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# THE CONSEQUENCES OF COVID-19 ON THE OVERDOSE EPIDEMIC: *OVERDOSES ARE INCREASING*

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## INTRODUCTION

The ODMAP team has been conducting an analysis of the possible implications of COVID-19 on the overdose epidemic for seven weeks, with the first report released March 24, 2020. The first six weeks of the analysis presented no apparent statistical significance between confirmed COVID-19 cases and ODMAP submissions, demonstrated through linear regression on a dataset consisting of the six states representing the highest confidence in both data quality and consistency. However, the most recent analysis released on May 5, 2020, demonstrated a statistically significant positive relationship between two of the six states. Additionally, ODMAP stakeholders have reported the following:

- Shelby County, TN: The Shelby County Health Department reported 391 suspected overdoses from April 7, 2020 to May 7, 2020, 58 of which were fatal, the most in a 30-day period, since tracking began on January 1, 2019. [1]
- Franklin County, OH: Franklin County Coroner, Dr. Anahi Ortiz, reported the first four months of 2020 showed 50% more deaths than in the same period of 2019. Dr. Ortiz also reports a pattern of weekend spikes during COVID-19. [2]
- Milwaukee, WI: Milwaukee County's Emergency Medical Services Division reported March and April 2020 display a 54% increase in drug overdose calls compared to the same time period of 2019. [3]

Qualitative data from interviews with ODMAP stakeholders, information gathered from open sources, and peer-reviewed articles indicate that people who use drugs are likely more vulnerable during the pandemic due to stigma, discrimination, inferior health knowledge, prioritization of drug use over overall health, and may experience difficulties accessing harm reduction services [4]. To assist in mitigating these risk factors, communities should:

1. Utilize vending machines, or other on-demand avenues for services such as distribution of sterile syringes, to ensure accessibility [4]
2. Employ teleconferencing and virtual meetings where applicable [4]
3. Medications that typically require attendance, monitoring, and supervision should receive consideration for alternative check-in methods [4]
4. Supervised sublingual buprenorphine/methadone dosing should be evaluated for possible transition to long-acting depot buprenorphine, or providing additional non-supervised, take-away dosages [4]

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[1] <https://www.localmemphis.com/article/news/health/spike-drug-overdoses-shelby-county-over-past-month/522-347077cd-2933-4396-9c66-f1d1ad02894a>

[2] <https://www.dispatch.com/news/20200511/od-deaths-surge-on-weekend-again>

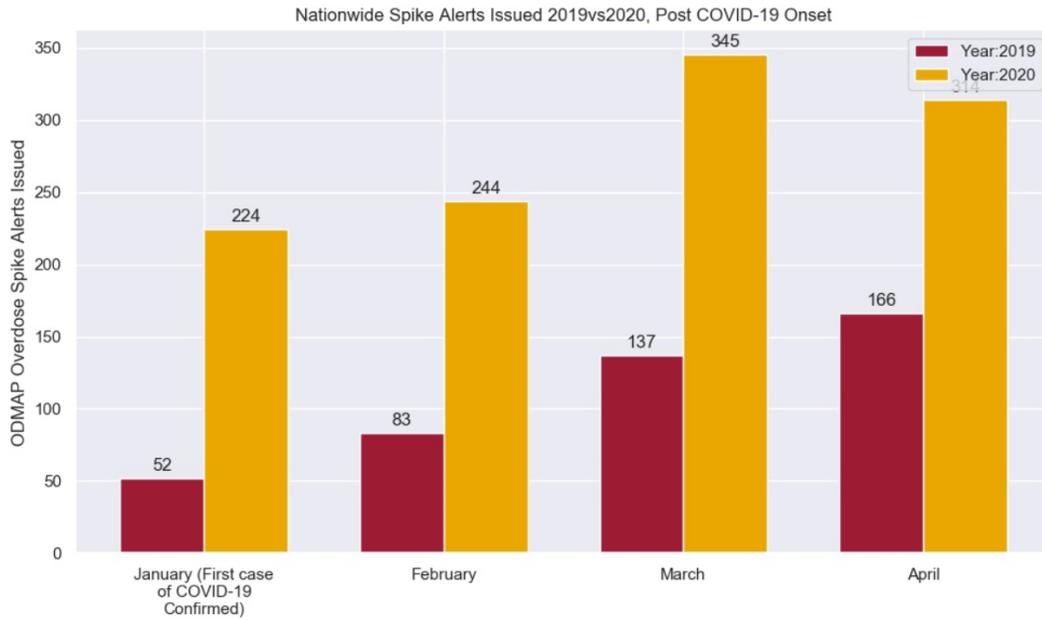
[3] <https://urbanmilwaukee.com/2020/05/07/ems-calls-show-54-spike-in-drug-overdoses-80-increase-in-suicide-attempts/>

