Overdose Detection Technologies for People Who Use Alone: Findings from the Rhode Island Pilot Study

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HARM REDUCTION INNOVATION LAB

COBRE CENTER OPIOIDS OVERDOSE HOPE

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Brave Technology Co-op
Oona Krieg

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Who am I?

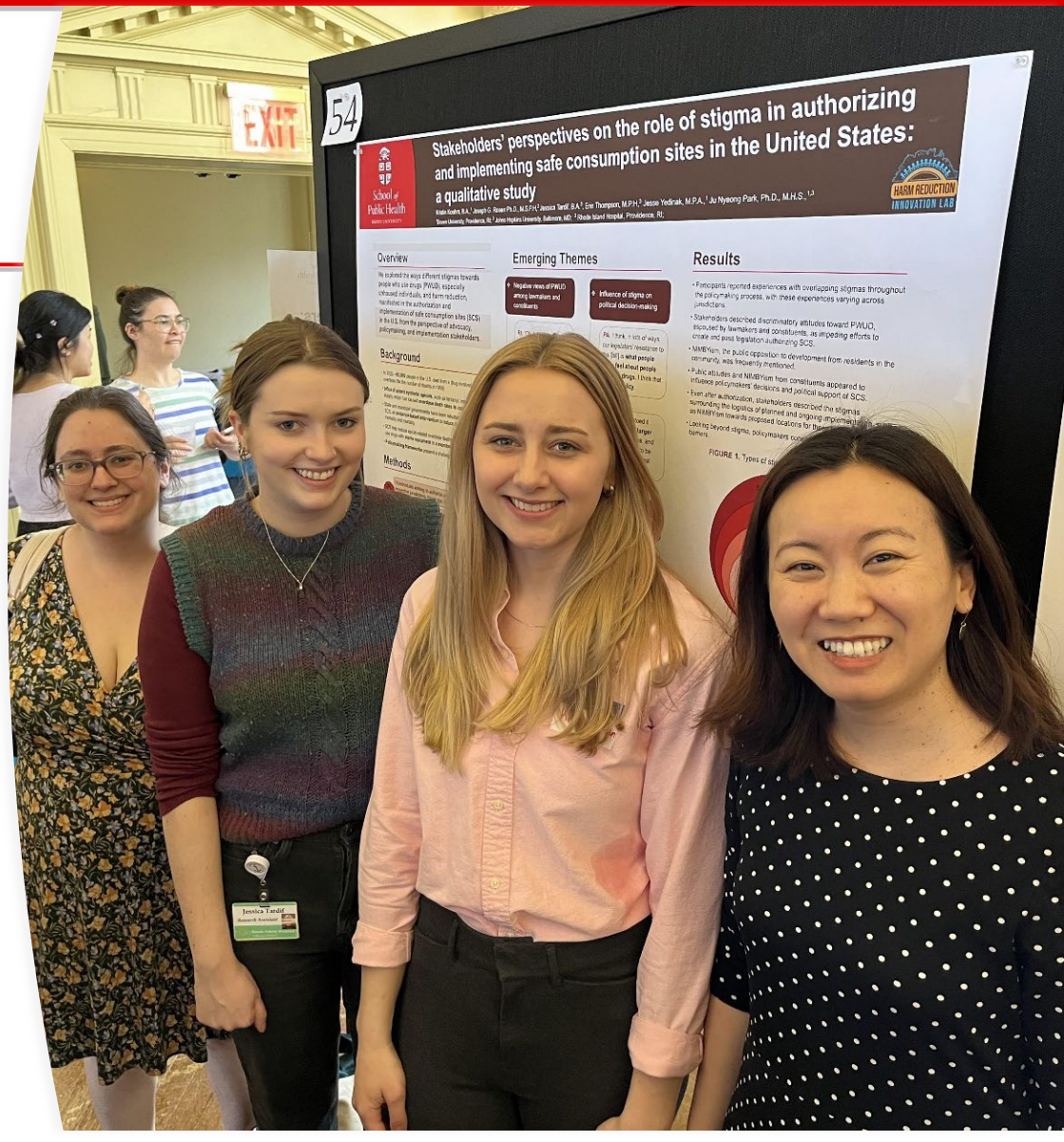
Assistant Professor of Medicine and Epidemiology at Brown University

Substance Use Epidemiologist

Over a decade of experience in studying drug use, fentanyl test strips, drug checking programs, naloxone, overdose, trauma, and HIV

