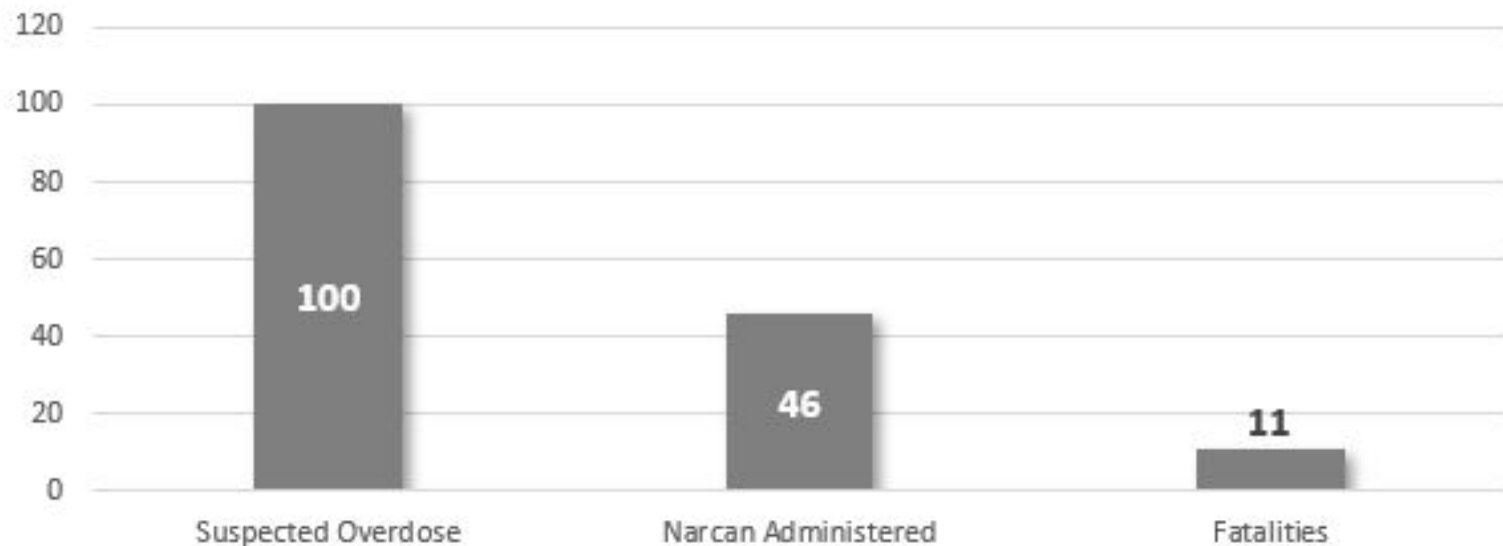


Building a Smarter and Healthier Community Through Opioid Wastewater Monitoring

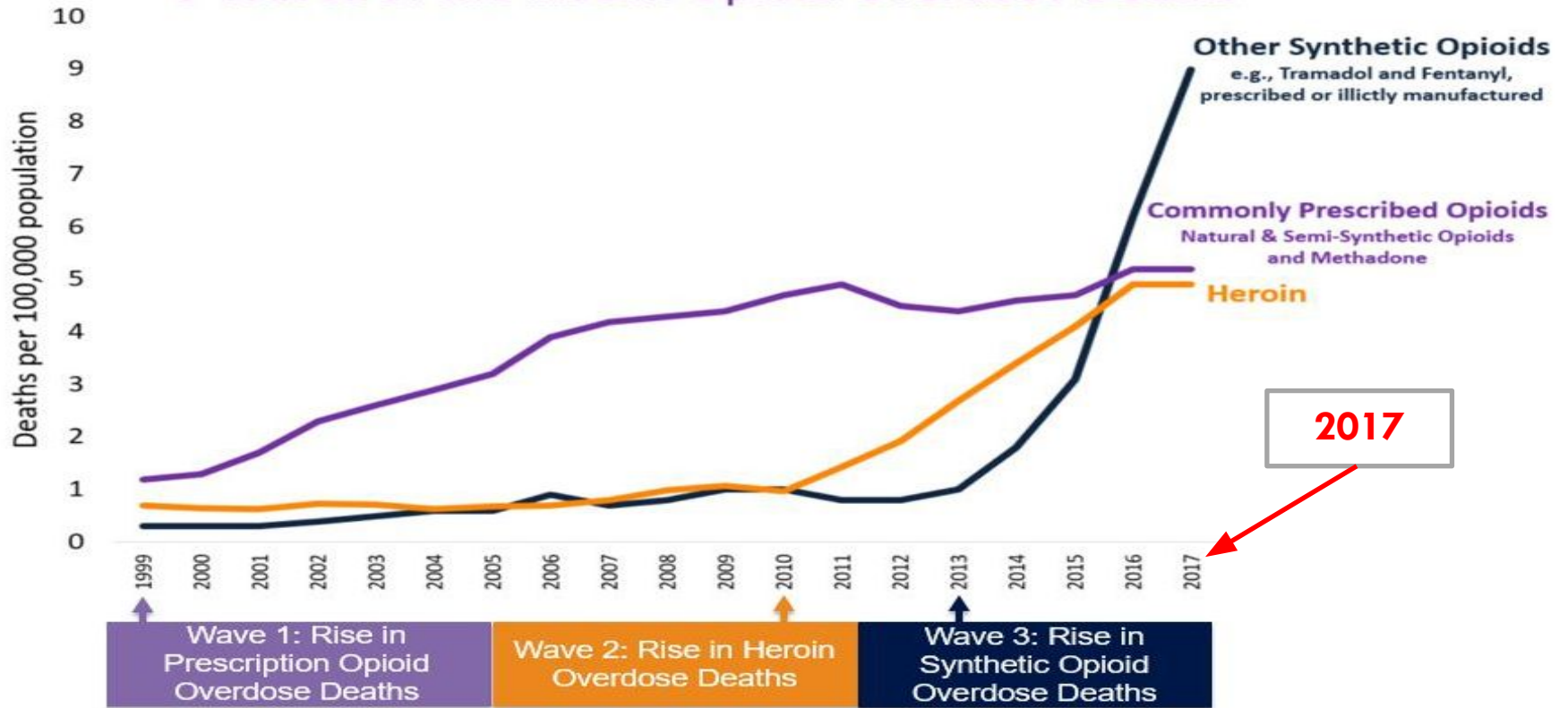
TOWN of CARY

Opioid Emergency Response Data



■ 2017

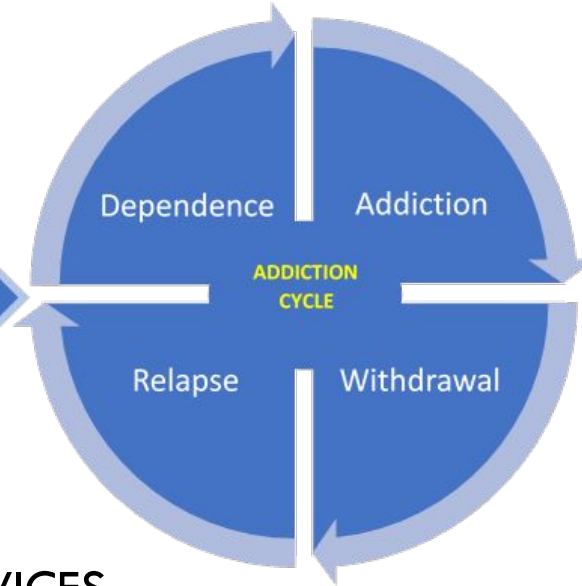
3 Waves of the Rise in Opioid Overdose Deaths



SOURCE: National Vital Statistics System Mortality File.

ADDRESS EARLY

Paths to Addiction



TIMELY & BETTER INFORMATION

EVALUATE & BETTER IMPLEMENT SERVICES

RAISE COMMUNITY AWARENESS – ADDRESS STIGMA

We saw an opportunity to leverage sewage
as an insight into what people were consuming
(and therefore excreting).

