



Closing the Treatment Gap for Opioid Use Disorder in Colorado

Stephanie Gold, MD; Yuli Chen, MPH; Anna Furniss, MS; Puja Shah, MPH; Steve Petterson, PhD;
Emma Gilchrist, MPH; Sarah Hemeida, MD, MPH; Daniel Pacheco, MBA; Kyle Knierim, MD

Brief #19
April 2021

Introduction

The purpose of this brief is to identify where there is insufficient buprenorphine treatment provision to meet the needs of Coloradans, calculate the workforce changes necessary to fill these treatment gaps, and offer recommendations to enable targeted resource allocation and better access to care for individuals with opioid use disorder. Other efforts to map treatment availability have focused on the capacity of waived providers; however, most waived prescribers do not prescribe up to their allowable limits. To accurately assess treatment gaps, this brief also uses actual rates of prescribing to assess current provision of treatment.

Background

Similar to most of the nation, deaths from overdoses related to opioids continued to rise in Colorado through 2017.

In 2018, for the first time in several years, there was a slight decrease in the overdose death rate.¹ Unfortunately, the COVID-19 pandemic is now leading to rising overdose death rates across the country.²

On average, someone dies in Colorado from an opioid-related overdose every 15 hours.³ Nationally, only about 20-40% of people with an opioid use disorder receive treatment for their addiction.⁴ There is a vital need for increased access to medication-assisted treatment (MAT) for those with opioid use disorder to prevent overdoses and save lives. In addition to reducing overdose deaths, MAT decreases criminal activity, reduces the spread of infectious diseases like hepatitis C and HIV, and decreases neonatal abstinence syndrome in babies.⁵ MAT has been found more effective at keeping individuals with opioid use disorder in treatment than detoxification or counseling without medications.⁶

MAT for opioid use disorder includes methadone, buprenorphine (most commonly prescribed as buprenorphine/naloxone), and naltrexone (includes oral and injectable formulations). Methadone is only prescribed for opioid use disorder through regulated Opioid Treatment Programs, while buprenorphine and naltrexone can also be prescribed in other settings such as primary care. In 2017, 2,790 individuals (approximately 9% of the estimated population with opioid use disorder) received MAT (including methadone, buprenorphine, and naltrexone) from Opioid Treatment Programs in Colorado.⁷

Key Messages



Provider rates of prescribing

buprenorphine for opioid use disorder are low in Colorado, with a median of 8 patients per active prescriber across the state.

In half of the counties in Colorado,

<40% of the
population

with an opioid use disorder is receiving treatment with buprenorphine.

There are current state programs

that directly or indirectly support medication-assisted treatment (MAT) for opioid use disorder that are time-limited and merit extension or expansion.

Buprenorphine and methadone have been found to be equally efficacious for treatment of opioid use disorder, while there are higher rates of discontinuation of treatment with naltrexone.⁸ Some experts have recommended that buprenorphine be considered first line for medication treatment, as it is less likely than methadone to have dangerous interactions with other medications or lead to overdose.^{4,8-9} Treatment in primary care allows for individuals with opioid use disorder to receive all of their care in one location and reduces the stigma of receiving treatment for addiction.¹⁰ Prescribing buprenorphine for addiction requires a special waiver from the Drug Enforcement Administration (DEA). Historically, providers had to meet additional training requirements and attest to the ability to refer for counseling services to obtain a waiver. Waivered providers had a limit of 30 but could apply to increase this to 100 after a year and subsequently 275 under certain circumstances. In 2018, the SUPPORT Act was passed which allows providers to apply for an initial 100 patient limit if they meet certain criteria. In April 2021, the Department of Health and Human Services issued guidelines eliminating the requirements for additional training and the ability to refer for counseling to receive a waiver to prescribe buprenorphine for opioid use disorder for up to 30 patients at one time.¹¹

Provider capacity limits for prescribing buprenorphine: A timeline^{12,13}

Drug Addiction Treatment Act of 2000 (DATA 2000)

- Qualified physicians permitted to obtain a waiver to prescribe buprenorphine with a patient limit of 30, if they have completed at least 8 hours of training in the use of MAT and have the capacity to refer for counseling services.
- After one year at the 30 patient limit, providers can apply for an increased limit of 100 patients.

Substance Abuse and Mental Health Services Administration Final Rule, 42 CFR Part 8, 2016

- After one year at a 100 patient limit, providers can apply to treat up to 275 patients, if they are board certified in addiction medicine or addiction psychiatry or they practice in a qualified practice setting. Eligibility for the increased patient limit must be renewed every 3 years.

Comprehensive Addiction and Recovery Act of 2016 (CARA)

- Extended the ability to obtain a waiver to prescribe buprenorphine to nurse practitioners and physician assistants, if they have completed at least 24 hours of training in MAT.

Substance Use Disorder Prevention that Promotes Opioid Recovery and Treatment for Patients and Communities Act of 2018 (SUPPORT Act)

- Expanded the ability of practitioners to treat 100 patients in the first year of the waiver if they are board certified in addiction medicine or addiction psychiatry or they practice in a qualified practice setting.

Department of Health and Human Services Practice Guidelines for the Administration of Buprenorphine for Treating Opioid Use Disorder, 2021

- Eliminates the requirement for additional training and the ability to refer for counseling to prescribe buprenorphine for OUD to up to 30 patients at a time for physicians, NPs, PAs, clinical nurse specialists, certified registered nurse anesthetists, and certified nurse midwives.
- Physicians and other qualifying prescribers can continue to obtain a waiver for greater capacity limits as specified in prior regulation and legislation.