[4] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7201394/>

**CURRENT OBSERVATIONS**

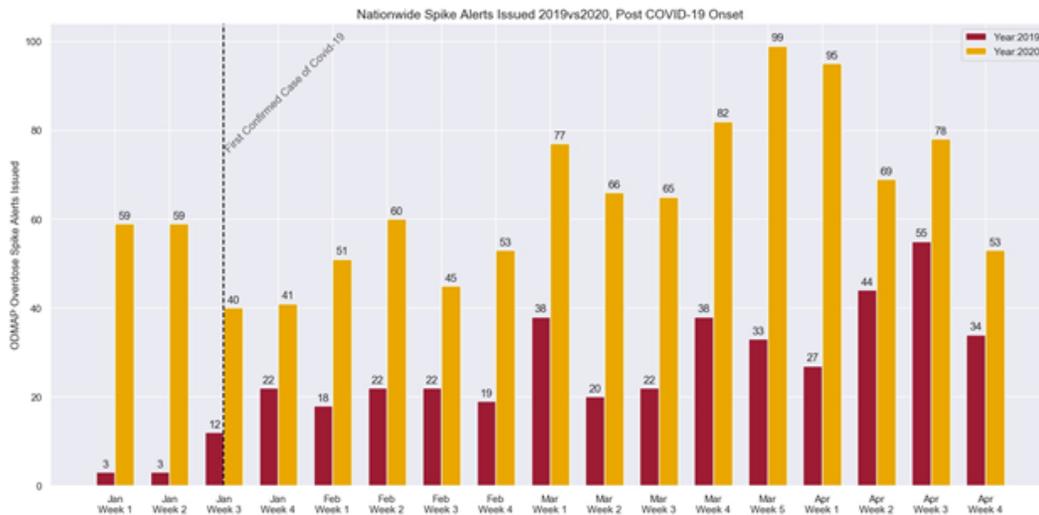
Since the first reported case of COVID-19, suspected overdose submissions display an average increase of 20% when compared to the same time-period during the previous year.

**Figure 1: National ODMAP Submissions January-April 2019 and 2020 Comparison**



An ODMAP spike alert is triggered when ODMAP submissions increase two standard deviations above the mean in the past 24 hours for a particular county and state. The mean is calculated based on the past 90 days of submissions for that county. ODMAP generated spike alerts have increased 191% in January-April 2020 compared to January-April 2019.