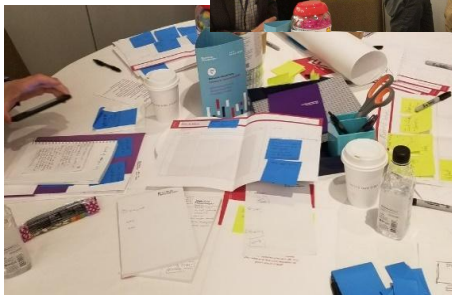
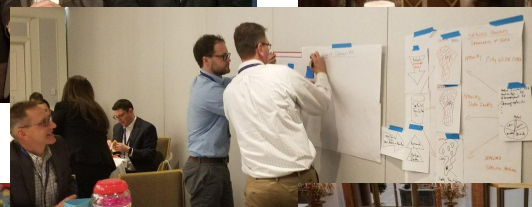
OUR JOURNEY BEGINS

BLOOMBERG MAYOR CHALLENGE WORKSHOP - IDEA ACCELERATOR WORKSHOP ON
AUG. 30TH 2017 CARY IS ONE OF 300 CITIES THAT SIGNED UP FOR THE WORKSHOP

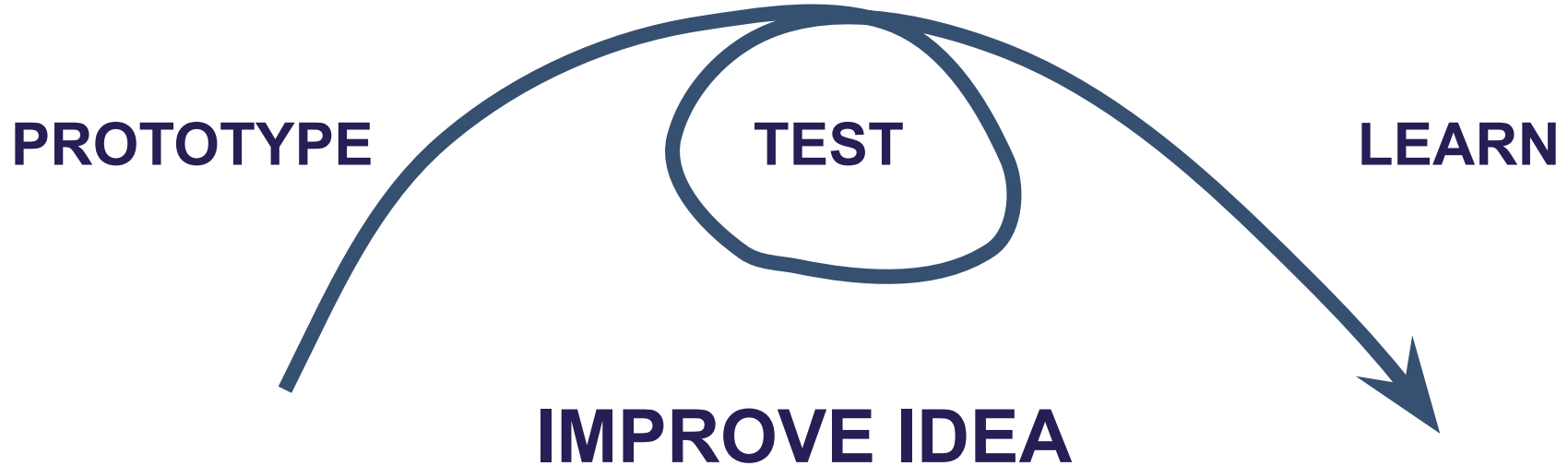


FEB. 22, 2018 CARY IS SELECTED AS ONE
OF THE 35 MAYORS CHALLENGE
CHAMPION CITIES
(OVER 500 CITIES APPLIED)

Ideas Camp (NYC)
March 19 - 20, 2018



LESSONS LEARNED: ITERATIVE APPROACH



WHAT DID WE TEST?