Collaborated on projects in North America, West Africa, Australia

Founded the Harm Reduction Innovation Lab in 2021



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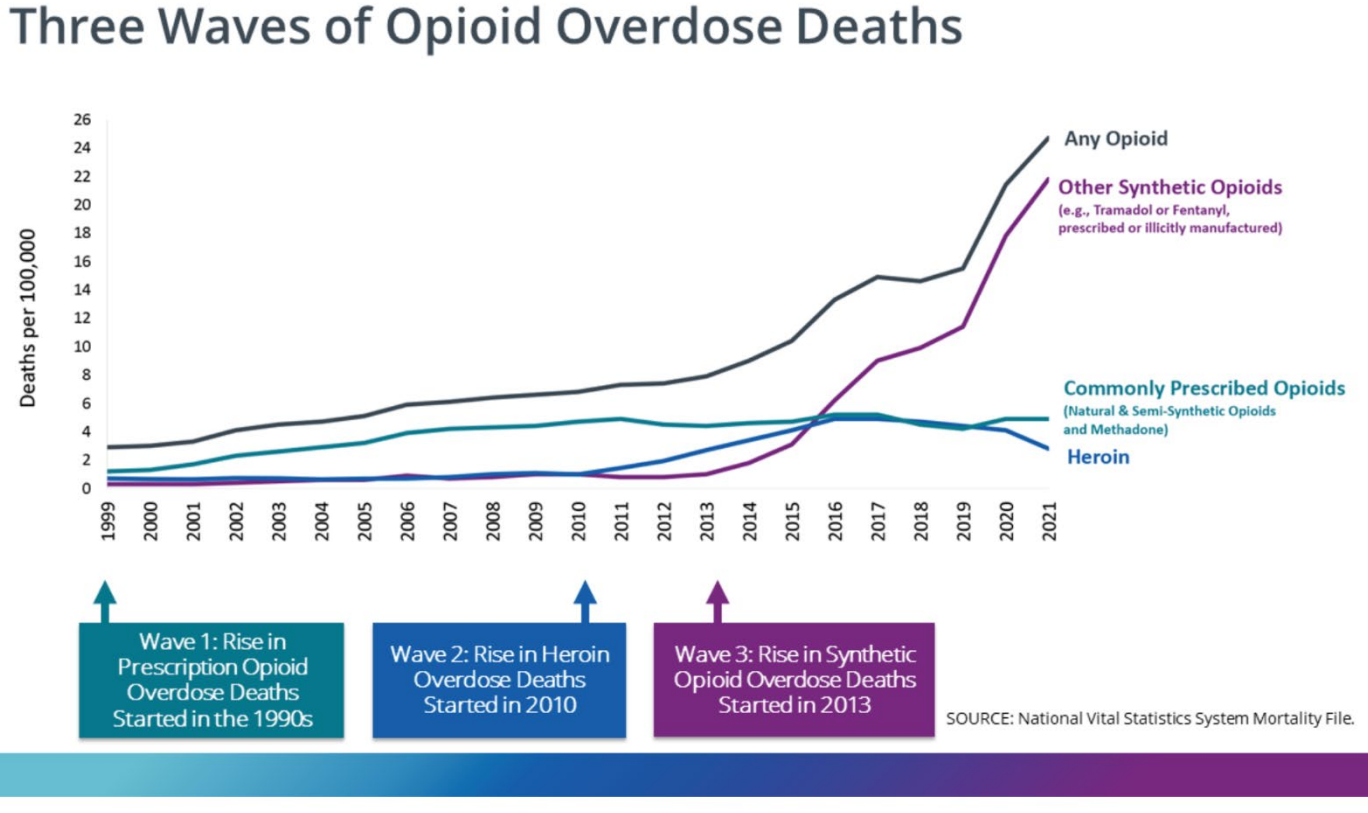
Overview of the U.S. Overdose Crisis

The number of people who died from a drug overdose in 2021 was over six times the number in 1999.
The number of drug overdose deaths increased more than 16% from 2020 to 2021.
Over 75% of the nearly 107,000 drug overdose deaths in 2021 involved an opioid. From 2020 to 2021:



- Opioid-involved death rates increased by over 15%.
- Prescription opioid-involved death rates remained the same.
- Heroin-involved death rates decreased nearly 32%.
- Synthetic opioid-involved death rates (excluding methadone) increased over 22%[1].

https://www.cdc.gov/opioids/basics/epidemic.html

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What is Harm Reduction?

