Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
The new services that opioid treatment programs have adopted in response to COVID-19

Jonathan Cantor a, Agustina Laurito b,∗

a RAND Corporation, Santa Monica, CA, 1776 Main Street, m5159, Santa Monica, CA 90401, USA
b Department of Public Administration, University of Illinois at Chicago, 412 S. Peoria St., 136, Chicago, IL 60607 (MC 278), USA

A R T I C L E   I N F O
Keywords: Opioid treatment programs Opioid use disorder COVID-19 Social distancing Telehealth

A B S T R A C T
COVID-19 has exacerbated the opioid epidemic and transformed how programs treat opioid use disorder. In response to the pandemic, the federal government modified guidelines to allow opioid treatment programs (OTPs) greater flexibility in the provision of medication for opioid use disorder. We conducted a telephone survey of 31.10% of OTPs in the contiguous United States between June and July 2020. We contacted a random sample of 477 facilities and obtained responses from 373. The survey asked questions about new patient intake, medication drop off, and pick up by a trusted person (Substance Abuse and Mental Health Services Administration, 2020c). In response to the pandemic, both federal and state governments have eased existing restrictions on MOUD induction and prescribing, including allowing the use of different forms of telehealth. In response to the pandemic, both federal and state governments have eased existing restrictions on MOUD induction and prescribing, including allowing the use of different forms of telehealth. To reduce transmission of COVID-19 and limit in-person contact, federal laws have also been loosened with respect to dispensing methadone at opioid treatment programs (OTPs), and for waivered prescribers treating patients with buprenorphine. As of March 2020, the federal government changed existing federal guidelines so that OTPs can now prescribe a take-home supply of up to 14 days of methadone for less stable patients and up to 28-days for stable patients (Substance Abuse and Mental Health Services Administration, 2020a), and OTPs can now induce patients to buprenorphine remotely via telemedicine (Substance Abuse and Mental Health Services Administration, 2020b). For patients who need to quarantine or isolate due to COVID-19, federal guidelines allow medication drop off, and medication pick up by a trusted person (Substance Abuse and Mental Health Services Administration, 2020c).

We do not know whether and to what extent OTPs adopted social distancing practices for the treatment of OUD to limit the spread of COVID-19. To fill this crucial gap, we contacted 477 OTPs in the contiguous United States, representing 31.10% of OTPs as of April 10, 2020, and asked a series of questions about their current treatment services. Specifically, we asked whether OTPs were accepting new patients; screening for COVID-19; using social distancing measures for in-person visits; and providing home delivery for MOUDs, curbside medication drop off, and medication pick up by a trusted person.
treatment, pick up by a trusted person, and telehealth. We hypothesized that many of these OTPs had adopted some or all of these measures or were still in the process of implementing these changes. Separately, we expected that the response of these facilities would differ based on facility characteristics, such as public or nonprofit ownership, the previous number of drug overdose deaths in 2018, and the location of the facility in an urban or rural area, among others.

2. Methods

2.1. Study sample and population

This study obtained data on the location of and contact information for OTPs in the United States from the Behavioral Health Treatment Service Locator of the Substance Abuse and Mental Health Services Administration (SAMHSA) (Substance Abuse and Mental Health Services Administration, 2020a). The SAMHSA compiled the list based on responses to the National Substance Abuse Treatment Services Survey (N-SSATS) and have formed the basis of previous studies of the availability of health services by OTPs (Gangopadhyaya et al., 2020; Joudrey et al., 2020). We restricted our study to the 1534 OTPs in the contiguous United States (including the District of Columbia) that the locator included as of April 10, 2020. We used a random number generator to sort these facilities into a list. We then attempted to contact each of the OTPs in our sample by phone in the period June 1, 2020, to July 31, 2020, to ask about social distancing and treatment services. We called each facility once and we did not re-contact them unless our first call happened outside of regular business hours. After this re-contact attempt, we classified the facility as a nonresponder. We used a secret shopper approach, which other studies have used successfully in the past related to the provision of mental health treatment (Cantor, McBain, et al., 2020), and the treatment of OUD (Beetham et al., 2020, 2019; Patrick et al., 2020). The study used the secret shopper to understand the real-life barriers that patients may encounter during the COVID-19 pandemic, and the Department of Health and Human Services has recommended this approach as a field experiment (US Department of Health and Human Services, 2014). We made all calls using the same script. In total, we contacted 477 OTPs, which make up 31.10% of all OTPs in the contiguous United States listed in the Behavioral Health Treatment Service Locator on April 10, 2020. We successfully obtained responses from 373 of those facilities (78.20%). In a small number of those interactions, the OTP staff asked the caller the purpose of the call and the caller revealed that they were part of a research team. This happened in approximately 30 calls.

2.2. Measures

The survey included nine questions focused on how OTPs have implemented social distancing practices to limit the spread of COVID-19. The first question confirmed the existence of an OTP at the location. The second question asked whether the facility was currently accepting new patients. The third question inquired whether the OTP screened for COVID-19 symptoms for in-person visits. The fourth question in the survey asked whether the OTP used any social distancing measures for in-person visits. Fifth, we confirmed the provision of MOUD at the facility. The sixth question asked if the OTP offered medication home delivery (drop off) for patients in quarantine due to COVID-19. We followed this question by asking whether the OTP offered curbside treatment. Then we asked if the OTP allowed for medication pick up by a trusted person on behalf of patients who needed to quarantine or isolate due to COVID-19. In our last question (question 9), we asked if the OTP offered telehealth/telemedicine. The exact questions are in the online appendix.

