

Impact of the X-Waiver Elimination on Buprenorphine Prescribing by Non-Physician Clinicians: An Interrupted Time Series Analysis

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Background

- ✓ Buprenorphine is an effective medication for opioid use disorder (OUD), yet access has historically been restricted by federal regulations.^{1,2}
- ✓ Under the Drug Addiction Treatment Act (DATA) of 2000, clinicians were required to obtain an X-waiver (a special certification involving extra training) before prescribing buprenorphine.
- ✓ While intended to promote safety, the X-waiver substantially limited access. In January 2023, the X-waiver was eliminated, expanding prescribing authority to all DEA-registered providers. However, state-level restrictions remain in some states.^{3,4}
- ✓ Objective: To assess how eliminating the X-waiver affected buprenorphine prescribing trends by provider type [physicians, nurse practitioners (NPs), physician assistants (PAs)], and state-level restrictions.

Methods

- ✓ **Data Source:** IQVIA PharMetrics® Plus for Academics, a U.S. claims database with medical, pharmacy, and enrollment data. This study used a 25% random sample of 215M+ individuals, focusing on data from Jan 2021 to Dec 2023.⁵
- ✓ **Study Population:** Unique providers who prescribed buprenorphine products indicated for OUD, stratified by provider type.
- ✓ **Exposure:** Elimination of the X-waiver (January 2023) and state-level restrictions.
 - **Restricted States:** States with extra training or counseling requirements beyond the X-waiver elimination.
 - **Non-Restricted States:** States fully aligned with federal policy with no additional requirements beyond the federal X-waiver.
 - 9 of the 14 restricted states continued restrictions into 2023, consistent with our classification.⁶

Table 1: State-Level Prescribing Restrictions by Provider Group

Provider Group	Restricted States
Physicians	AL, CO, KY, LA, ME, NM
Physician Assistants (PAs)	AL, AR, IN, KY, ME, NM, OH, VT, WV
Advanced Practice Nurses (APNs)	CA, ME, NM

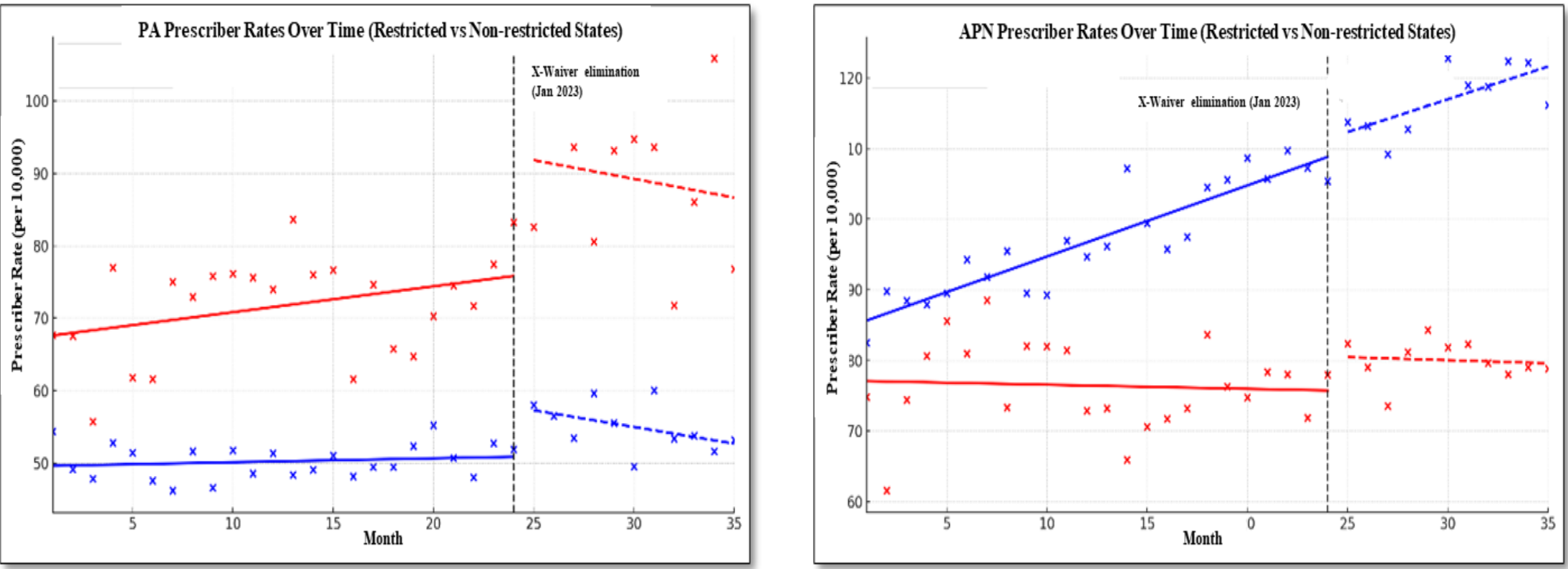
- ✓ **Outcome:** Monthly rate of unique buprenorphine prescribers per 10,000 prescribers by type.
- ✓ **Statistical Analysis**
 - Interrupted Time Series (ITS) models assessed prescribing changes after X-waiver elimination.
 - Single-group ITS evaluated national trends.
 - Coefficients of interest: β_2 (level change) and β_3 (slope change).

