



The Opioid-related Syndemic in Rural Northern New England: Findings from the DISCERNNE Study

Peter D. Friedmann, MD, MPH, FASAM, FACP

Chief Research Officer and Endowed Chair for Clinical Research,
Baystate Health

Associate Dean for Research and Professor of Medicine,
UMass Medical School (UMMS)-Baystate

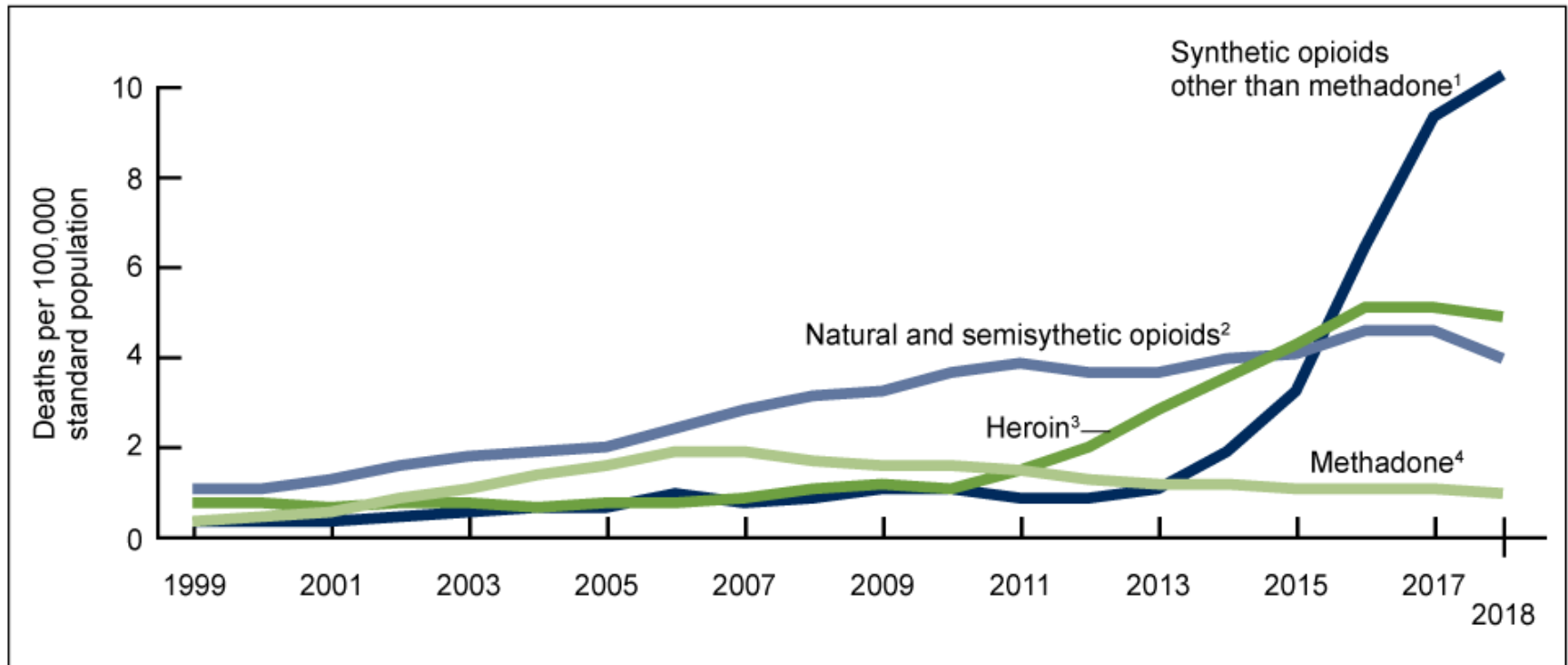
Professor, Population & Quantitative Health Sciences, UMMS

Supported by 1UG3/UH3DA044830

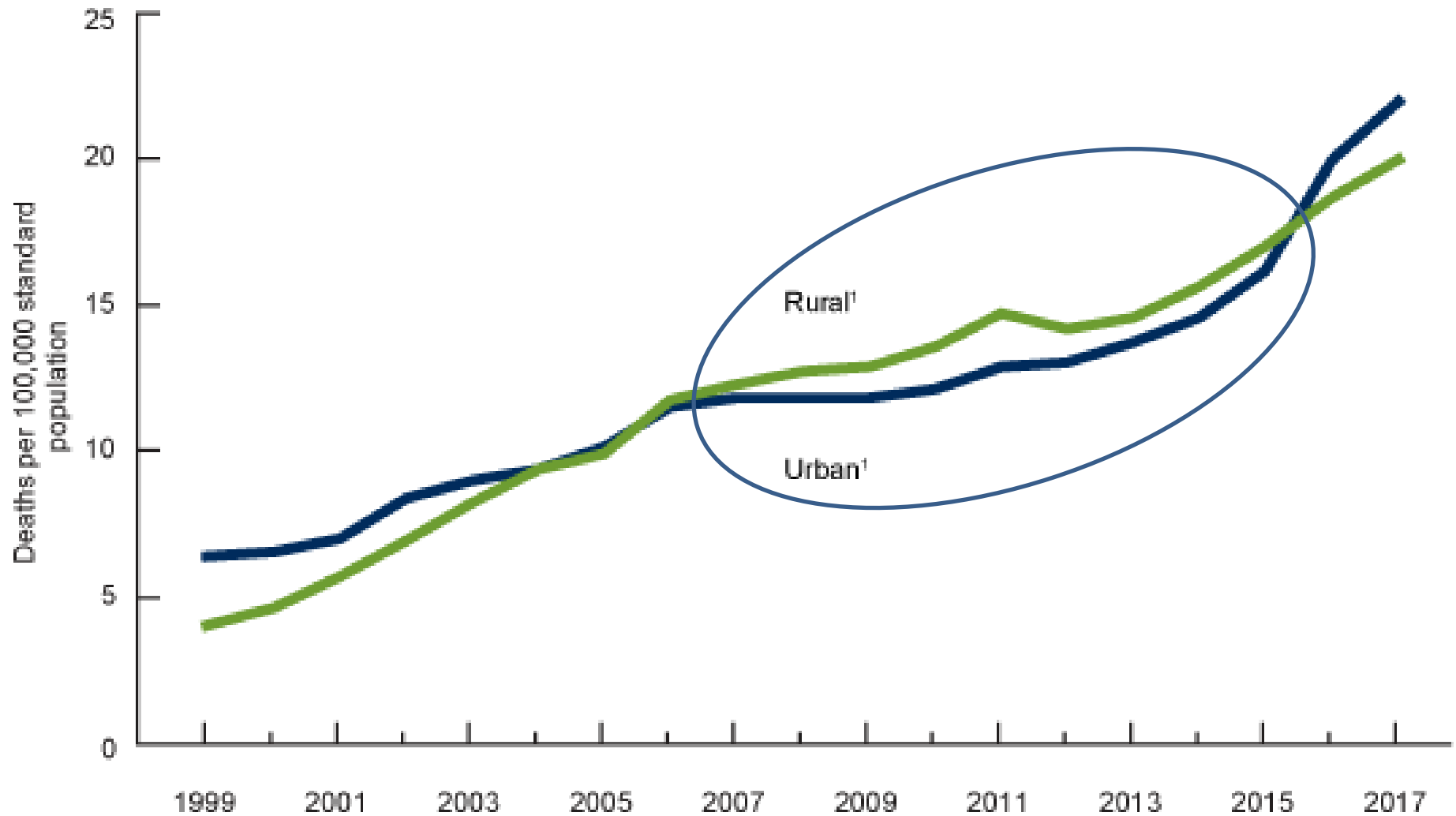
Disclosures

- No disclosures
- Views and interpretations are those of the speaker
 - do not necessary reflect those of state partners or federal funding agencies (NIDA/CDC/SAMHSA/ARC).

