

Geographic Distribution of Patients in Washington State’s Medication Assisted Treatment – Prescription Drug and Opioid Addiction Project

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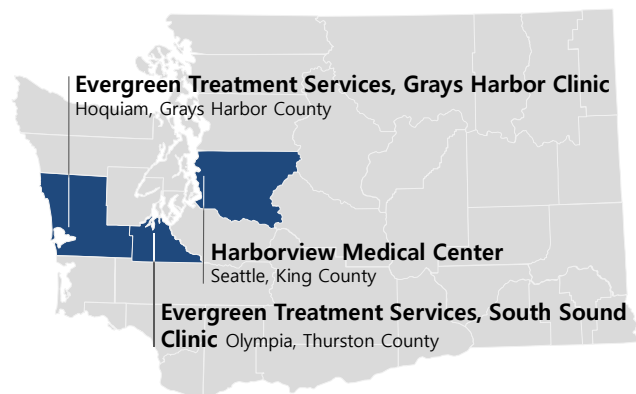
In collaboration with Washington State’s Department of Social and Health Services, Division of Behavioral Health and Recovery; Harborview Medical Center; and Evergreen Treatment Services

THE NATION is in the midst of an opioid epidemic; in 2015, approximately 2.5 million Americans had opioid use disorders (OUD).¹ Washington State’s Department of Social and Health Services (DSHS) received a three-year federal grant in 2015 to expand access to MAT for OUD using the office-based opioid treatment with buprenorphine (OBOT-B) model.² Buprenorphine is one of three medication assisted treatment (MAT) options approved by the Food and Drug Administration to treat OUD.³ The Washington State Medication Assisted Treatment – Prescription Drug and Opioid Addiction (MAT-PDOA) project expanded access to MAT by implementing the OBOT-B in one primary care clinic in Seattle and two opioid treatment programs (OTP) in Olympia and Hoquiam. Washington is a geographically diverse state, which often presents challenges to program implementation and patient access to treatment. This report describes the geographic distribution of patients served by Washington State MAT-PDOA sites in the first two years.

Key Findings

- Patients (TOTAL = 541) receiving treatment at MAT-PDOA sites lived an average of 20 miles from their clinic at enrollment.
- Half of MAT-PDOA patients lived within 11 miles of their clinics at enrollment; almost 30 percent lived within 5 miles.
- Eight percent of patients resided more than 60 miles from their MAT-PDOA clinic at enrollment.
- While MAT-PDOA intended to serve patients living in a six county region, MAT-PDOA treated patients from 14 counties across western Washington State.

FIGURE 1. MAT-PDOA Grant Site Locations



¹ Center for Behavioral Health Statistics and Quality. Key substance use and mental health indicators in the United States: Results from the 2015 National Survey on Drug Use and Health. 2016 Contract No.: HHS Publication No. SMA 16-4984.

² The federal grant is funded through the Substance Abuse and Mental Health Services Administration (SAMHSA) from August 1, 2015 through July 31, 2018.

³ Volkow, ND., Frieden, T.R., Hyde, P.S., Cha, S.S. 2014. Medication-Assisted Therapies – Tackling the Opioid-Overdose Epidemic. The New England Journal of Medicine. 370: 2063-2066. DOI: 10.1056/NEJMp1402780. Available from <http://www.nejm.org/doi/full/10.1056/NEJMp1402780>.

MAT-PDOA Clinic Characteristics

Three sites were selected for the WA MAT-PDOA project based on county-level opioid treatment admission rates, opioid death rates, and crime lab cases related to opioids.⁴ The sites were: Harborview Medical Center's Adult Medicine Clinic (HMC) in Seattle, Evergreen Treatment Services' (ETS) South Sound Clinic (SSC) in Olympia, and ETS's Grays Harbor Clinic (GHC) in Hoquiam (Figure 1). Harborview Medical Center is part of the University of Washington and is a county-owned, public safety-net hospital and regional medical center. The HMC Adult Medicine Clinic is located near downtown Seattle in a densely populated urban area and is HMC's largest primary care clinic.

Evergreen Treatment Services is a private, nonprofit organization that has been providing federally accredited OTP services since 1973. The SSC clinic is located in the State's capital, Olympia, serving a mix of urban and rural communities. Grays Harbor Clinic is located in a small town of 8,500 people on the Pacific coast, serving predominately rural communities. The ETS sites required the use of telehealth to mitigate the challenges with recruitment of qualified staff to deliver MAT with buprenorphine in rural areas; prior to the MAT-PDOA grant, ETS sites only offered methadone treatment for opioid use disorder (OUD).