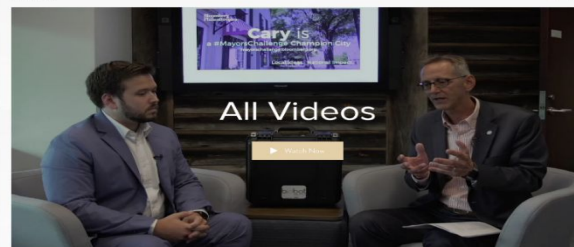


WE'VE BEEN VERY BUSY:

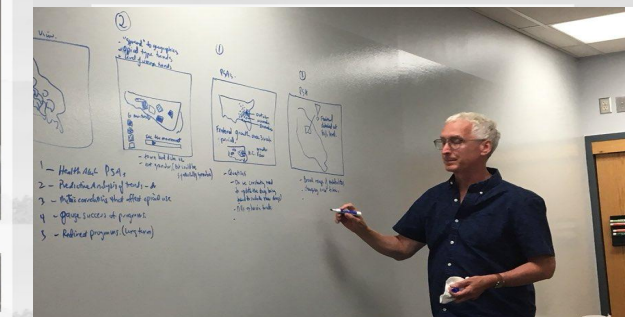
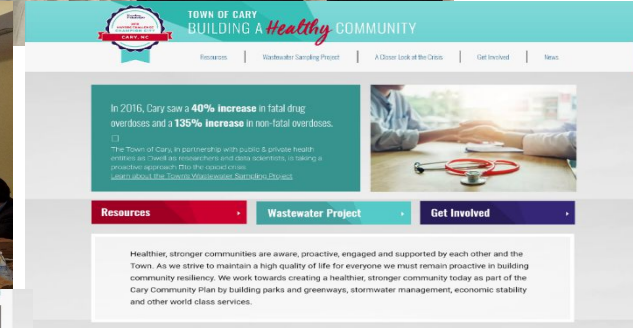
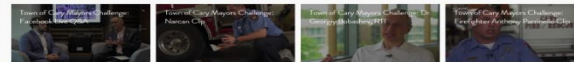
- PARTNER MEETINGS
- TEAM MEETINGS
- COACHES MEETINGS
- VIDEO INTERVIEWS
- WEBSITE DEVELOPMENT



All Videos



Search videos...



PUBLIC AWARENESS & COMMUNICATION

- 5 CIVIC EVENTS
- 18 INTERVIEWS
- 35 PRESENTATIONS



COMMUNITY AWARENESS - STIGMA

“My son’s fear of being judged was greater than his fear of death”