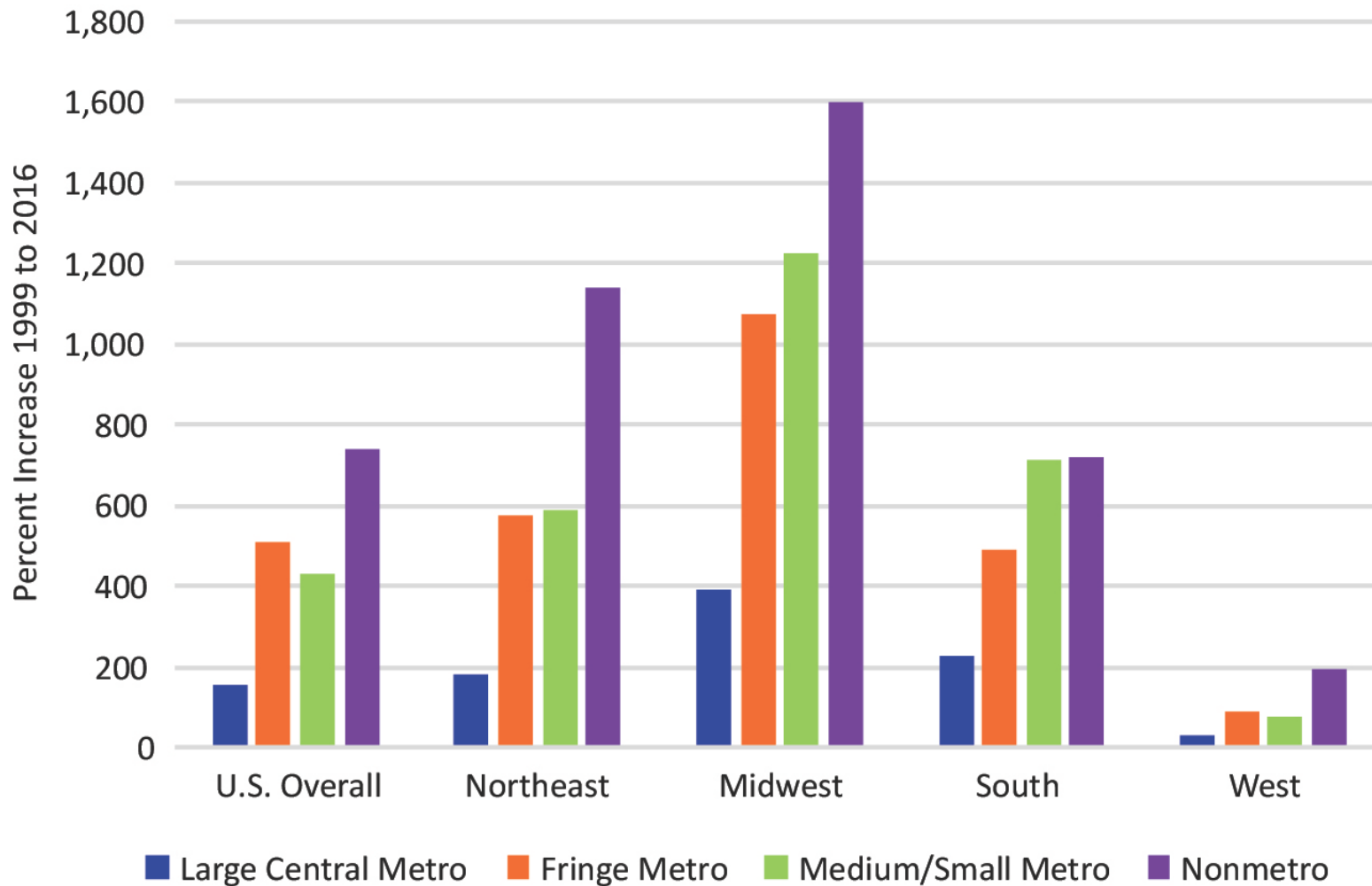
The U.S. Opioid Epidemic Continues



Opioid Epidemic in Rural & Urban Communities

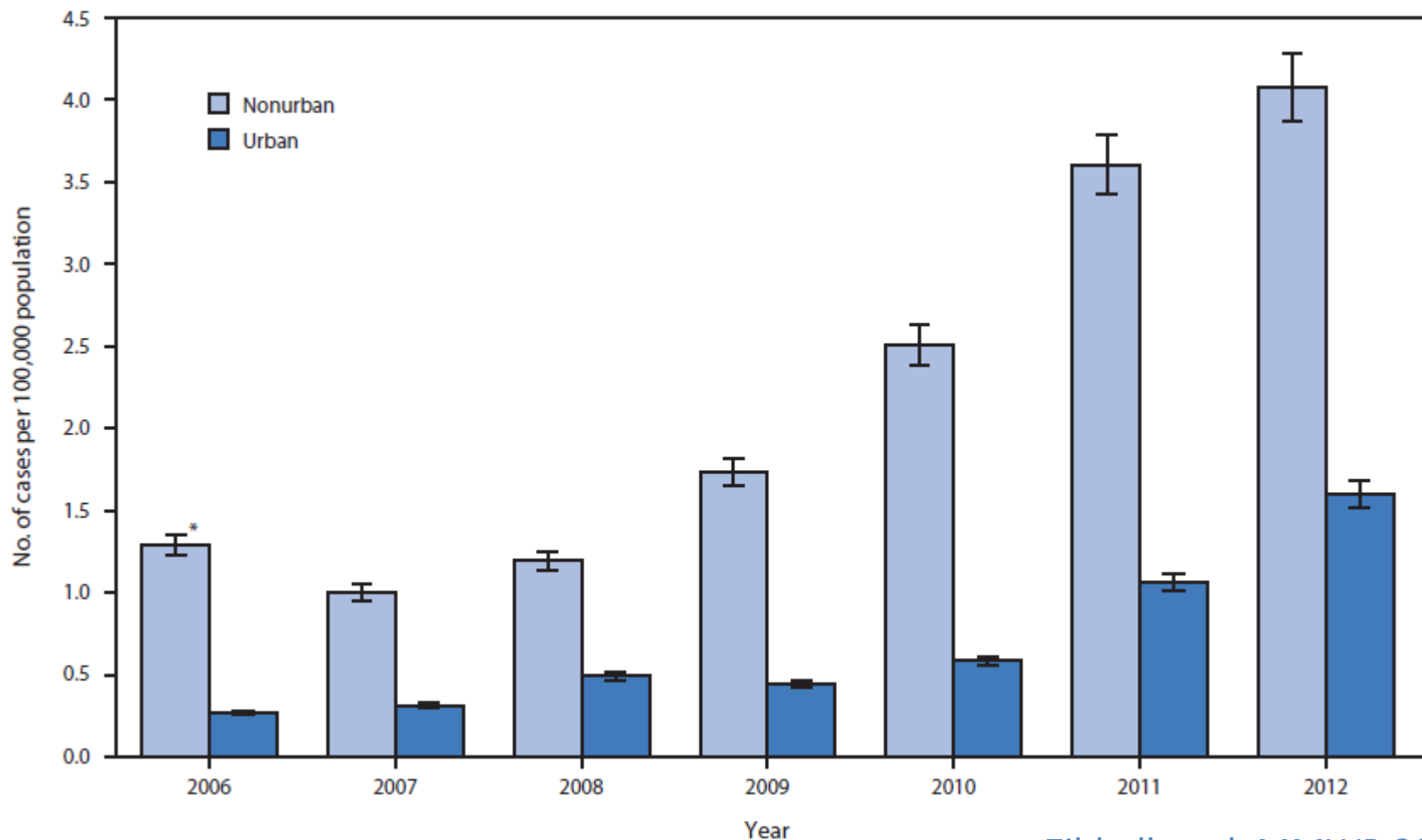


High Rate of Increase in Opioid-related Mortality in Rural Counties, 1999-2016



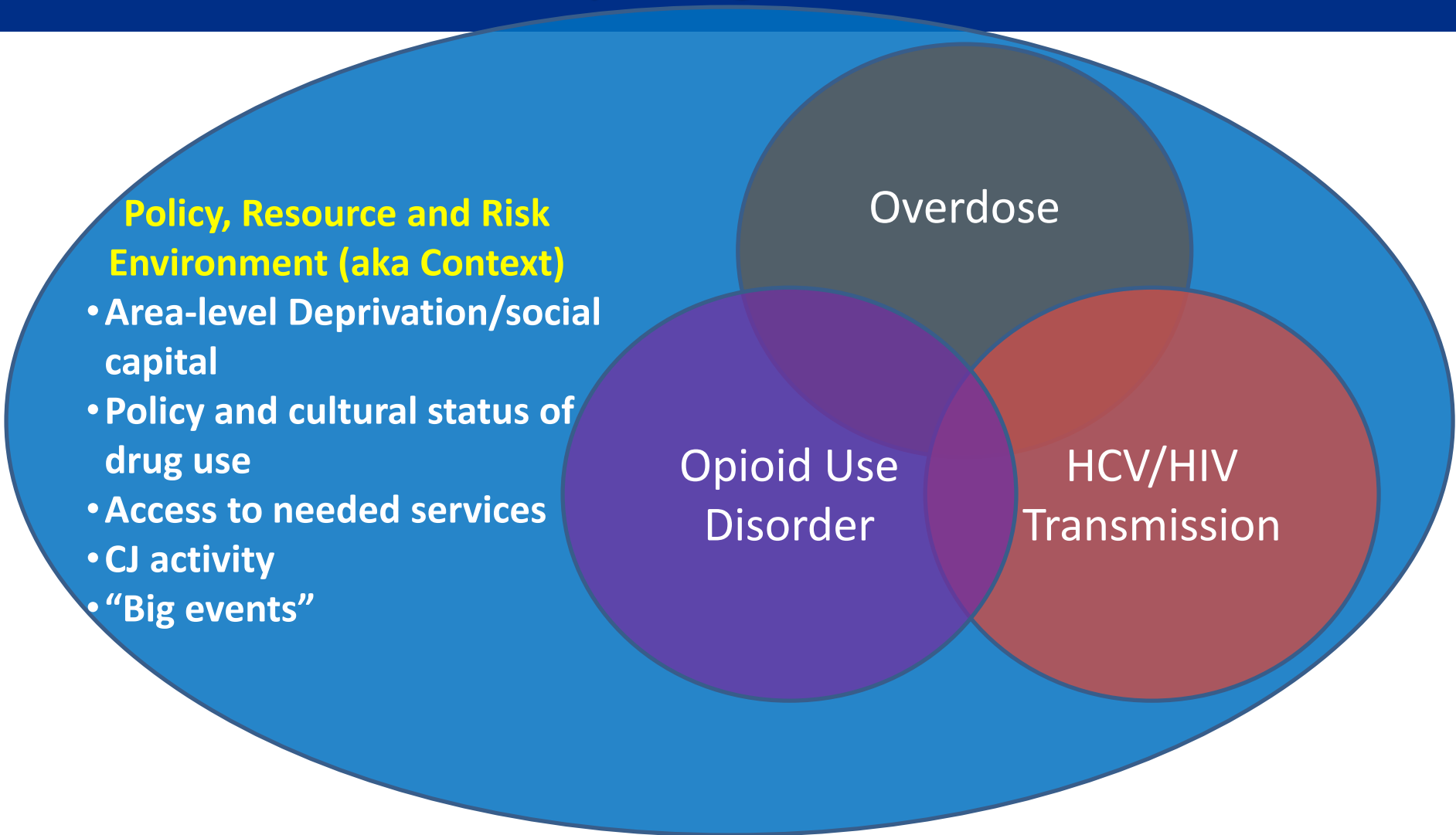
CDC, 2017, Rigg et al., 2018

HCV Incidence among persons aged ≤ 30 Kentucky, Tennessee, Virginia, & West Virginia, 2006–12



Zibbell et al. MMWR 2015

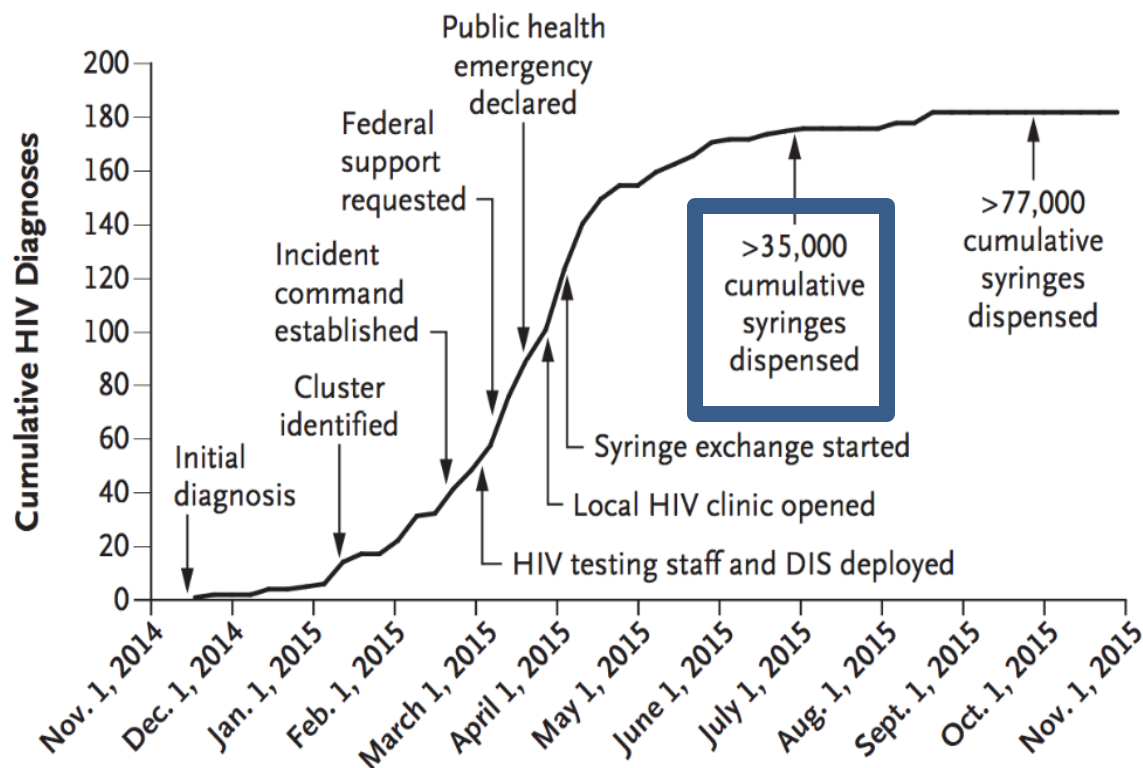
Syndemic: Interrelated Epidemics + Structurally-Marginalized Context



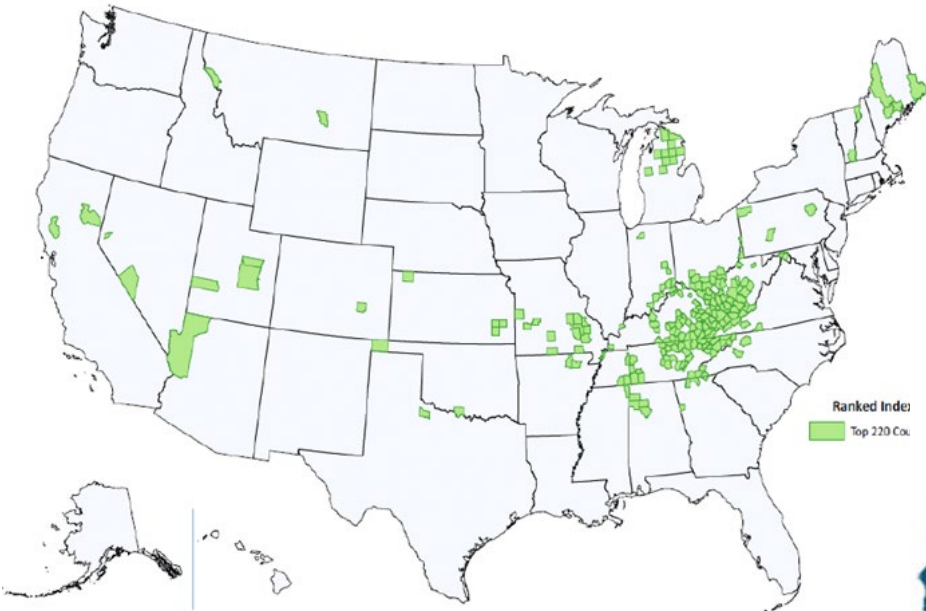
Singer, 1994; Rhodes et al., 2005; Nikolopoulos et al 2015; Perlman & Jordan, 2018.

Syndemic Outbreak in Scott County IN, 2014-15

A Cumulative HIV Diagnoses and Public Health Response

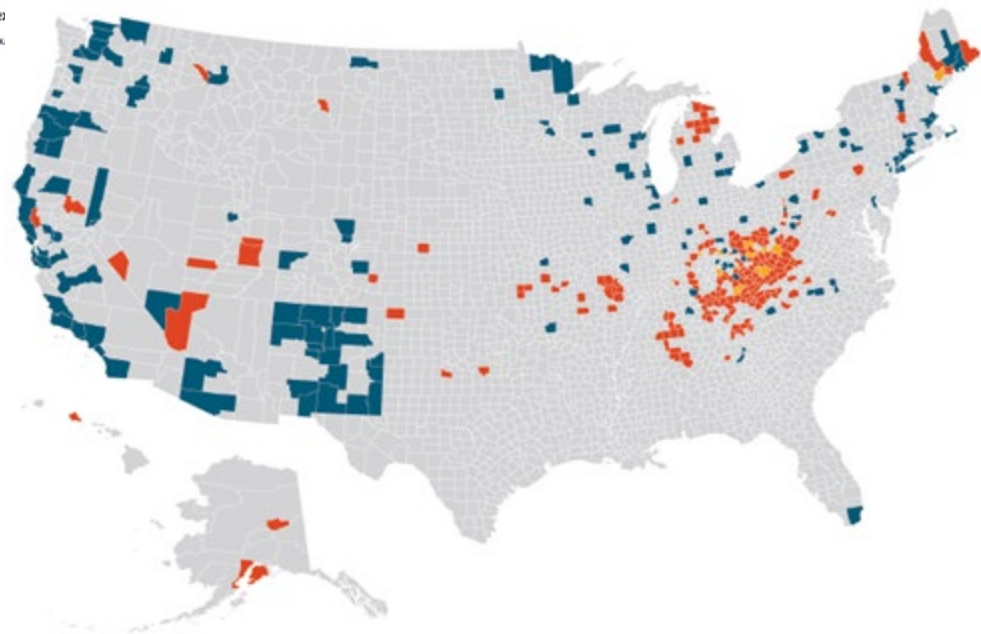


CDC: 220 Counties Most Vulnerable to OUD-related Outbreak of HIV



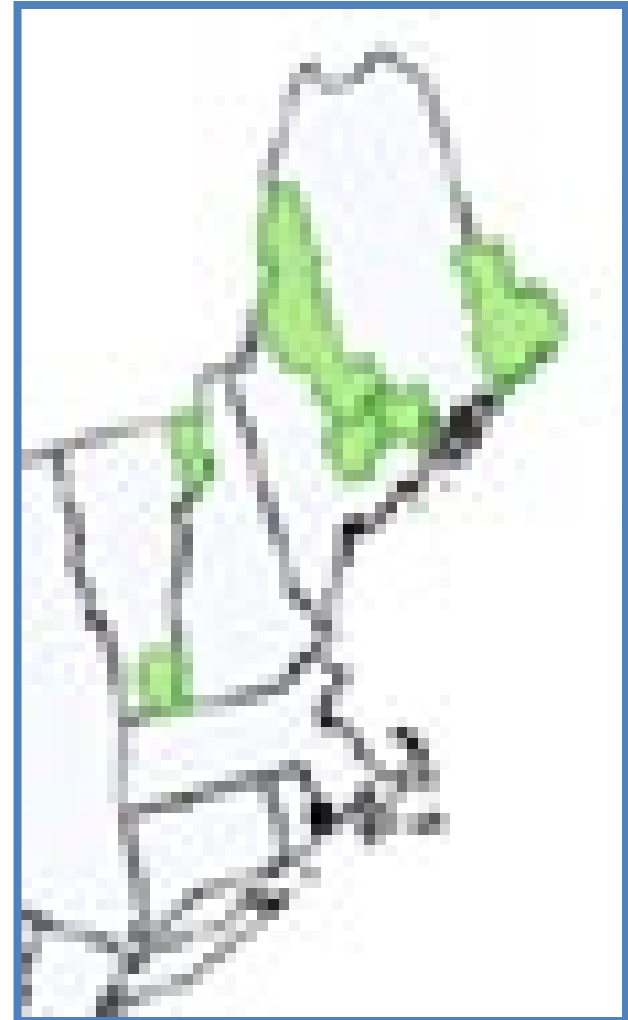
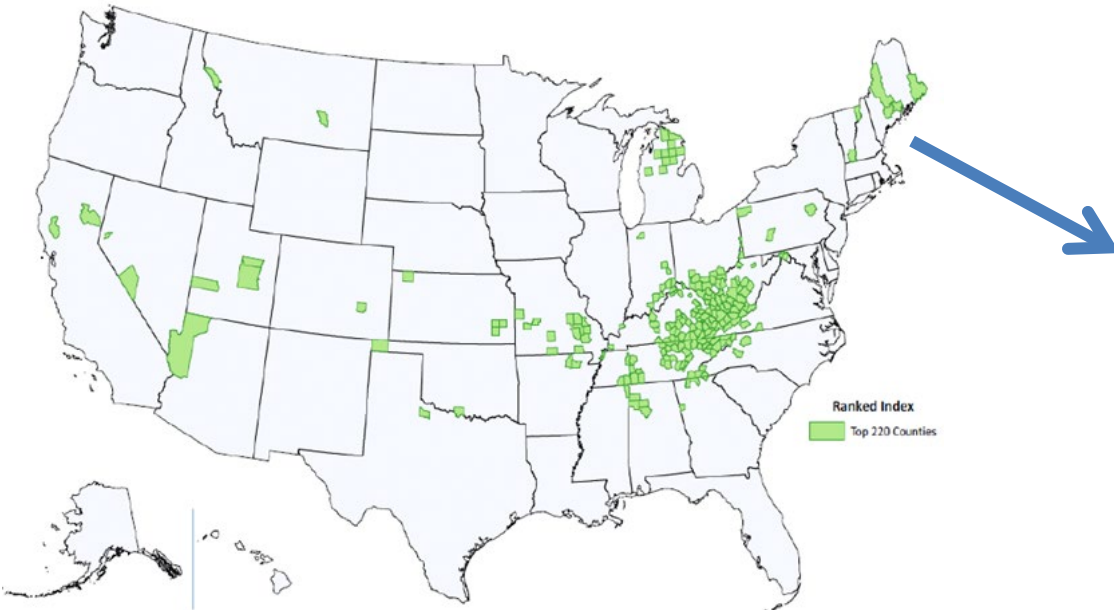
206 (94%) have no SSP