Efforts across the state to combat the opioid epidemic have been coordinated through the Colorado Consortium for Prescription Drug Abuse Prevention. These efforts encompass collaboration across multiple agencies using a variety of means to address the epidemic, from promoting prevention of substance misuse to expanding access to rescue medication for overdoses. The Consortium's Treatment Workgroup focuses on identifying gaps and needs in the provision of preventive, therapeutic, and rehabilitative substance use treatment programs and making clinical, organizational, and public policy improvements to these systems. The Consortium's Provider Education Workgroup strives to improve the education and training of health care professionals who prescribe, dispense or otherwise provide care for those receiving prescription medications with the potential for misuse, abuse, or diversion. The Public Awareness Workgroup raises awareness regarding the problem of prescription drug abuse and promotes the safe use, storage, and disposal of prescription medications. Other workgroups focus on data collection and research, harm reduction, affected friends and family, the Prescription Drug Monitoring Program (PDMP), recovery, and safe disposal.¹⁴

The Practice Innovation Program at the University of Colorado has received funding from the Colorado Office of Behavioral Health to (1) provide team training to clinics on implementation of MAT for opioid use disorder, (2) incentivize providers to obtain their DEA waiver to prescribe buprenorphine, (3) organize regular webinar presentations by addiction medicine experts, and (4) develop advertising materials for MAT prescribers to engage patients and colleagues. The program expands the IT MATTTs™ program developed by the High Plains Research Network and initially implemented in the rural eastern plains and the San Luis Valley of Colorado.¹⁵

Defining and Mapping the Buprenorphine Treatment Gap

Methods

The proportion of individuals with opioid use disorder (treatment need) that are receiving treatment with buprenorphine (treatment provision) was calculated at the county level. *Treatment provision* was identified through the Prescription Drug Monitoring Program (PDMP) by assessing the number of unique patients per county prescribed buprenorphine formulations approved for treatment of opioid use disorder in 2019. *Treatment need* was defined as the population with opioid use disorder in a county, calculated by multiplying the county population (age 12 and older) by an estimated county-level rate of opioid use disorder. County-level rates of opioid use disorder were determined by developing a logistic regression model based on demographic variables that have been associated with opioid use disorder from the [National Survey on Drug Use and Health](#). County-level demographics were substituted into this model to estimate the prevalence of opioid use disorder in each county. County-level demographic data was obtained from the [American Community Survey](#) (2013-2017) and included: education, sex, race/ethnicity, employment, poverty, and geographic classification (large metro, small metro, and non-metro). The county population was determined from the [Colorado State Demography Office](#)'s estimates and forecasts. In calculating the number of providers necessary to close the treatment gap, the number of unique prescribers per county from the PDMP was used. To reflect the fact that rates of prescribing amongst waived providers are typically lower than their maximum capacity, the number of providers necessary to close the treatment gap was calculated in two separate ways:

- 1 If every active prescriber treated 15 patients (half of the maximum capacity for the majority of Colorado's prescribers), how many more providers would be required to meet treatment needs?
- 2 If every active prescriber treated 8 patients (the current median prescribing rate in Colorado), how many more providers would be required to meet treatment needs?

Distances to provider locations were calculated based on the center of a patient zip code to the center of a provider zip code. Data were suppressed if there were less than 3 prescribers in a county; in these counties, 1 prescriber was assumed. Maps were created using ArcGIS software.

Results

What percentage of people with an opioid use disorder is receiving treatment with buprenorphine?

Figure 1. Proportion of individuals with an opioid use disorder receiving treatment with buprenorphine.