We supplemented our survey data with other data sources. First, we obtained measures for the ownership and service setting of the facility from the Behavioral Locator. To the extent that public and not-for-profit facilities operated differently before the pandemic (e.g., offering telemedicine) we may expect differences by ownership (Cantor, Stein, et al., 2020). Second, we acquired data on state-level shelter in place using Boston University’s COVID-19 U.S. state policy database (COVID-19 US State Policy Database, 2020). We expect the demand for either in person or virtual treatment will differ based on requirements for social distancing within a state (Becker et al., 2020; Livingston et al., 2020). Third, we collected data on the total number of COVID-19 cases as of June 2, 2020, in each county from USAFacts because states and local municipalities are more likely to implement social distancing changes based on COVID-19 severity (Cantor, Sood et al., 2020). These data are collected from the Centers for Disease Control and Prevention and local public health departments (USAFACTS, 2020). We also collected measures for county-level metropolitan status (Centers for Disease Control and Prevention, 2019). Even prior to the pandemic rural areas had less access to methadone maintenance, and fewer buprenorphine prescribers (Nunes et al., 2020). Thus, these areas may be less likely to adopt some of the policy changes (Oerther & Oerther, 2020). Finally, we gathered data on age-adjusted drug poisoning mortality rates that come from the National Center for Health Statistics (Centers for Disease Control and Prevention, 2020b) for year 2018—the most recent year data are available. We hypothesized that OTPs will respond differently to the pandemic based on the severity of the opioid crisis within their community and expected differences for the demand for treatment.

The University of Illinois at Chicago’s Institutional Review Board did not consider our study human subject research.

2.3. Statistical analysis

First, we report sample characteristics for the OTPs that we contacted stratified by those that we reached and those we did not reach. We compare the differences between both groups using Chi-square tests.

We report primary findings in a descriptive table with percentages of positive (yes) and nonpositive (no, I don’t know) responses for each question, and we exclude missing data. We show percentages for facilities that implemented each of the changes in our survey. Adoption of social distancing or screenings to limit the spread of COVID-19 are not mutually exclusive practices, thus we quantified the number of treatment facilities that reported both implementing social distancing and COVID-19 screenings for in-person visits. For the delivery of MOUD, we present percentages for each question separately, and then we present percentages of facilities that implemented one of these changes only, two of the changes only, all three changes in modality (curbside treatment, home delivery [drop off], pick up by trusted person) or none of the changes in modality. Finally, we show results from a logistic regression model predicting responses to some of our questions based on selected county and facility characteristics. As before, we coded survey questions as equal to one if the answer was yes, and zero if the answer was no or I don’t know. The study created facility characteristics, which include private not-for-profit or public (versus private for-profit) and outpatient only (versus not outpatient only), using information in the Behavioral Locator. County-level predictors include non-metropolitan county (versus metropolitan county), the number of COVID-19 cases per 10,000 population from USAFacts as of June 2, 2020, and the age-adjusted drug poisoning mortality rate in the county in which the facility is located. Metropolitan counties are classified using the 2013 National Center for Health Statistics 2013 Urban-Rural classification. We classified all counties into one of three terciles based on the drug-overdose rate in 2018, the most recent year for publicly available data. These regressions also include a predictor for whether the state established a shelter in place order. Finally, all specifications control for the region in which the facility is located (Northeast, South, West, Midwest) to account for geographic differences. The research staff did all analyses in November 2020 using Stata, version 15.0 (StataCorp, 2017).
3. Results

Table 1 reports characteristic of contacted facilities by whether we were able to reach them. The facilities that we reached \( (n = 373) \) do not differ substantially from those that we did not reach \( (n = 104) \) based on results from Chi-square tests. A slightly higher percentage of reached facilities \( (66.76\%) \) are private for-profit than not reached facilities \( (58.65\%) \). About 33.24% of reached OTPs are not-for-profit privately owned or publicly owned facilities. Among those that we did not reach, 41.35% fall in this category. These differences are not statistically significant \((p-value = 0.126)\). Most facilities that we reached are located in the South \( (36.19\%) \) and West \( (28.42\%) \), followed by the Northeast \( (19.84\%) \) and the Midwest \( (15.55\%) \). This regional distribution is similar to OTPs that we did not reach \((p-value = 0.416)\). The majority of reached OTPs provide outpatient services only \( (87.94\%) \), and this is also true among not reached OTPs \( (85.58\%) \). The study found no statistically significant differences by service setting \((p-value = 0.521)\). Roughly 88.20% of reached facilities are located in a metropolitan county and 11.80% are located in a non-metropolitan county. The study also found no differences with OTPs that we were unable to reach \((p-value = 0.754)\). We also examined variation in terms of county age-adjusted drug poisoning mortality rate. In our sample of reached facilities, 30.56% are located in counties with the highest age-adjusted drug poisoning mortality rate \((p-value = 0.104)\). We report the results in the appendix.