In the first two years of the grant, the treatment sites performed 573 inductions onto buprenorphine for 541 patients

All three sites adopted the Massachusetts OBOT-B model and were able to expand treatment services by hiring a nurse care manager, a program manager, and a medical assistant to support physicians with screening patients for OUD, starting them on buprenorphine (induction) and managing ongoing care for patients receiving MAT. In the first two years of the grant, the treatment sites performed 573 inductions onto buprenorphine for 541 unique patients. Patient demographics are presented in Table 2 of the appendix.

Patient Proximity to Treatment Sites at Enrollment

MAT-PDOA clinics routinely collect demographic information on the patients they served at the time of enrollment. Patient residences and MAT-PDOA clinic addresses were used to map locations and to estimate road-travel distances to their clinic.⁵ Driving distances were modeled using the shortest path via road network between each patient residence and the clinic where they began MAT. To protect privacy, patient addresses were aggregated to census tract level for display purposes (Figure 4).⁶

MAT-PDOA sites were originally expected to serve patients from six counties: Grays Harbor, King, and Thurston counties where the clinics operate, and three rural counties near the ETS clinics: Lewis, Mason, and Pacific. The majority of patients served (89 percent) resided in these six counties at time of enrollment. However, MAT-PDOA providers enrolled patients from eight additional counties across Washington State: Clallam, Cowlitz, Island, Kitsap, Pierce, Skagit, Snohomish, and Whatcom counties (Figure 2).⁷

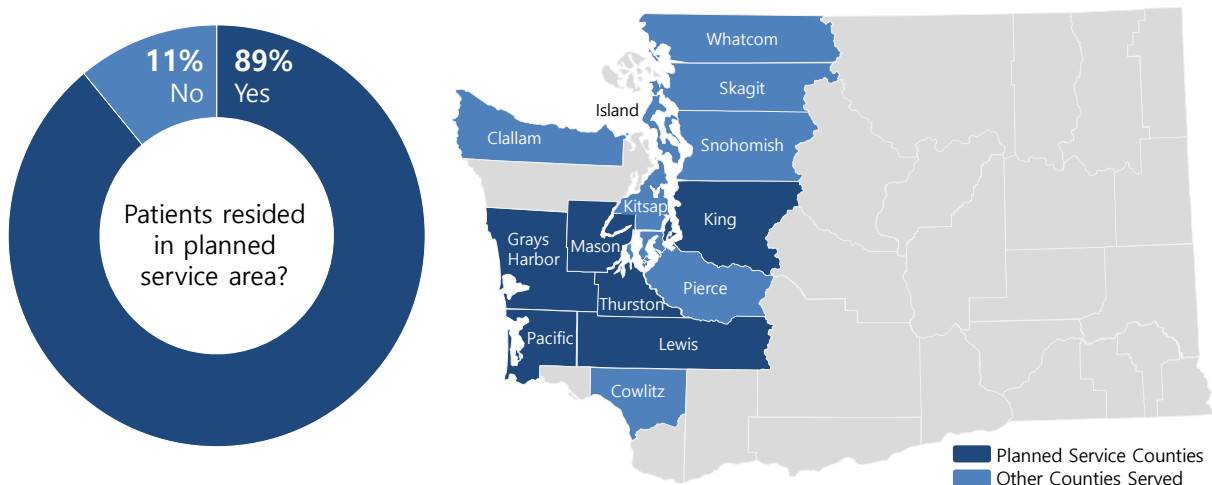
⁴ Speaker, E., Mayfield, J., Yakup, S., & Felver, B. 2017. Washington State Medication Assisted Treatment – Prescription Drug and Opioid Addiction Project: Year One Performance. Department of Social and Health Services – Research and Data Analysis. Report 4.96. Available at https://www.dshs.wa.gov/sites/default/files/SESA/rda/documents/research-4-96_0.pdf.

⁵ Patient addresses were standardized and geocoded using Centrus software.

⁶ Distance modeling was done using the Network Analyst in ArcGIS 10.3.1 (Copyright © 1995-2015 Esri). See Technical Notes for more details on this process.

⁷ There were two outlier addresses, one listed in Nevada and another listed in Walla Walla County in eastern WA. These were excluded from geographic analyses.