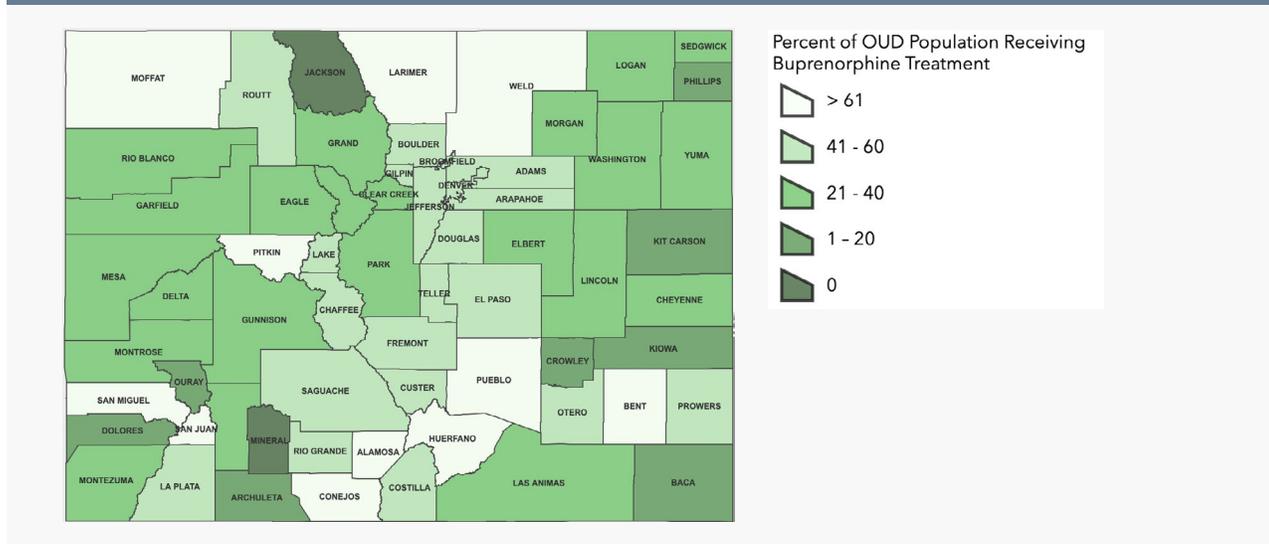


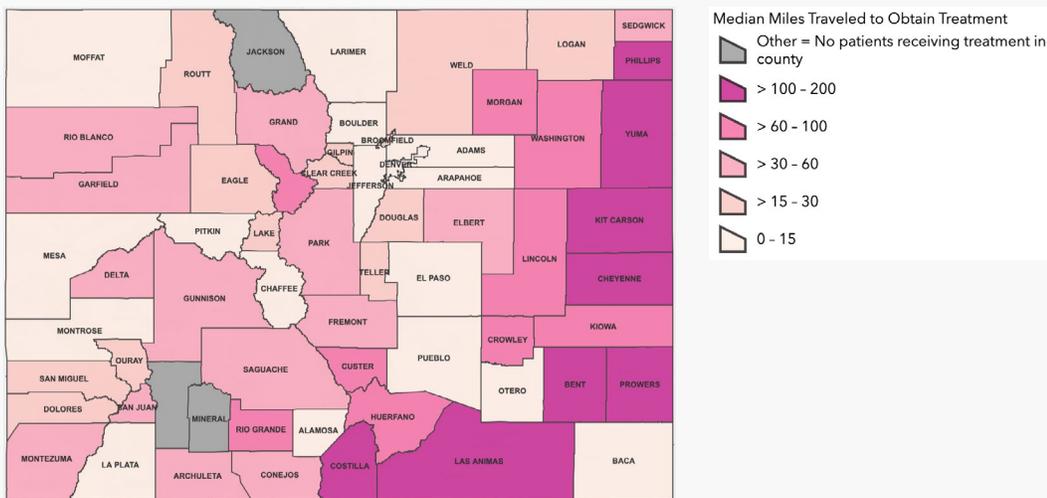
Table 1. Proportion of individuals with an opioid use disorder receiving treatment with buprenorphine by county classification.

| | 0% | 1-20% | >20-40% | >40-60% | 61%+ | Total |
|-------------------|----|-------|---------|---------|------|-------|
| Urban counties | 0 | 0 | 4 | 10 | 3 | 17 |
| Rural counties | 0 | 4 | 9 | 8 | 3 | 24 |
| Frontier counties | 2 | 4 | 9 | 3 | 5 | 23 |
| Colorado counties | 2 | 8 | 22 | 21 | 11 | 64 |

Across Colorado, an estimated 53% of individuals with opioid use disorder received treatment with buprenorphine, with wide variation between counties. In half of all Colorado counties, less than 40% of individuals with opioid use disorder received treatment with buprenorphine. In 10 out of 47 rural and frontier counties, less than 20% of individuals with opioid use disorder received treatment with buprenorphine. See Appendix A for county rankings of the proportion of individuals with an opioid use disorder receiving treatment with buprenorphine.

How many miles do patients travel to obtain MAT?

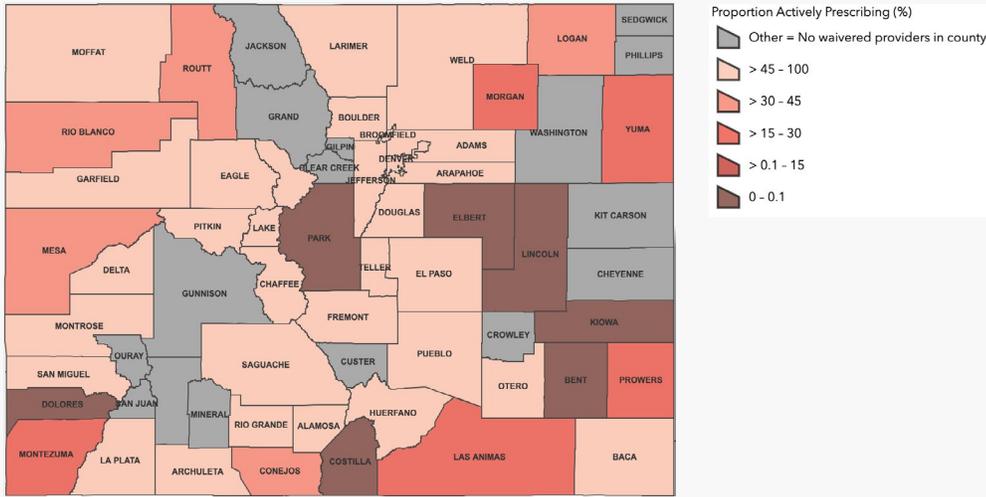
Figure 2. Median miles traveled by patients to obtain MAT.



The median distance traveled by patients in Colorado to receive MAT was 9.9 miles, however this varied widely by county. In 17 counties, the median distance traveled by patients to get to a treatment location was < 15 miles. In 17 counties, the median distance patients traveled was > 60 miles, and in 8 of those counties, the median distance was >100 miles. In 3 counties, there were no patients receiving prescriptions for buprenorphine.

How many providers with a waiver are actively prescribing buprenorphine to treat opioid use disorder?

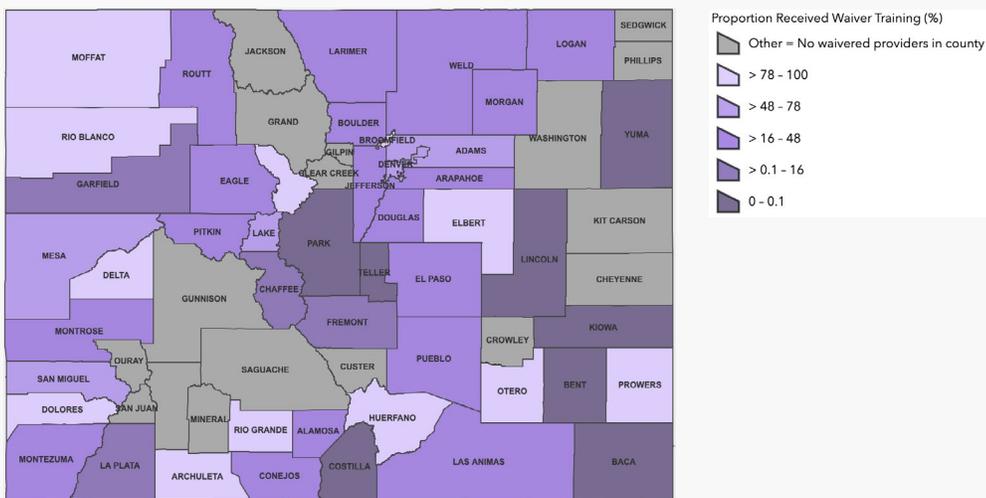
Figure 3. Proportion of waived providers actively prescribing buprenorphine.