Sample Area Parameters



Population

- 4,000 to 16,000



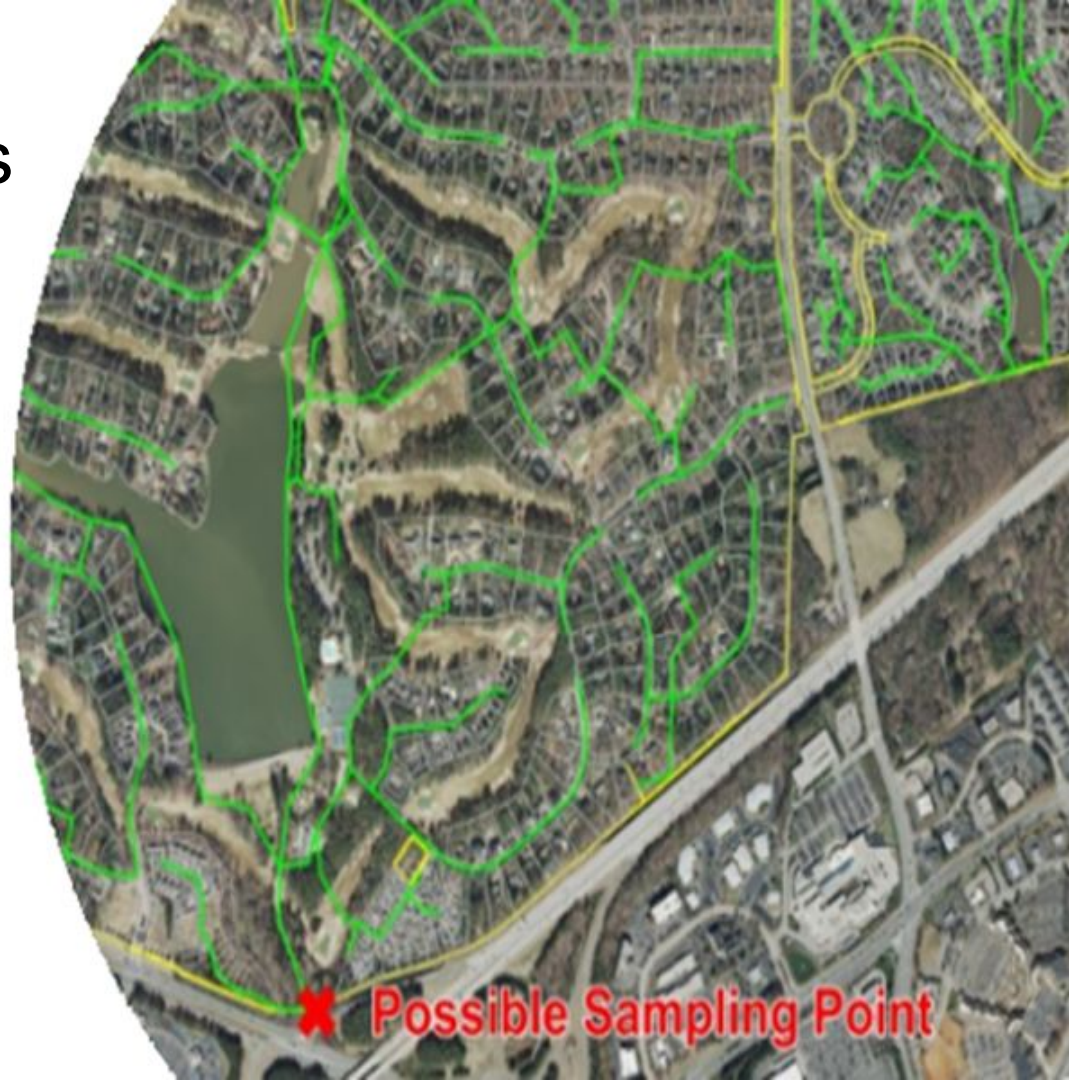
Land Use

- >90% Residential

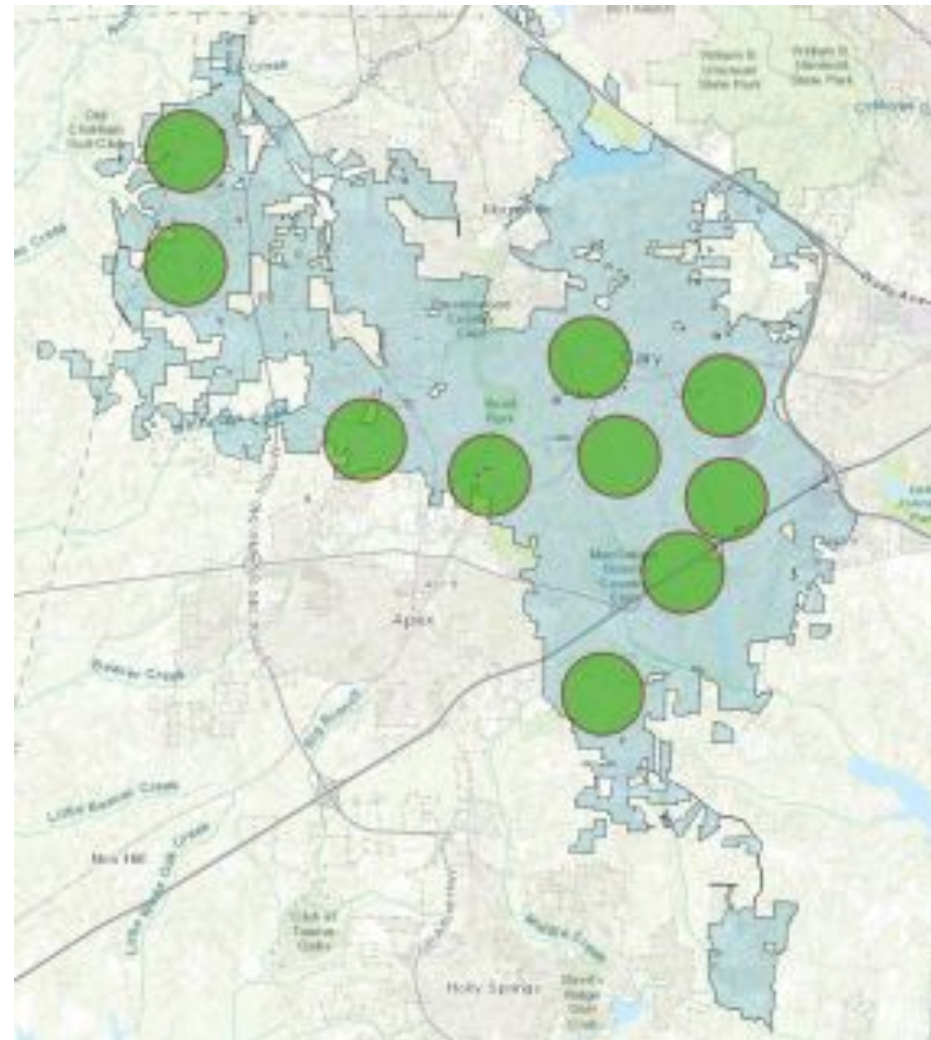


Detention Time

- <2 hours



- ❑ 10 Sample Locations
- ❑ Representative
- ❑ Varying Demographics







Standard	Parent Drug(s)	Type
6-MAM: 6-mono-acetylmorphine	Heroin	Illicit
Norfentanyl (oxalate)	Fentanyl	Prescription
Codeine-6-beta-D-glucuronide	Codeine	Prescription
O-desmethyl-cis-tramadol (hydrochloride)	Tramadol	Prescription
Noroxycodone (hydrochloride)	Oxycodone	Prescription
Norhydrocodone (hydrochloride)	Hydrocodone, Codeine	Prescription