FIGURE 2.
Patients Living in Planned Counties of Service
 TOTAL PARTICIPANTS = 541



While some patients lived as far away as 153 miles one-way at the time of enrollment, the average patient lived 20 miles and half lived within 11 miles of their respective MAT-PDOA clinic (Appendix, Table 1).⁸ Nearly one in ten patients lived over 60 miles from their clinic at the time of enrollment; assuming normal driving conditions, this would amount to two or more hours of driving time round trip. Twenty-eight percent lived within five miles of their clinic. SSC patients lived furthest from their MAT-PDOA clinic; half of SSC patients lived almost 18 miles from their clinic compared to 10- and 7-mile median distances for patients at HMC and GHC, respectively (Figure 3).

FIGURE 3.
Distances Travelled for MAT with Buprenorphine at Enrollment
 TOTAL PARTICIPANTS = 573

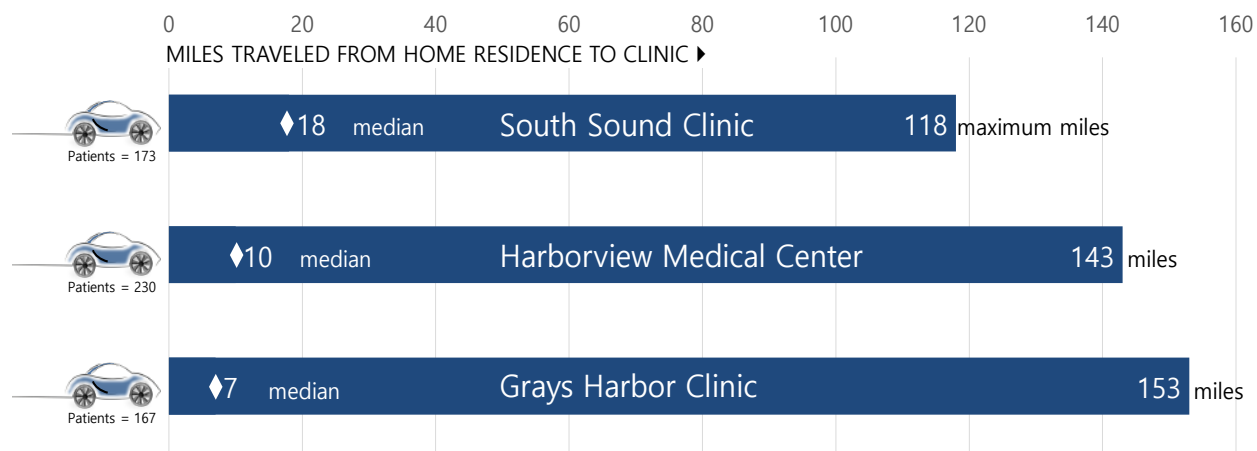
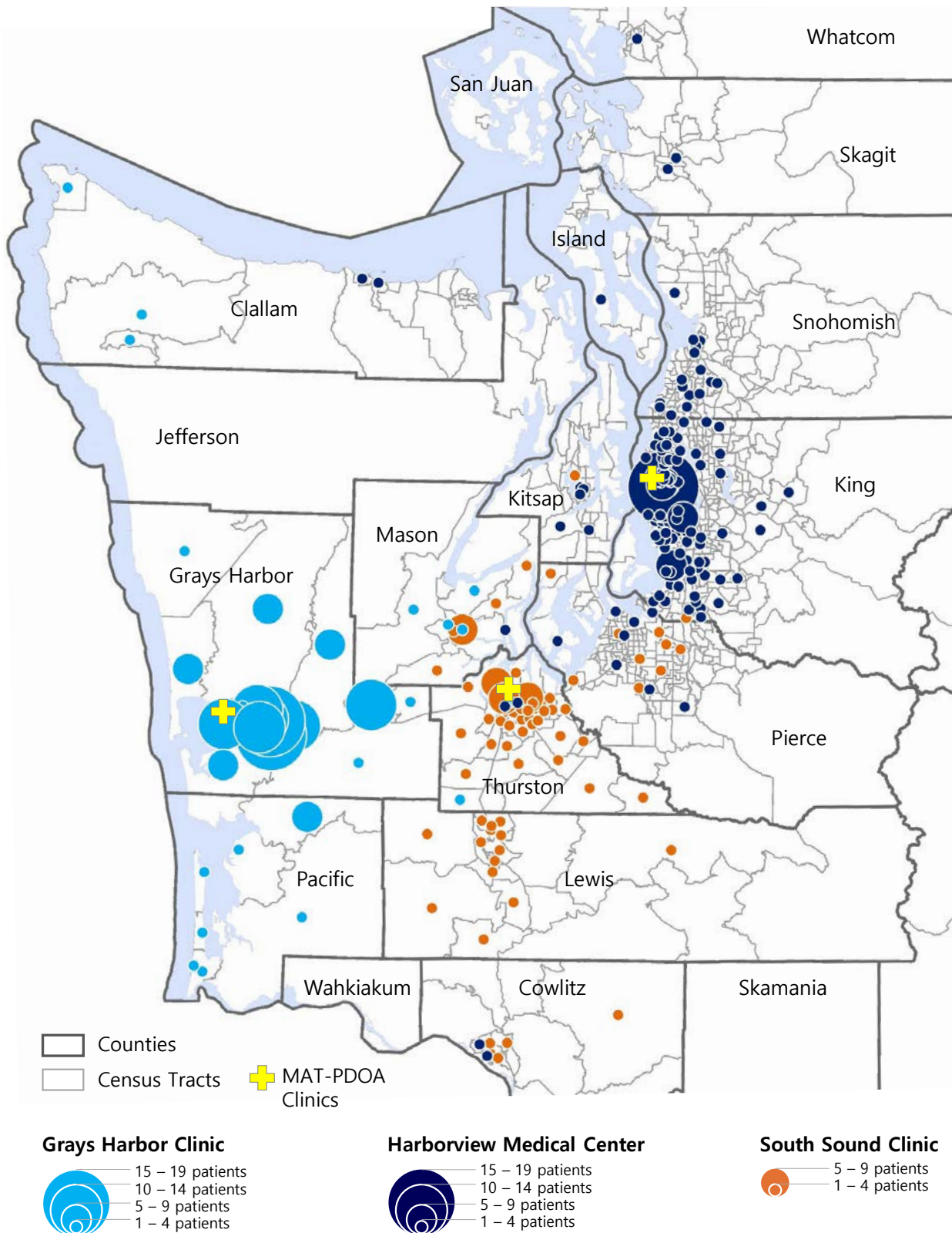