Across Colorado, 57% of waived providers were actively prescribing buprenorphine. In 12 counties, less than 30% of waived providers were actively prescribing buprenorphine. In 16 counties, there were no waived providers.

How many actively prescribing providers has the Practice Innovation Program added to the workforce?

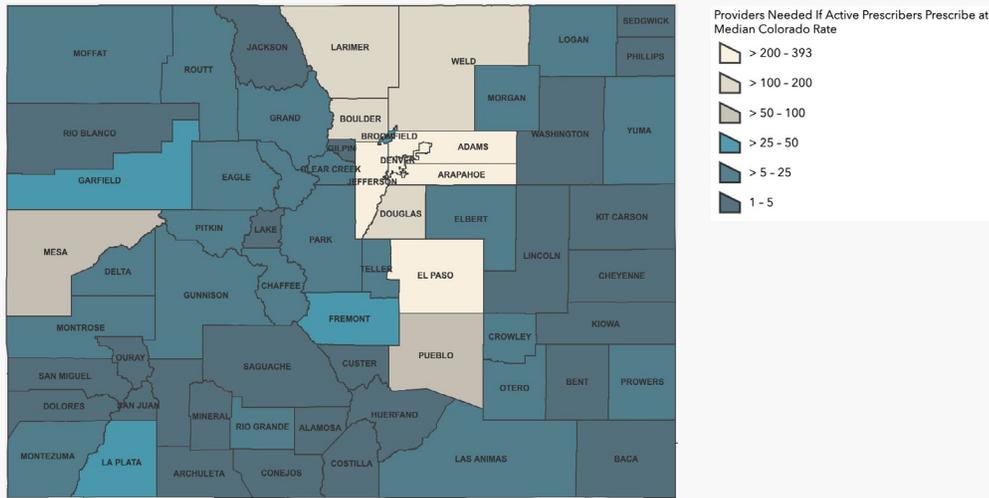
Figure 4. Proportion of prescribers who received training through the Practice Innovation Program.



The Practice Innovation Program efforts have increased the numbers of active prescribers in 33 counties across the state.

How many more providers are needed to close the treatment gap?

Figure 5. Number of additional providers needed by county to close the treatment gap, if each provider prescribes at the Colorado median rate of 8 patients.



Assuming a stable rate of opioid use disorder in a county, closing the treatment gap with buprenorphine prescribing can be accomplished by increasing the number of patients currently active prescribers treat, increasing the number of active prescribers, or both. If all currently active prescribers were prescribing buprenorphine to 8 patients (representing the median prescribing rate in Colorado), every county would still need at least one more prescriber. On average, every county would need 42 more prescribers, ranging from 1 more prescriber needed in 7 counties (where the estimated population with opioid use disorder is very small) to 393 more prescribers needed in El Paso county.

See Appendix B for the number of additional providers needed by county to close the treatment gap if each provider prescribes at the Colorado median rate of 8 patients or at half the most common capacity limit of 30.

The pool of waived providers who are not actively prescribing is a potential source of additional prescribers. Colorado had over 700 waived providers who were not actively prescribing buprenorphine in 2019. If these waived, inactive providers were prescribing to 8 patients, every county except for 1 would still need more prescribers. On average, the remaining counties would need 32 more active prescribers, ranging from 1 more prescriber needed in 10 counties to 317 more prescribers needed in El Paso County. If all waived providers were prescribing to 30 patients (the current maximum capacity for most Colorado providers), there would be enough prescribers in 35 counties. On average, the remaining 29 counties would need 2 additional prescribers, ranging from 1 to 10 prescribers.

[A full set of maps with additional data visualizations can be accessed online here.](#)

Discussion

Current availability of buprenorphine treatment for opioid use disorder is insufficient across Colorado. Including the number of individuals receiving treatment with methadone, buprenorphine, or naltrexone from Opioid Treatment Programs in 2017 (the most recent year of data available), only 62% of individuals with an opioid use disorder in Colorado are receiving treatment. These treatment gaps exist in frontier, rural, and urban counties. If every active prescriber in Colorado were treating 8 patients (the median prescribing rate in the state), 28 counties would need more than 10 additional prescribers to meet the need for treatment; 9 of these counties would need more than 100 additional prescribers.

Examining the maps for unmet need and distance traveled by patients to get to a treatment location depicts where there is need for more prescribers geographically with two different but complementary lenses. Determining where best to target resources to increase the prescribing workforce would likely benefit from an approach that combines both of these representations of need. In rural areas of the state, regional rather than county-level targeting may be appropriate.

Closing the treatment gap will likely require a combination of current prescribers serving more patients and more providers obtaining their waiver and prescribing MAT. As of 2018, Colorado ranked 19th across states in terms of number of waived providers per capita, up from 30th in 2016. Approximately 57% of waived providers in Colorado are actively prescribing buprenorphine. National estimates of the proportion of waived providers who are prescribing buprenorphine range from 44% to 84%.^{16,17} With new federal guidelines released in April 2021, physicians and other qualified providers will no longer have to complete additional trainings or have the ability to refer to counseling to obtain a waiver to prescribe to up to 30 patients.¹¹

The treatment gap was calculated in a few different ways to reflect the fact that most active prescribers do not prescribe at their maximum allowable capacity. Nationally, the average number of patients treated by recently waived providers is 27 while the median is 13.¹⁸ The overall median prescribing rate in Colorado is slightly lower at 8 patients.