Top 220 Counties



Van Handel et al. JAIDS 2016; opioid.AMfar.org

CDC: 220 Counties Most Vulnerable to OUD-related Outbreak of HIV

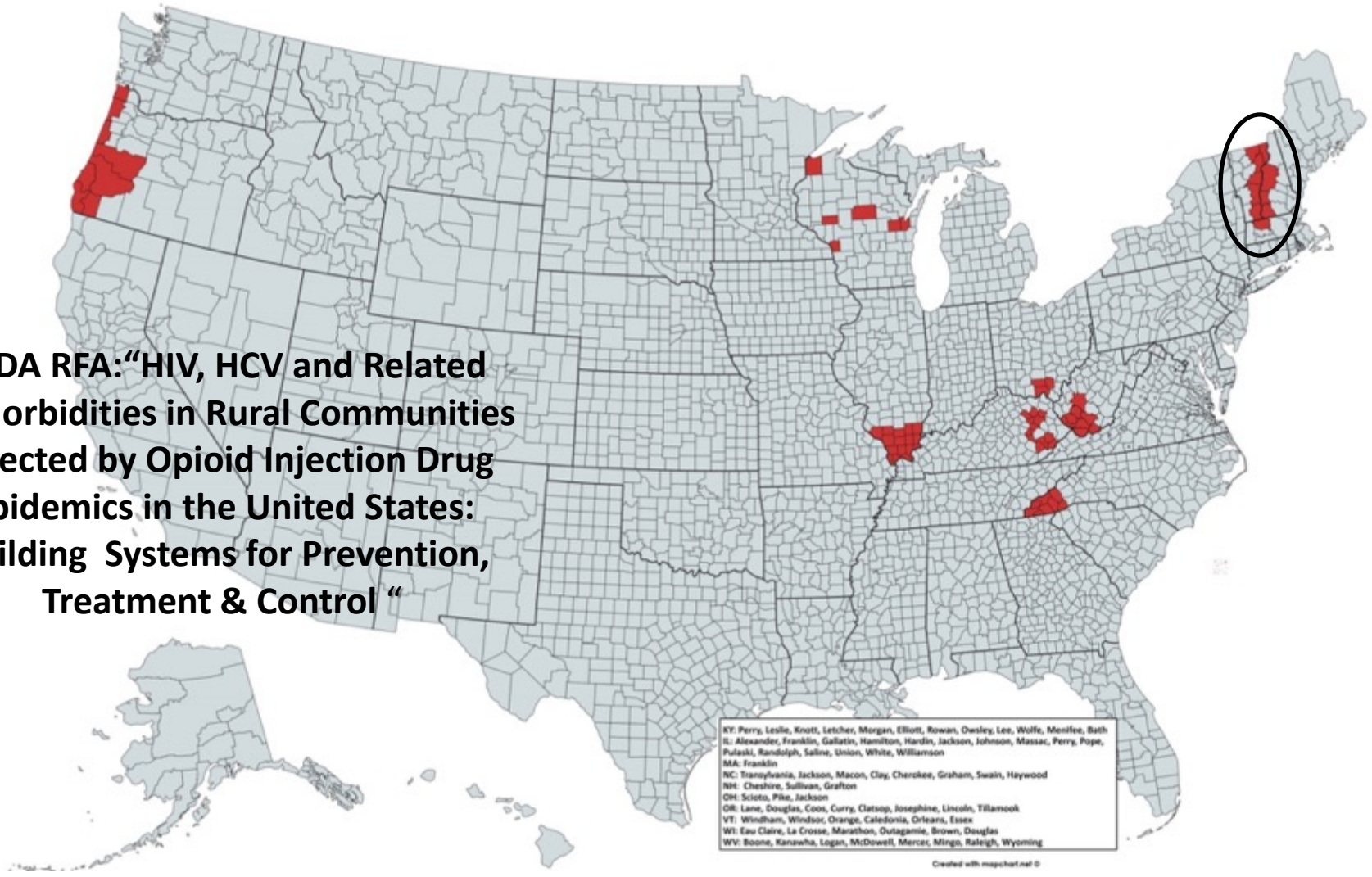


Top 220 Counties

Van Handel et al. JAIDS 2016; opioid.AMFAR.org

NIDA/CDC/SAMHSA/ARC Funded 8 Rural Opioid Initiative (UG3) Sites and GHOST Lab

NIDA RFA: “HIV, HCV and Related Comorbidities in Rural Communities Affected by Opioid Injection Drug Epidemics in the United States: Building Systems for Prevention, Treatment & Control “



Syndemic Concerns not theoretical in our region...

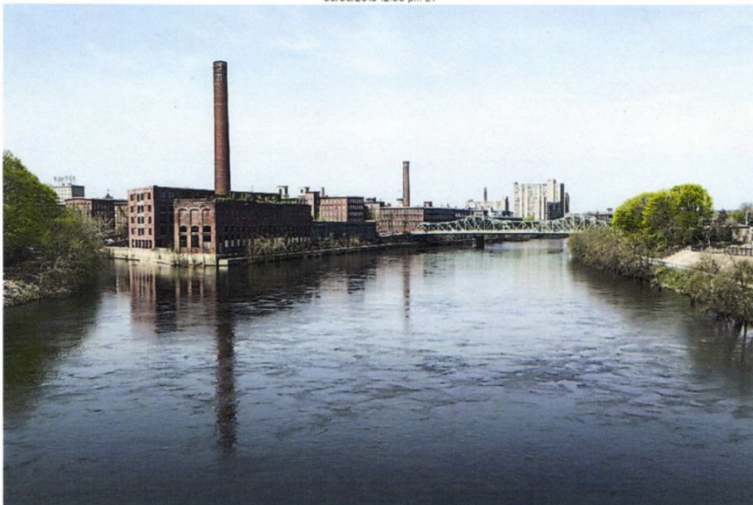
Metro
HIV is surging in Lawrence and Lowell. The CDC wants to know why GLOBE STAFF APRIL 05, 2018



Opioids Have Sparked An HIV Outbreak In Massachusetts

The synthetic drug fentanyl is sweeping the country. It appeared in these cities first — and people who use it tend to share needles.

By Erin Schumaker
08/06/2018 12:00 pm ET



In Lowell, Massachusetts, near the New Hampshire border, widespread fentanyl use has helped spark an HIV outbreak among people injecting drugs

- 2105-18: 129 new HIV+ in Lowell and Lawrence
- 2012-14: 41 new cases
 - age 20-39
 - Fentanyl-related IDU
 - 90% HCV+
 - High rates of homelessness



CHARLES D. BAKER
Governor

KARYN E. POLITO
Lieutenant Governor

November 27, 2017

The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
250 Washington Street, Boston, MA 02108-4619

MARYLOU SUDDERS
Secretary

MONICA BHAREL, MD, MPH
Commissioner

Massachusetts Department of Public Health raises level of concern about increased HIV transmission through injection drug use, in light of the current epidemic of opiate/opioid misuse and recent observations.

The Massachusetts Department of Public Health (MDPH) has noted an increase in newly diagnosed and acute HIV infections among persons who inject drugs (PWID). To date in calendar year 2017 (through November 21), there have been 64 HIV infections reported among individuals who inject drugs in Massachusetts, representing 14% of all HIV infections reported this year. Over the past 5-10 years, newly diagnosed HIV infection in PWID amounted to 32-62 cases annually, representing a stable proportion of 4-8% of all reported HIV infections. Investigation of cases is ongoing.

DISCERNNE: A 2-Phase Study

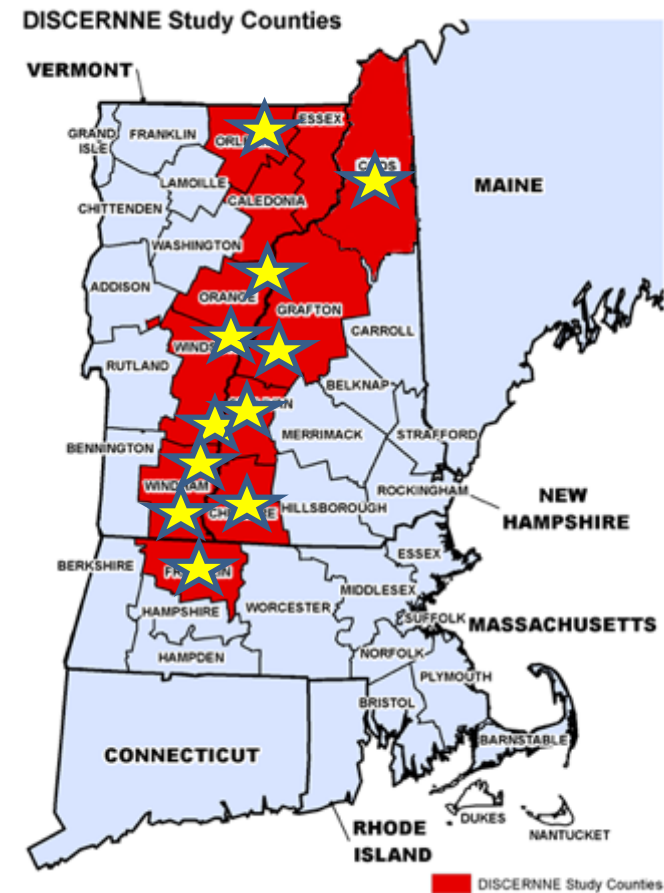
1. UG3 (2 yrs):

In 11 rural counties along the I-91/
CT River corridor in MA, NH, VT:

- Characterize the epidemiology of overdose and injection-associated infectious disease
- Assess local policy, resource and risk environment

2. UH3 (3 yrs):

field an intervention to address gaps



UG3: Mixed Method Study

- **Assess public health data, law, policies and services**
- Respondent-driven sample (RDS) survey, 5/18-10/19
 - N=589, age 18+, IDU or opioid use in prior 30 days
 - 90-minute quantitative and social network survey
 - Toxicology and laboratory testing (HIV, HCV, syphilis)
- Semi-structured interviews
 - Stakeholders (n = 31)
 - healthcare, harm reduction, addiction tx, public health, law enforcement
 - Persons who use drugs (PWUDs) (n=22)

Stopka et al., Prev Med 2019

Epidemiologic, Policy and Legal Environment

Preventive Medicine 128 (2019) 105740



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed



The opioid epidemic in rural northern New England: An approach to epidemiologic, policy, and legal surveillance



Thomas J. Stopka^{a,*}, Erin Jacque^b, Patsy Kelso^c, Haley Guhn-Knight^d, Kerry Nolte^e,
Randall Hoskinson Jr^d, Amanda Jones^c, Joseph Harding^f, Aurora Drew^g, Anne VanDonsel^c,
Peter D. Friedmann^d

^a Department of Public Health and Community Medicine, Clinical and Translational Science Institute, Tufts University School of Medicine, Boston, MA, United States of America

^b Department of Public Health and Community Medicine, Tufts University School of Medicine, Boston, MA, United States of America

^c Vermont Department of Health, Burlington, VT, United States of America

^d University of Massachusetts Medical School – Baystate, Springfield, MA, United States of America

^e University of New Hampshire, Durham, NH, United States of America

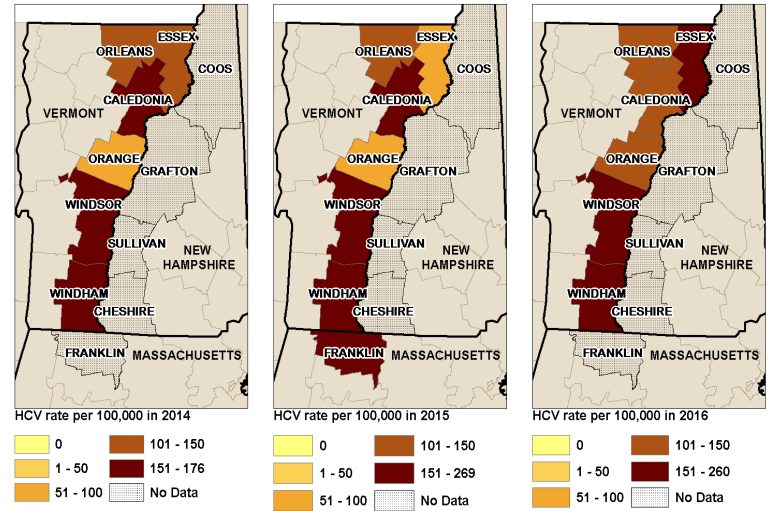
^f Substance-Misuse Systems Planning and Evaluation Quality Assurance & Improvement, New Hampshire Department of Health & Human Services, Concord, NH, United States of America

