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Relationship of County Opioid Epidemic Severity to Changes in Access to Substance Use Disorder Treatment, 2009–2017

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Motivation

- Opioids are now the leading cause of death for Americans over 50.
- 47,000 opioid-related deaths in 2017, 750,000 ED admissions, 2+ million individuals with opioid use disorder (OUD)
- Since 2016, deaths related to heroin and illicit fentanyl have surpassed those from prescription pain relievers.
- Improving access to substance use disorder (SUD) treatment should be top priority (along with reducing pain reliever prescribing, harm reduction, etc.)

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OUD Treatment Options

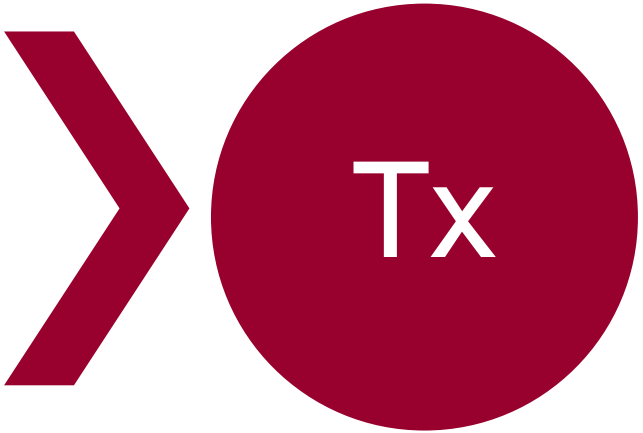
- Supervised withdrawal, then abstinence
- Psychosocial therapy alone—outpatient, intensive outpatient, inpatient residential, etc.
- Medications for OUD (MOUD):
  - Many studies reveal substantially better odds of preventing relapse with MOUD compared to the above.
  - Recommended in conjunction with psychosocial therapy

OUD Treatment

- Three FDA-approved medications for OUD
  - Methadone: Opioid agonist dispensed exclusively through opioid treatment programs (OTP)
  - Buprenorphine: (e.g., Suboxone) Opioid agonist available on an outpatient basis, prescribers (MDs, DOs, NPs, and PAs) must receive training and a waiver to prescribe to 30, 100, or 275 patients
  - Naltrexone: (e.g., Vivitrol) Opioid *antagonist* available on an outpatient basis; any prescriber may prescribe it. Patients must go through withdrawal before initiating treatment.

Barriers to treatment…MANY.

- Stigma
- Time constraints
- System capacity
- Geographic proximity
- Efficacy
- Affordability



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Measures

For each county, 2009-2017

- # of specialty treatment programs per 100,000 pop.:
  - Overall
  - Offer methadone and/or buprenorphine (Efficacy)
  - Accept Medicaid reimbursement (Affordability)
  - Offer methadone and/or buprenorphine *and* accept Medicaid

- If county has no such program, the county centroid-to-centroid distance to the nearest county with one.

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Data

Rise Above
1039 South Orem Boulevard
Orem, UT 84058
(801) 623-0125
MHSAF • SA NMOA • CBT DBT SACA TRC REBT TWFA BIA CMI MOTI ANG RELP • SMON • OP ODT OIT ORT • PVT • STAG STMH • SF PI MI • CO GL AD TRMA XA TAY • CM PEER STU TCC SSA SMHD CSAA CMHA DAUT DP ACC SSD SAE MHS ADD TID ICO GCO FCO • CHLD • FEM MALE • DU • SP

True North Treatment Center
234 North Orem Boulevard
Orem, UT 84057
(801) 691-0672
SAF • SA MM MMW BUM BMW RPN BU ACM VTRL METH OTP • CBT DBT SACA TRC REBT TWFA BIA CMI MOTI ANG MXM RELP • SMPD • OP OMB ORT • PVT • STAG STDH CARF • SF MD PI MI • GL CJ SE PW WN MN TRMA XA DV • CM HS STU TCC SSA SMHD CSAA ISC DAUT SHB SHC STDT TBS DP ACC SSD AOSS EMP EIH HAEC TAEC SAE ICO GCO FCO MCO