The low rate of prescribing among providers raises questions: what is needed to support providers who have not prescribed MAT in the past to begin prescribing? What rate of prescribing per provider is a realistic target?

Other studies have identified a variety of barriers to prescribing, including insufficient provider and staff education and training, provider stigma towards treatment or belief in abstinence-only approaches (despite a lack of evidence), lack of institutional and peer support, limited care coordination or behavioral health support, limited time and office space, inadequate or burdensome reimbursement, and burdensome regulatory procedures.^{4,19-21}

Given the importance of behavioral health support - inclusive of care for mental health and substance use disorders - there is a key role for integration of behavioral health in primary care, where behavioral health providers (including psychologists, licensed clinical social workers, or addictions counselors) are part of the care team. The Colorado State Innovation Model (SIM) program supported the integration of behavioral health and primary care throughout the state. This program ended in July of 2019, and efforts are ongoing to ensure sustainability of the advances made in integrated care and continued scaling of integration throughout Colorado.

The Practice Innovation Program's efforts mitigate barriers by addressing provider and staff training for MAT through team training for practices, financial support for waiver training for prescribers, regular webinar presentations by addiction medicine experts, and customizable advertising materials to engage patients and colleagues of MAT prescribers. More information on this multifaceted project can be found at <https://medschool.cuanschutz.edu/practice-innovation-program/current-initiatives/opioids>. The [IT MATTRs™ team training](#), developed by the High Plains Research Network, includes curricula on MAT for opioid use disorder for primary care and behavioral health practice teams, enhancing the behavioral health support available in clinics that have integrated behavioral health care. As a result of this multifaceted project, an additional 824 Colorado providers have completed waiver training, and 349 of them are actively prescribing. Notably, many who are not yet actively prescribing are resident doctors who are not eligible to begin prescribing until after they obtain their medical license. There is some evidence to suggest that doctors who received waiver training during residency are more likely to prescribe buprenorphine afterwards.²²

Four of five opioid-related bills were signed into law in the 2020 Colorado Legislative Session. The major components of these bills are summarized in Table 2; other components of these bills with a fiscal note had to be removed due to state budget shortfalls caused by the COVID-19 pandemic. While many programs faced cuts due to budget shortfalls, \$2.5 million in funding for a rural MAT pilot program from a bill passed in 2019 was preserved. The Office of Behavioral Health was also awarded up to \$41 million for 2 years in a state opioid response grant, which will support a variety of prevention, treatment, and recovery services.

Table 2. Major components of the four opioid-related bills signed into law from the 2020 Colorado Legislative Session.

| Bill | Components |
|---------------------------|--|
| Senate Bill 20-007 | <ul style="list-style-type: none"> • Requires insurance carriers to provide coverage for naloxone and substance use disorder treatment in accordance with current guidelines as well as report on the number of providers licensed to provide MAT and prescriptions filled by enrollees • Increases access to treatment by prohibiting denial of access to MAT to individuals in recovery residences and judicial programs • Authorizes the Commissioner of Insurance to revise the essential health benefits package for MAT • Requires the statewide managed care system to provide coordination of care for the continuum of substance use disorder and mental health treatment |
| House Bill 20-1017 | <ul style="list-style-type: none"> • Encourages the Department of Corrections and jails to make MAT available to individuals with opioid use disorder in custody throughout their incarceration • Contains provisions to connect individuals to continued treatment on release • Provides legal immunity for individuals disposing of controlled substances at a safe station • Creates availability requirements for mobile response units for behavioral health crises |
| House Bill 20-1065 | <ul style="list-style-type: none"> • Contains several measures to improve access to naloxone • Reduces barriers to operating syringe exchange programs |
| Senate Bill 20-028 | <ul style="list-style-type: none"> • Continues the legislative opioid interim committee • Requires the state Substance Abuse Trend and Response Task Force to review progress on bills and generate policy recommendations • Modifies how child abuse and neglect are determined based on substance exposure • Continues a perinatal substance use data linkage project |

Shortages of both primary care and behavioral health providers, a particular issue in rural areas, create additional barriers to the spread of buprenorphine treatment. Programs like the National Health Service Corps and Colorado Health Service Corps support provider placements in areas of high need. The National Health Service Corps is now offering enhanced loan repayment for primary care providers prescribing MAT. Senate Bill 18-024 incorporated loan repayment for behavioral health providers committing to work in shortage areas under the Colorado Health Service Corps and established a scholarship program for individuals seeking certification as addictions counselors.

Beyond provider-level barriers, access to MAT for opioid use disorder requires health insurance coverage and patient and community awareness and acceptance of treatment. Future studies could assess patient and community knowledge and barriers in Colorado to further enhance understanding of treatment gaps. Through their original IT MATTTTs™ research project funded by the Agency for Healthcare Research and Quality, the High Plains Research Network conducted a community survey on knowledge, attitudes and behaviors related to opioid use disorder and MAT that could serve as a basis for a larger statewide study. They also worked with local community members to create two rural community-based campaigns to increase awareness and generate action toward seeking treatment for opioid use disorder. Furthering these community-informed approaches in other Colorado counties would be valuable.

It is important to note that treatment of opioid use disorder is just one aspect of addressing the opioid epidemic. Prevention efforts are vital to decrease the number of individuals needing treatment. Efforts to prevent opioid use disorder include safer prescribing of opioids for pain. There are also evidence-based programs for youth that prevent opioid misuse from developing.²³ For individuals with an opioid use disorder not ready to engage in treatment, other efforts can reduce harm, such as ensuring access to naloxone for reversal of opioid overdoses.