Figure 4 illustrates that some patients' initial travel distance may have been reduced if they sought treatment at the MAT-PDOA clinic that was closest to their residence. For 37 patients, the MAT-PDOA clinic where they received treatment was not the closest based on the street/road distance to the clinic. These patients resided in Cowlitz, Kitsap, Mason, Pierce, and Thurston counties.

⁸ Distances travelled are based on addresses at the time patients sought treatment. If patients subsequently moved, their new travel times are not reflected in this report.

FIGURE 4.
 MAT-PDOA Patient Residences at Enrollment
 TOTAL PARTICIPANTS = 573



Discussion

Almost 90 percent of the patients enrolled in the MAT-PDOA program resided in one of the six counties targeted for the intervention. The remainder originated from eight other Washington State counties. At the time of enrollment, most patients (56 percent) receiving treatment at MAT-PDOA sites lived within 15 miles of their clinic. Roughly 1 in 5 lived 30 or more miles and 1 in 12 lived more than 60 miles from their MAT-PDOA clinic at enrollment. The latter distance is consistent with a national study that found six percent of patients receiving methadone for opioid treatment traveled more than 50 miles one-way.⁹

Unlike methadone, which can only be dispensed by licensed OTPs, buprenorphine may be prescribed by physicians, physician assistants and nurse practitioners in a variety of healthcare and treatment settings. However, in 2012, only two percent of all US physicians held the waiver necessary to prescribe buprenorphine and served primarily urban settings.¹⁰ Lack of access to physicians prescribing buprenorphine likely contributes to patients travelling relatively long distances (up to 150 miles) to receive buprenorphine treatment for OUD. For patients without access to a vehicle or those who live in regions with limited or no public transit, even short distances to their clinic could be a significant barrier to treatment. This is compounded when patients are required to return to the clinic for daily medication dispensing or weekly appointments to refill prescriptions. Additional analyses examining the impact of travel distance on retention in MAT would need to account for transportation available to patients in a given setting.

TECHNICAL NOTES

STUDY POPULATION

This report focuses on patients who received medication assisted treatment (MAT) with buprenorphine under the WA MAT Prescription Drug and Opioid Addiction (MAT-PDOA) grant. Individuals 18 and older seeking MAT at grant-funded clinics were screened for opioid use disorder between November 2015 and July 2017. Based on the patients' OUD severity and health history, an eligibility determination is made for MAT with buprenorphine. To be included in the study, patients had to be eligible for MAT with buprenorphine and initiate treatment, defined as taking their first dose of buprenorphine (induction).