PANGUITCH

Southwest Center
601 East Center Street
P.O. Box 579
Panguitch, UT 84759
(435) 676-8176
MHSAF • SA NOOP • CBT DBT SACA TRC TWFA BIA MOTI ANG RELP • SMON • OP OIT ORT • LCCG • STAG STMH • SF MD MC SI PI MI FSA • CM HS SSA SMHD CSAA CMHA DAUT DP ACC SSD AOSS DVFP HAEC SAE TA MHS ICO GCO FCO • CHLD YAD ADLT • FEM MALE • DU

PARK CITY

Silver Peak Wellness
1790 Sun Peak Drive
Suite A-102
Park City, UT 84098
(495) 612-6000
SAF • SA DT BUM DB BU MOA UBN OTPA • CBT DBT SACA TRC REBT TWFA BIA CMI MOTI ANG MXM RELP • SMPD • OP OMB ORT • PVT • SF PI • SSA DAUT ICO GCO FCO MCO • CHLD YAD ADLT • FEM MALE

Steps Recovery Center
984 South 930 West
Payson, UT 84651
(801) 465-5111
Intake: (801) 465-5115
MHSAF • SA DT BUM BMW DB RPN BU DSF MPD NXN VTRL UBN • CBT DBT SACA TRC REBT TWFA BIA CMI MOTI ANG CRV RELP • SMON • RES RL RD • PVT • JC • SF SI PI • CO GL VET ADM MF CJ SE PW WN MN HV TRMA XA DV TAY • CM PEER HEOH HS NRT NSC STU TCC SSA SMHD CSAA CMHA OPC BABA DAUT SHB SHC HIVT STDT TBS DP ACC SSD AOSS EMP DVFP EIH HAEC TAEC SAE TA MHS SHG ADD ADTX BDTX CDTX MDTX ODTX TGD TID ICO GCO FCO MCO • YAD ADLT • FEM MALE • DU • SP

PRICE

Four Corners Community Behav Hlth Inc
575 East 100 South
Price, UT 84501
(435) 637-2358
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Counties categorized by "opioid problem severity"

- Conducted a factor analysis to develop a scale of the county-year level opioid problem using

    1. Drug-related mortality rate (CDC detailed mortality multiple cause of death files)

    2. Opioid prescribing rate (CDC Opioid Prescribing Maps)

    3. Drug-related arrests (FBI Uniform Crime Reporting)

- Divide counties into equal terciles based on factor score of low-, medium-, and high-severity.

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Model: Part 1

- Two-part model with year fixed effects and standard errors clustered at the county level.
  - First part: Probit model regressing dichotomous measure of any program in the county [0,1] on indicators for:
    - Severity terciles
    - Year fixed effects
    - Controls

Results: Change in the probability of a county have any program correlated with

- High- and moderate-severity counties compared with low-severity counties
- Year 2017 compared with Year 2009

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Model: Part 2

- Two-part model with year fixed effects and standard errors clustered at the county level.

  - Second part: OLS model regressing the natural log of

    1. If program = YES: Number of programs per 100,000 pop.
    2. If program = NO: Distance (in miles) to the nearest county

  on indicators for:

    - Severity terciles
    - Year fixed effects
    - Controls

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Controls

- **Demographic characteristics** (County population, rurality, race/ethnicity)

- **Socioeconomic characteristics** (County median income, unemployment rate, poverty rate, educational attainment, physicians per 1,000 pop.)

- **State policies implementation** (Medicaid expansion, optional PDMP, mandatory PDMP, pain clinic law, SUD parity, naloxone standing orders, SABG funds per capita)

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Summary statistics

	All Counties	Low-Severity Counties	Moderate-Severity Counties	High-Severity Counties
Any SUD Tx Program	63.65%	45.39%	70.88%	74.67%
Any Program Offering Methadone and/or Buprenorphine	24.85%	11.56%	30.92%	32.08%
Any Program Accepting Medicaid	56.15%	38.23%	64.06%	66.16%
Any Program Offering Methadone and/or Buprenorphine and Accepting Medicaid	18.85%	9.07%	23.86%	23.62%

