

The Impact of State Level COVID-19 Preventive Restrictions on Diseases of Despair — An Interrupted Time Series Analysis of National Claims Data

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BACKGROUND

- 'Diseases of despair' (DOD) are conditions that include alcohol-related disorders, substance-related disorders and suicidal thoughts and behaviors seen in groups of people who experience despair due to economic and social distress [1,2].
- There has been a surge in DOD rates in the US since the late 1990s that has been attributed to economic, social and psychological factors often tied to unemployment [3].
- Restrictions put in place during the COVID-19 pandemic (e.g., closing of restaurants) resulted in social isolation and job loss, factors that could worsen DOD. This provided a natural experiment to investigate the effects of COVID-19 restrictions on DOD [4].

OBJECTIVE

- This study explored the association between state-level COVID-19 restrictions and (1) rates of enrollees diagnosed with DOD and (2) utilization rates for which a DOD diagnoses were recorded.

METHODS

Data Source and Selection:

- We analyzed a 25% random sample of the IQVIA LifeLink Pharmetrics Plus database (June 2017 to October 2021) with comprehensive claims data from a nationally-representative cohort of commercially insured US individuals [5].
- Data from March to May 2020 were excluded due to notable healthcare disruptions immediately following the declaration of the COVID-19 pandemic in the US.

Subject Eligibility Criteria

- Individuals aged 13 or older with at least one month of active medical benefits enrollment.

State Categorization COVID-19 Restrictiveness

- States were categorized based on their COVID-19 policies using the Pew Research Center's classification system [6].
- States classified as 'Most Restrictive' and 'Least Restrictive' were compared.

Exclusion Criteria for States

- States experiencing enrollment changes of more than 50% between any two consecutive months were excluded from the analysis to focus the analysis on populations with stable enrollment.

Outcome of Interest

- Outcome measures included:
 - Monthly rates of individuals with one or more DOD diagnoses recorded
 - Monthly utilization rates for healthcare encounters with a DOD diagnosis recorded.
- A Composite measure of DOD was assessed and individually for six specific DOD:
 - Opioid Related Disorders (ORD), Alcohol Related Disorders (ARD), Non-opioid Non-alcohol Related Disorders, Opioid Overdoses (OO), Non-Opioid Overdoses, and Suicidal Ideation or attempt.
- The Clinical Classification Software Refined (CCSR) system was used to define these categories based on ICD-10-CM codes considering all diagnoses in the claims.

Statistical Analyses

- A Controlled Interrupted Time Series Analysis (CITSA) model was estimated to assess pre-and post-implementation trends (slope), levels (intercept shift), and variations in DOD rates between states classified as having COVID-19 policies that were 'most restrictive' and 'least restrictive'.

RESULTS

Demographic and Diagnostic Trends in Diseases of Despair

- In the pre-exposure period, individuals with DOD diagnoses averaged 363.67 (most restrictive) and 345.64 (least restrictive) per 100,000 eligible enrollees per month. In the post-exposure period, the mean rates were 353.95 and 405.13 per 100,000 eligible enrollees per month, respectively.

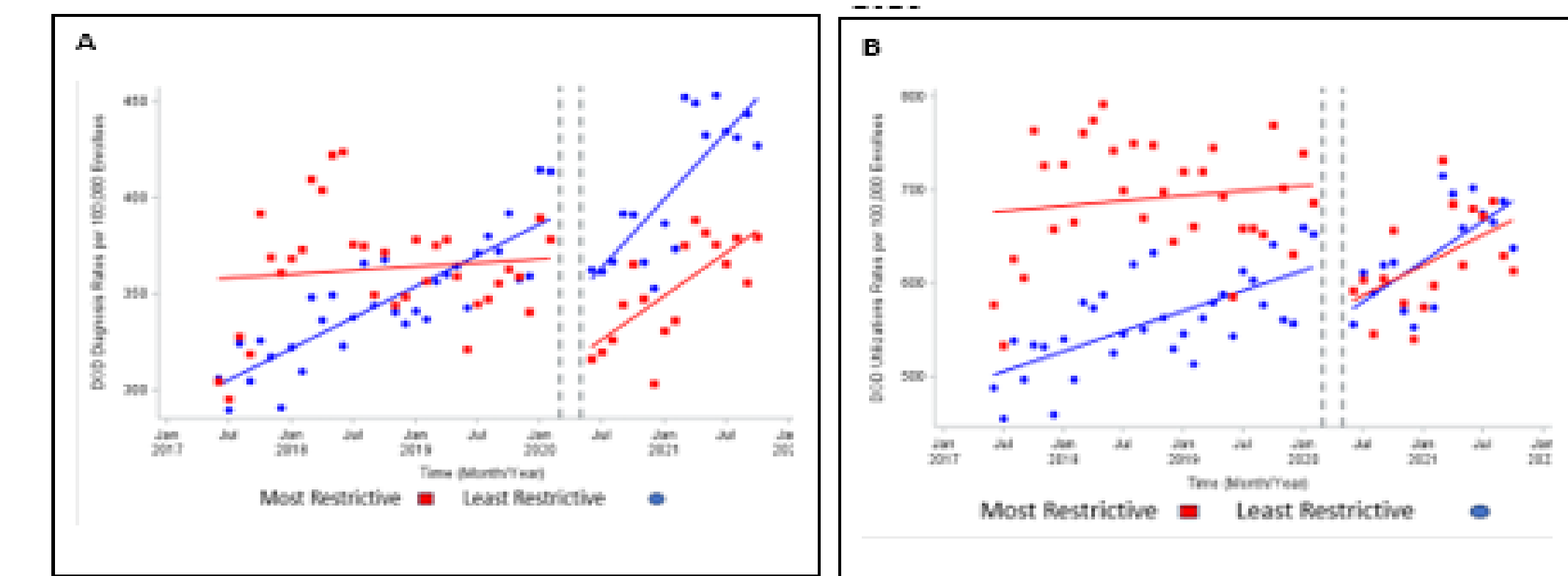
Key Findings

- The most restrictive states experienced a slight yet statistically significant rise in the trend (slope) of opioid-related disorder diagnoses and utilization rates compared to the least restrictive states (see Figures 1 & 2).
- No statistically significant increases were detected in either the level or trend (slope) in the number of persons with a any individual DOD or the monthly individual DOD utilization rates between the most restrictive states compared to the least restrictive states (see table 1).

