

The Spectrum of Response: A Trend Analysis of Opioid Detected Fatal Overdoses in Maryland, 2019-2022

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Background

In Maryland, an 8% increase in fatal drug overdoses was observed from 2019 to 2022, and the state sustains a rate of 40.3 per 100,000 drug overdose deaths³ compared to the national rate of 32.6 per 100,000⁴. These increases can be attributed to a plethora of factors, including, but not limited to, increased social isolation¹ largely due to the COVID-19 pandemic, and an increased lethality of the drug supply due the introduction of synthetic opioids and fentanyl².

Maryland utilizes the State Unintentional Drug Overdose Reporting System (SUDORS) to systematically collect data surrounding the characteristics and circumstances of fatal drug overdoses, including information about potential bystanders, defined as individuals with a minimum age of eleven years who are around the overdose during, or shortly preceding, the event with an opportunity to intervene. The current study seeks to describe bystander behavior and opportunities to increase bystander interventions to prevent fatal overdose.

Objectives

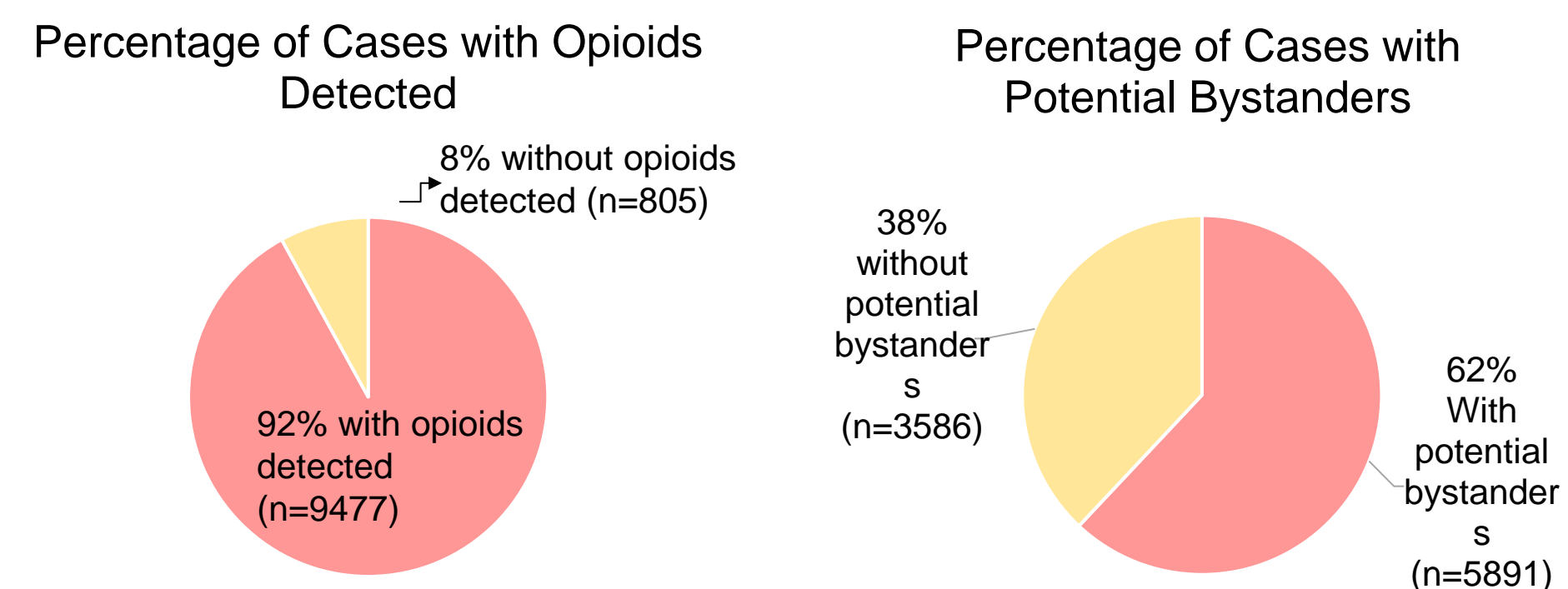
- Describe the frequency, characteristic, and trends of:
 - Potential bystander presence and response
 - Intervention behaviors, including naloxone administration
 - Obstacles to intervention
- Understand where naloxone doses are administered and by whom

Methods

This analysis was conducted utilizing SUDORS cases of fatal opioid detected overdoses from 2019 to 2022. Cases that included opioids in the postmortem toxicology report, ("opioid detected"), and cases where potential bystanders were present were included. Percent increases were determined by using the relative change formula. The variable "not recognizing signs of an overdose" was created when respondents did not report recognizing any abnormalities in the decedent OR reported recognizing abnormalities but not recognizing signs of an overdose. The second, was collated different injury location sites into the following three categories: in-home, in supervised location, and other locations.

Statistical significance was determined using chi-square tests and Pearson-Correlation Coefficient tests determined time trend analysis significance. SAS 9.4 was used for all data manipulation and statistical testing, and all results yielding fewer than 11 were suppressed.