Table 2 shows percentages of positive and nonpositive responses for each question in the survey. Almost all reached facilities were operating an OTP at the time of the survey \((n = 370, 99.20\%)\), and 306 \( (91.34\%) \) were taking new patients. Facilities are taking steps to limit the spread of COVID-19 through screening for symptoms in-person visits \( (82.97\%)\), COVID-19 screening and social distancing \( (82.97\%)\), and Social distancing measures \( (92.31\%)\). Facilities that we did not reach show a similar distribution, and the differences were not statistically significant \((p-value = 0.331)\). We also examined differences based on COVID-19 mortality by tercile. Among reached OTPs, 8.41% were located in the lowest tercile of COVID-19 mortality as of June 2, 2020, 33.78% were in the second tercile, and 57.91% were in areas with the highest COVID-19 mortality \( (p-value = 0.797)\). We also compared treatment facilities that we reached with the overall population of nonreached or contacted. We report the results in the appendix.

Facilities that we did not reach show a similar distribution, and the differences were not statistically significant \((p-value = 0.331)\). We also examined differences based on COVID-19 mortality by tercile. Among reached OTPs, 8.41% were located in the lowest tercile of COVID-19 mortality as of June 2, 2020, 33.78% were in the second tercile, and 57.91% were in areas with the highest COVID-19 mortality \( (p-value = 0.797)\). We also compared treatment facilities that we reached with the overall population of nonreached or contacted. We report the results in the appendix.

### Table 1

| Ownership                      | Reached (n = 373) | Not Reached (n = 104) | p-Value |
|-------------------------------|------------------|-----------------------|---------|
| Private for profit            | 310              | 249                   | 66.76%  | 61 | 58.65% | 0.126 |
| Private not for profit or public | 167              | 124                   | 33.24%  | 43 | 41.35% |

| Region                        | Reached (n = 373) | Not Reached (n = 104) | p-Value |
|-------------------------------|------------------|-----------------------|---------|
| Midwest                       | 76               | 58                    | 15.55%  | 18 | 17.31% | 0.416 |
| Northeast                     | 101              | 74                    | 19.84%  | 27 | 25.46% |
| South                         | 171              | 135                   | 36.19%  | 36 | 34.62% |
| West                          | 129              | 106                   | 28.42%  | 23 | 22.12% |

| Service setting               | Reached (n = 373) | Not Reached (n = 104) | p-Value |
|-------------------------------|------------------|-----------------------|---------|
| Outpatient only               | 417              | 328                   | 87.94%  | 89 | 85.58% | 0.521 |
| Not outpatient only           | 60               | 45                    | 12.06%  | 15 | 14.42% |

| County is rural               | Reached (n = 373) | Not Reached (n = 104) | p-Value |
|-------------------------------|------------------|-----------------------|---------|
| Metropolitan                  | 421              | 329                   | 88.20%  | 92 | 89.32% | 0.754 |
| Not Metropolitan              | 55               | 44                    | 11.80%  | 11 | 10.68% |

| County mortality              | Reached (n = 373) | Not Reached (n = 104) | p-Value |
|-------------------------------|------------------|-----------------------|---------|
| First tercile                 | 138              | 114                   | 30.56%  | 24 | 23.30% | 0.331 |
| Second tercile                | 91               | 71                    | 19.03%  | 20 | 19.42% |
| Third tercile                 | 247              | 188                   | 50.40%  | 59 | 57.28% |

| County COVID-19 case rate as of June 2, 2020 | Reached (n = 373) | Not Reached (n = 104) | p-Value |
|----------------------------------------------|------------------|-----------------------|---------|
| First tertile                                | 35               | 31                    | 8.31%   | 4  | 4.85%  | 0.202 |
| Second tertile                               | 158              | 126                   | 33.78%  | 32 | 30.77% |
| Third tertile                                | 284              | 216                   | 57.91%  | 68 | 65.38% |

| State enacted a shelter in place policy      | Reached (n = 373) | Not Reached (n = 104) | p-Value |
|----------------------------------------------|------------------|-----------------------|---------|
| No shelter in place policy                   | 83               | 65                    | 17.43%  | 18 | 17.31% | 0.977 |
| Shelter in place policy                      | 394              | 308                   | 82.57%  | 86 | 82.69% |

### Table 2

| OTP status and acceptance of new patients | Reached (n = 373) | Not Reached (n = 104) | p-Value |
|------------------------------------------|------------------|-----------------------|---------|
| Currently operating OTP                  | 99.20%           | 0.80%                 |         |
| Accepting new patients                   | 91.34%           | 8.66%                 |         |

| COVID-19 screening and social distancing  | Reached (n = 373) | Not Reached (n = 104) | p-Value |
|------------------------------------------|------------------|-----------------------|---------|
| Screening for COVID-19 symptoms          | 82.97%           | 17.03%                |         |
| Social distancing measures               | 92.31%           | 7.69%                 |         |
| Both screening and social distancing     | 82.92%           | 17.08%                |         |
| At least one of screening and social distancing | 92.24%       | 7.76%                 |         |

| Number of new MOUD modalities            | Reached (n = 373) | Not Reached (n = 104) | p-Value |
|------------------------------------------|------------------|-----------------------|---------|
| All MOUD treatment changes               | 10.63%           | 89.37%                |         |
| Only two new MOUD modalities             | 29.53%           | 70.47%                |         |
| Only one new MOUD modality               | 46.46%           | 53.54%                |         |
| No new MOUD modalities                   | 13.39%           | 86.61%                |         |

### Notes

- Non-positive includes facilities that responded “no”, or “I don’t know”.
- New MOUD modality: medication drop off for patients in quarantine due to coronavirus, curbside treatment, medication pick up by a trusted person on behalf of the patient in quarantine or isolation due to COVID-19. These new modalities are not mutually exclusive categories. Number of new MOUD modalities counts facilities offering only one of these three modalities, offering only two of the modalities, offering all three, and offering none of the three modalities included in our survey.