Limitations

This analysis focuses specifically on MAT with buprenorphine; both naltrexone and methadone prescribed for addiction treatment are not tracked in the PDMP and there is not available data on county prescribing rates to adjust our county-level representations of treatment and prescriber need. As distances to provider locations were calculated based on the center of a patient zip code to the center of a provider zip code, these distances may be inflated for patients traveling between adjacent, large rural counties. Additionally, providers are attributed to a single location and the expanded access by mobile or pop-up MAT units may not be accounted for in these calculations or maps. Calculations for smaller counties with lower estimates of populations with opioid use disorder are more subject to error. The numbers needed to close the treatment gap presume meeting increased treatment needs with buprenorphine alone. Increased treatment with methadone and naltrexone would decrease these estimates. As of 2012, 76% of Opioid Treatment Programs in Colorado were operating at 80% or greater capacity.¹⁶ From 2012 to 2017, the number of individuals receiving treatment in Opioid Treatment Programs increased from 2,309 to 2,790, representing approximately 9% of the population with opioid use disorder.^{7,24} The treatment gap has also been calculated to provide MAT to 100% of individuals with opioid use disorder, but some individuals may choose not to pursue pharmacologic treatment.

Recommendations for State and Local Policy

These maps enhance identification of areas of need in Colorado for the treatment of opioid use disorder and can inform decision-making regarding further resource allocation. There are ongoing programs that directly or indirectly support MAT for opioid use disorder that are time-limited and merit extension or expansion.

- Use maps such as those presented here to geographically target resources for education and support for providers obtaining waivers, practice team training, and other efforts to increase prescribing. Consider setting benchmarks for treatment targets to measure and monitor impact through a multi-stakeholder group such as the Consortium.
- Support continued efforts like IT MATTTs™ team training and incentivizing providers who obtain their waiver to support practice teams to implement MAT programs and to increase the number of active prescribers. Include support to spread training to criminal justice settings.
- Support sustainability efforts for changes made in the SIM program to spread integrated behavioral health and primary care, allowing primary care practices to have better on-site access to counseling for patients in treatment for opioid use disorder. Include substance use disorder treatment as a focus area for next steps post-SIM.
- Increase and sustain efforts to grow the behavioral health workforce, particularly in rural areas, such as through the Colorado Health Service Corps as mandated in SB18-024.
- Continue investments in mobile and pop-up MAT services to expand access in rural and frontier parts of the state
- Fund studies to evaluate patient and community-level awareness, acceptance of, and barriers to treatment across the state; consider building on the community survey conducted by the High Plains Research Network. This work could be coordinated through the Public Awareness Workgroup of the Consortium, which conducted a community survey in 2018 focused on safe use, storage, and disposal of medications.
- Utilize the results of the above studies on patient and community-level awareness, acceptance of, and barriers to treatment to inform public awareness campaigns that address multiple aspects of opioid use disorder and MAT.

At the federal level, 2021 guidelines that eliminate the requirements for additional training and capacity to refer to counseling to obtain a waiver to prescribe buprenorphine for opioid use disorder for up to 30 patients remove some of the regulatory barriers to treatment. Some experts have called for eliminating the waiver entirely and suggested universal addiction education should be provided through medical schools and residency training programs.²⁵ Additional state and federal-level recommendations to improve access to treatment for opioid use disorder can be found at <https://makehealthwhole.org/tools/briefs/>.

Conclusion

While there have been great improvements in access to treatment of opioid use disorder in the last several years, significant treatment gaps remain across Colorado. These treatment gaps vary widely by county, highlighting locations for focused efforts. Successful programs should be extended and expanded to reach a greater number of Coloradoans.

Acknowledgments

The authors would like to thank Dionisia de la Cerda from the Practice Innovation Program and Linda Zittleman from the High Plains Research Network for their input on this brief and Maria Butler at the Colorado Department of Public Health and Environment for her assistance with data retrieval. Funding for this brief was provided by the Colorado Office of Behavioral Health through SAMHSA's State Opioid Response grant.