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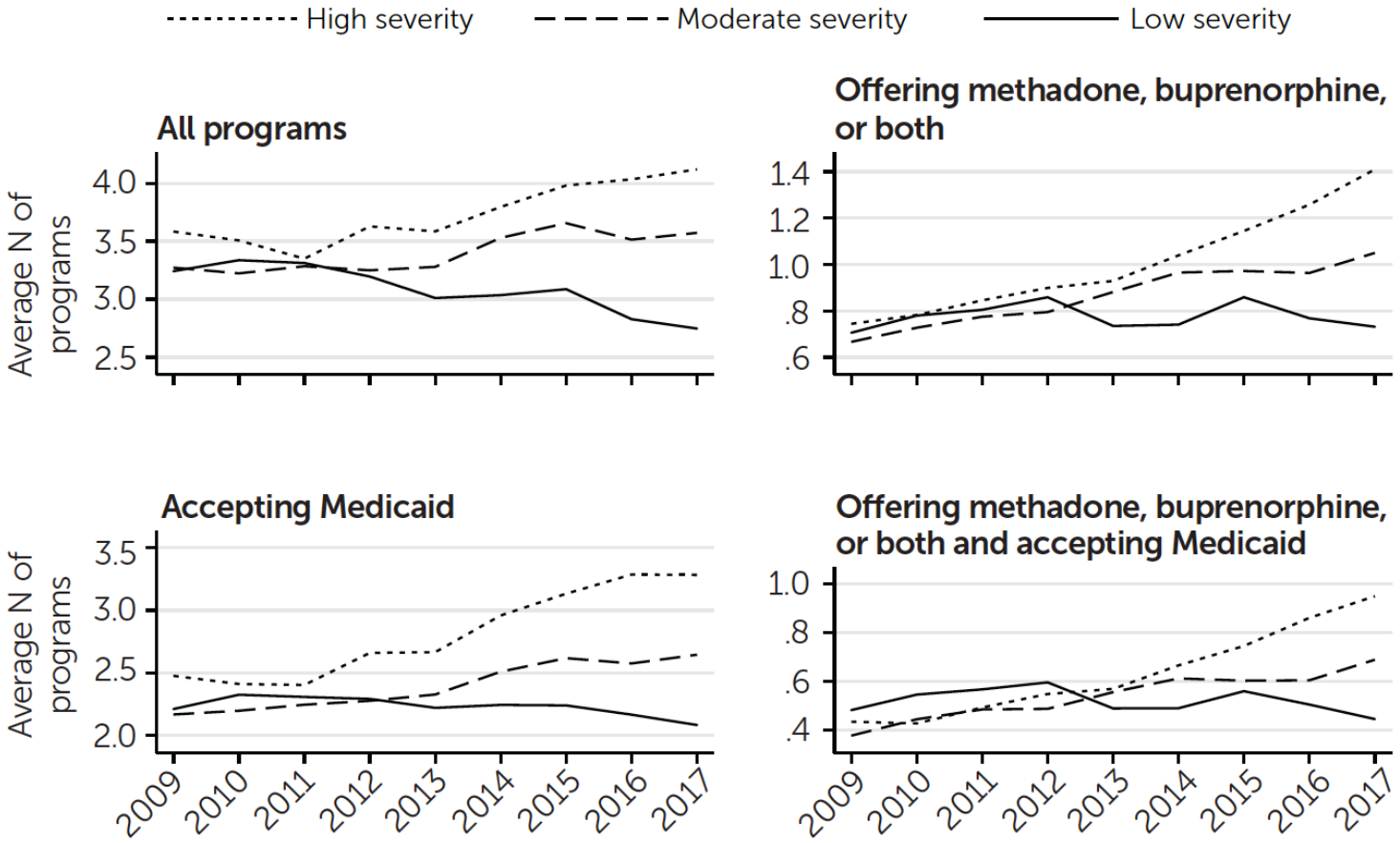
Results

FIGURE 1. Average number of substance use disorder treatment programs per county (per 100,000 population), by severity of opioid problem, 2009–2017[a]