### Sources

- Author’s calculations.
n = 268) and implementing social distancing measures (92.31%, n = 300). About 82.92% (n = 267) of surveyed facilities reported implementing both social distancing and symptom screening and 92.24% (n = 301) reported doing one of the two but not both.

The vast majority of reached facilities 97.44% (n = 304) still provide MOUD, and several have adapted their services for patients who may have to isolate or quarantine due to COVID-19. Around 21.48% (n = 61) offer medication drop off, and 83.21% (n = 228) provide curbside treatment. Only 32.48% (n = 89) allow for a trusted person named by the patient to pick up medication in the case the patient needs to quarantine or isolate. Some facilities are implementing a combination of medication drop off, curbside treatment, and the pick-up of medication by a trusted person. About 10.63% (n = 27) of reached facilities offer all three treatment modalities to maintain social distancing, while 29.53% offer only two options (n = 80), and 46.46% have implemented only one change (n = 137). A minority of reached facilities, 13.39% (n = 34), have made none of the three modality changes (curbside treatment, medication drop off, pick up by trusted person) that we asked about. Telehealth adoption was also high among facilities that we were able to reach. Approximately 80.81% (n = 240) are offering this option for patients.

Table 3 shows results of the logistic regression analyses for currently accepting patients, and the COVID-19 screening and social distancing measures. Results show that facilities in states with a stay-at-home order are more likely to implement social distancing measures for in-person visits (OR = 2.92, CI = 1.01–7.23, p-value = 0.031). We do not find statistically significant differences for the other facility and county predictors, including age-adjusted poisoning mortality and COVID-19 case rates.

Table 4 shows results for treatment provision and telehealth. Outpatient only facilities were more likely to offer medication drop off for patients who need to quarantine (OR = 4.91, CI = 1.053–22.94, p-value = 0.043), provide curbside treatment (OR = 17.90, CI = 16.33–50.67, p-value = 0.000), medication pick up by trusted person (OR = 4.75, CI = 1.47–15.39, p-value = 0.009), and telehealth (OR = 3.98, CI = 1.620–9.78, p-value = 0.003). We do not find statistically significant differences for the other predictors, including private not-for-profit ownership, age-adjusted drug poisoning mortality, or COVID-19 case rate.

4. Discussion

The COVID-19 pandemic has led to transformative policy changes in the treatment of OUD. Policy-makers and public health officials have allowed OTPs to respond to the challenge by relaxing rules and regulations that might hinder access to treatment for those with OUD during the pandemic in ways that also help to limit the spread of COVID-19 by increasing social distancing. Given these changes and the current increase in COVID-19 cases around the country at the time of this writing, policy-makers must understand the types of care that OTPs are providing during the pandemic. In the current study, we report that the majority of facilities that we reached are accepting new patients. While these OTPs are not substantially different from those we did not reach on most characteristics, facilities that we were able to reach were slightly more likely to have private for-profit ownership. Although this finding was not statistically significant, it is important because it suggests public and not-for-profit facilities may be more likely to be closed or not available when new patients contact them. These providers may face additional challenges to remaining open during the pandemic, affecting the ability of their patients to obtain treatment. Policy-makers should ensure that public and not-for-profit providers have both adequate funding and staffing to operate during the pandemic. From anecdotal information gleaned in our calls, some OTPs have shortened hours of operation and had limited staff. More work is needed to understand how the pandemic has affected day-to-day operations, staffing, and budgets of OTPs perhaps through more in-depth data collection, including qualitative interviews, than we were able to do in this short survey.

We also report that the majority of surveyed facilities have adopted screening and social distancing measures to limit the spread of COVID-19, but they have responded differently in how they provide treatment. While most facilities offer curbside treatment to minimize contact, most do not offer medication home delivery or pick up by a trusted person for patients who need to quarantine or isolate due to COVID-19. In interpreting these findings, the reader must consider that we did not distinguish between buprenorphine and methadone, and use of different treatment modalities may depend on the type of medication. These results, however, suggest some actions may be easier to implement than others. Both home delivery of medication (drop off) and medication pick up by a trusted person may require additional resources that may not be available for many facilities, such as additional staff and access to vehicles. In some calls, OTP staff clarified that pick up by a trusted person requires a strict process to verify the person and maintain chain-of...