Harm reduction is a practical and transformative approach that incorporates community-driven public health strategies — including prevention, risk reduction, and health promotion — to empower people who use drugs (and their families) with the choice to live healthy, self-directed, and purpose-filled lives.

Harm reduction centers the lived and living experience of people who use drugs, especially those in underserved communities, in these strategies and the practices that flow from them.

- SAMHSA

https://www.samhsa.gov/find-help/harm-reduction

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Nationally, 57% of people who die of an accidental overdose die alone.

Why do people use alone?

To maintain privacy, avoid stigma, convenience, have a better experience, avoid theft/violence, no choice.

What can happen?

Naloxone and oxygen may not be administered in time and EMS may not arrive quickly enough to help.

Responders need to know **when** and **where** overdoses are occurring.

CDC 2023 SUDORS Dashboard
Rosen et al., 2023 Addiction

Wojcicki et al., 2019 Addiction

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NEVER USE ALONE
1-800-484-3731

MASSACHUSETTS OVERDOSE PREVENTION HELPLINE
1-800-972-0590

Brave

Naxos Neighbors

Overdose Detection Technologies (ODT)

Masimo

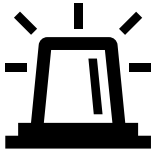
LIFE SAVER ALERT LLC.COM

Donnell et al., 2022 Frontiers in Public Health
Fairbairn et al., 2017 IJDP

Lombardi et al., 2023 IJERPH
Park et al., 2023 JAMA Psychiatry

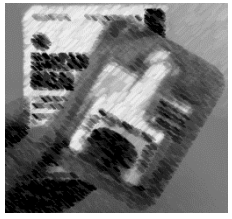
How do they work?

1. Potential overdose detected



2. Responder checks the room

3. Overdose response is initiated



4. EMS is called to the scene (if needed)

https://lifesaveralertllc.com/video/

Timeline

- **2019**: Gordon Casey presents on Brave technologies to state agencies and housing organizations
- **2020**: Brave App is launched globally
- **May 2022**: Dr. Park's team receives formative research funds from the COBRE
- **May 2022**: Oona Krieg and Dr. Park presents information to the COBRE Community Advisory Board and several community organizations interested in piloting these technologies
- **Sept 2022**: Dr. Park and Brave team publishes Canada evaluation on Buttons and Sensors
- **Oct 2022:** EOHHS considers funding harm reduction technologies in RI
- **Nov 2022**: Dr. Park's team joins the San Francisco's Brave Button project evaluation team
- **Mar 2023**: Oona Krieg and Dr. Park launch the Global Overdose Technology Consortium
- **March 2023:** EOHHS enters into contract with Brave Technology Co-op

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Retrospective Evaluation of Brave Sensor and Button Installations in Canada

Between Dec 2018 to Jul 2022, 486 Buttons and 148 Sensors were installed in Canadian emergency shelters, supportive housing facilities, medical facilities and community drop-in centers.

Over 44 months, the devices detected and averted **108 overdose deaths**.

- one for every 19 Sensors
- one for every 5 Buttons

Zero overdose deaths occurred.

The technologies were also had a variety of other uses including mental health crises, conflict resolution, referrals to care and education.

Welwean et al., 2023 J Urban Health

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RHODE ISLAND OVERDOSE TECHNOLOGY STUDY: RESULTS

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Table 1. Characteristics of fatal opioid-involved overdoses in Rhode Island, 2020-2022 (N = 1,084)

Location and naloxone administration	Percent (%)
Private home	84.5
Outdoor spaces	4.9
Hotel/motel	4.8
Supervised facility	2.4
Business	1.2
Motor vehicle	1.0
Naloxone administered by community bystander	8.3
Naloxone administered by EMS	23.1

Data from Rhode Island Department of Health
Flavin, Hallowell, Weidele, Rosen, Park et al., manuscript in progress

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Figure 1. Opioid Overdose Deaths in Rhode Island, 2020-2022 (N = 1,084)