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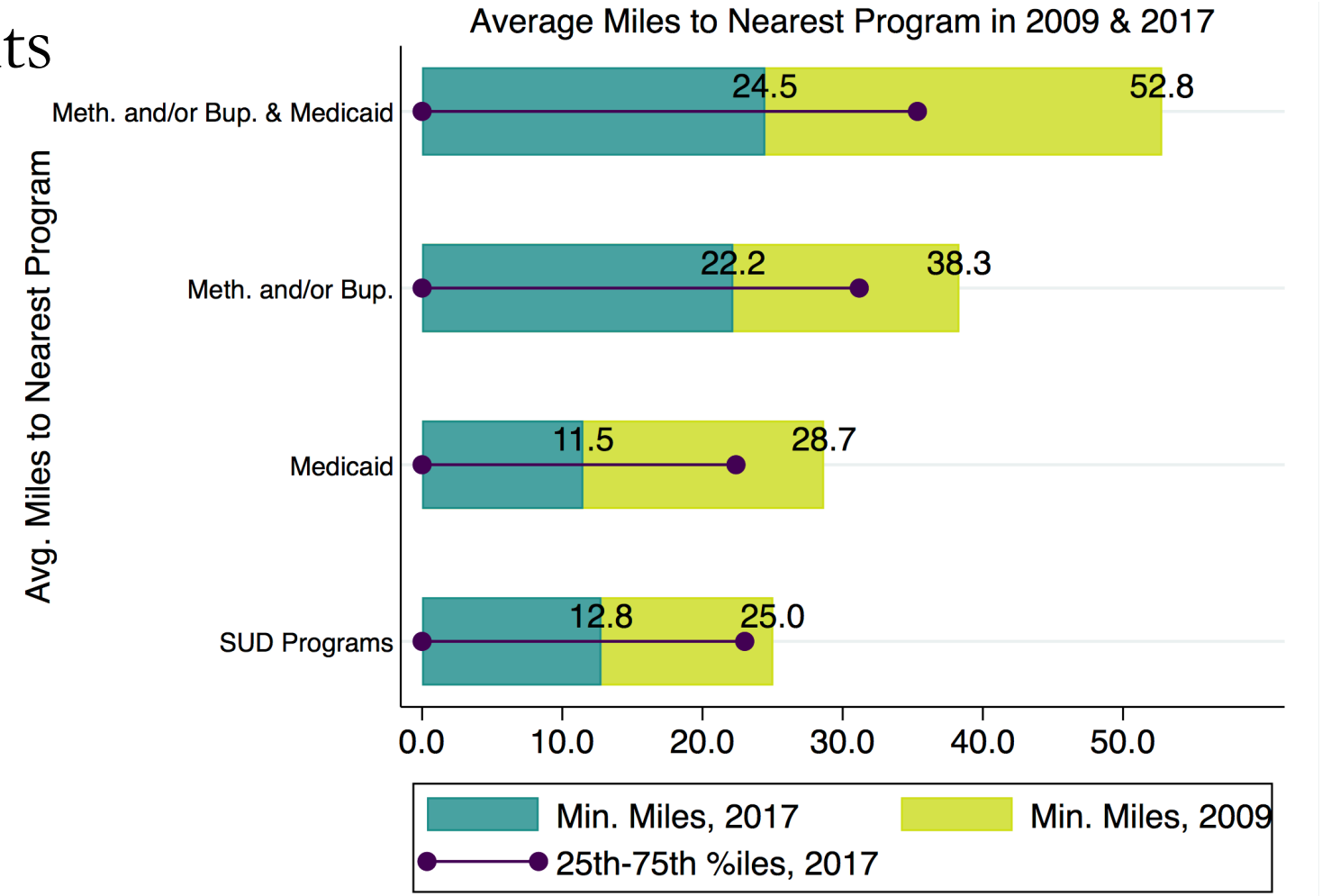
Results



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Results: First Part of Two-Part Model

TABLE 2. Availability of a county substance use disorder treatment program as a function of severity of the county's opioid problem and year, by type of program[a]