| Mean of outcome variable | Currently accepting new patients? | Screening for COVID-19 for in-person visits? | Social distancing for in-person visits? |
|--------------------------|----------------------------------|------------------------------------------|----------------------------------------|
| Private not-for-profit or public | 0.465 (0.198–1.091) | 2.007 (0.925–4.354) | 2.201 (0.698–6.941) |
| Outpatient only service setting | 0.772 (0.194–3.072) | 0.136 (0.017–1.080) | 2043 (0.416–10.02) |
| County is non-metropolitan | 1.542 (0.331–7.191) | 1.847 (0.636–5.369) | 2043 (0.416–10.02) |
| 2018 age adjusted drug poisoning mortality rate tertile | | | |
| Second tertile | 0.905 (0.305–2.684) | 1.024 (0.405–2.592) | 0.788 (0.222–2.796) |
| Highest tertile | 1.194 (0.475–3.001) | 0.554 (0.270–1.135) | 0.555 (0.197–1.570) |
| COVID-19 case rate as of June 2, 2020 | | | |
| Second tertile | 0.367 (0.042–3.205) | 1.411 (0.435–4.581) | 1.612 (0.283–9.166) |
| Highest tertile | 0.421 (0.049–3.595) | 1.387 (0.434–4.436) | 0.918 (0.176–4.784) |
| Shelter in place policy in place | 1.290 (0.485–3.431) | 1.946 (0.906–4.181) | 2.977 (1.191–7.727) |
| Region (baseline is Midwest) | | | |
| Northeast | 0.855 (0.182–4.008) | 0.500 (0.158–1.575) | 0.471 (0.0786–2.827) |
| South | 0.500 (0.129–1.932) | 0.891 (0.313–2.538) | 0.596 (0.116–3.059) |
| West | 0.792 (0.187–3.353) | 0.541 (0.195–1.501) | 0.427 (0.0839–2.172) |
| Constant | 95.98 (3.402–2708) | 10.63 (0.597–189.5) | 3.940 (0.245–63.41) |
| Observations | 335 | 323 | 290 |

Notes: Odds ratios are reported with confidence intervals in parentheses. For survey questions please see the Online Appendix. State-level shelter in place law presence comes from Boston University’s COVID-19 US State Policy Database. Both the age-adjusted drug poisoning mortality rate and county metropolitan status come from the National Center for Health Statistics. COVID-19 case rate comes from USAFacts. Due to the high adoption of social distancing among outpatient only facilities we do not have variation to estimate this coefficient for the social distancing outcome. COVID-19 case rate comes from USAFacts. Baseline categories: private for-profit, not outpatient only setting, metropolitan county, age-adjusted drug poisoning mortality first tertile, COVID-19 case rate as of June 2, 2020 first tertile.

*p < 0.01.

*p < 0.05.

Sources: Author’s calculations.
COVID-19 diagnoses or who may have been exposed to COVID-19 and face when seeking treatment for OUD during the current pandemic. In during the pandemic.
sufficient to meet the needs of these patients is unclear. Our study — OTPs may face an increasing number of patients with positive custody, which some facilities may also find challenging or burdensome to implement. A comprehensive survey of OTPs should gather more information about the implementation of these practices, such as who was allowed access to curbside treatment, and what options the OTPs provided for patients unable to use this alternative. As COVID-19 continues, OTPs may face an increasing number of patients with positive COVID-19 diagnoses or who may have been exposed to COVID-19 and need to isolate per CDC guidelines. In this context, whether existing actions—including extended doses of take-home medication—will be sufficient to meet the needs of these patients is unclear. Our study highlights the need to continuously survey these facilities to further understand the challenges and barriers that providers face to operating during the pandemic.

Further research is also needed to document barriers that patients face when seeking treatment for OUD during the current pandemic. In making calls, we often reached automated phone systems for intake but were unable to speak with a person. In other cases, we called during listed operating hours, but no one picked up the phone or staff informed us that a specific facility was closed and directed us to another location. Sometimes, OTP staff told us that new patients who had COVID-19 needed to show a negative test prior to intake. The ability to receive a test should be considered an additional barrier to receiving treatment during the pandemic. More research can help us to gain a comprehensive understanding of all barriers to treatment during the pandemic, given recent evidence showing an increase in opioid-related overdoses since the start of the COVID-19 outbreak (Slavova et al., 2020).

Our work constituted a general survey, and we made no specific distinction about whether facilities serve particularly at-risk groups such as the elderly, the homeless, or populations hardest hit by COVID-19. These facilities may face additional challenges or may have adopted different practices and future research should do more to understand whether this is true, as well whether COVID-19 has increased racial disparities in substance abuse treatment.

Finally, our work provides a snapshot of what OTPs were doing during a specific two-month span in summer 2020. As the United States continues to grapple with the COVID-19 pandemic and the surge that happened in fall and winter 2020/2021, future research should help to give us a sense of how OTPs have dealt with the shifting nature of the outbreak over a longer period of time, and how they may have changed some of their earlier actions to respond to a decline or increase in the number of COVID-19 cases.