^g Geisel School of Medicine at Dartmouth, Hanover, NH, United States of America

Syndemic Outcomes, 2014-16

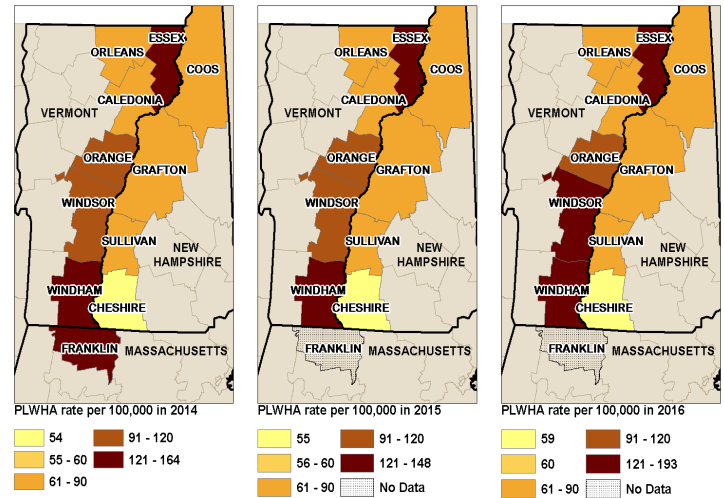
HCV Prevalence

Fatal Overdose Rate

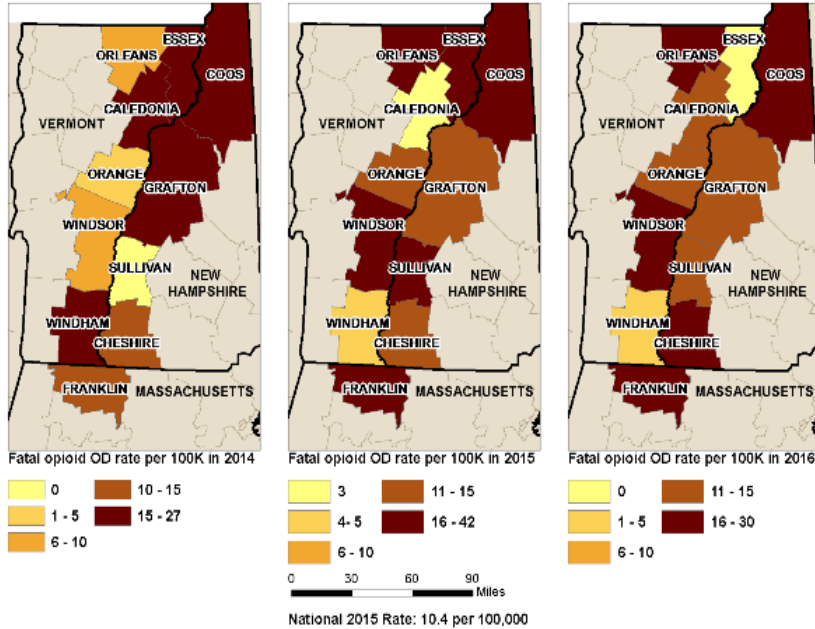


National 2015 Rate: 1,295.4 per 100,000

Prevalence of people living with HIV/AIDS



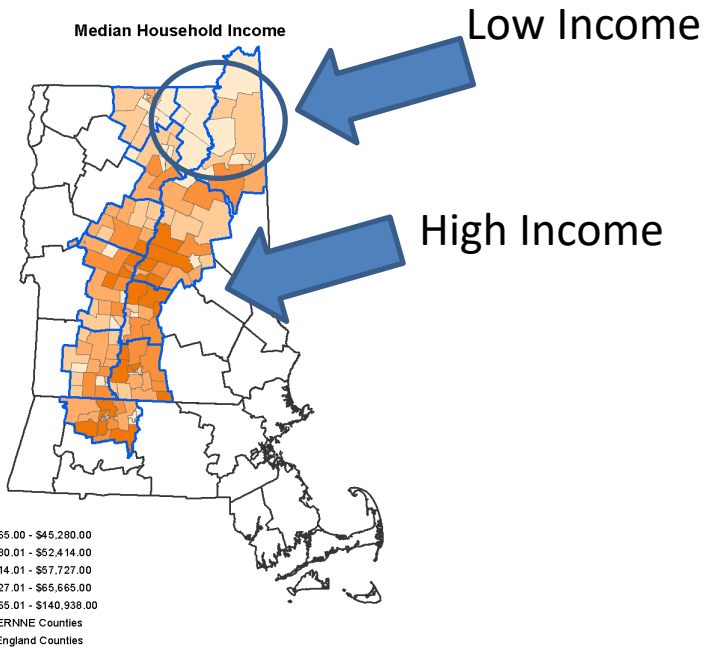
National 2015 Rate: 303.5 per 100,000



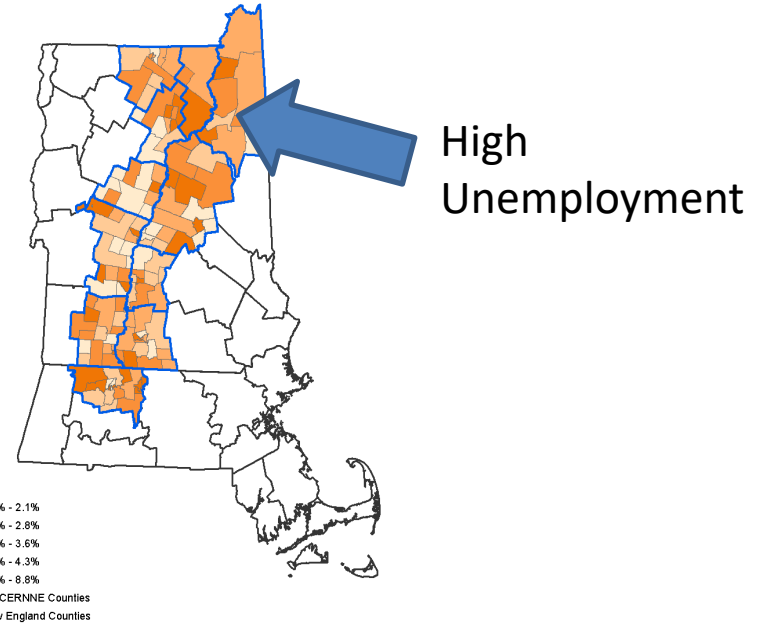
Stopka et al., Prev Med 2019

Socioeconomic Context, 2016

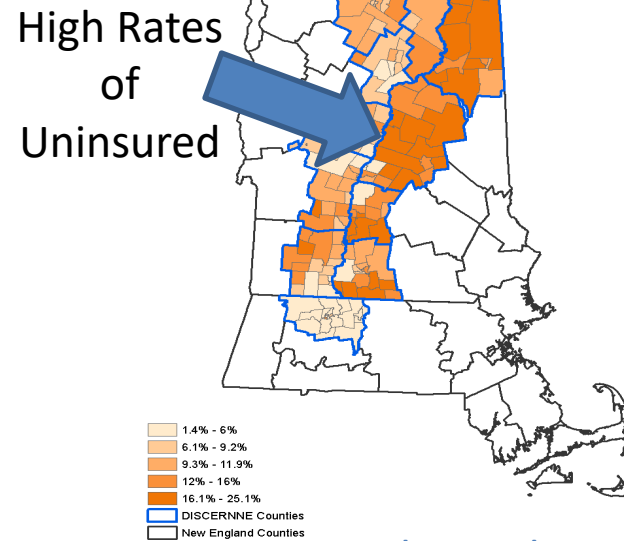
Economic disparities



Unemployment, Age 16 and Over



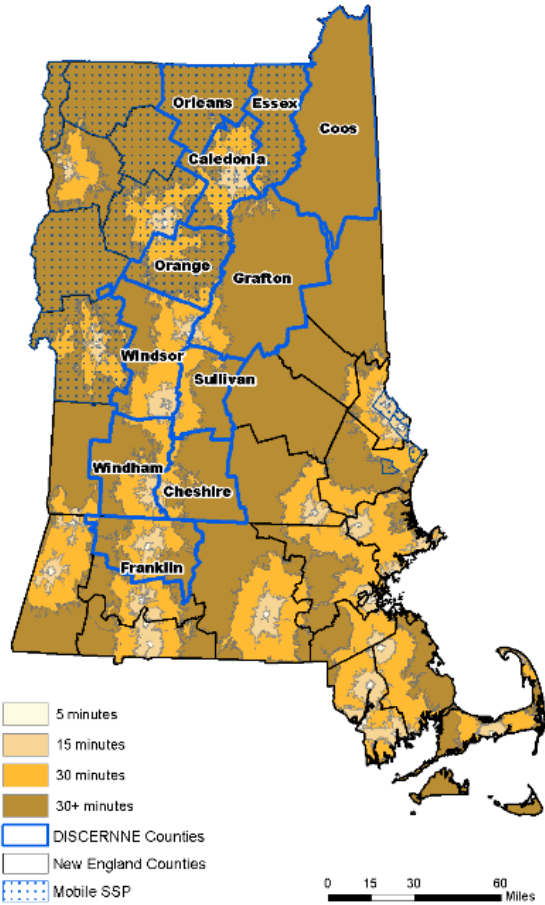
Percent Uninsured



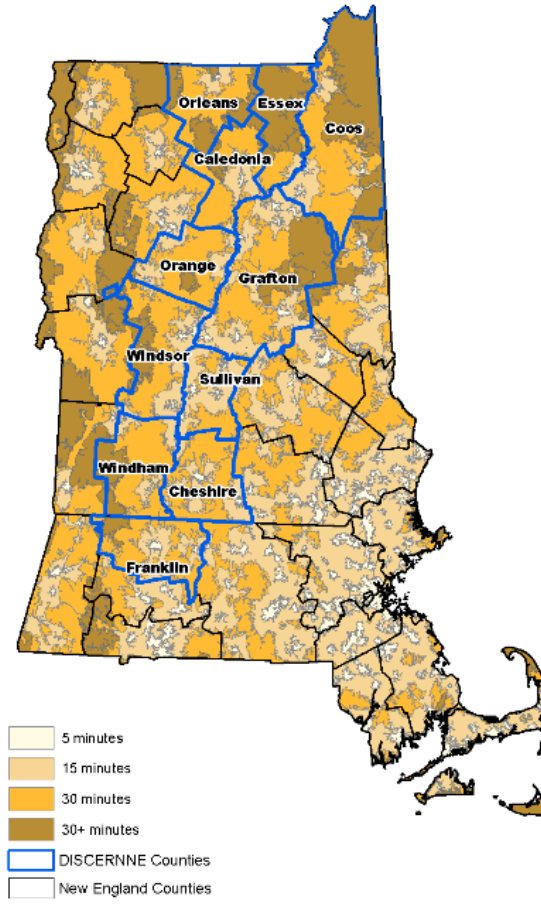
Stopka et al., Prev Med 2019

Service Environment

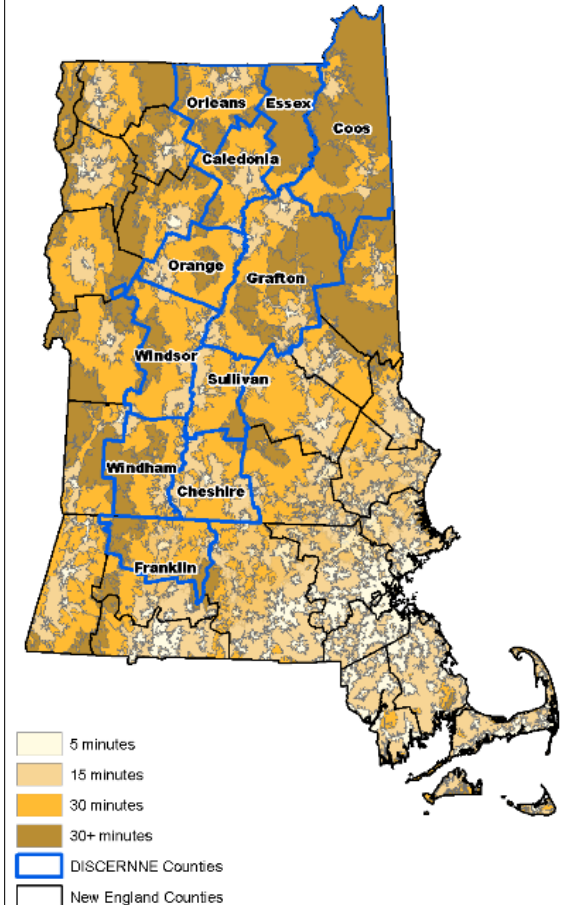
Drive-time Access: Syringe Service Programs



Drive-time Access: Drug Treatment Programs



Drive-time Access: Naloxone Programs



Stopka et al., Prev Med 2019

UG3: Mixed Method Study

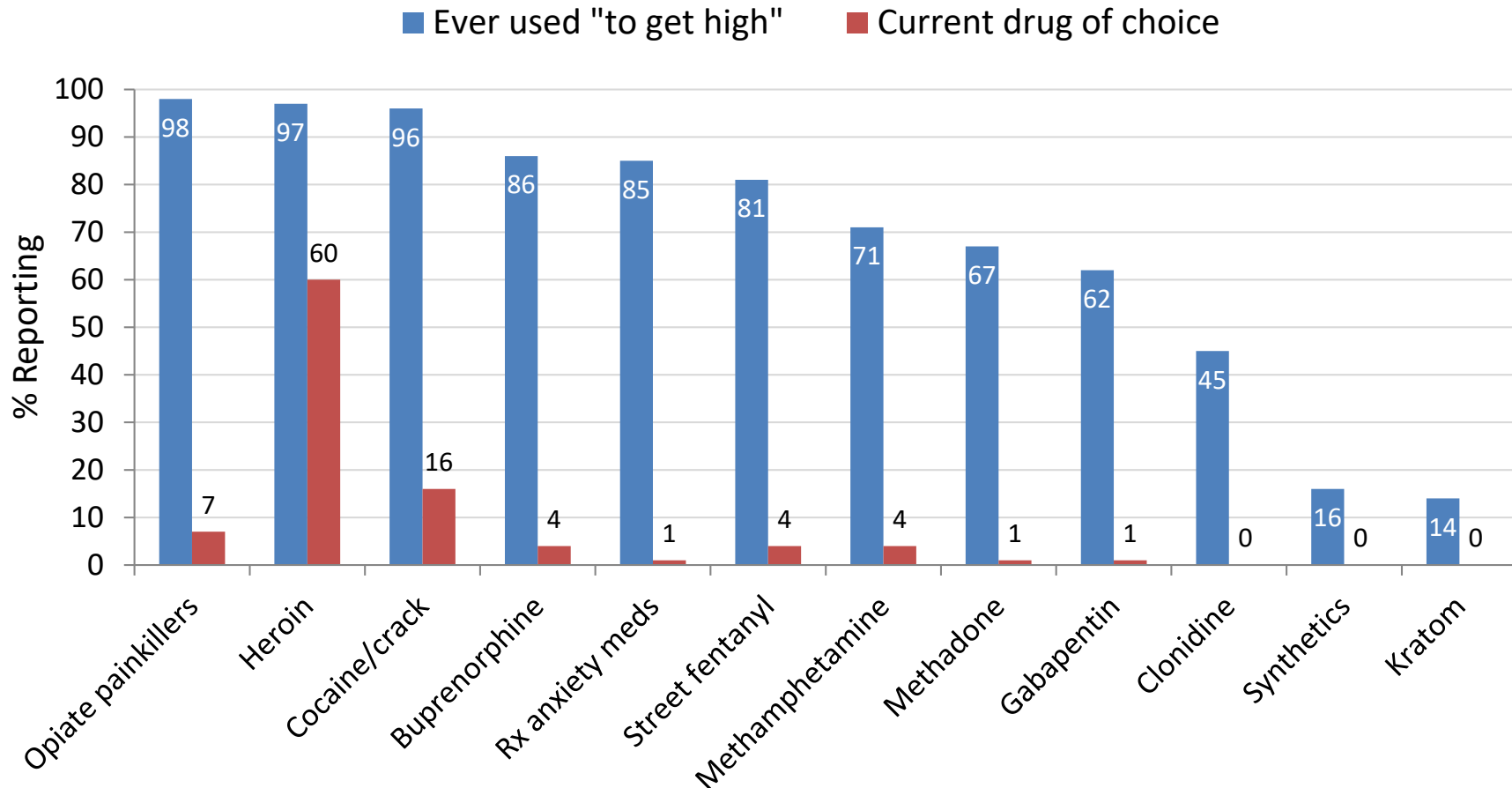
- Assess public health data, law, policies and services
- **Respondent-driven sample (RDS) survey, 5/18-10/19**
 - N=589, age 18+, IDU or opioid use in prior 30 days
 - 90-minute quantitative and social network survey
 - Toxicology and laboratory testing (HIV, HCV, syphilis)
- Semi-structured interviews
 - Stakeholders (n = 31)
 - healthcare, harm reduction, addiction tx, public health, law enforcement
 - Persons who use drugs (PWUDs) (n=22)

Stopka et al., Prev Med 2019

Respondent-Driven Sample

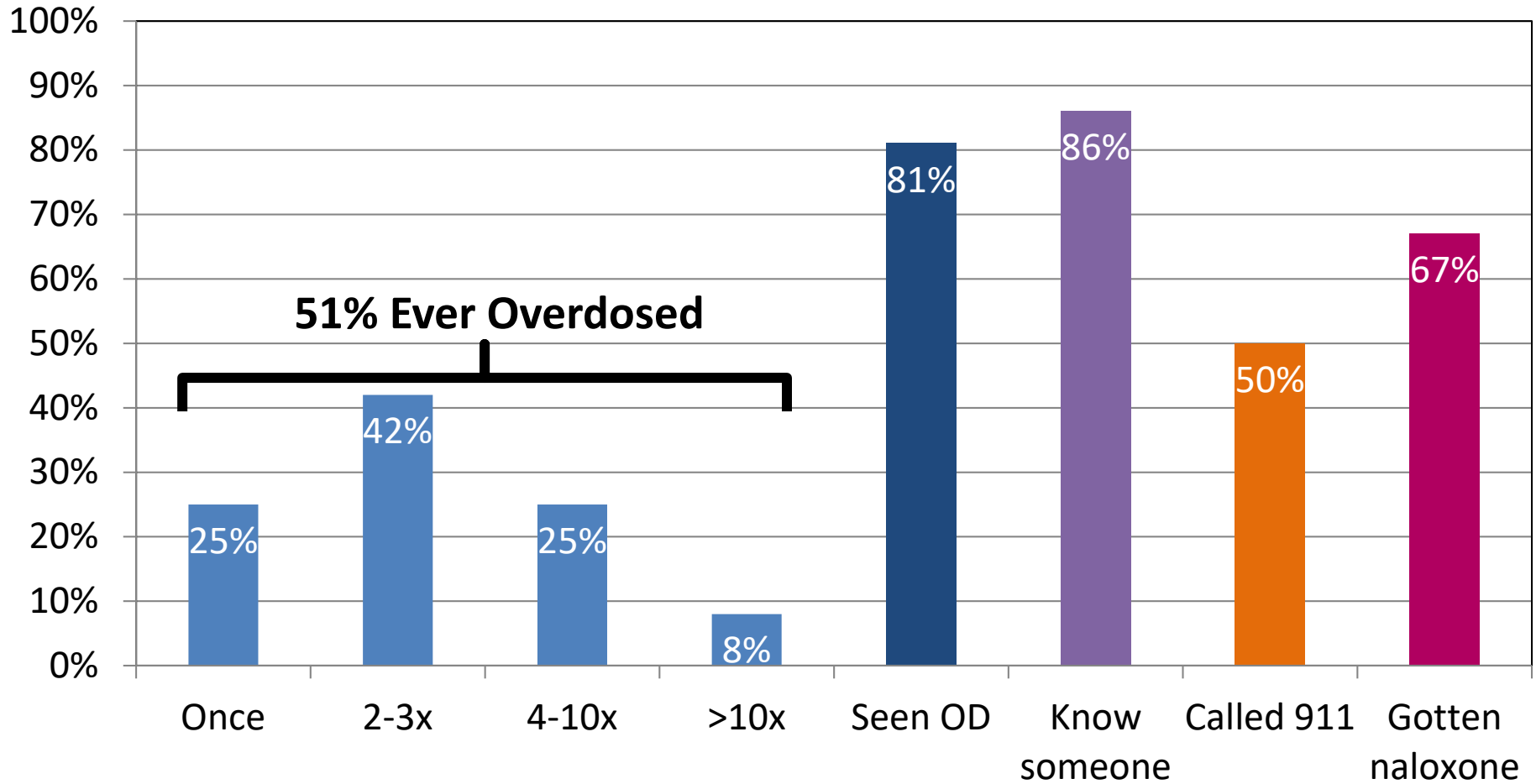
	DISCERNNE	Scott County*
	n=589	n=196
Male, %	58%	58%
Median age (IQR)	34 (28-42) years	33 (27–41) years
Non-Hispanic white, %	88%	99%
Homeless past 6 mos, %	56%	
Shared inj equip %	53% past 30 days	70% ever
Incarcerated, %	29% past 6 mos.	54% past year
Sex for money or drugs	10% past 30 days	9% ever