Dihydrocodeine-6-beta-glucuronide	Dihydrocodeine, Codeine, Hydrocodone	Prescription
Oxymorphone-3-beta-D-glucuronide	Oxymorphone, Oxycodone	Prescription
EDDP: 2-ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (perchlorate)	Methadone	Substitution Therapy
Norbuprenorphine-3-glucuronide	Buprenorphine	Substitution Therapy
Naloxone-3-glucuronide	Naloxone	Overdose Reversal
Caffeine	Caffeine	Control Marker
Acetaminophen	Acetaminophen	Control Marker
Acetaminophen glucuronide	Acetaminophen	Control Marker



Mass Spectrometry



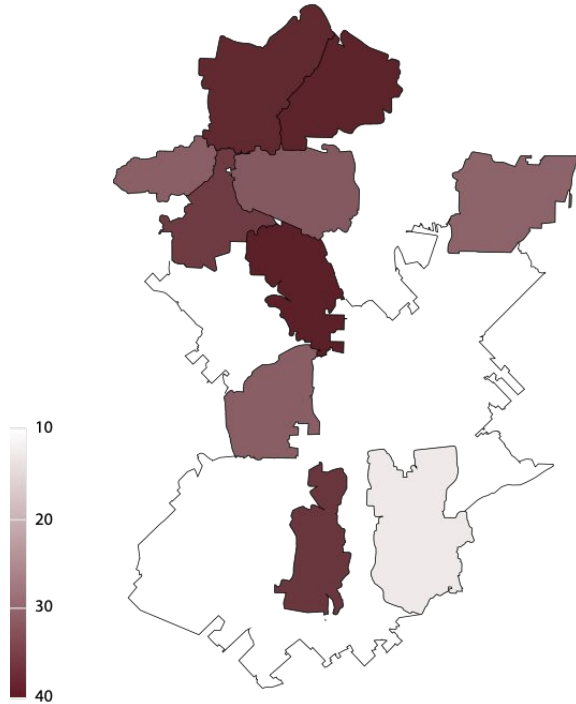
mg/day/1000 people



Morphine Milligram
Equivalent (MME)