### 4.1. Limitations

The current study has limitations. First, our data rely on self-reports. Most often we spoke with intake-personnel, front-desk staff, or admissions coordinators, but we also reached or were transferred to counselors and program managers. While we assume that all these different staff members should be acquainted with the treatment and social distancing practices offered at the facility, this knowledge varies among them, especially regarding treatment modalities. Second, the ways that OTPs adapted to the context of COVID-19 is complex and our survey does not cover all changes that these facilities implemented. Our survey did not ask about provision of extended doses of medication to limit the

---

**Table 4**

| Medication home delivery | Curbside treatment | Medication pick up by a trusted person | Telehealth/telemedicine |
|--------------------------|--------------------|----------------------------------------|------------------------|
| Mean of outcome variable | 0.21               | 0.83                                   | 0.32                   | 0.81                   |

**Private not-for-profit or public ownership**

| OTPs | Number of observations |
|------|------------------------|
| 1081 | (0.538–2.170)          |
| 0.453 (0.199–1.030) | 1.470 (0.793–2.725) |
| 0.824 (0.414–1.638) |

**Outpatient only service setting**

| OTPs | Number of observations |
|------|------------------------|
| 4.915 (1.053–22.94) | 17.90** (6.326–50.67) |
| 4.751** (1.466–15.39) |
| 3.981** (1.620–9.779) |

**County is non-metropolitan**

| OTPs | Number of observations |
|------|------------------------|
| 0.886 (0.346–2.271) | 0.581 (0.183–1.846) |
| 0.973 (0.431–2.195) |
| 0.621 (0.247–1.557) |

**2018 age adjusted drug poisoning mortality rate tercile**

| OTPs | Number of observations |
|------|------------------------|
| Second tercile | 1.277 (0.559–2.914) |
| 1.149 (0.380–3.480) |
| 1.012 (0.472–2.170) |
| 1.568 (0.641–3.833) |

**Highest tercile**

| OTPs | Number of observations |
|------|------------------------|
| 1.298 (0.646–2.609) | 1.444 (0.595–3.508) |
| 1.529 (0.823–2.842) |
| 1.769 (0.872–3.592) |

**COVID-19 case rate as of June 2, 2020**

| OTPs | Number of observations |
|------|------------------------|
| Second tercile | 0.565 (0.188–1.694) |
| 0.415 (0.0602–2.865) |
| 1.643 (0.564–4.792) |
| 1.176 (0.346–3.991) |

**Highest tercile**

| OTPs | Number of observations |
|------|------------------------|
| 0.623 (0.207–1.870) | 0.230 (0.0341–1.551) |
| 1.384 (0.477–4.021) |
| 0.795 (0.238–2.650) |

**State-level shelter in place law (baseline is no law)**

| OTPs | Number of observations |
|------|------------------------|
| 1.183 (0.511–2.741) | 0.341 (0.0988–1.174) |
| 0.900 (0.444–1.823) |
| 0.617 (0.266–1.430) |

**Region (baseline is Midwest)**

| OTPs | Number of observations |
|------|------------------------|
| Northeast | 1.196 (0.443–3.229) |
| 0.802 (0.219–2.939) |
| 1.692 (0.652–4.394) |
| 0.586 (0.179–1.925) |

**South**

| OTPs | Number of observations |
|------|------------------------|
| 0.525 (0.210–1.308) | 0.647 (0.198–2.118) |
| 1.139 (0.491–2.640) |
| 0.400 (0.135–1.186) |

**West**

| OTPs | Number of observations |
|------|------------------------|
| 1.128 (0.474–2.689) | 0.739 (0.208–2.616) |
| 1.464 (0.630–3.402) |
| 0.488 (0.157–1.521) |

**Constant**

| OTPs | Number of observations |
|------|------------------------|
| 0.0758 (0.00690–0.832) | 0.0126 (0.0670–237.2) |
| 0.0335** (0.00395–0.284) |
| 3.962 (0.426–36.89) |

| Observations | 284 | 274 | 274 | 297 |

**Notes:** Odds ratios are reported with confidence intervals in parentheses. For survey questions please see the Online Appendix. State-level shelter in place law prevalence comes from Boston University’s COVID-19 US State Policy Database. Both the age-adjusted drug poisoning mortality rate and county metropolitan status comes from the National Center for Health Statistics. COVID-19 case rate comes from USAFacts. Baseline categories: private for-profit, not outpatient only setting, metropolitan county, age-adjusted drug poisoning mortality first tercile, COVID-19 case rate as of June 2, 2020 first tercile.

**Sources:** Author’s calculations.

---


number of visits to the facility, which is something that OTPs are also allowed to do and may present its own challenges (Hatch-Maillette et al., 2020). We also did not ask about specific measures such as limiting the number of people at the facility, use of masks or face coverings, or keeping people at a distance of at least six feet. A longer and more detailed survey should ask about each of these social distancing measures and their feasibility of implementation. We also did not ask about access to personal protective equipment, which has been an issue in many settings. This question should be added in a future survey, as access to personal protective equipment may have varied depending on the severity of outbreaks in an area, facility resources and characteristics, and may have affected the overall ability of OTPs to provide services during the pandemic. As cases continue, a future survey should ask more about how COVID-19 has affected OTP staff and how it may have affected facility operations. Third, we did not differentiate between methadone and buprenorphine on our questionnaire for the delivery or pick up of MOUD. A future study should examine whether how MOUD is delivered differs based on the type of medication. Fourth, due to limited resources, we were able to call facilities only once and only recontact them if we called outside of business hours. Fifth, our analyses did not completely account for clustering and geographic proximity. Finally, our study is focused solely on OTPs and does not include office-based physicians with a waiver to prescribe buprenorphine.

5. Conclusion

This study provides critical and timely information on the treatment practices that OTPs used during the height of the pandemic, and the extent to which they have adapted their services to accommodate social distancing practices as a result of the COVID-19 pandemic. Our findings provide evidence that OTPs have taken actions to limit the spread of COVID-19 while providing treatment. Future work should continuously survey these programs to understand if and how they have changed in response to new and rapidly changing government policies and to the evolution of the pandemic over time.