Table 1. Coefficients From Multi-Group Interrupted Time Series Models Comparing Most-restrictive Vs Least Restrictive

Analysis	Intercept	Pre-to-post interruption level difference	Pre-to-post interruption trend change
Composite DOD diagnoses	299.921 (294.673 to 305.168)	-13.148 (-38.551 to 12.255)	0.298 (-1.761 to 2.357)
Composite DOD utilization	497.958 (480.399 to 515.517)	-77.810 (-129.194 to -26.425)	0.929 (-3.117 to 4.975)
ORD inpatient/outpatient diagnoses	115.757 (110.953 to 120.561)	-5.750 (-19.484 to 7.984)	1.467 (0.407 to 2.527)
ORD inpatient/outpatient Utilization	200.009 (183.837 to 216.181)	-11.391 (-40.834 to 18.053)	1.467 (0.407 to 2.527)

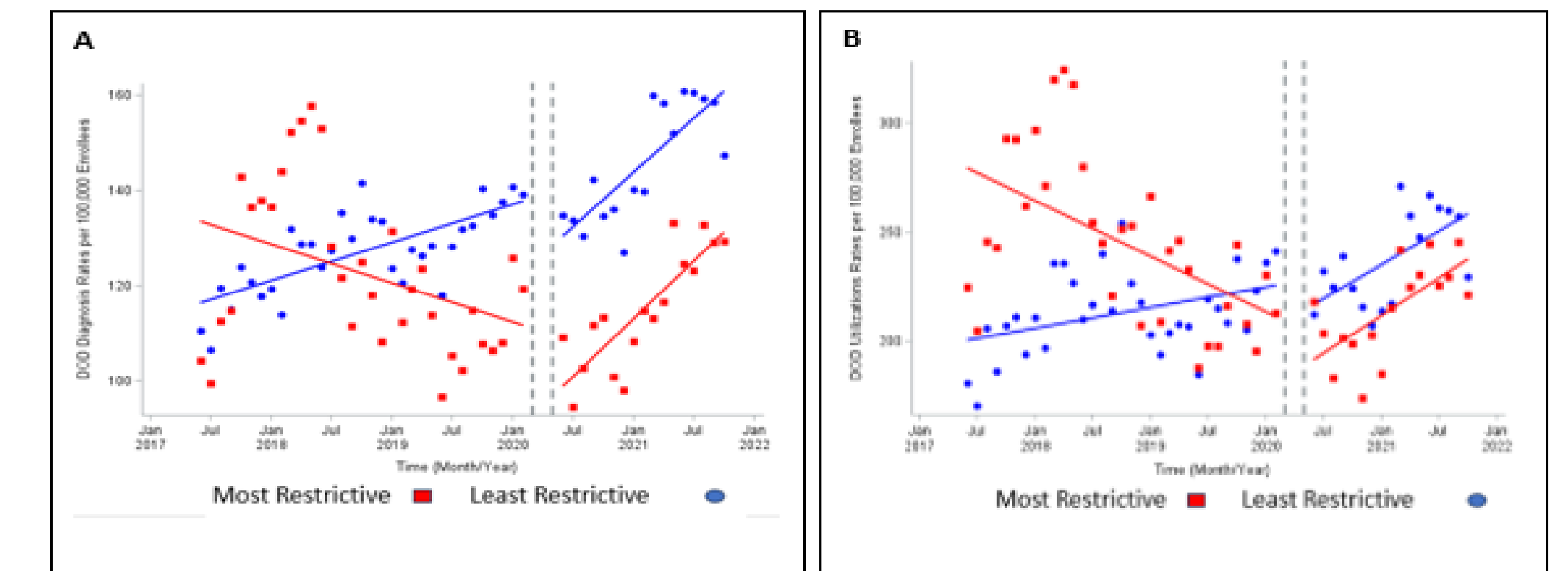
Monthly Composite DOD Diagnoses and Utilization Rates and CITSA Results



Panel A: Person-Level Trends: Rate of Individuals with One or More DOD-Related Diagnoses per 100,000 Enrollees

Panel B: Utilization-Level Trends: Rate of DOD-Related Healthcare Utilizations per 100,000 Enrollees

Monthly Opioid Related Disorder Diagnoses and Utilization Rates and CITSA Results



Panel A: Person-Level Trends: Rate of Individuals with One or More ORD-Related Diagnoses per 100,000 Enrollees

Panel B: Utilization-Level Trends: Rate of ORD-Related Healthcare Utilizations per 100,000 Enrollees

CONCLUSIONS

- Besides a significant increase in opioid related disorders in states with the most COVID-19 restrictions compared to the states with the fewest restrictions, State-level COVID-19 restrictions were not broadly associated with increases in either the number of people or the monthly utilization rates of most diseases of despair.
- These results provide insight into the risks (or lack thereof) of state based COVID-19 restrictions for commercially insured individuals during the pandemic which may be less susceptible to DOD than the broader general population.
- There may be other un-intended risks with implementing state-based restrictions in response to a pandemic that were not captured in this study

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