Drug Use

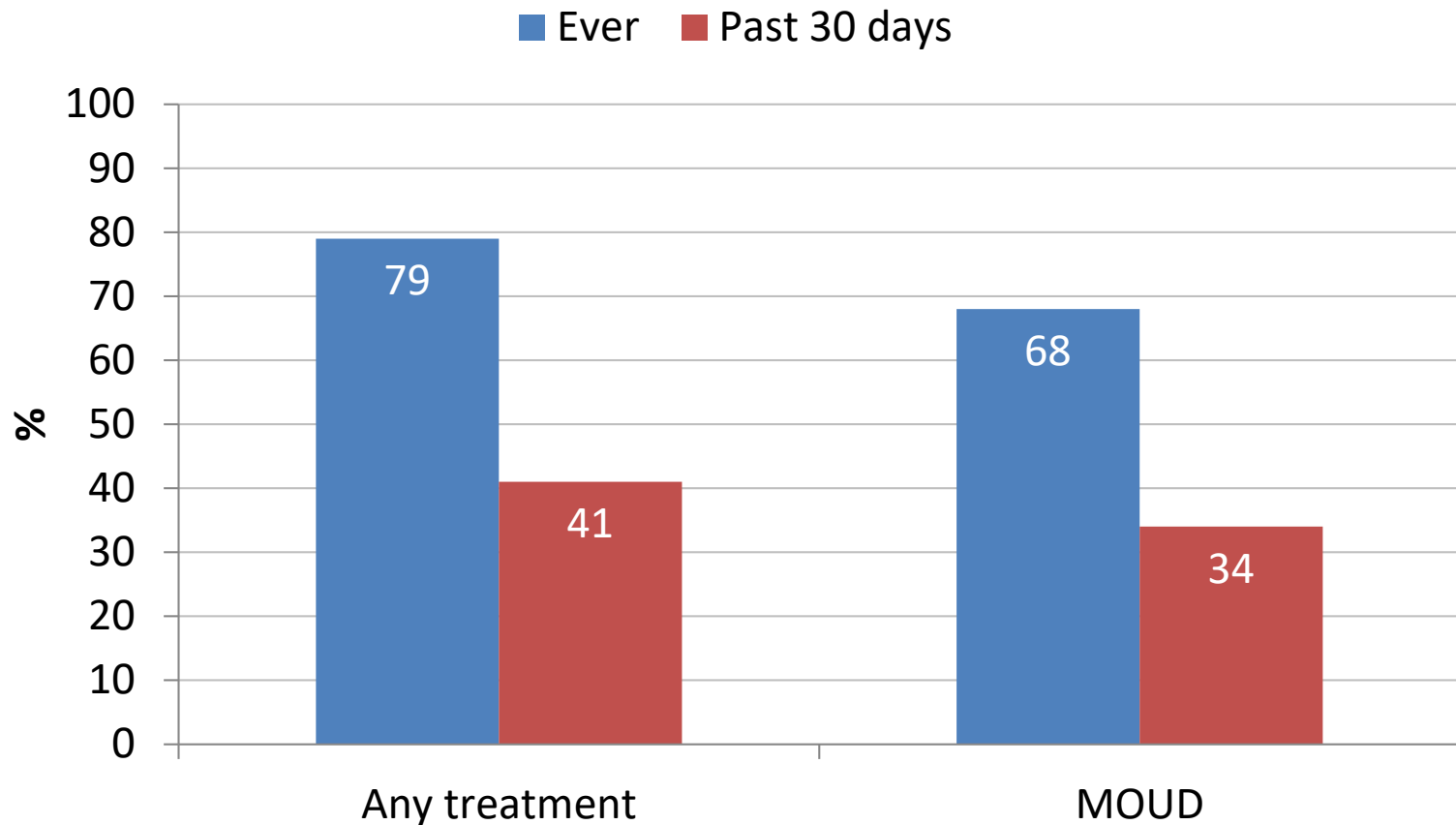


- > 95% had ever used opioid painkillers, heroin, & cocaine/crack
- 60% reported heroin as drug of choice

Overdose



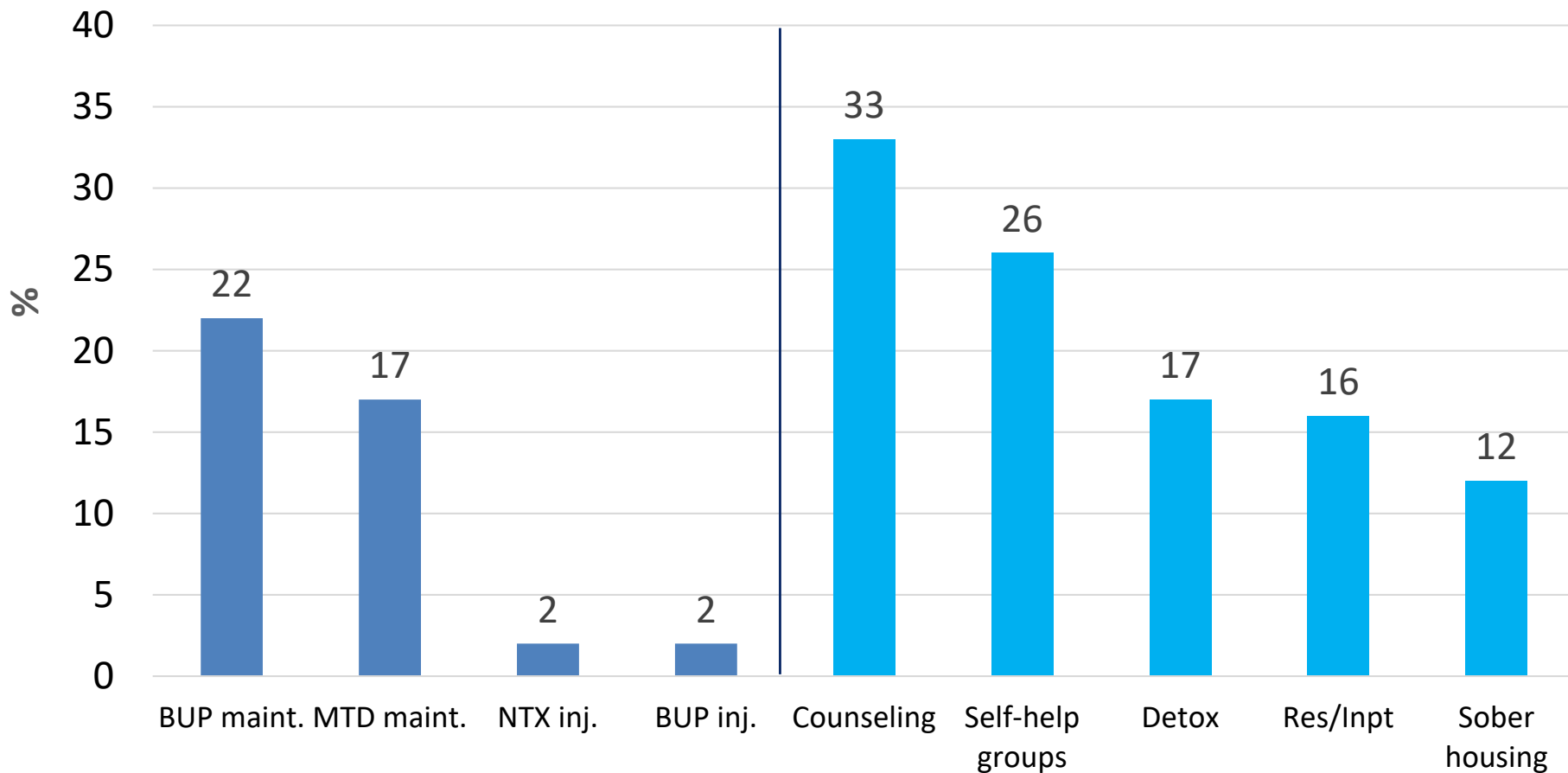
Most have h/o Addiction Treatment, but Current Utilization is Low



- 79% ever treated – counseling most common
- 32% have not had access to MOUD

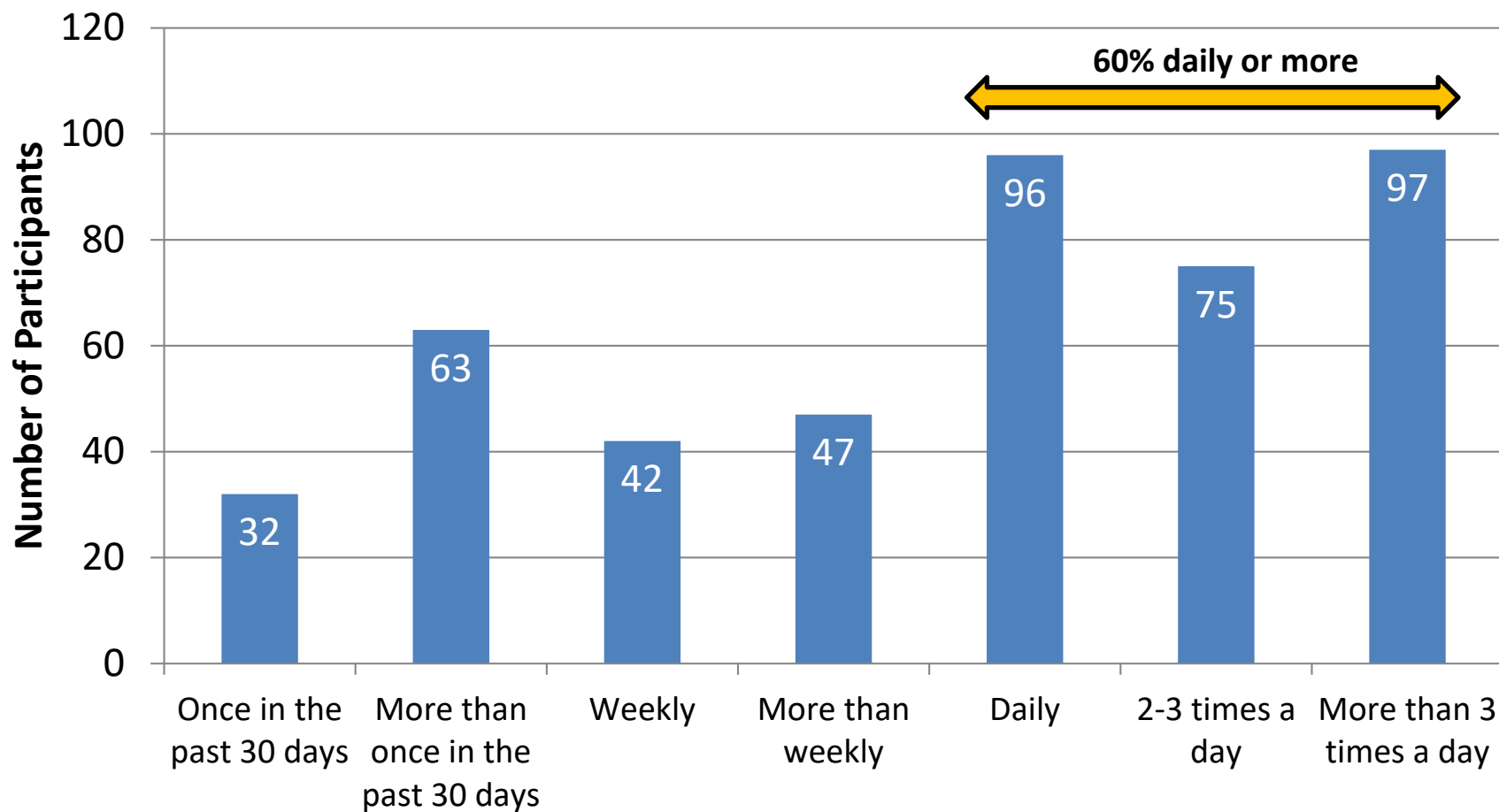
MOUD Treatment Less Common than Other Modalities

Addiction Treatment Received in the Past 30 Days



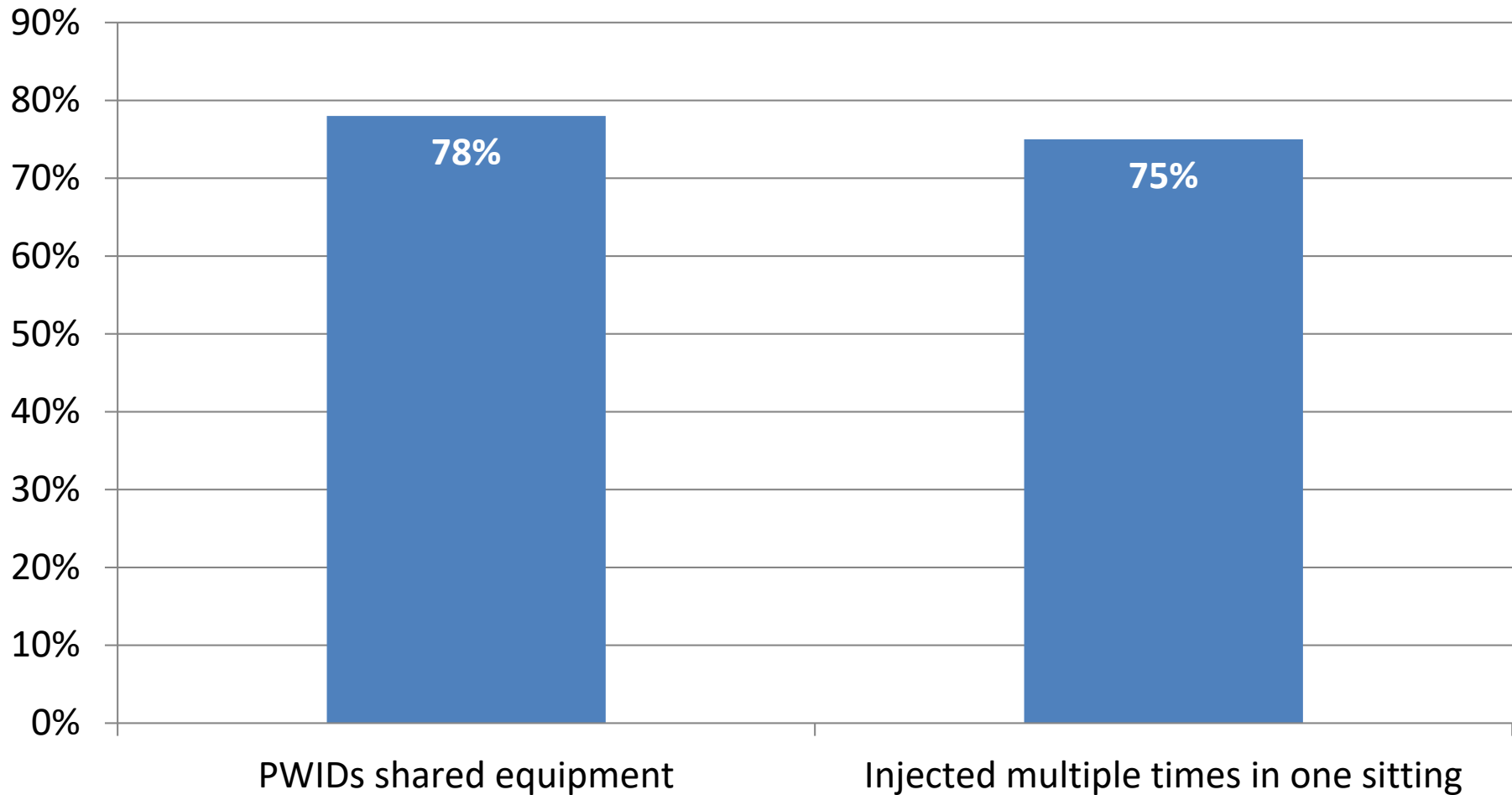
Frequency of Injection (n=453 who injected in past 30 days)