Declaration of competing interest

None.

Acknowledgements

The authors thank each of the treatment facilities that responded to the survey. Finally, the authors thank Allyson Nolde for her valuable assistance making calls.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Jonathan Cantor: Conceptualization, methodology, data curation, data analysis, writing.

Agustina Laurito: Conceptualization, methodology, data curation, project management, writing.

The contents of this article have not been previously published or presented.

Appendix A. Questionnaire

- Allow for the phone to ring for one complete minute before hanging up
- If prompted who you are and why you are calling:
  - I am a research assistant at the University of Illinois Chicago working with a team of researchers on a study examining how Opioid Treatment Programs are responding to the COVID-19 pandemic.
- If you are being walked through the procedure for being a new patient for question 2 please mark down yes

Hello,

1. Do you still have an Opioid Treatment Program (OTP) at this location?
   a. Yes (Go to question 2)
   b. No (End call)

2. Are you currently accepting new patients here?
   a. Yes
   b. No
   c. Don’t Know

3. Are you screening for COVID-19/coronavirus symptoms for in-person visits here?
   a. Yes
   b. No
   c. Don’t Know

4. Are you using social distancing measures for in-person visits here?
   a. Yes
   b. No
   c. Don’t know

5. Does this location still offer medication assisted treatment?
   a. Yes
   b. No (Skip to question 9)
   c. Don’t Know (Skip to question 9)

6. Does this location offer medication home delivery for patients in quarantine due to coronavirus?
   a. Yes
   b. No
   c. Don’t Know

7. What about curbside treatment?
   a. Yes
   b. No
8. Does this location allow medication pick up by a trusted person on behalf of the patient?
   a. Yes
   b. No
   c. Don’t know

9. Do you currently offer telehealth/telemedicine here?
   a. Yes
   b. No
   c. Don’t know

10. Thank you for your assistance, would you mind sharing your job title here?

---

**Appendix Table 1**

Descriptive characteristics of opioid treatment programs by reached or not.

| Ownership                          | All OTPs (N = 1534) | Reached (n = 373) | Not reached or contacted (n = 1161) | p-Value |
|------------------------------------|---------------------|-------------------|-------------------------------------|---------|
| n                    | n                  | %                 | n                  | %                 |         |
| Private for profit               | 964                 | 249               | 66.76%               | 715                 | 61.58%  | 0.072       |
| Private not for profit or public | 570                 | 124               | 33.24%               | 446                 | 38.42%  |             |
| Region                            |                     |                   |                      |                     |         |
| Midwest                          | 252                 | 58                | 15.55%               | 194                 | 16.71%  | 0.000       |
| Northeast                         | 438                 | 74                | 19.84%               | 364                 | 31.35%  |             |
| South                             | 548                 | 135               | 36.19%               | 413                 | 35.57%  |             |
| West                              | 296                 | 106               | 35.57%               | 190                 | 16.37%  |             |
| Service setting                   |                     |                   |                      |                     |         |
| Outpatient only                   | 1340                | 328               | 87.94%               | 1012                | 87.17%  | 0.697       |
| Not outpatient only               | 194                 | 45                | 12.06%               | 149                 | 12.83%  |             |
| County is rural                   |                     |                   |                      |                     |         |
| Metropolitan                      | 1345                | 329               | 88.20%               | 1016                | 87.59%  | 0.752       |
| Not metropolitan                  | 188                 | 44                | 11.80%               | 144                 | 12.41%  |             |
| County age-adjusted drug poisoning mortality rate | | | | | |
| First tercile                     | 414                 | 114               | 30.56%               | 300                 | 25.86%  | 0.155       |
| Second tercile                    | 328                 | 71                | 19.03%               | 257                 | 22.16%  |             |
| Third tercile                     | 791                 | 188               | 50.40%               | 603                 | 51.98%  |             |
| County COVID-19 case rate as of June 2, 2020 | | | | | |
| First tercile                     | 109                 | 31                | 31.31%               | 78                  | 6.72%   | 0.013       |
| Second tercile                    | 439                 | 126               | 33.78%               | 313                 | 26.96%  |             |
| Third tercile                     | 986                 | 216               | 52.91%               | 770                 | 66.32%  |             |
| State enacted a shelter in place policy | | | | | |
| No shelter in place policy        | 208                 | 65                | 17.43%               | 143                 | 12.32%  | 0.012       |
| Shelter in place policy           | 1326                | 308               | 82.57%               | 1018                | 87.68%  |             |

**Notes:** p-Value from chi-squared test.

**Sources:** Author’s calculations.

**References**

Alexander, G. C., Stoller, K. B., Haffajee, R. L., & Saloner, B. (2020). An epidemic in the midst of a pandemic: Opioid use disorder and COVID-19. *Annals of Internal Medicine*. https://doi.org/10.7326/M20-1141.

Becker, S. J., Garner, B. R., & Hartzler, B. J. (2020). Is necessity also the mother of invention? COVID-19 and the implementation of evidence-based treatments for opioid use disorders. *Journal of Substance Abuse Treatment*, 108210. https://doi.org/10.1016/j.jsat.2020.108210.