- Controlled ITS (CITSA) compared restricted vs. non-restricted states using a difference-in-difference approach.
 - Key coefficients: β_6 (level difference) and β_7 (slope difference for CITSA)
- All models were stratified by provider type [Physicians, PAs, APNs, and Advanced Practice Practitioners (APPs = PAs + APNs)].

RESULTS

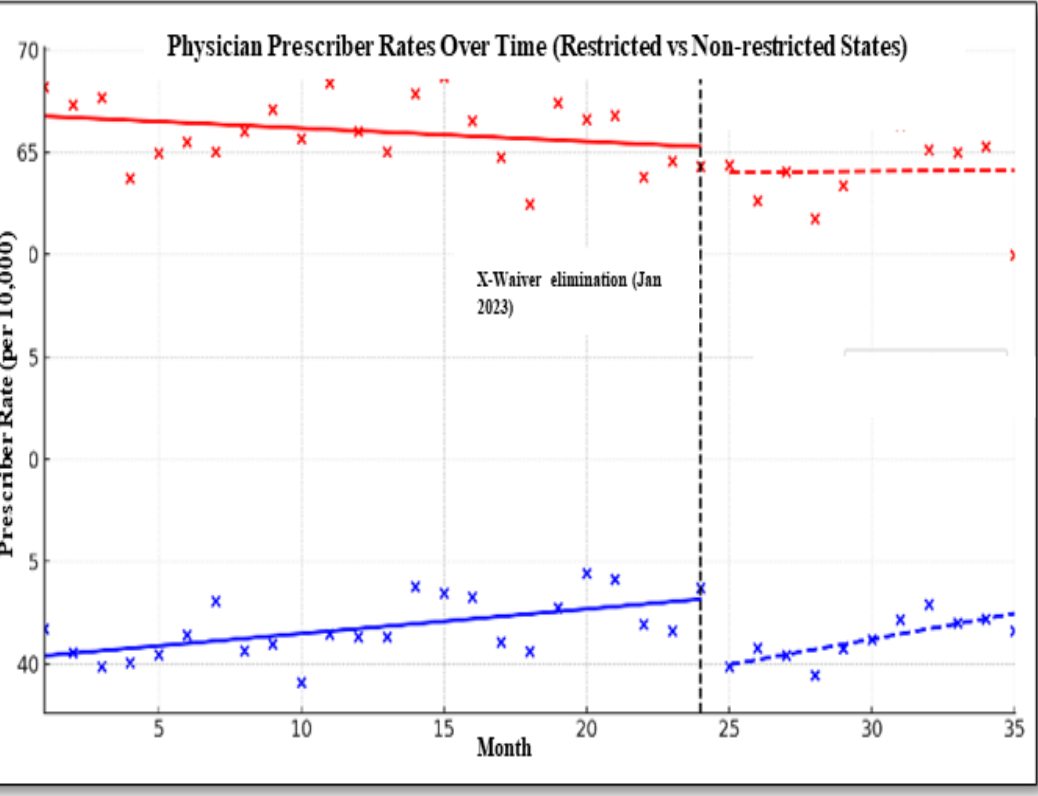
- ✓ PA buprenorphine prescribing rates increased significantly in restricted states relative to non-restricted states immediately after the X-waiver elimination (See Figure 2, Panel A and Figure 3).
- ✓ APN buprenorphine prescribing rates in non-restricted states continued a steady upward trajectory across the study period (See Figure 2, Panel B).
- ✓ No significant changes were seen in physician buprenorphine prescribing rates after X-waiver elimination by state-level restriction status (See Figure 2, Panel D and Figure 3).