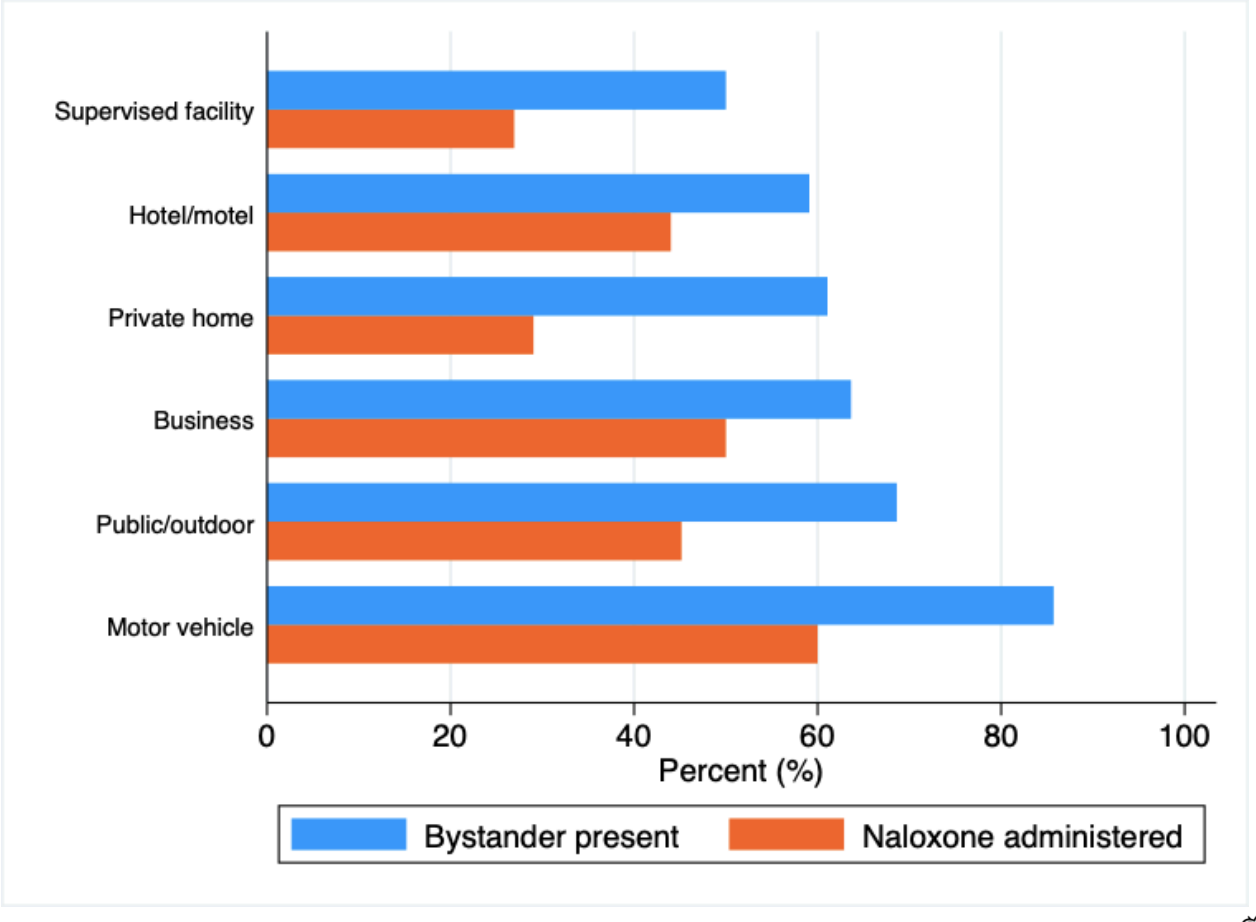

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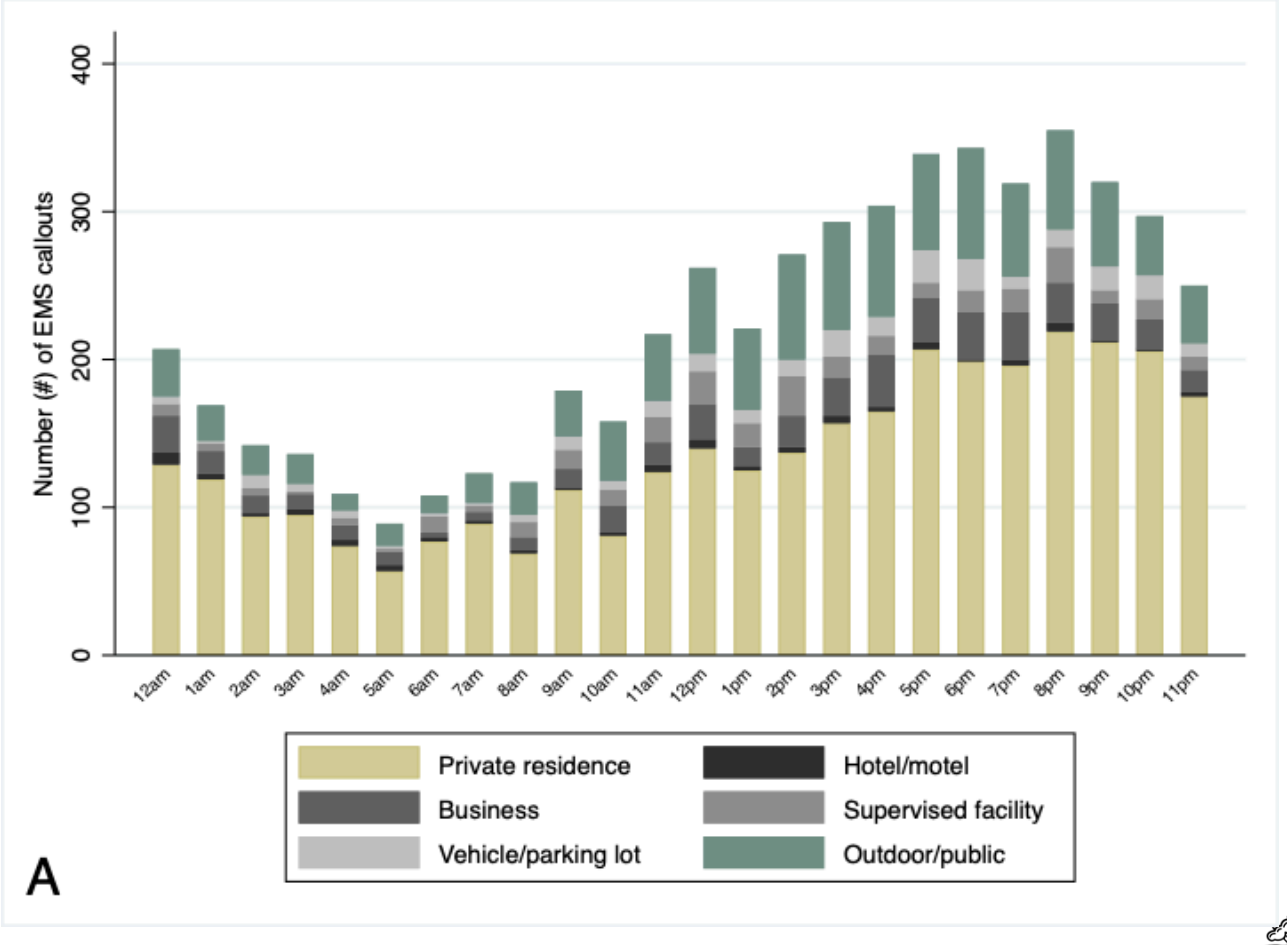
Figure 2: Hour-by-hour EMS responses to suspected opioid overdoses in Rhode Island, 2020-2022 (N = 5,377)



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Rosen, Hallowell, Weidele, Flavin, Park et al., manuscript in progress