METHODS

The addresses of the MAT-PDOA clinics (n=3) and patients (n=573) were standardized and geocoded using Centrus (Copyright © 2014-2016 Pitney Bowes Software Inc.). The Network Analyst in ArcGIS 10.3.1 (Copyright © 1995-2015 Esri) was used to model the shortest path via the street/road network between each patient's place of residence and their assigned MAT clinic; the process estimated travel distance by car for each patient. All geocoded locations of patients were assigned to the nearest street or road based on the straight-line distance; however, 37 patients were located between 100 and 1,000 feet from the nearest road and another 6 patients were located 1,000 feet or more from the nearest road (distance estimates based on such assignments are less precise).

To protect confidentiality, patient locations were aggregated by census tract, and the aggregate counts of patients in treatment were mapped using the proportional symbols method: the size of each circle (its area) is proportionate to the value (number of patients) in the census tract. The location of each circle on the map is the geographic center (centroid) of its census tract, not an actual location of any patient. Patients listed as homeless or missing an address (n=5), but who had a city or ZIP Code, were assigned to a census tract based on the location of the ZIP Code area centroid. The color of the circle on the map (Figure 4) denotes the clinic(s) where patients are enrolled.

SUPPORTING TABLES

⁹ Rosenblum, A., Cleland, C.M., Fong, C., Kayman, D.J., Tempalski, B., & Parrino, M. 2011. Distance traveled and cross-state commuting to opioid treatment programs in the United States. *Journal of Environmental Health*. DOI: 10.115/2011/948789. Available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3136171/>.

¹⁰ Rosenblatt, R.A., Holly, C., Andrilla, A., Catlin, M., and Larson, E.H. 2015. Geographic and Specialty Distribution of US Physicians Trained to Treat Opioid Use Disorder *Annals of Family Medicine*, 13(1): 23–26. DOI: 10.1370/afm.1735. Available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4291261/>.

TABLE 1.

Patient Proximity (street or road miles) to MAT-PDOA Clinic at Enrollment

TOTAL PARTICIPANTS = 573

	Harborview Medical Center: Adult Family Medicine		Evergreen Treatment Services: South Sound Clinic		Evergreen Treatment Services: Grays Harbor Clinic		TOTAL	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Total MAT Inductions	230	100%	167	100%	176	100%	573	100%
Miles	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
<5	64	28%	26	16%	68	39%	158	28%
5 – 15	71	31%	53	32%	36	21%	160	28%
>15 – 30	57	25%	39	23%	48	27%	144	25%
>30 – 60	21	9%	36	22%	7	4%	64	11%
>60	17	7%	13	8%	17	10%	47	8%
Average Miles	19		23		20		20	
Median Miles	10		18		7		11	
Maximum Miles	143		118		153		153	

TABLE 2.

MAT-PDOA Patient Demographics

TOTAL PARTICIPANTS = 541

DEMOGRAPHICS	Harborview Medical Center: Adult Family Medicine		Evergreen Treatment Services: South Sound Clinic		Evergreen Treatment Services: Grays Harbor Clinic		TOTAL	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
TOTAL POPULATION Unduplicated	201	100%	173	100%	167	100%	541	100%
Male	128	64%	89	51%	78	47%	295	55%
American Indian/ Alaska Native	6	3%	11	6%	10	6%	27	5%
African American	26	13%	5	3%	4	2%	35	7%
Asian/Pacific Islander	8	4%	8	5%	3	2%	19	4%
Hispanic	16	8%	13	8%	9	5%	38	7%
White, non-Hispanic	145	72%	143	83%	144	86%	432	80%
Unknown	15	8%	6	4%	5	3%	26	5%
Mean Age	42 years		36 years		36 years		38 years	
Age Ranges								
18-25	17	9%	30	17%	28	17%	75	14%
26-35	71	35%	74	43%	74	44%	219	41%
36-45	41	20%	34	20%	31	19%	106	20%
46-55	37	18%	21	12%	19	11%	77	14%
56+	35	17%	14	8%	15	9%	64	12%

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VISIT US AT: <https://www.dshs.wa.gov/SESA/research-and-data-analysis>

We want to acknowledge the work of our colleagues throughout the research and data analysis division and our partner programs for all the work they do in serving Washington's vulnerable populations.