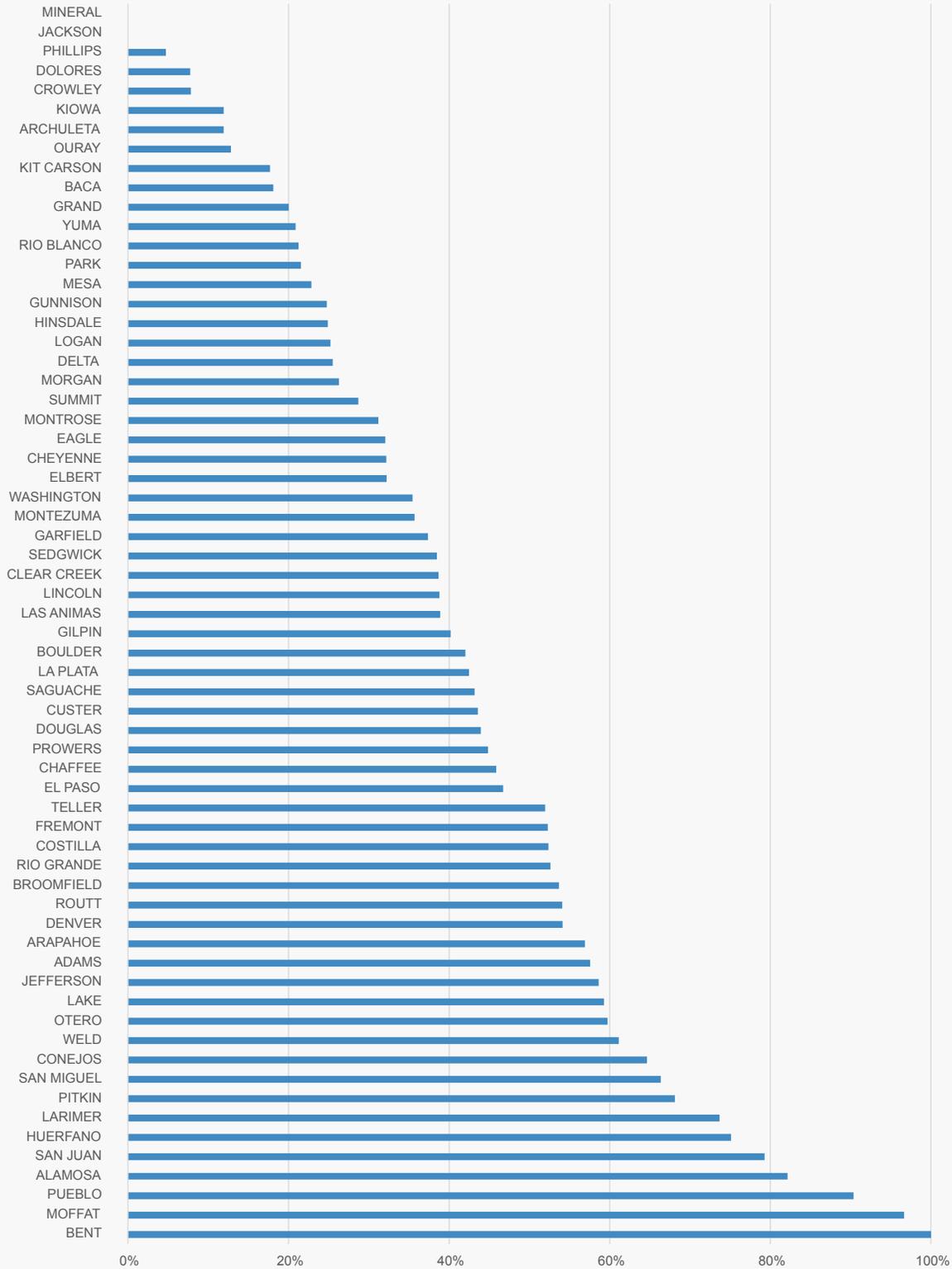
Suggested Citation

Gold S, Chen Y, Furniss A, Shah P, Petterson S, Gilchrist E, Hemeida S, Pacheco D, Knierim K. *Closing the Treatment Gap for Opioid Use Disorder in Colorado*. Brief #19, April 2021. Available at: <https://medschool.cuanschutz.edu/farleyhealthpolicycenter/our-work/projects/mappingOUDtreatment>

References

- 1 Opioid overdose death rates and all drug overdose death rates per 100,000 population (age-adjusted). Secondary Opioid overdose death rates and all drug overdose death rates per 100,000 population (age-adjusted) 2020. <https://www.kff.org/other/state-indicator/opioid-overdose-death-rates/>.
- 2 Advocacy Resource Center. Issue brief: Reports of increases in opioid-related overdose and other concerns during COVID pandemic: American Medical Association, 2020.
- 3 Colorado Opioid Profile: Colorado Department of Public Health and Environment, 2018.
- 4 Haajee RL, Bohnert AS, Lagisetty PA. Policy pathways to address provider workforce barriers to buprenorphine treatment. *Am J Prev Med* 2018;54(6S3):S230-42
- 5 National Institute on Drug Abuse. Effective treatments for Opioid Addiction: National Institutes of Health, 2016.
- 6 Nielsen S, Larance B, Degenhardt L, Gowing L, Kehler C, Lintzeris N. Opioid agonist treatment for pharmaceutical opioid dependent people. *Cochrane Database of Systematic Reviews* 2016;5
- 7 National Survey of Substance Abuse Treatment Services (N-SSATS): 2017. Data on Substance Abuse Treatment Facilities. Rockville, MD: Substance Abuse and Mental Health Services Administration, Department of Health and Human Services, 2018.
- 8 Kampman K, Jarvis M. American Society of Addiction Medicine (ASAM) guideline for the use of medications in the treatment of addiction involving opioid use. *J Addict Med* 2015;9(5):358-67
- 9 Bruneau J, Ahamad K, Goyer M, et al. Management of opioid use disorders: a national clinical practice guideline. *CMAJ* 2018;190(9):E247-57
- 10 Wakeman SE, Rich JD. Barriers to medications for addiction treatment: how stigma kills. *Substance Use & Misuse* 2017;53(2):330-33
- 11 Practice Guidelines for the Administration of Buprenorphine for Treating Opioid Use Disorder: Department of Health and Human Services, 2021.
- 12 Substance Abuse and Mental Health Services Administration. Statutes, Regulations, and Guidelines. Secondary Statutes, Regulations, and Guidelines 2020. <https://www.samhsa.gov/medication-assisted-treatment/statutes-regulations-guidelines#support>.
- 13 Medication-Assisted Treatment: Changes in Federal Law and Regulation: National Health Care for the Homeless Council, 2016.
- 14 Colorado Consortium for Prescription Drug Abuse and Prevention. Annual Report, 2019.
- 15 Zittleman L, Curcija K, Sutter C, et al. Building capacity for medication assisted treatment in rural primary care practices: the IT MATTRs practice team training. *Journal of Primary Care & Community Health* 2020;11:1-9
- 16 Jones CM, Campopiano M, Baldwin G, McCance-Katz E. National and state treatment need and capacity for opioid agonist medication-assisted treatment. *Am J Public Health* 2015;105(8):e55-e63
- 17 Thomas CP, Doyle E, Kriener PW, et al. Prescribing patterns of buprenorphine waived physicians. *Drug Alcohol Depend* 2017;181:213-18
- 18 Jones CM, McCance-Katz E. Characteristics and prescribing practices of clinicians recently waived to prescribe buprenorphine for the treatment of opioid use disorder. *Addiction* 2018;114:471-82
- 19 Hutchinson E, Catlin M, Andrilla C, Baldwin L-M, Rosenblatt RA. Barriers to primary care physicians prescribing buprenorphine. *Annals of Family Medicine* 2014;12(2):128-33
- 20 DeFlavio JR, Rolin SA, Nordstrom BR, Kazal LA, Jr. Analysis of barriers to adoption of buprenorphine maintenance therapy by family physicians. *Rural Remote Health* 2015;15:3019
- 21 Chou R, Korthuis PT, Weimer M, et al. Medication-assisted treatment models of care for opioid use disorder in primary care settings. Rockville, MD: Agency for Healthcare Research and Quality, 2016.
- 22 Suzuki J, Connery HS, Ellison TV, Renner JA. Preliminary survey of office-based opioid treatment practices and attitudes among psychiatrists never receiving buprenorphine training to those who received training during residency. *Am J Addict* 2014;23:618-22
- 23 Gold S, Wong SL. Preventing Opioid Addiction: The Role of Integrated Behavioral Health. Issue Brief 2: Farley Health Policy Center, 2018.
- 24 National Survey of Substance Abuse Treatment Services (N-SSATS): 2012. Data on Substance Abuse Treatment Facilities. Rockville, MD: Substance Abuse and Mental Health Services Administration, Department of Health and Human Services 2013.
- 25 Frank JW, Wakeman SE, Gordon AJ. No end to the crisis without an end to the waiver. *Substance Abuse* 2018;39(3):263-65.