- Overall 85% h/o injection



Injection Behavior

(n=453 who injected in past 30 days)



UG3: Mixed Method Study

- Assess public health data, law, policies and services
- Respondent-driven sample (RDS) survey, 5/18-10/19
 - N=589, age 18+, IDU or opioid use in prior 30 days
 - 90-minute quantitative and social network survey
 - Toxicology and laboratory testing (HIV, HCV, syphilis)
- **Semi-structured interviews**
 - **Stakeholders (n = 31)**
 - healthcare, harm reduction, addiction tx, public health, law enforcement
 - **Persons who use drugs (PWUDs) (n=22)**

Stopka et al., Prev Med 2019

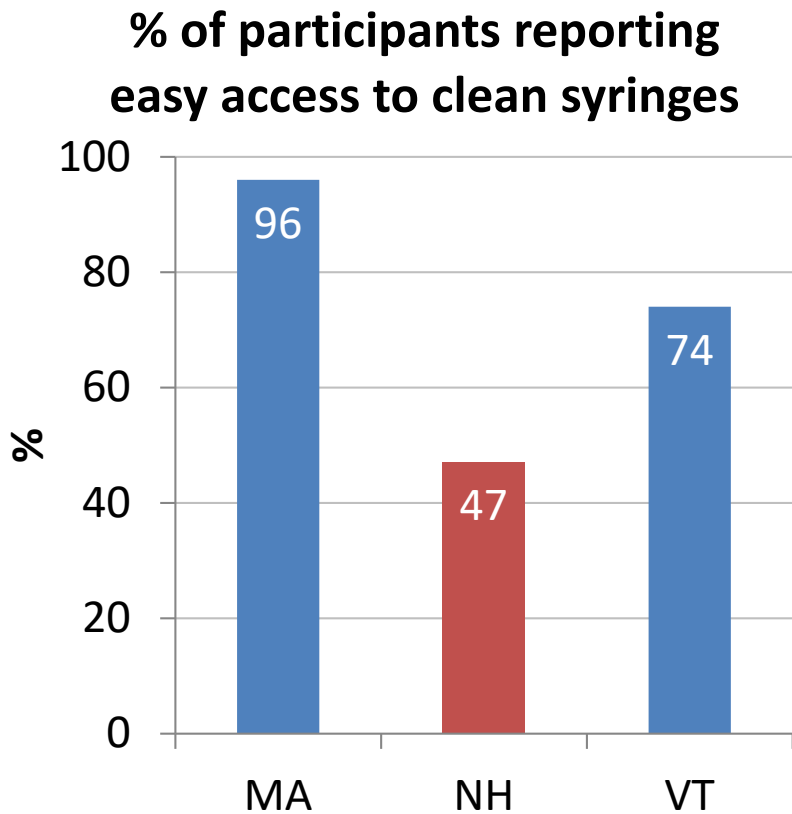
Syringe sharing common

“...if somebody wants to get high and they don’t have a needle to use, they’ll pick one up of the ground and use it. That’s how desperate they are...It could’ve been 500 people...and they’ll still pick it up and use it. Because, and, and they won’t, and they won’t say oh well, I’ll just sniff it this time. That’s not going to happen. They’ll hunt it down until they find it.”

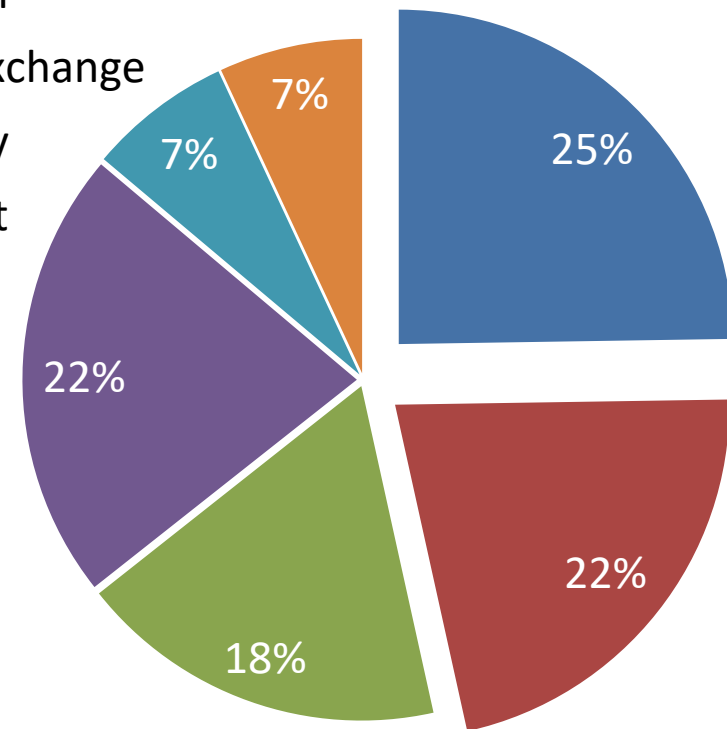
-Participant, Keene, NH

Syringe Access

(n=453 who injected in past 30 days)



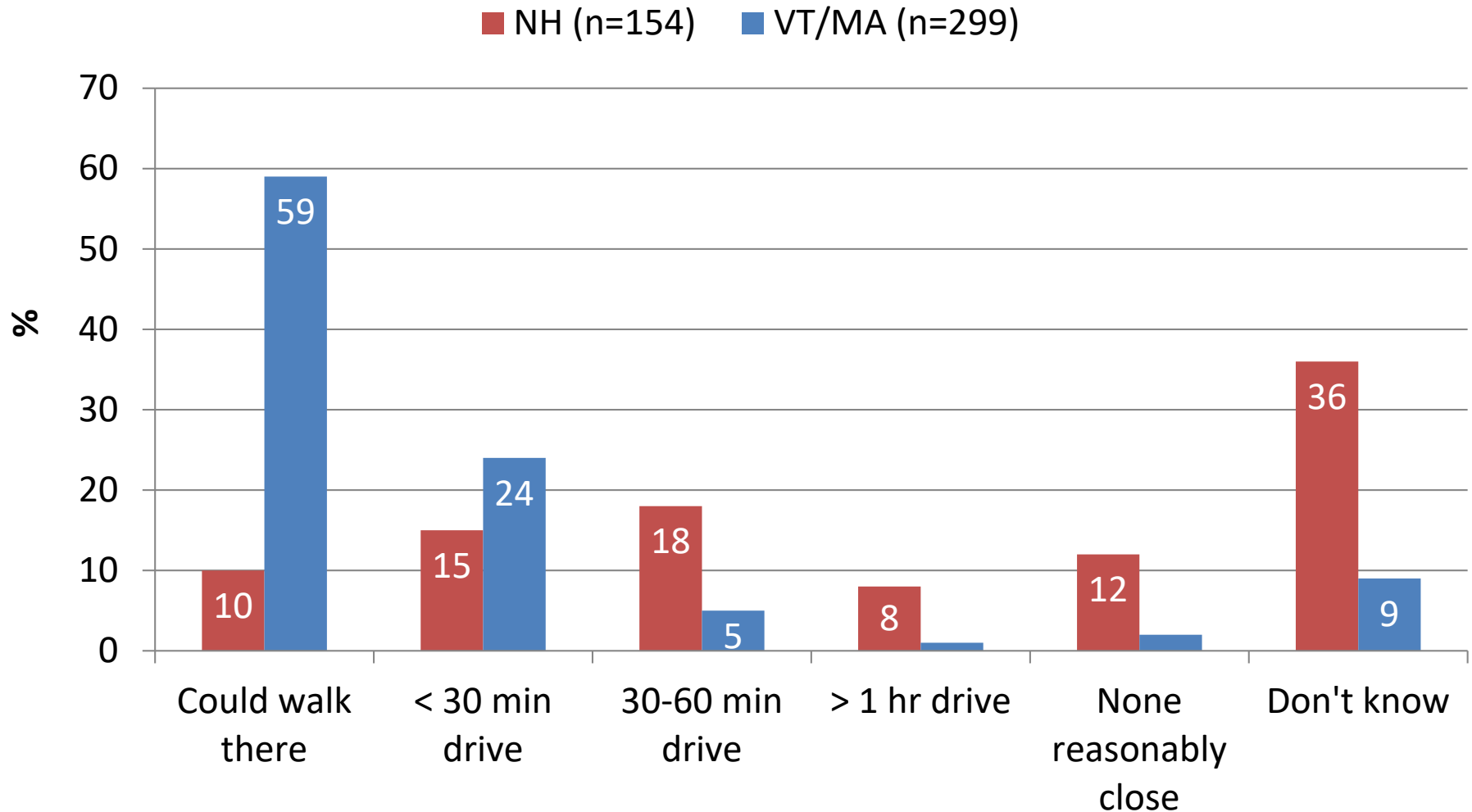
- Pharmacy
- SSP in person
- Secondary exchange
- Friend/family
- Dealer/street
- Other



Syringe Source

Proximity to Exchange

(n=453 who injected in past 30 days)