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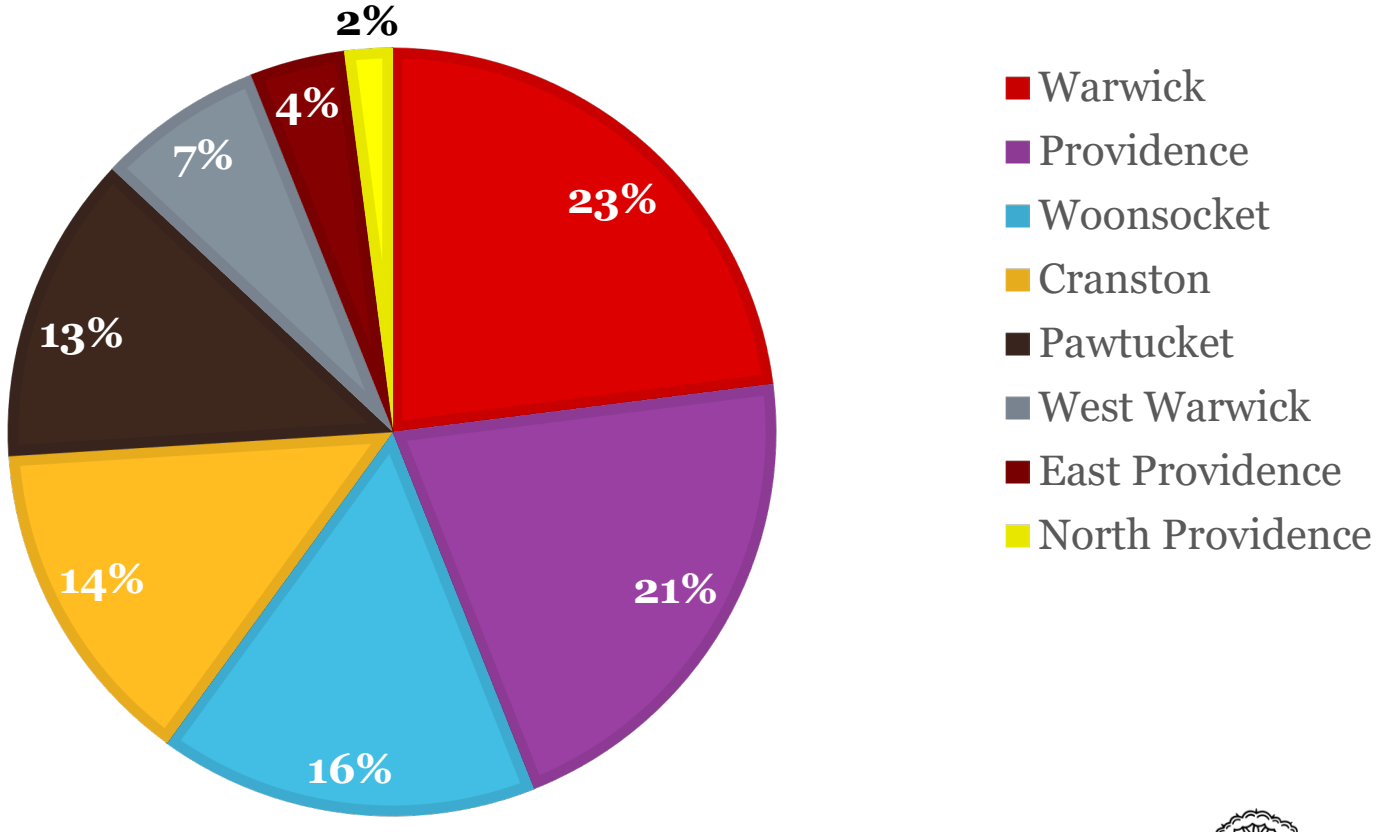
Survey: Towns/Cities



Koch, Tardif, Thompson, Rosen, Park et al., manuscript in progress