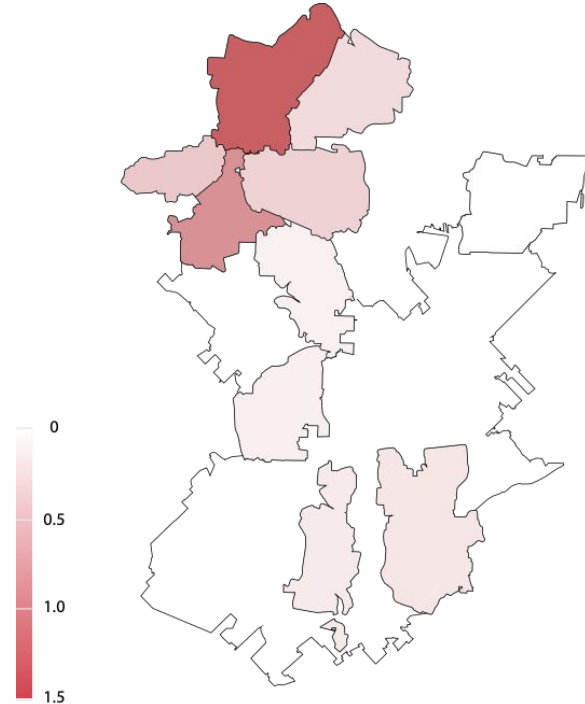
Opioid metabolites measured in sewage

[units: MME/day/1000 people]



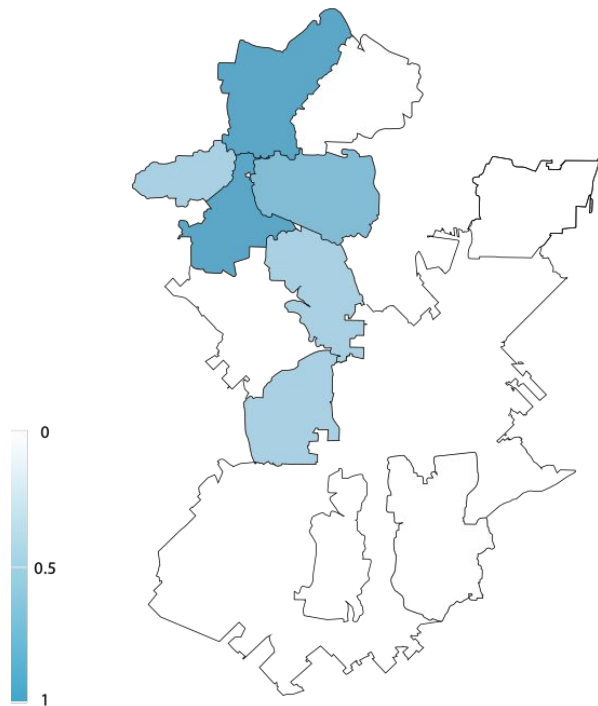
Reported overdoses

[units: overdoses/year/1000 people in 2018]



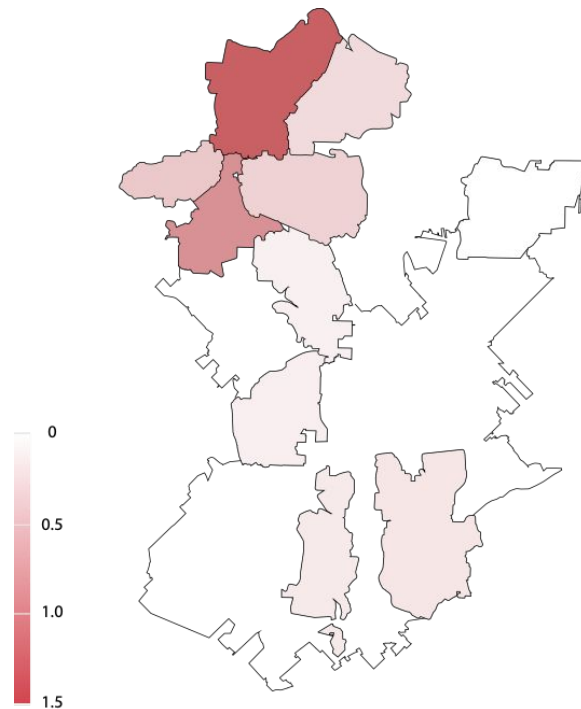
Naloxone metabolites measured in sewage

[units: frequency of detection]