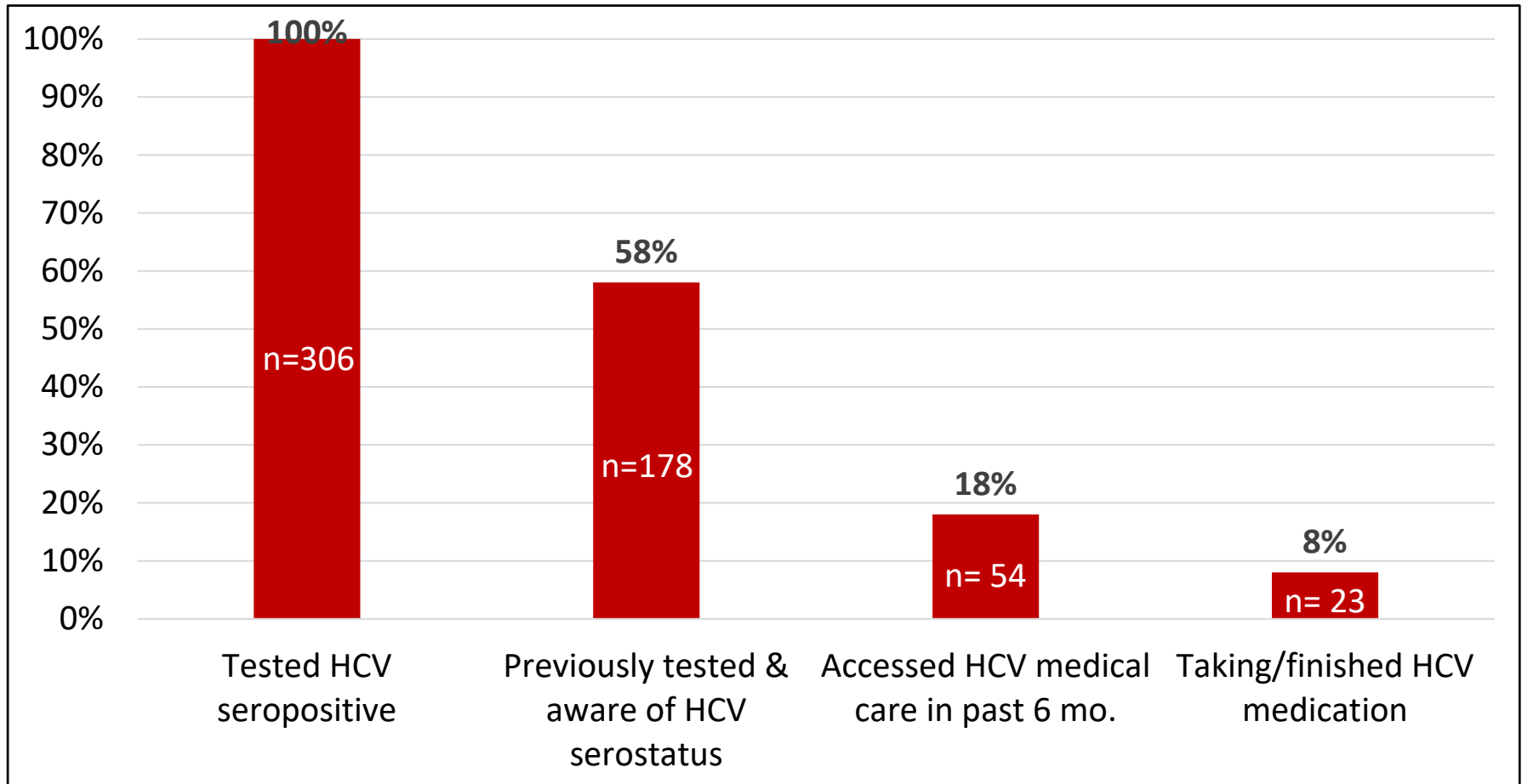


HIV & Major Bacterial Infections

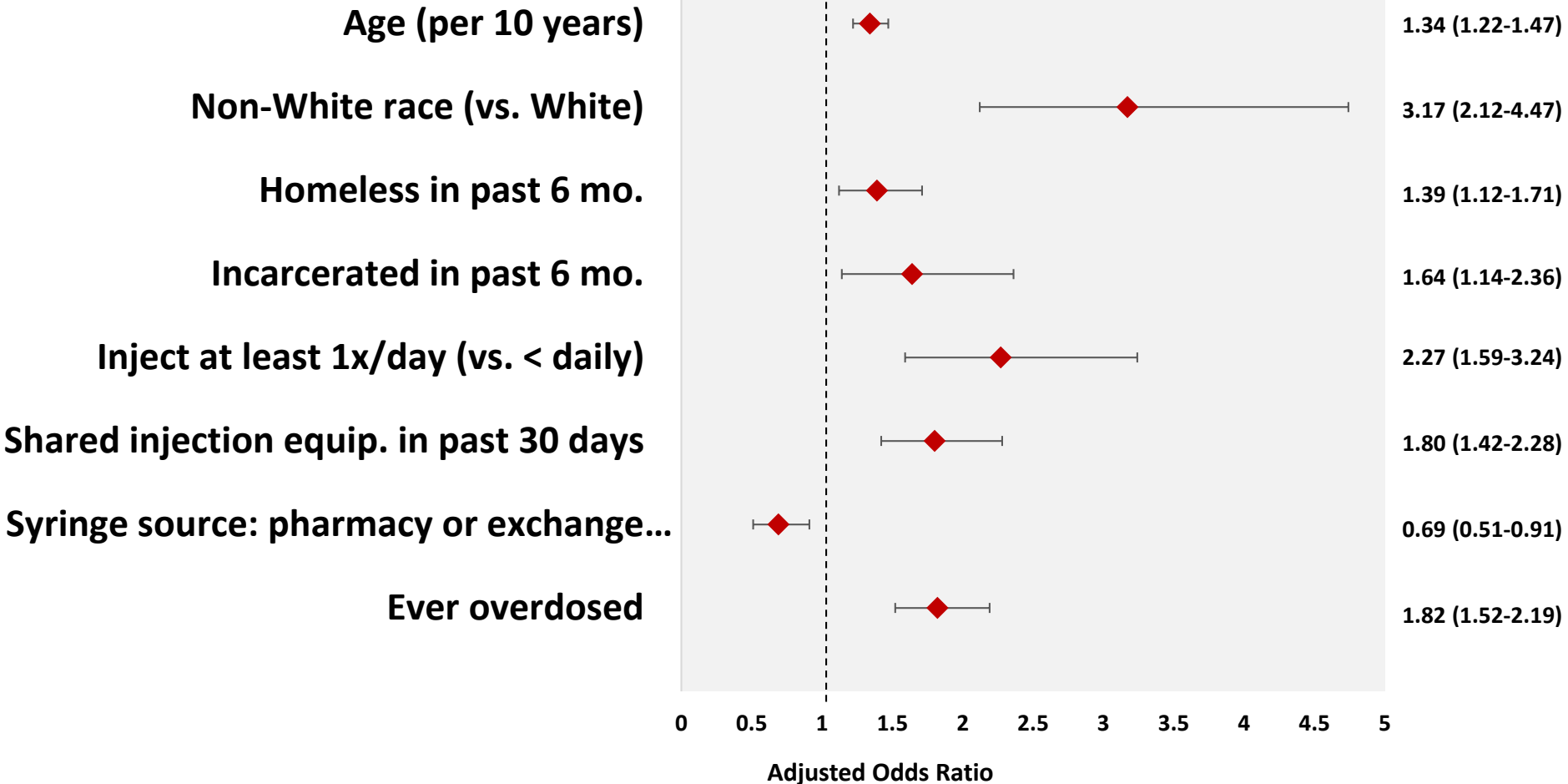
- 81% previously tested for HIV
 - 84% received results
 - 7 (1%) reported told they were HIV positive
 - 3 have a doctor and take medication
 - No new HIV detected
- 31% heard of med to prevent HIV (PrEP)
- 10% had been hospitalized for major bacterial infection

HCV Prevalence and Treatment (n=422 PWID with usable results)

- 306 (73%) tested positive for HCV antibodies:



GEE Model: Correlates of HCV Serostatus



HCV not a strong deterrent to sharing

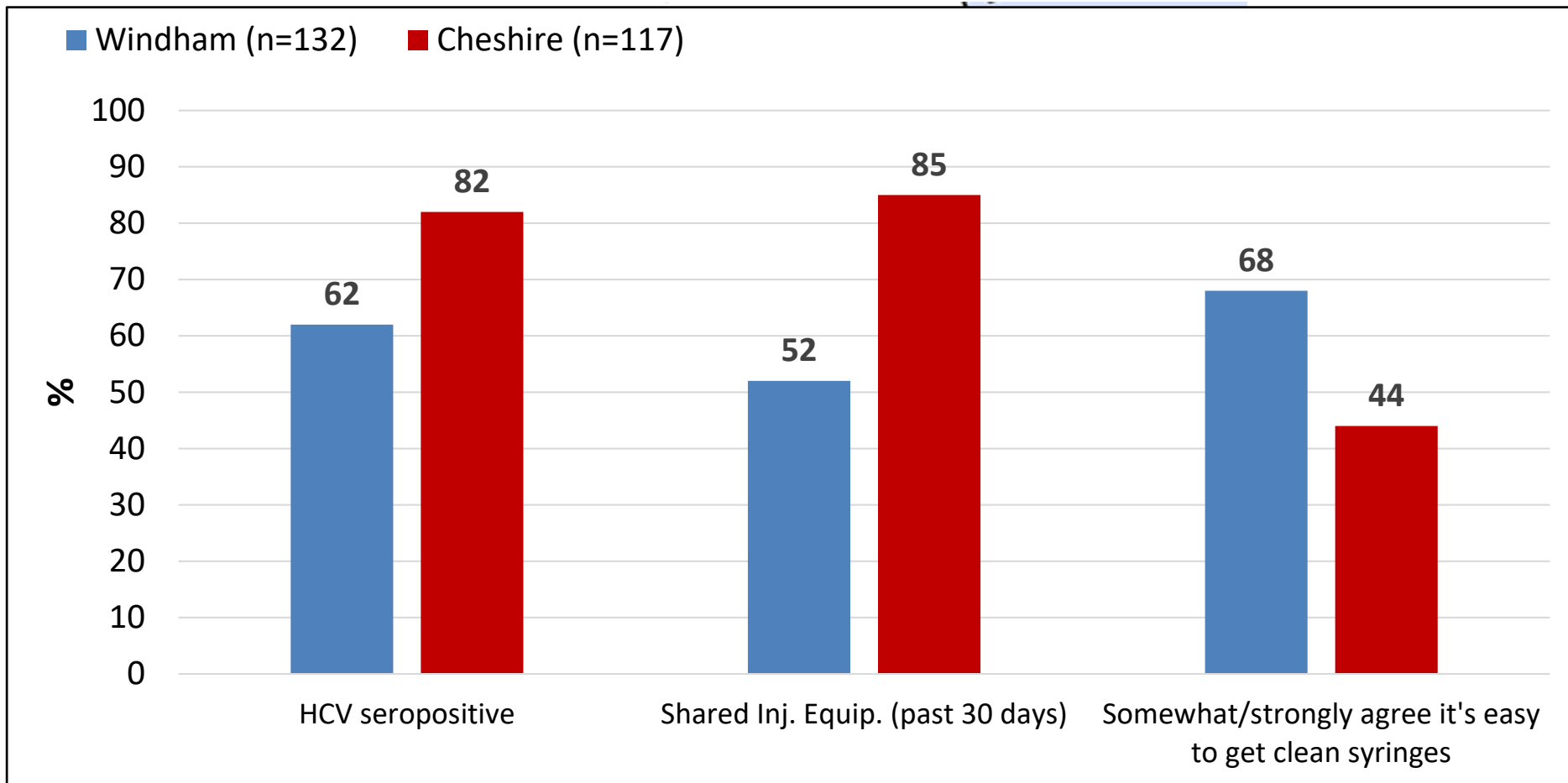
“Nowadays they just say ‘well what, do you got hep C? I got hep C. Well that’s it? Alright. Well I got it too.’ And they’ll joke around like ‘well hep C’s got so many different strands that well you’ll just get another strand. Or I’ll get another strand. Or all three of us. We got three new strands!’ It’s like a joke.”



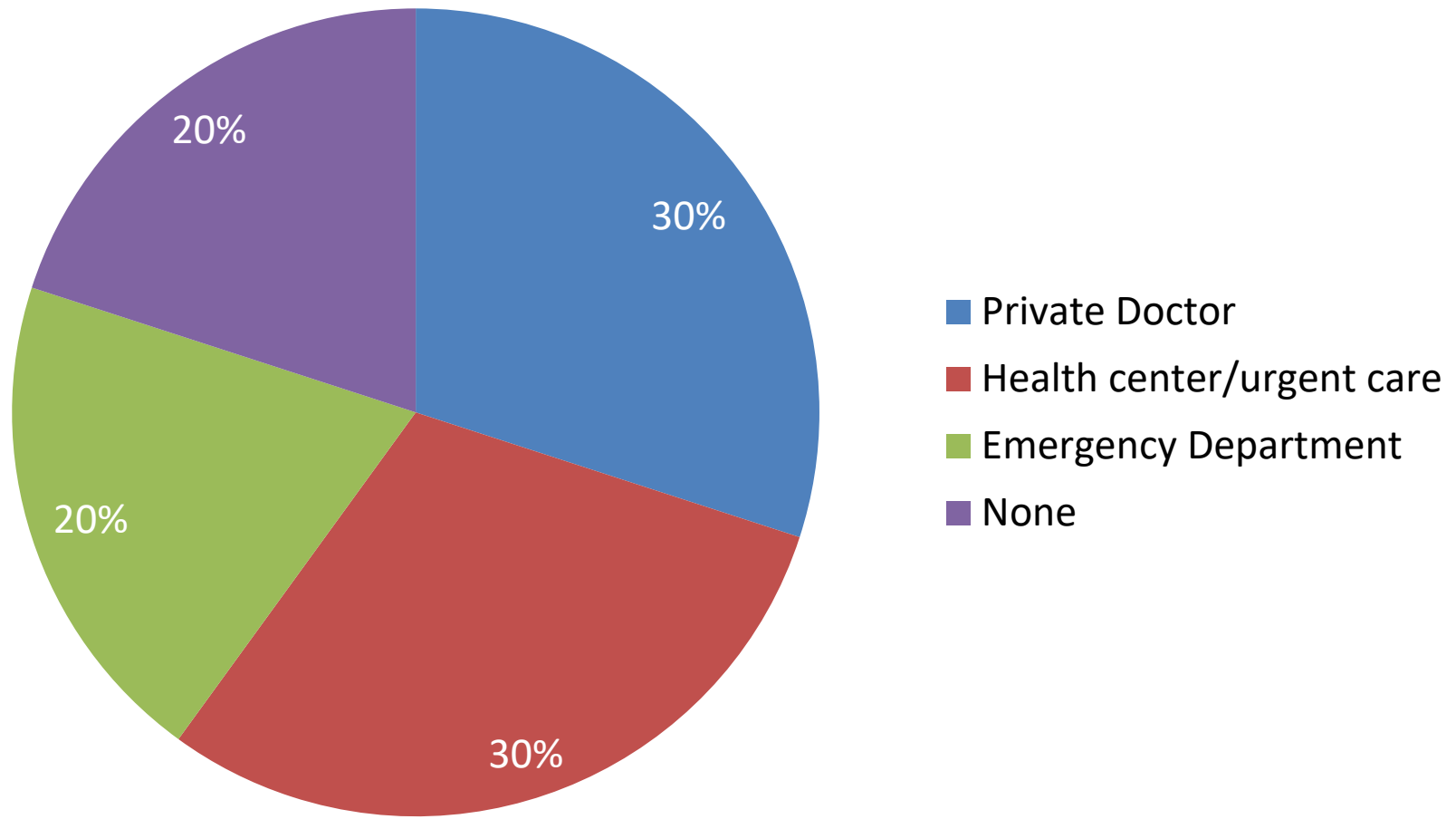
Baystate
Health



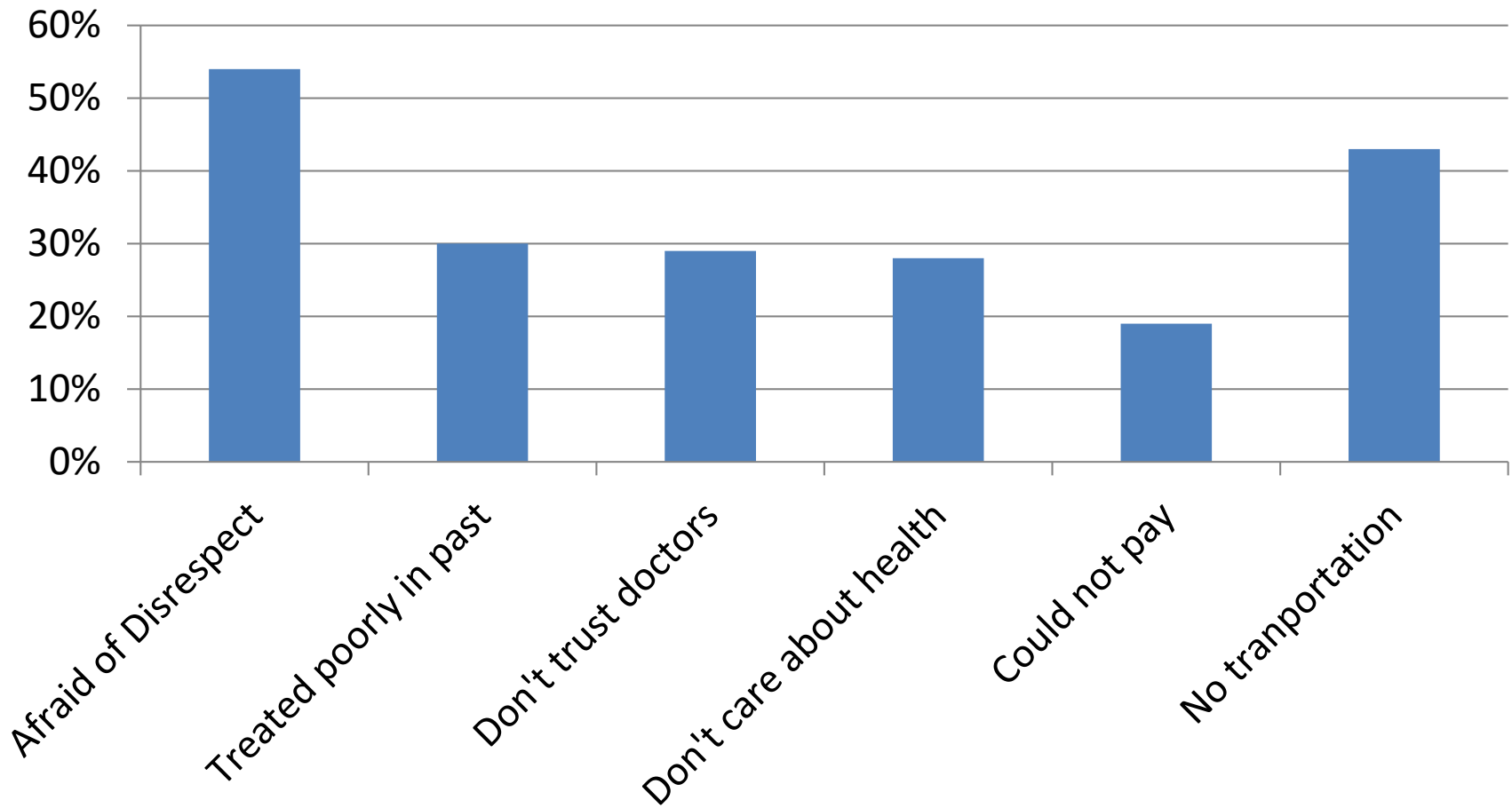
Windham County, VT vs. Cheshire County, NH



Primary Source of Health Care Past 6 months



Reasons for Not Getting Needed Care



Stigma remains a barrier to effective intervention

From a SSP staff person –

“And there’s still like...there’s a real hard core...opposition to treating people who use drugs for Hepatitis C.... just like what drug users should and shouldn’t have access to or rights to. And that influences policy advocacy and acquisition and money, you know?”

From an emergency room doctor –

“And I’ve learned that you can treat Hep C, but if you keep using needles you’ll catch it again. So that \$100,000 treatment might have to be repeated. And I know the state of the Medicaid budget in this state, and I think these people are going to be on their own. I don’t think the state can afford it.”

From a police chief in a town that has an SSP –

“Well, I think, um, uh, we do not have a needle exchange program and I don’t support it and wouldn’t advocate for it.”

Transportation

“...if you take limited hours and then you take limited transportation, you put the two things together, you have a serious access problem... And sometimes you might have to hang out for hours just finding something to do before you can make it back to your home. Maybe you are going to miss work...”