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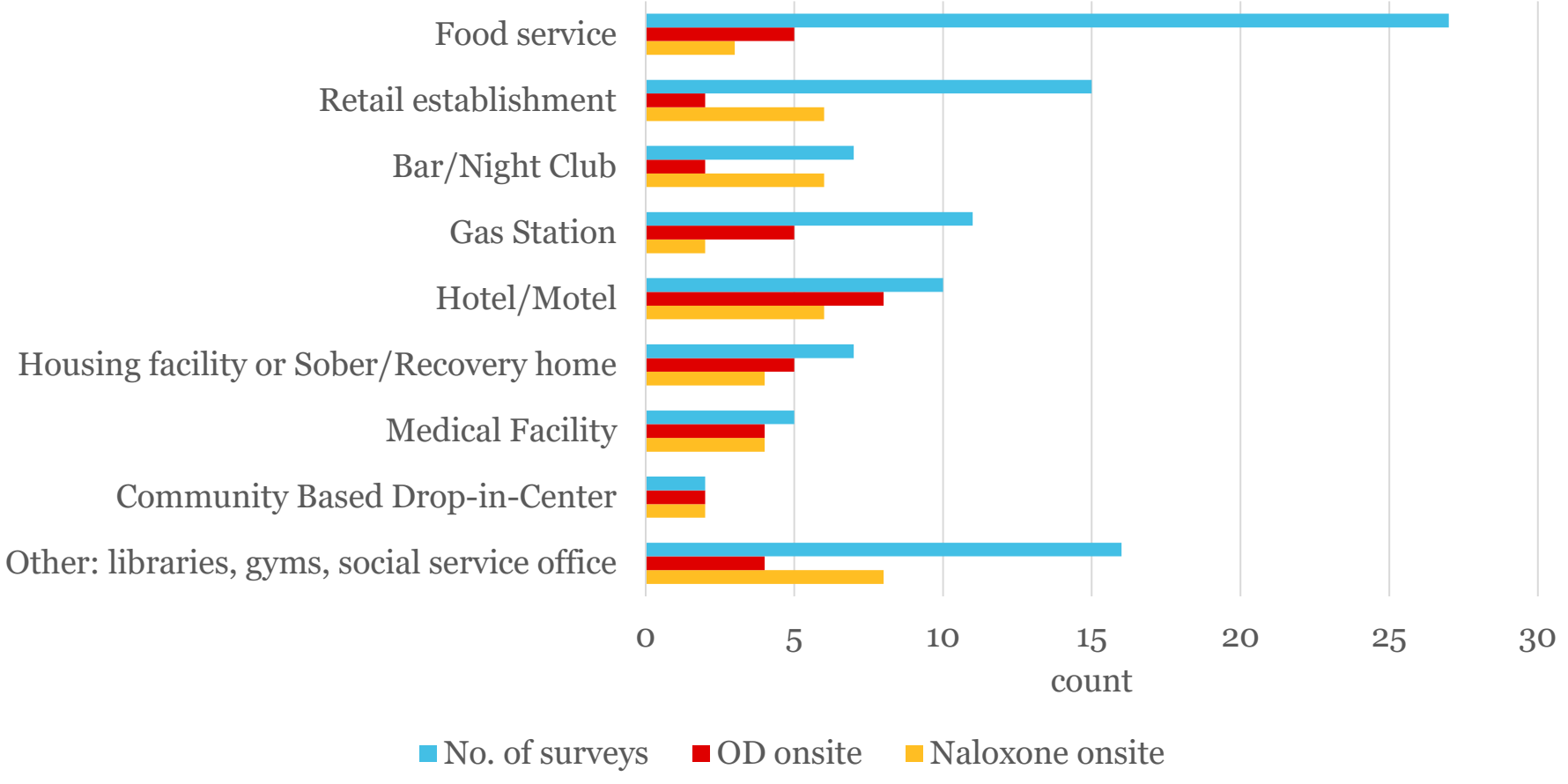
Manager/Staff Survey Findings, 2022-2024 (N=100)