Appendix A. Proportion of individuals with an opioid use disorder receiving treatment with buprenorphine, ranked by county.



Appendix B. Number of Additional Providers Needed by County to Close the Treatment Gap, if Each Provider Prescribes at the Colorado Median Rate of 8 patients or At Half of the Most Common Capacity Limit of 30.

| County | OUD Prevalence | Number of Active Prescribers | Additional Providers Needed if Each Prescriber Prescribes at CO Median Rate (8 patients) | Additional Providers Needed if Each Prescriber Prescribes at Half of the Most Common Capacity Limit of 30 (15 patients) |
|-------------|----------------|------------------------------|--|---|
| ADAMS | 2,762 | 122 | 223 | 62 |
| ALAMOSA | 83 | 10 | 1 | Provider Need Met |
| ARAPAHOE | 3,182 | 122 | 276 | 90 |
| ARCHULETA | 67 | 3 | 5 | 1 |
| BACA | 22 | 1 | 2 | 1 |
| BENT | 37 | 0 | 5 | 2 |
| BOULDER | 1,594 | 73 | 126 | 33 |
| BROOMFIELD | 326 | 14 | 27 | 8 |
| CHAFFEE | 111 | 5 | 9 | 2 |
| CHEYENNE | 9 | 0 | 1 | 1 |
| CLEAR CREEK | 54 | 0 | 7 | 4 |
| CONEJOS | 39 | 1 | 4 | 2 |
| COSTILLA | 19 | 0 | 2 | 1 |
| CROWLEY | 51 | 0 | 6 | 3 |
| CUSTER | 28 | 0 | 3 | 2 |
| DELTA | 192 | 3 | 21 | 10 |
| DENVER | 3,753 | 203 | 266 | 47 |
| DOLORES | 13 | 0 | 2 | 1 |
| DOUGLAS | 1,585 | 23 | 175 | 83 |
| EAGLE | 222 | 9 | 19 | 6 |
| EL PASO | 3,796 | 82 | 393 | 171 |
| ELBERT | 155 | 0 | 19 | 10 |
| FREMONT | 312 | 6 | 33 | 15 |
| GARFIELD | 276 | 7 | 27 | 11 |
| GILPIN | 35 | 0 | 4 | 2 |
| GRAND | 85 | 0 | 11 | 6 |
| GUNNISON | 93 | 0 | 12 | 6 |
| HINSDALE | 4 | 0 | 1 | 1 |
| HUERFANO | 35 | 1 | 3 | 1 |
| JACKSON | 8 | 0 | 1 | 1 |
| JEFFERSON | 3,149 | 66 | 328 | 144 |
| KIOWA | 8 | 0 | 1 | 1 |

| | | | | |
|------------|-------|----|-----|-------------------|
| KIT CARSON | 34 | 0 | 4 | 2 |
| LA PLATA | 271 | 8 | 26 | 10 |
| LAKE | 42 | 3 | 2 | Provider Need Met |
| LARIMER | 1,979 | 83 | 164 | 49 |
| LAS ANIMAS | 75 | 1 | 8 | 4 |
| LINCOLN | 34 | 0 | 4 | 2 |
| LOGAN | 135 | 3 | 14 | 6 |
| MESA | 1,011 | 29 | 97 | 38 |
| MINERAL | 4 | 0 | 1 | 1 |
| MOFFAT | 78 | 4 | 6 | 1 |
| MONTEZUMA | 148 | 1 | 18 | 9 |
| MONTROSE | 237 | 9 | 21 | 7 |
| MORGAN | 137 | 1 | 16 | 8 |
| OTERO | 97 | 3 | 9 | 3 |
| OURAY | 23 | 0 | 3 | 2 |
| PARK | 121 | 0 | 15 | 8 |
| PHILLIPS | 21 | 0 | 3 | 1 |
| PITKIN | 76 | 4 | 6 | 1 |
| PROWERS | 62 | 1 | 7 | 3 |
| PUEBLO | 932 | 44 | 72 | 18 |
| RIO BLANCO | 38 | 1 | 4 | 2 |
| RIO GRANDE | 53 | 1 | 6 | 3 |
| ROUTT | 124 | 4 | 11 | 4 |
| SAGUACHE | 35 | 1 | 3 | 1 |
| SAN JUAN | 4 | 0 | 1 | 1 |
| SAN MIGUEL | 36 | 3 | 2 | Provider Need Met |
| SEDGWICK | 13 | 0 | 2 | 1 |
| SUMMIT | 153 | 6 | 13 | 4 |
| TELLER | 150 | 1 | 18 | 9 |
| WASHINGTON | 28 | 0 | 4 | 2 |
| WELD | 1,694 | 41 | 171 | 72 |
| YUMA | 53 | 1 | 6 | 3 |