Themes Related to Opioid Use & Transition to Injection

I was 12 years old...My father gave me a line of oxycodone...he just broke it out and said here, sniff this. And I said, uh how? And he showed me how he did it, and I did it. (Jacob, 24M)

Normalization of Drug Use within the Family and Community

My god it's horrible. I literally can remember...thinking that [this town] was a great area to grow up in and raise a family. And maybe I was just really extra oblivious then but, uh, it's, drugs were like scarce. [Using drugs] was the exception. Now people that don't do drugs are the exception. There's more drugs or people using... everywhere. (Amanda, 29F)

Lower Cost
Increased Effect/
Rush
Greater Availability
Faster Relief

So they took me in and did surgery and they put me on, um oxycontin 60 milligrams four times a day...And that's why I got addicted. I was on it for two or three years, and then finally they shut me off... They supposedly got a call saying that we were abusing meds or selling them or whatever... I know like four or five people that... all got shut off the same day... I tried to find the pill if I had the money. But yeah, you couldn't. .. Yes, so I went to the heroin. (Michelle, mid-50s F)

Pain & Abrupt D/C of Prescription Opioids

Transition to heroin

And then the doctor took them away from me and I was in pain. I was sick, throwing up... physically was sick from it, from not having it. And where did I go? I went to the streets to find them. And then that became too expensive. And then I went to heroin. (Jessica, 32F)

Trauma

Escalation of use

Last year I lost my baby...it was a stillborn...before that I lost my best friend's dad who was like a father to me growing up... just three weeks ago my mothers' boyfriend shot himself in the head in front of my mom. But it's just a lot of trauma happening lately...it's just a lot of things piling up. Life's pretty unforgiving sometimes. (Matt, 24M)

Summary: Rural NNE Risk Environment

- Area-level deprivation/social capital
 - Unemployment, trauma, stigma, distrust, provider unwillingness to treat active users for HCV
- Policy and cultural status of drug use
 - Policy climate limits action, normalization of drug use and syringe sharing
- Access to needed services
 - Transportation gaps, geospatial access to MOUD, naloxone, syringes, HCV treatment
- *CJ activity*
- *“Big events”*

Significant Population at Risk in Rural NNE

- CDC analysis underestimated risk in NNE
 - High rates syringe sharing and HCV
 - SSP access limited
- After conferring with local partners
 - States have MOUD initiatives in motion
 - UH3 focus on HCV treatment and harm reduction

UH3 2020-2022

Mobile Tele-HCV Treatment Integrated w/ Syringe Services

1. Examine effectiveness of mobile telemedicine treatment for HCV integrated with syringe services



2. Validate the accuracy of dried blood spot (DBS) testing for HCV viral load as a surveillance strategy to address limited rural phlebotomy services.



UH3: Study Hypotheses

Mobile tele-HCV care will be associated with:

- HCV treatment initiation
- HCV SVR 12-weeks post treatment
- Reduced syringe sharing

Secondary outcomes

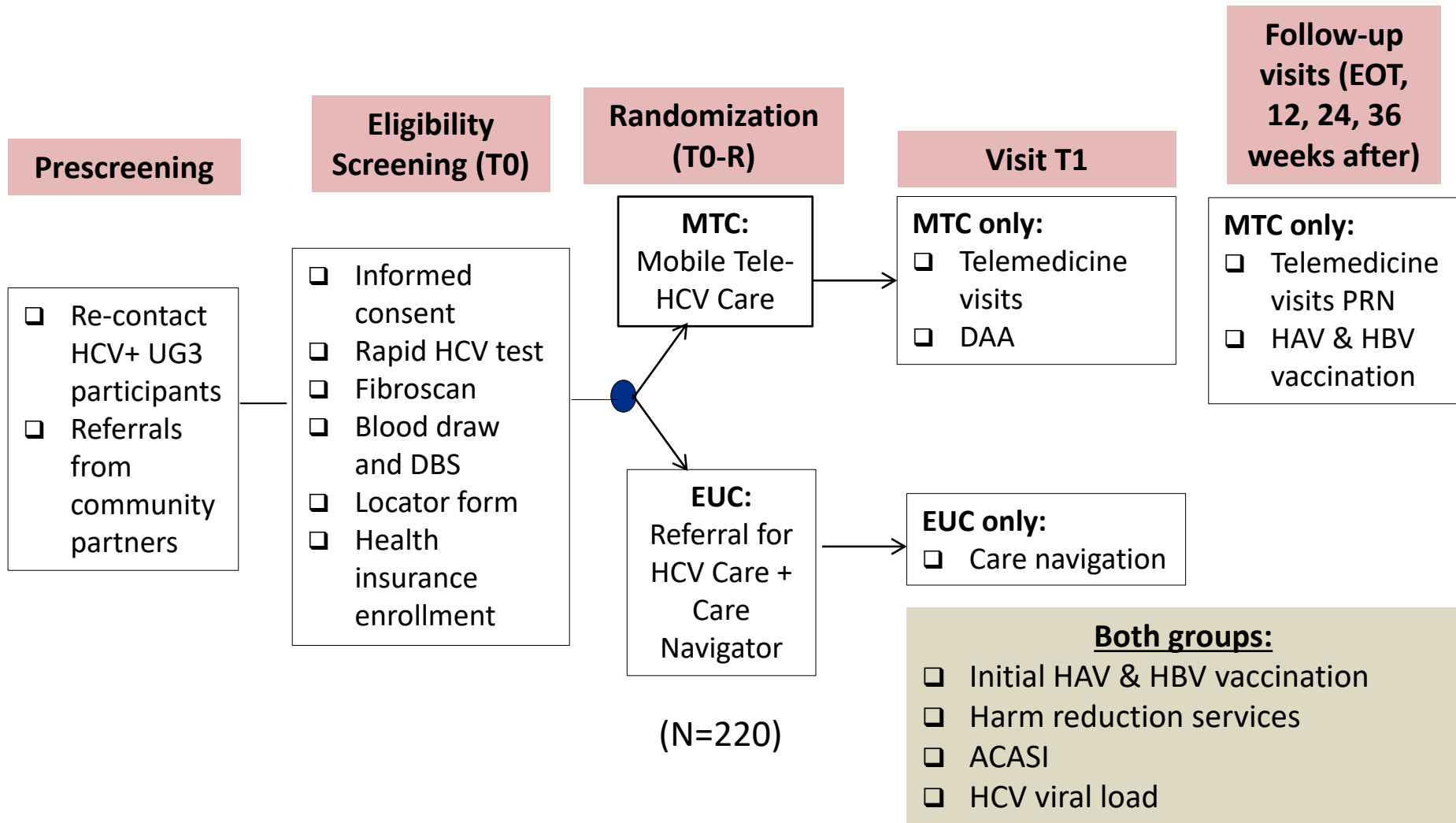
- HAV and HBV vaccination completion rates
- MOUD initiation
- Health-related quality of life (HRQOL)
- Substance use

Can HCV Tx ↓ Sharing of Injection Equipment?

- 5 studies of impact of HCV tx on injecting behavior
 - ↓ past month injection drug use 3 of 4 studies
 - ↓ weekly injection frequency 1 of 2 studies
 - ↓ sharing 2 of 3 studies
 - All but one from interferon era
- Two Phase 4 DAA studies (n=190)
 - At baseline, 62% reported injecting past month
 - 47% opioids, 39% stimulants
 - 61% receiving MOUD
 - 16% reported sharing injection equipment.
 - Over 2 year f/u,
 - ↓ opioid injection (OR = 0.95; 95% CI, 0.92-0.99)
 - ↓ sharing of injection equipment (OR = 0.87; 95% CI, 0.80-0.94)
 - Limited impact on stimulant injection

Caven et al. Int J Drug Pol 2019; Artenie et al. 2019

UH3 Overview



UH3 Intervention Plan: Outcomes

- End-of-treatment (8 or 12 wks)
- Post-treatment follow up (12, 24 & 36 wk later)
 - ACASI: HCV Tx initiation, adherence; syringe sharing; quality of life; substance use
 - Blood: DBS, virologic response (e.g. SVR12), viral genetics
 - Ethnography, on-the-spot interviews to assess implementation

Summary

- Several rural northern NE counties are at high risk for Scott County-like outbreaks — syringe sharing and HCV are highly prevalent:
- Mobile van in UH3 to address service gaps
 - Access to harm reduction, phlebotomy services
 - HCV testing and treatment limited, esp. in NH & VT
- Comprehensive, long-term community-level and policy interventions needed to address risk and resource environment.

Study Team

University of Massachusetts Medical School-Baystate:

Peter D. Friedmann, MD, MPH, DFASAM, FACP (Multi Principal Investigator, Contact)

Randall A. Hoskinson, Jr.

Lizbeth Del Toro-Mejias

Donna Wilson

Elyse Bianchet

Eric Romo

Haley Guhn-Knight

Patrick Dowd

Imani M. Williams

Johnathan Swift

Tufts University School of Medicine:

Thomas J. Stopka, PhD, MHS (Multi Principal Investigator)

Erin Jacque

The Dartmouth Institute:

Aurora L. Drew, PhD (Co-Investigator)

Sonia Gill

Linda M. Kinney

Sandra Tomeny

Parastoo Bassiri

Dartmouth-Hitchcock Medical Center:

Bryan J. Marsh, MD (Co-Investigator)

David de Gijzel, MD, MSc (Co-Investigator)

University of New Hampshire:

Kerry Nolte, PhD, FNP-C (Co-Investigator)

Vermont Department of Health:

Patsy Kelso, PhD

Amanda Jones

Anne Van Donsel

New Hampshire Department of Health and Human Services:

Benjamin Chan, MD, MPH

Elizabeth Talbot, MD

Joseph Harding

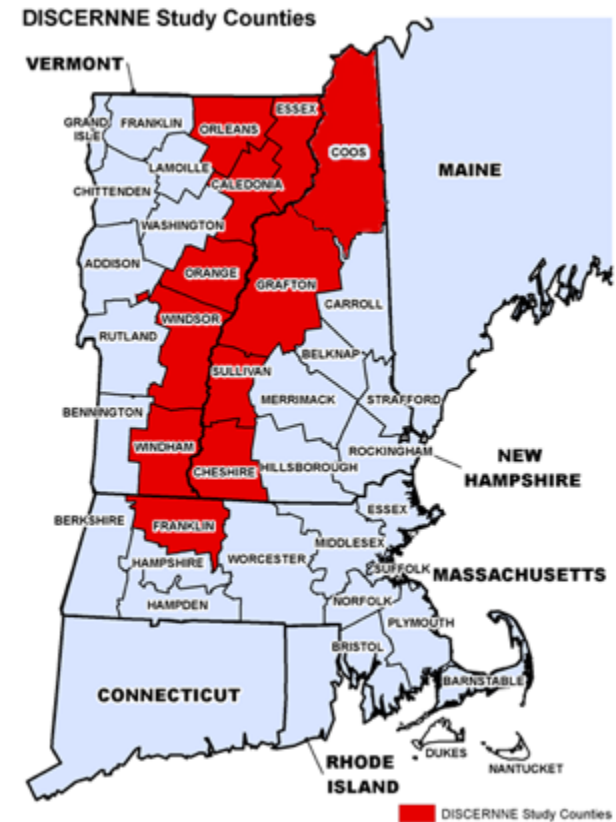
University of Vermont Medical Center:

Jean Dejace, MD (Co-Investigator)

W. Kemper Alston, MD, MPH

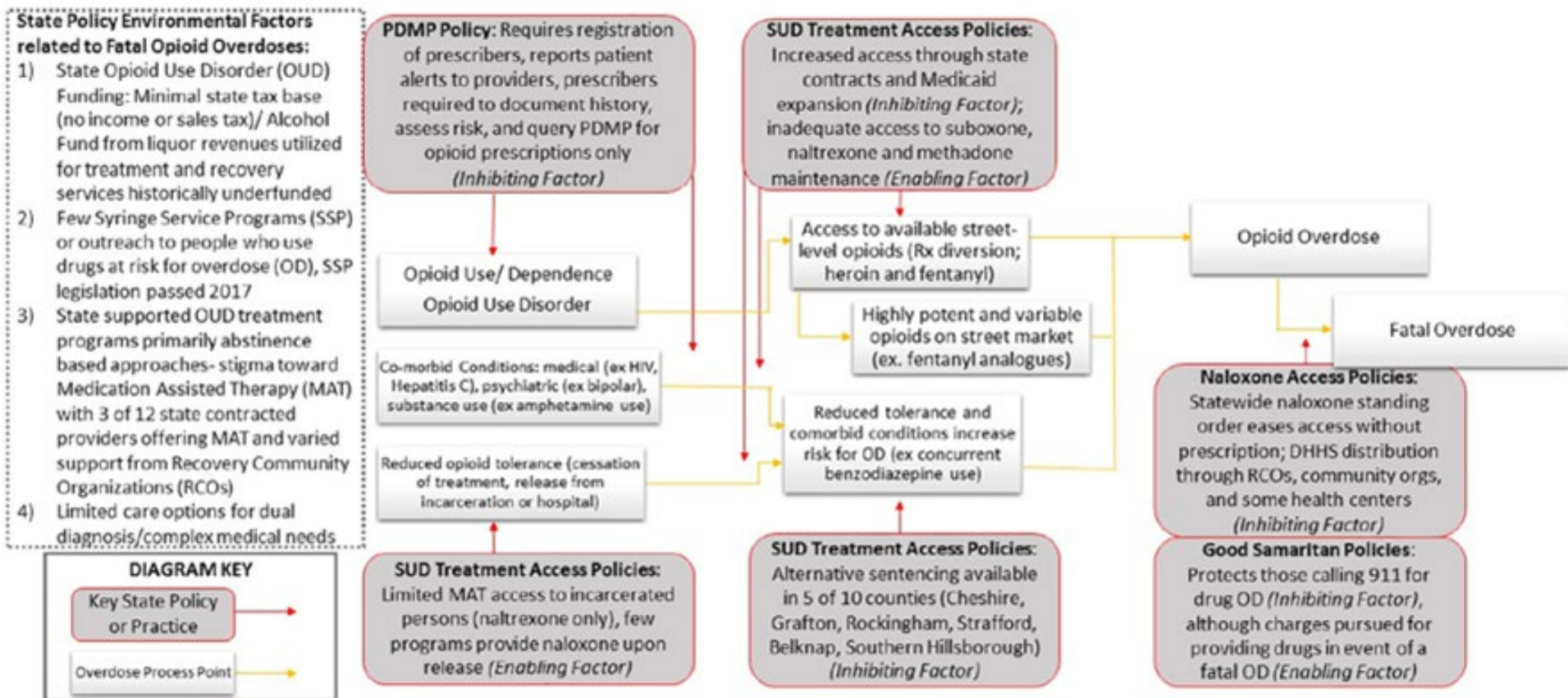
Thank you to...

- The participants for sharing their stories and helping us to understand their experiences
- Local harm reduction, opioid use disorder treatment and medical care partners
- Dartmouth Institute
- Massachusetts Dept of Public Health
- NH Dept of Health and Human Services
- VT Dept of Health
- Tufts School of Medicine
- UMMS-Baystate
- University of New Hampshire
- UVM School of Medicine



Epidemiologic, Policy, and Legal Environment

Logic Model of Fatal Opioid Overdoses in New Hampshire



Stopka et al., Prev Med 2019

UG3 Cross-sectional Analysis: HCV treatment & Risk Behaviors

- Among the 187 PWID who reported previously having tested positive for HCV:

Risk Behavior (past 30 days)	Receiving/Finished HCV treatment (n=26), No. (%)	No Hx of HCV treatment (n=161), No. (%)
Syringe sharing	12 (46)	88 (55)
Sharing other injection equipment	13 (50)	91 (57)
Backloading	12 (46)	81 (50)

*risk behaviors and history of HCV treatment were both self-reported