Koch, Tardif, Thompson, Rosen, Park et al., manuscript in progress

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Manager/Staff Survey Findings, 2022-2024 (N=100): Overall Acceptability

	Acceptability (Strongly Agree/Agree)
Comfortable with the installation of sensors	73%
Comfortable with the installation of buttons	43%
Interested in being considered as a pilot study location in the future	57%

Koch, Tardif, Thompson, Rosen, Park et al., manuscript in progress

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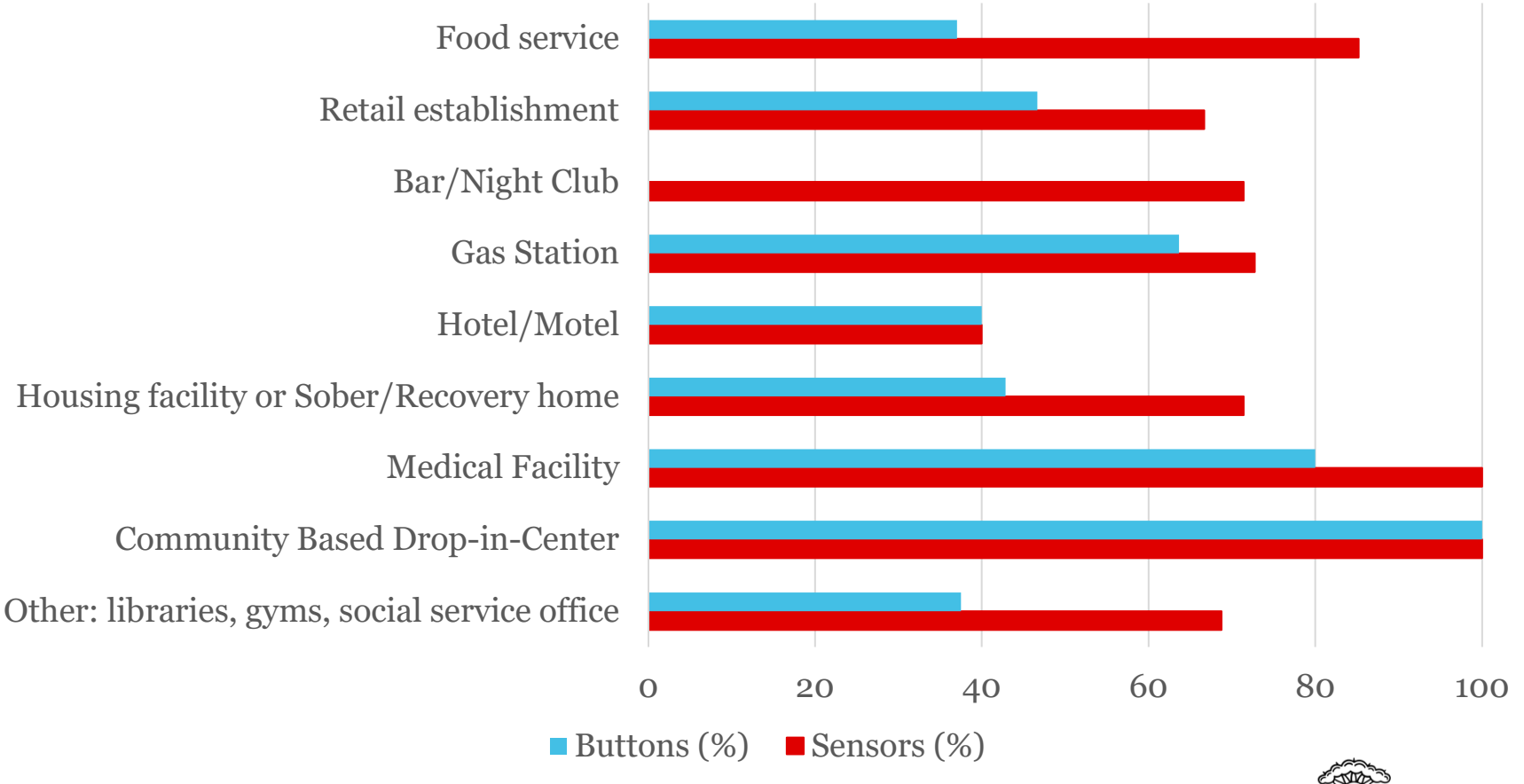
Manager/Staff Survey Findings (N=100): Acceptability by Location