Figure 2: Prescriber Rate Trends Over Time Following X-Waiver Elimination: Restricted vs Non-Restricted States



Panel A: PA Prescribers: Restricted states had significantly higher immediate increase; no slope difference

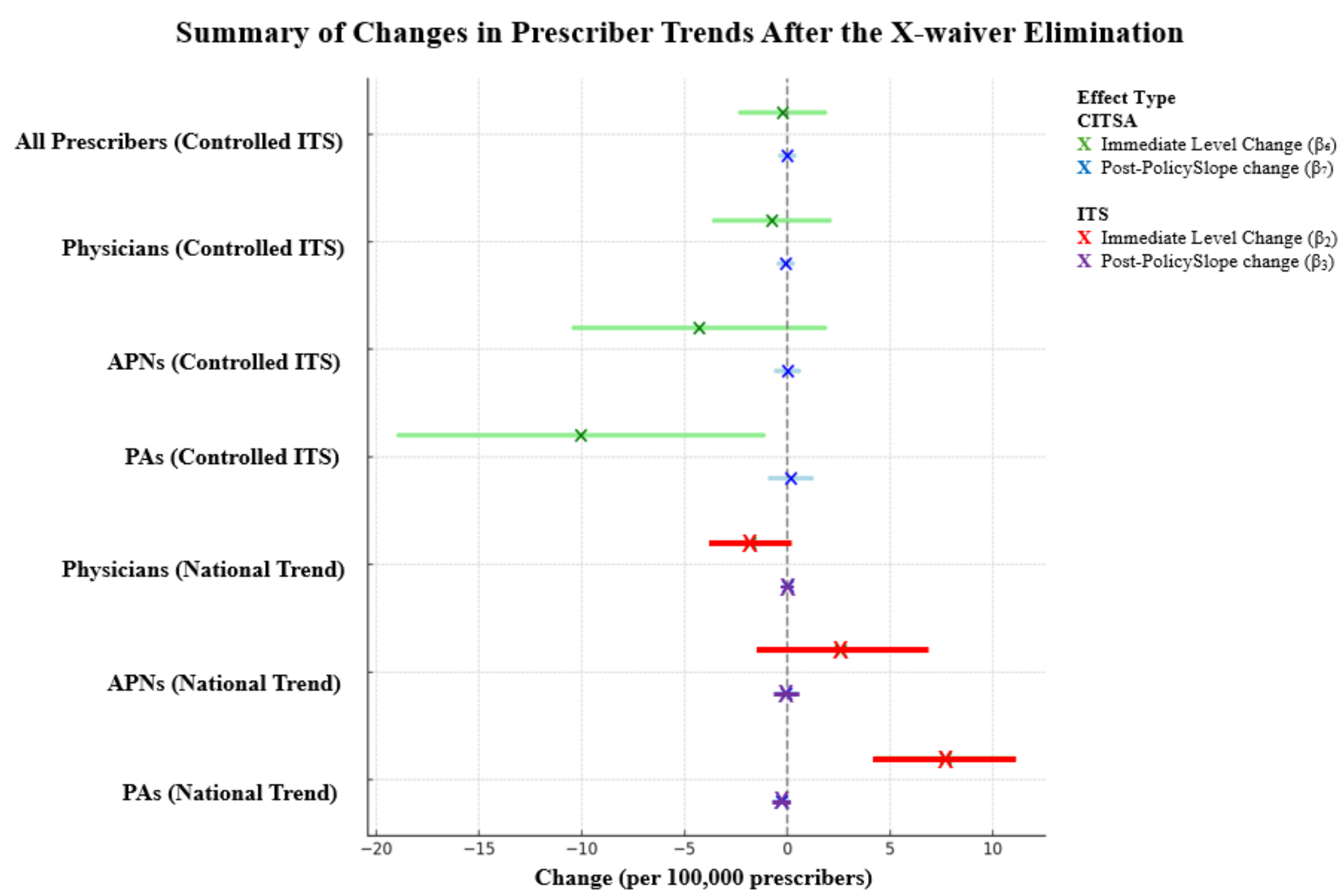
Panel B: APN Prescribers: No significant difference in level or slope changes



Panel C: Physician Prescribers: No significant difference in level or slope changes

Legend:
Non-Restricted States (Exposed Group) ●
Restricted States (Control Group) ●

Figure 3: Changes in Prescriber Trend After X-Waiver Elimination



CONCLUSIONS

- ✓ PAs in restricted states experienced a significant shift in buprenorphine prescribing following X-waiver elimination as compared to non-restricted states.
- ✓ No significant changes were seen in buprenorphine prescribing among physicians or APNs.
- ✓ These results indicate policy changes alone are unlikely to result in significant behavior change among providers.

LIMITATIONS

- ✓ Limited to 11 months post-policy observation.
- ✓ Commercially insured population only.
- ✓ Potential misclassification of state policies.
- ✓ Possible influence of concurrent policy changes.

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Figure 1. Timeline of Key Federal Policies on Buprenorphine Prescribing (2000–2023)