**Figure 2: ODMAP Spike Alerts January-April 2019 and 2020 Comparison**

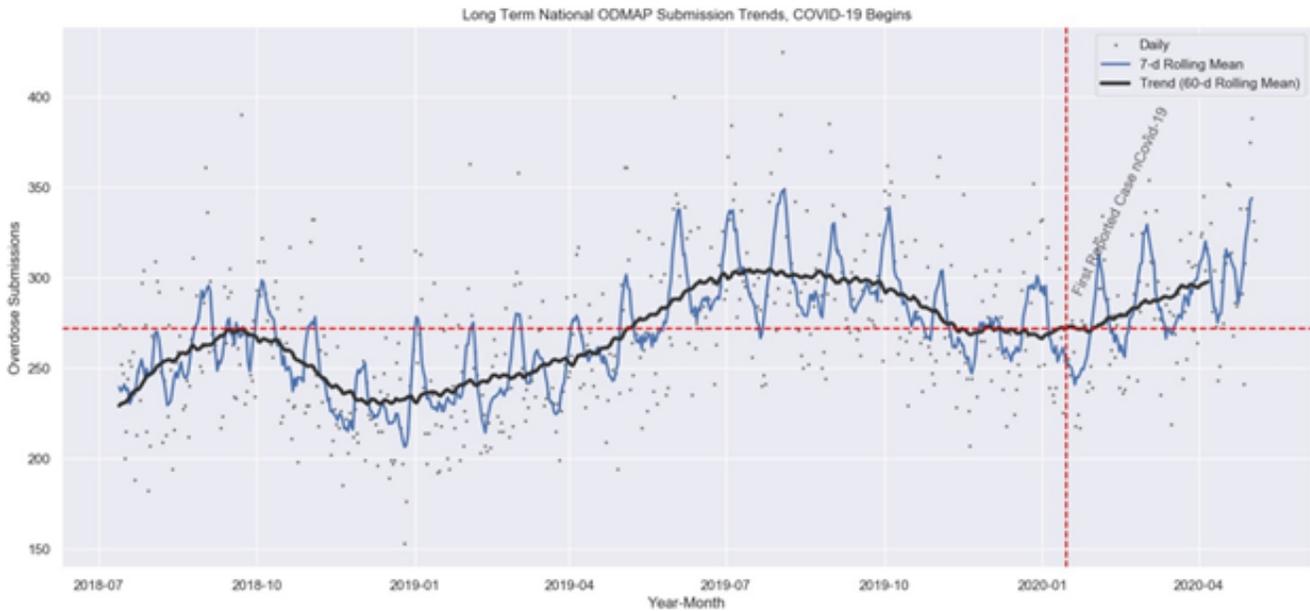


## ANALYSIS

Surveillance of suspected overdose data in near real-time through ODMAP is critical for deployment of an overdose response. Equally as significant is the utilization of historical data to forecast future data trends to aid in geographic resource allocation. To understand whether COVID-19 is affecting overdoses, historical overdose trends must be taken into account to determine whether an apparent increase in overdoses is consistent with historic data trends.

For this analysis, we have applied the Autoregressive Integrated Moving Average (ARIMA) model, which has been used to forecast COVID-19[5] instances nationally, evaluate both infectious and non-infectious diseases[6], and to identify and estimate significant temporal clusters in overdose surveillance[7]. ODMAP submissions from July 15, 2018 to May 6, 2020 were analyzed using the ARIMA model to determine if historical data would forecast current observations within ODMAP data. Figure 3 displays the historical trend of suspected overdose submissions into the ODMAP system.

**Figure 3:** ODMAP submissions over time for the ARIMA historical data set



[5] <https://www.sciencedirect.com/science/article/pii/S2352340920302341?via%3Dihub>

[6] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC545198/>

[7] [http://illinoisinjuryprevention.org/Friedman\\_2009\\_Heroin.pdf](http://illinoisinjuryprevention.org/Friedman_2009_Heroin.pdf)

**Figure 4: ARIMA forecast graph for ODMAP submissions**

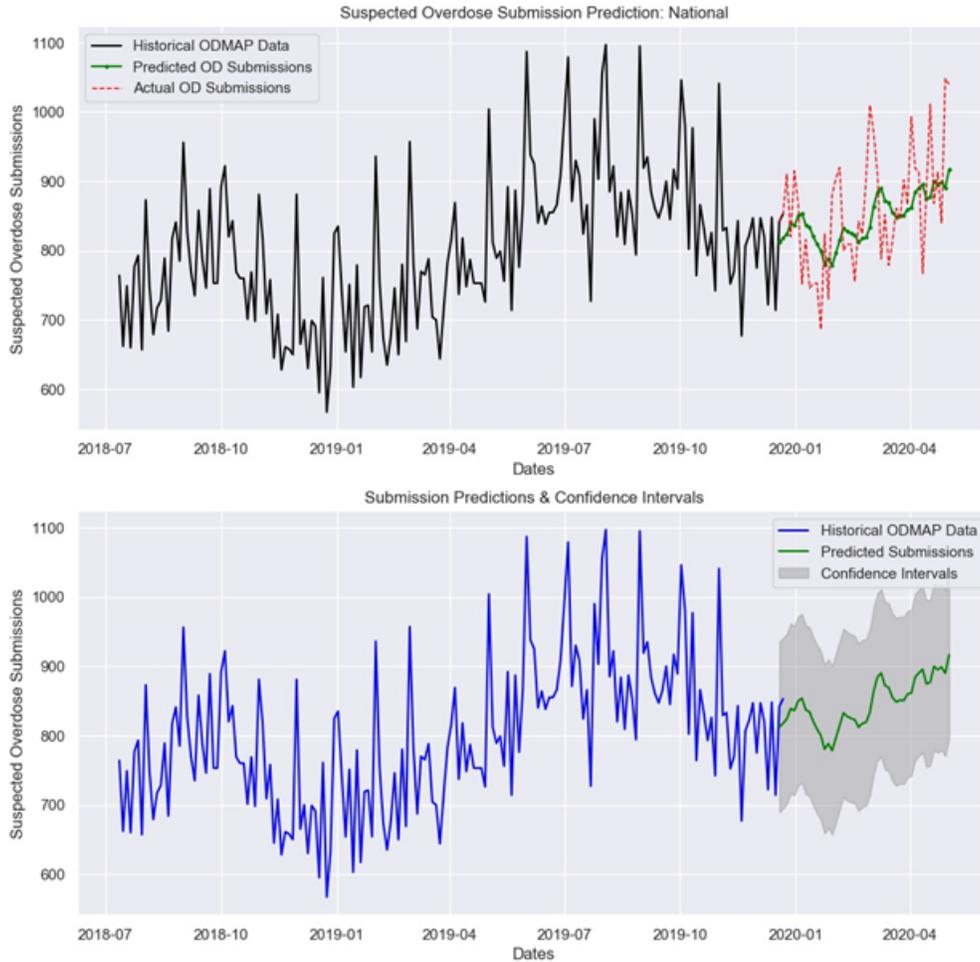
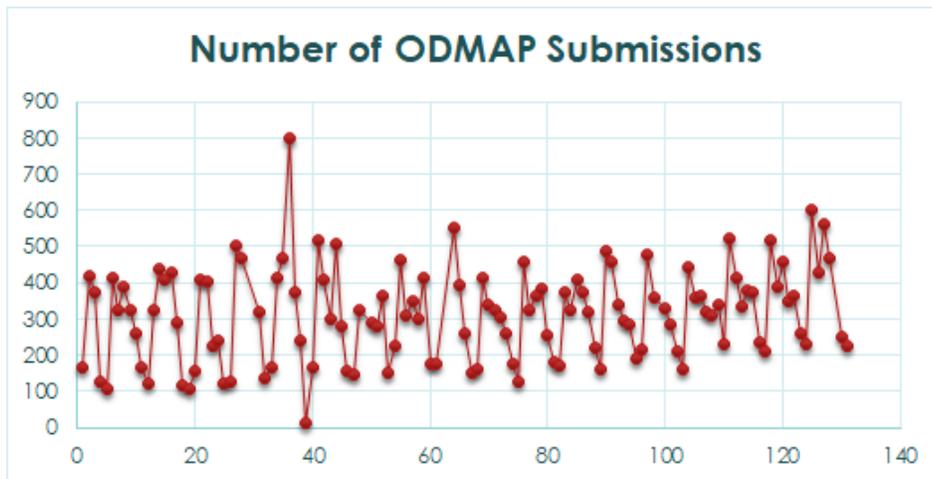


