Gabapentin Regulation Effects on Opioid Overdose Trends

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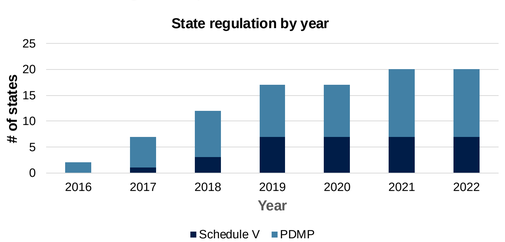
INTRODUCTION

- Gabapentin is among the top 10 most prescribed drugs in the U.S. and is frequently used off-label for conditions such as neuropathic pain, anxiety, fibromyalgia, and alcohol dependence.
- It is often co-used with opioids, enhancing their potency but significantly increasing the risk of overdose. Notably, 85–90% of gabapentin-related deaths involve opioids, underscoring its role in the opioid crisis.
- In response, several states have implemented regulations, e.g., classifying gabapentin as Schedule V or requiring Prescription Drug Monitoring Program (PDMP) reporting to curb misuse and improve monitoring.
- This study analyzes the impact of state-level gabapentin regulations on age-adjusted opioid overdose mortality trends (2013–2022) to evaluate their effectiveness and inform evidence-based strategies for addressing the opioid crisis.



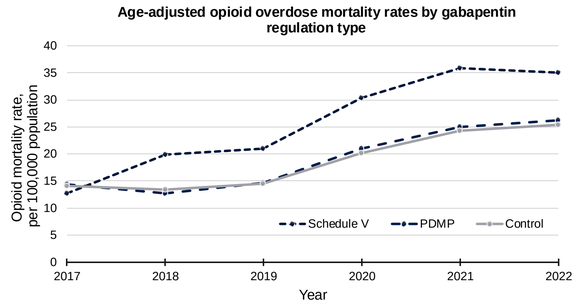
As of 2024:
- 7 states classify gabapentin as Schedule V
- 17 states mandate PDMP reporting

METHODS

- **Study Design:** Retrospective state-level analysis (2013–2022) using CDC WONDER mortality data and state gabapentin regulation records.
- **Exposure:** States classified into three groups: Schedule V, PDMP reporting, or no regulation (control).
- **Outcome:** Age-adjusted opioid overdose mortality rates (per 100,000 population).
- **Analysis:** Primary analysis involved linear time-series regression to assess regulation impact adjusted for state and fixed-year effects and socioeconomic factors. Secondary analysis of Schedule V regulation was done utilizing Interrupted Time Series (ITS) regression and the Synthetic Control Method (SCM).
- **Software:** Microsoft Excel and R (ggplot2) for statistical analysis and visualization.

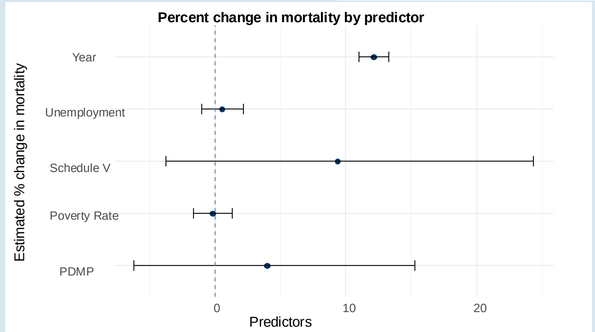
RESULTS

Primary Analysis: Linear time-series regression showed no significant association between gabapentin regulations and opioid overdose mortality; higher mortality observed in Schedule V states.