Variable	All programs			Methadone, buprenorphine, or both			Medicaid			Methadone, buprenorphine, or both and Medicaid		
	ME[b]		p	ME[b]		p	ME[b]		p	ME[b]		p
Opioid problem severity (reference: low)												
Moderate	.03**	.01	.01	.04**	.01	<.01	.06**	.01	<.01	.04**	.01	<.01
High	.03*	.01	.02	.07**	.01	<.01	.05**	.01	<.01	.07**	.01	<.01
Year fixed effects (reference: 2009)												
2017	.02	.02	.47	.03	.02	.13	.13**	.03	<.01	.04*	.02	.03

6.6%

60.3%

13%

76.9%

14.4%

25.3%

27%

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Results: 2nd Part (# programs, if ≥1)

TABLE 3. Number of substance use disorder treatment programs in the county and distance to the nearest substance use disorder treatment program as a function of severity of the county's opioid problem and year, by type of program[a]

	All programs (N=18,001)[b]			Methadone, buprenorphine, or both (N=7,030)[c]			Medicaid (N=15,880)[d]			Methadone, buprenorphine, or both and Medicaid (N=5,332)[e]		
Variable	b	SE	p	b	SE	p	b	SE	p	b	SE	p
N of substance use disorder treatment programs[f]												
Opioid problem severity (reference: low)												
Moderate	−.08**	.03	<.01	−.15**	.05	<.01	−.13**	.03	<.01	−.18**	.06	<.01
High	−.07*	.03	.03	−.06	.06	.26	−.13**	.03	<.01	−.11	.07	.11
Year fixed effects (reference: 2009)												
2017	−.34**	.06	<.01	.08	.09	.40	−.08	.07	.24	.25*	.11	.03

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Results: 2nd Part (miles to nearest program, if none)

TABLE 3. Number of substance use disorder treatment programs in the county and distance to the nearest substance use disorder treatment program as a function of severity of the county's opioid problem and year, by type of program[a]

	All programs (N=10,269)[g]			Methadone, buprenorphine, or both (N=21,240)[h]			Medicaid (N=12,390)[i]			Methadone, buprenorphine, or both and Medicaid (N=22,938)[j]		
	b	SE	p	b	SE	p	b	SE	p	b	SE	p
Distance to nearest substance use disorder treatment program[k]												
Opioid problem severity (reference: low)												
Moderate	−.00	.01	.92	−.00	.01	.87	.01	.01	.42	−.02	.01	.12
High	.03†	.02	.09	.01	.02	.51	.03	.02	.11	−.01	.02	.72
Year fixed effects (reference: 2009)												
2017	−.08*	.04	.05	−.39**	.04	<.01	−.21**	.04	<.01	−.57**	.04	<.01

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Conclusions and next steps

- The specialty treatment system has increased geographic access to care over time and has responded to local opioid problem severity, to a degree.

- Most of these improvements come in the form of a county getting its first program, not in increasing those numbers above 1. Access has gotten geographically broader, not deeper.

- YET, many counties, even high-severity ones, still lack an provider, especially one offering medications and/or accepting Medicaid.

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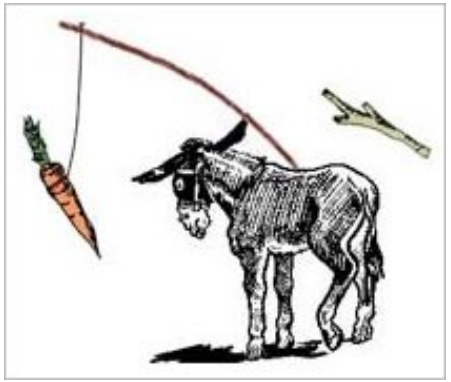
Conclusions and next steps



- Policy-makers, public health groups, concerned citizens, etc. should leverage this responsiveness to encourage further growth in access:
  - Medicaid expansion and mental health and SUD parity laws
  - Increased payments for evidence-based care (with MOUD)
  - Require programs receiving public reimbursement to accept patients using MOUD

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