Figure 4 displays the application of the ARIMA model. Here we see that historical data modeling would not have forecasted the increase in overdose activity currently present in the ODMAP submissions since the onset of COVID-19. Suspected overdose submissions in the OMDAP system have risen 16.56% based off of a 30 day rolling mean comparison from 2019 to 2020. A comparison of raw numbers yields an increase of 11.39% for fatal overdoses, and an increase of 18.64% for non-fatal overdoses during that same time period. May 2020 appears to be displaying a continuation of this trend, with an overall increase of 8% in overdoses in the first six days of the month, when compared to the previous year.

**SUBMISSIONS**

Lastly, in order to verify suspected overdoses were still being entered into ODMAP during COVID-19, submissions for the nation as a whole for the time period January 1, 2020 to May 10, 2020 were evaluated. The review showed to date there has not been an apparent reduction in submissions to ODMAP. Figure 5 below displays days 1-131 on the x-axis (day 1 is January 1, 2020 and day 131 is May 10, 2020), the number of submissions is represented on the y-axis.

**Figure 5: Number of ODMAP submissions from January 1, 2020 through May 10, 2020**



Note: Days with a large number of submissions indicate a bulk upload of overdose data

**CONCLUSION**

Both the COVID-19 pandemic and the opioid epidemic are both current national public health emergencies[8]. Given the unprecedented nature of both, as well as the constantly evolving qualitative factors such as COVID-19 testing, harm reduction efforts, and economic factors, this analysis may present different findings in the future. However, since both ODMAP submissions and confirmed COVID-19 cases are both reported in near real time, and ODMAP is the only national surveillance platform for collection of both fatal and non-fatal suspected overdoses, this analysis presents the most relevant evaluation of the possible implications of COVID-19 on the overdose epidemic. Further analysis should be conducted in coordination with state health departments and the ODMAP system to better understand this significance.

Below are a few reminders of the unique intricacies that exist surrounding overdose data, ODMAP submissions, and COVID-19 cases:

- Many state and local governments have never captured non-fatal suspected overdose data previously eliminating a control data set;
- Drug trends are continually evolving due to the rapid introduction of synthetic analogs, which complicates the use of historical data as a predictor of future data;
- ODMAP defers state and local agencies to define "suspected overdose," impacting data quality and consistency across jurisdictional boundaries;
- There are regions that either fail to report or are inconsistent in their reporting of suspected overdoses into ODMAP consistently;
- The actual reach of COVID-19 is still unknown due to delays in both testing and test results; and
- Correlation does not imply causation.

[8] <https://www.phe.gov/emergency/news/healthactions/phe/Pages/default.aspx>