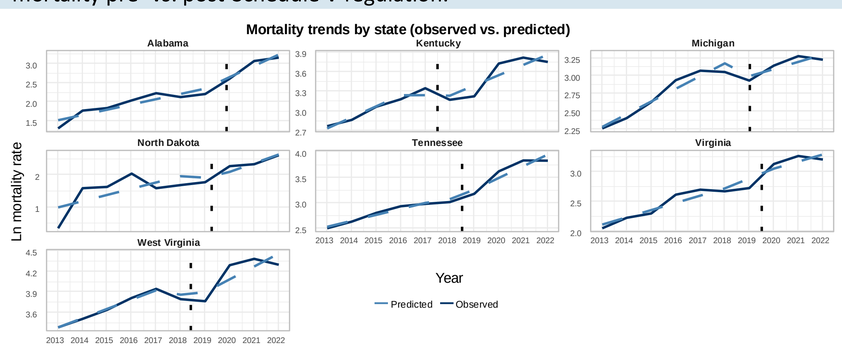


State	Regulation	Date
Alabama	Schedule V	11/18/2019
Connecticut	PDMP	1/1/2021
Washington, D.C.	PDMP	6/7/2019
Indiana	PDMP	7/1/2019
Kansas	PDMP	7/25/2018
Kentucky	Schedule V	7/1/2017
Louisiana	PDMP	1/20/2021
Massachusetts	PDMP	8/1/2017
Michigan	Schedule V	1/4/2019
Minnesota	PDMP	8/1/2016
Nebraska	PDMP	1/1/2018
New Jersey	PDMP	5/7/2018
North Dakota	Schedule V	4/10/2019
Ohio	PDMP	12/1/2016
Oregon	PDMP	1/1/2020
Tennessee	Schedule V	7/1/2018
Utah	PDMP	12/9/2019
Virginia	Schedule V	7/1/2019
West Virginia	Schedule V	6/7/2018
Wisconsin	PDMP	9/1/2021
Wyoming	PDMP	7/1/2017

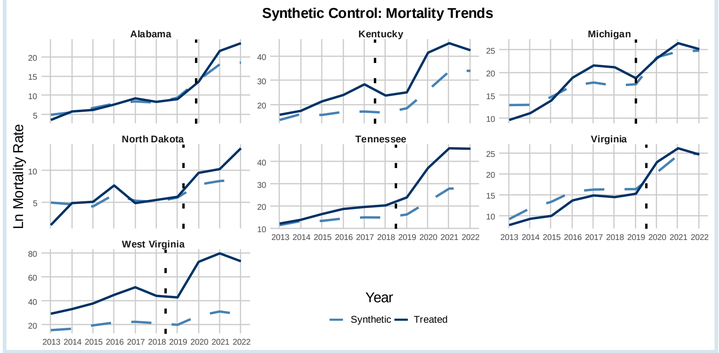
Comparison with Control Group:
■States with Schedule V + PDMP: Estimated mortality change 95% CI: -3.75% to 24.31% (p = 0.17)
■States with PDMP-only: Estimated mortality change 95% CI: -6.17% to 15.24% (p = 0.46)



Secondary Analyses: ITS analysis found no significant change in opioid overdose mortality pre- vs. post-Schedule V regulation.



SCM found no significant difference in Schedule V states vs. synthetic control.



CONCLUSION

Key Findings & Implications

- There was no statistically significant association between gabapentin regulations and opioid overdose mortality - possible explanations:
  - Synthetic opioids (e.g., fentanyl) may have masked regulatory effects.
  - Delayed prescribing changes and limited awareness of gabapentin-opioid risks impacted outcomes.
  - Healthcare disparities and state policy variability affected effectiveness.
- Higher mortality in Schedule V states likely reflects higher baseline risk, justifying regulation

Limitations: Observational design, unmeasured confounders, and state policy differences.

Future Directions: Investigate prescribing trends, unintended consequences, and improve harm reduction efforts.

REFERENCES

1. Kuehn BM. Growing Role of Gabapentin in Opioid-Related Overdoses Highlights Misuse Potential and Off-label Prescribing Practices. JAMA. 2022;328(13):1283–1285. doi:10.1001/jama.2022.13659
2. Wallach JD, Ross JS. Gabapentin Approvals, Off-Label Use, and Lessons for Postmarketing Evaluation Efforts. JAMA. 2018;319(8):776–778. doi:10.1001/jama.2017.21897
3. Fukada C, Kohler JC, Boon H, Austin Z, Krahn M. Prescribing gabapentin off label: Perspectives from psychiatry, pain and neurology specialists. Can Pharm J (Ott). 2012 Nov;145(6):280-284.e1. doi: 10.3821/145.6.cpj280. PMID: 23509590; PMCID: PMC3567599.
4. Karavolis ZA, Su AB, Peckham AM. State-level response to gabapentin misuse in the United States: Implications and future direction. Am J Health-Syst Pharm. 2022 May 1;79(9):e143–e148. doi: 10.1093/ajhp/zxab486.
5. Centers for Disease Control and Prevention (CDC). WONDER platform. Accessed January 8, 2025. https://wonder.cdc.gov/