Reported overdoses

[units: overdoses/year/1000 people in 2018]

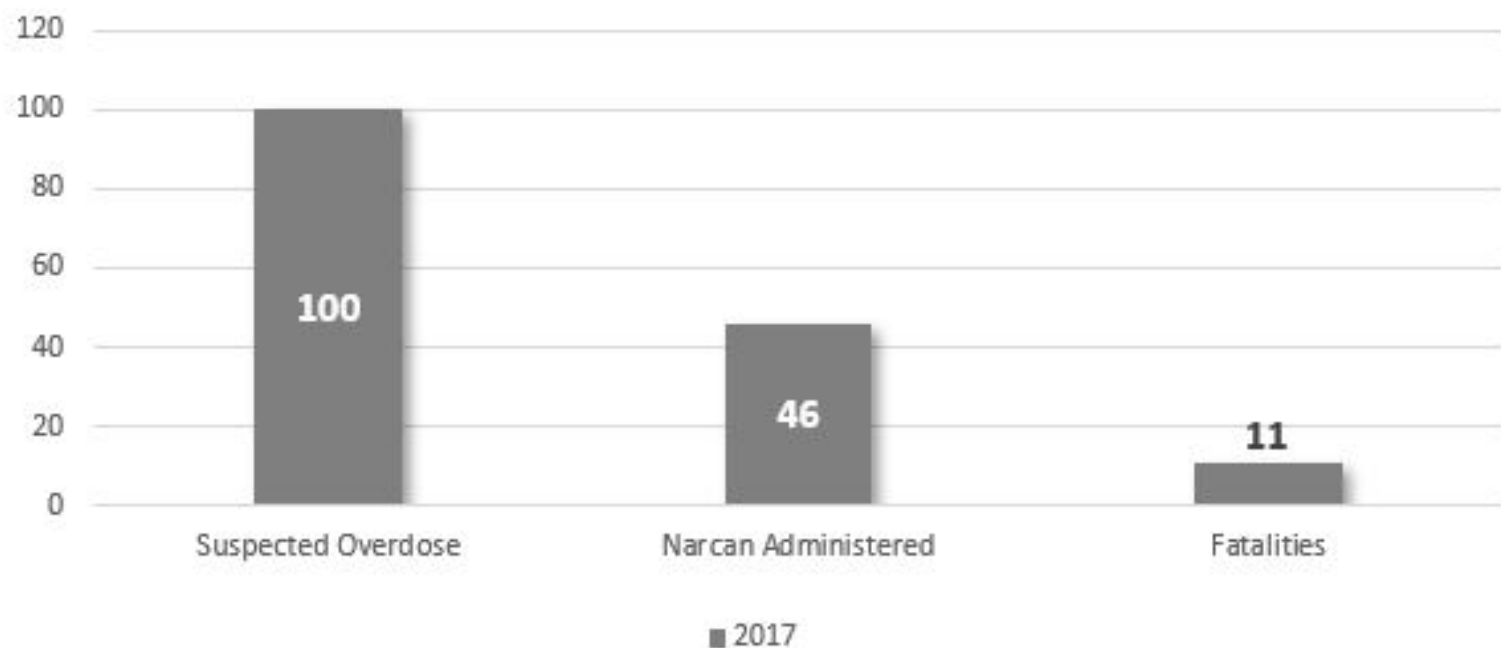


TOWN of CARY
Prescription Medicine Disposal
Collected (lbs)



TOWN of CARY

Opioid Emergency Response Data



NEXT STEPS

- **Continue Community Conversations**
- **Continue Working with Public Health Programs**
- **Identify Data Use - Data Analytics**
- **Continue Sampling - Build on Baseline Data**
- **Build Website and Open Data Portal**

QUESTIONS

Donald Smith

Town of Cary - Wastewater Collection System Manager

Email: donald.smith@townofcary.org

Phone: (919) 469-4095

Biobot Analytics

www.biobot.io