Beatham, T., Saloner, B., Gaye, M., Wakeman, S. E., Frank, R. G., & Barnett, M. L. (2020). Therapies offered at residential addiction treatment programs in the United States. *JAMA*, 324(8), 804–806. https://doi.org/10.1001/jama.2020.8969.

Beatham, T., Saloner, B., Wakeman, S. E., Gaye, M., & Barnett, M. L. (2019). Access to office-based buprenorphine treatment in areas with high rates of opioid-related mortality: An audit study. *Annals of Internal Medicine*, 171(1), 1–9. https://doi.org/10.7326/M18-3457.

Cantor, J., McBain, R. K., Kohner, A., Stein, B. D., & Yu, H. (2020). Fewer than half of US mental health treatment facilities provide services for children with autism Spectrum disorder. *Health Affairs*, 39(6), 966–974. https://doi.org/10.1377/hlthaff.2019.01557.

Cantor, J., Haffajee, R. L., Stoller, K. B., & Saloner, B. (2020). Telehealth capability among substance use disorder treatment facilities in counties with high versus low COVID-19 social distancing. *Journal of Addiction Medicine*, 14(6), Article e366. https://doi.org/10.1097/ADM.0000000000000744.

Cantor, J. H., Sood, N., Bravata, D. M., Pera, M., & Whaley, C. (2020). The impact of the COVID-19 pandemic and policy response on health care utilization: Evidence from county-level medical claims and cellphone data (working paper 28131). National Bureau of Economic Research.

Centers for Disease Control and Prevention. (2019). Urban rural classification scheme for counties. https://www.cdc.gov/nchs/data_access/urban_rural.htm.

Centers for Disease Control and Prevention. (2020a). NCHS - Drug poisoning mortality by county: United States. https://data.cdc.gov/NCHS/NCHS-Drug-Poisoning-Mortality-by-County-United-States/rpvx-m2md.

Centers for Disease Control and Prevention. (2020b). Products—Vital statistics rapid release—Provisional drug overdose data. https://www.cdc.gov/nchs/nvss/vsr/drug-overdose-data.htm.

COVID-19 US State Policy Database (CUSP). (2020). Google Docs. https://docs.google.com/spreadsheets/d/1zv9qElBPs07JUULhL1S29HGDHBlg2fIVMsGxpQ5tvAQ/edit?usp=sharing&usg=embed_facebook.

Gangopadhyay, A., Clemans-Cope, L., & Epstein, M. (2020). Neonatal abstinence syndrome and maternal access to treatment for opioid use disorder in California counties. Urban Institute.

Hatch-Maillette, M. A., Peavy, K. M., Tsui, J. I., Banta-Green, C. J., Woolworth, S., & Grekin, P. (2020). Re-thinking patient stability for methadone in opioid treatment programs during a global pandemic: Provider perspectives. *Journal of Substance Abuse Treatment*, 108223. https://doi.org/10.1016/j.jsat.2020.108223.
Livingston, N. A., Ameral, V., Banducci, A. N., & Weisberg, R. B. (2020). Unprecedented need and recommendations for harnessing data to guide future policy and practice for opioid use disorder treatment following COVID-19. *Journal of Substance Abuse Treatment*, 108222. https://doi.org/10.1016/j.jsat.2020.108222.

Noguchi, Y. (2020). A new addiction crisis: Treatment centers face financial collapse. *NPR*. https://www.npr.org/sections/health-shots/2020/06/15/865006675/a-new-addiction-crisis-treatment-centers-face-financial-collapse

Nunes, E. V., Levin, F. R., Reilly, M. P., & El-Basel, N. (2020). Medication treatment for opioid use disorder in the age of COVID-19: Can new regulations modify the opioid cascade? *Journal of Substance Abuse Treatment*, 108222. https://doi.org/10.1016/j.jsat.2020.108222.

ODMAP. (2020). Overdose detection mapping application program. http://www.odmap.org.

Patrick, S. W., Richards, M. R., Dupont, W. D., McNeer, E., Buntin, M. B., Martin, P. R., … Cooper, W. O. (2020). Association of pregnancy and insurance status with treatment access for opioid use disorder. *JAMA Network Open*, 3(8), e2013456. https://doi.org/10.1001/jamanetworkopen.2020.13456.

Sokolow, A. (2020). States slash addiction treatment budgets, even as overdoses spike. *STAT* https://www.statnews.com/2020/07/16/opioid-overdoses-have-skyrocketed-d-amid-the-coronavirus-but-states-are-nevertheless-slashing-addiction-treatment-program-budgets/.

StataCorp. (2017). *Stata statistical software: Release 15*. College Station, TX: StataCorp LLC.

Substance Abuse and Mental Health Services Administration. (2020a). FAQs: Provision of methadone and buprenorphine for the treatment of opioid use disorder in the COVID-19 emergency. https://www.samhsa.gov/sites/default/files/faqs-for-oud-prescribers-and-dispensing.pdf.

Substance Abuse and Mental Health Services Administration. (2020b). Opioid treatment program (OTP) guidance. https://www.samhsa.gov/sites/default/files/otp-guidance-20200316.pdf.

USA Facts. (2020). Coronavirus locations: COVID-19 map by county and state. https://usafacts.org/visualizations/coronavirus-covid-19-spread-map/.