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Focus Group Discussion Methods

- Range of participants (N=41)
- 8 groups:
  - Treatment providers (FG1)
  - Community drop-in center staff (FG3, 5)
  - Housing service providers (FG7)
  - OUD patients (FG2)
  - People who use drugs (FG4,6)
  - Housing residents (FG8)
- Provided with a 5-minute video
- Structured discussion for ~60 minutes
- Participants were compensated $50

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“You never know what could happen. They could be going—nobody ever knows what someone's going through. I could come—I could be a staff member. I could be clean for 20 years, but guess what? If I lose my daughter, or let's just say I got an urge that's so bad that I go and I go into the bathroom and I do what I do. Guess what? Game over, all because that technology wasn't there.”

"I get so nervous when we open that bathroom. I'm always sitting outside the door, like I hope they don't overdose… I worry so much…

"…explain that it also doesn't call emergency responders. It calls one of us [staff]. You're not in trouble when this goes off. This is not a bad thing. This is me checking on you to make sure you're okay."

Peace of mind

Protects privacy

Trust between staff & patients

Prevent ambulance/police calls

"We're still going to be out there doing the same thing we've always done, just with an extra set of eyes."

"Everybody knowin' your business…It's embarrassing."

[Maintaining Bathroom Sensors]
"To save somebody's life?"
"Yeah, it's worth it. It's worth it."
"Yeah, are you kidding me? That's $41 a month. Come on."

Park, Rosen, Thompson et al., manuscript in progress

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"Everyone here knows I do drugs, but if my boss found out that I fucking smoke meth, he'd probably fire me, even though I work fucking seven days a week and I don't complain…"

"They [patients] have tremendous issues about confidentiality and who they come in contact with, and who we come in contact with... Many of our patients are involved with DCYF [child protection services], involved with probation…parole... Their whole life is being monitored…"

Losing children

Arrest

Data sharing

False alarms

Staff burden

"Yeah, the information: how it's held, where is it going, who's holding it"

"As a person who works at nighttime and is here by themselves, I think that [responding] would be hard."

"I would worry about what if multiple people press it at the same time."

Park, Rosen, Thompson et al., manuscript in progress

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What's next?

- Pilot test Brave's restroom sensors to assess their real-world implementation in RI
- Evaluate the intervention's usefulness, scalability and sustainability
- Present the results of the pilot and apply for longer-term funding

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Conclusions

Overdoses occur in a variety of settings in Rhode Island.

EMS runs appear to be more common outside of traditional work hours.

Many organizations are interested in overdose sensor and button installations.

Naloxone training, support for the workforce as well as communication strategies and legal protections for PWUD may be needed to promote uptake.

Coordinating overdose responses with business partners and the non-profit community will be necessary to ensure coverage across all potential settings.

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Thank you!

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www.harmreductionlab.com

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