Figure 1: Percentage of Cases that are Opioid Related and Percentage with Potential Bystanders



Data source: 2019-2022 Maryland State Unintentional Drug Overdose Reporting System

Table 1: Types of Potential Bystanders at Fatal Opioid-Detected Overdoses and Their Actions and Reasons for Inactions

Type of potential bystander	n	%
Family member	1972	33
Intimate partner	1564	27
Friends	1114	19
Roommates	776	13
Strangers	349	6
Person using drugs	120	2
Medical professionals	70	1
Other	464	8

Potential bystander intervention	n	%
CPR	1247	64
Naloxone administration	712	37
Stimulation	287	15
Sternal rub	17	1
Rescue breaths	12	1
Other	163	8

Bystander non-response reason	n	%
Spatially separated	3434	72
Not recognizing signs of an overdose, but noting abnormalities in the decedent	550	16
Not recognizing any abnormalities in the decedent	301	9
Unaware decedent was using	425	13
Public space	123	4
Other	333	10

Table 2: Naloxone Dose Administration Location Type

Naloxone dose administration site	n	%
In home	4009	68
In supervised location	1331	23
Other locations	548	9

Table 3: Type of Individual Who Administered Naloxone Dose to Decedent

Type of individual administering naloxone	n	%
Lay individual	712	57
EMS/Fire	559	45
Law enforcement	294	24
Hospital	125	10

Results

From 2019-2022, Maryland's SUDORS recorded 10,282 accidental and undetermined intent fatal overdoses. 92% (n=9477) of SUDORS cases were opioid detected, and 62% (n=5891) of the opioid detected cases reported potential bystanders. The type of bystanders that were most prominent at these fatal overdoses were family members (33%), intimate partners (27%), and friends (19%) of the decedent. From 2019-2022, statistically significant changes were seen among friends, intimate partners, and family members of the decedent by 51%, 29%, and 15%, respectively. The potential bystanders who attempted interventions prominently performed cardiopulmonary resuscitation (64%), administered naloxone (37%), and attempted stimulation (15%). Cardiopulmonary resuscitation and naloxone administration are the only interventions to significantly increase at 57% and 39%. The most common explanations for non-intervention were spatial separation (72%), not recognizing signs of an overdose but noting abnormalities in the decedent (16%), being unaware the decedent was using (13%). Of potential bystanders, who had the opportunity to intervene (n=961), 88% (n=848) did not recognize the signs of an overdose. All of which significantly changed over time 100%, 118%, 226%, and 192%, respectively. Naloxone doses were administered largely by lay individuals (57%), EMS/Fire (45%), and law enforcement (24%). Overtime, lay individuals became the largest administrators of naloxone doses, growing along with the number of doses law enforcement administered. Doses administered by EMS/Fire and hospitals decreased as well. These doses were predominately administered in homes (68%) with supervised locations occurring 23% of the time and 9% in other locations.

Figure 2: Statistically Significant Trends of Potential Bystander Types and Bystander Attempted Interventions

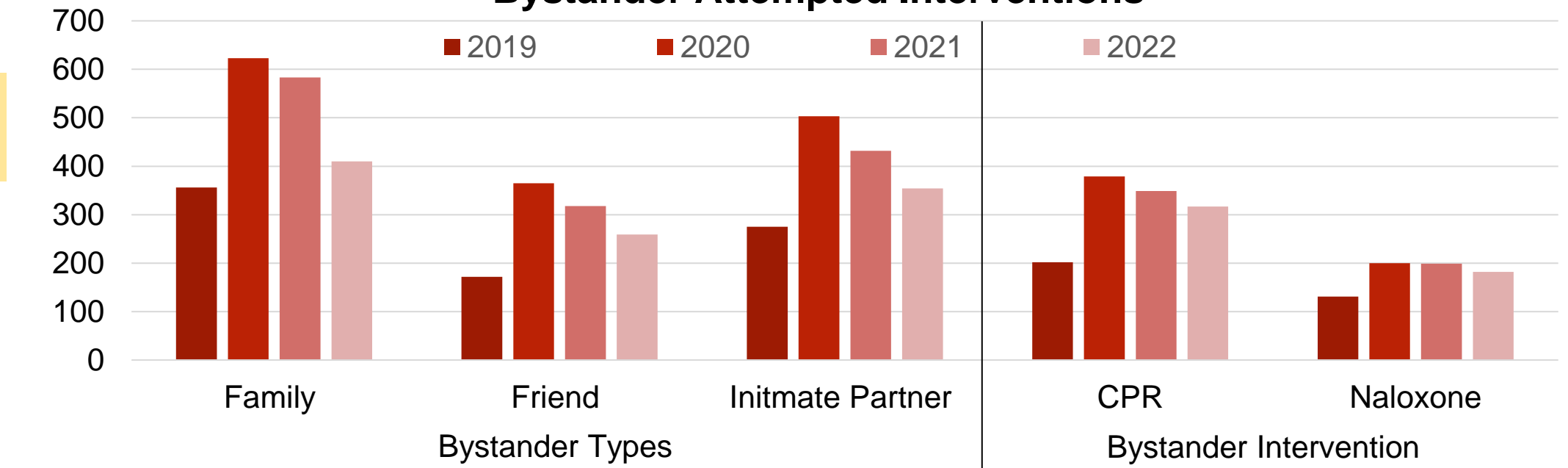


Figure 3: Statistically Significant Trends of Type of Person Administering Naloxone

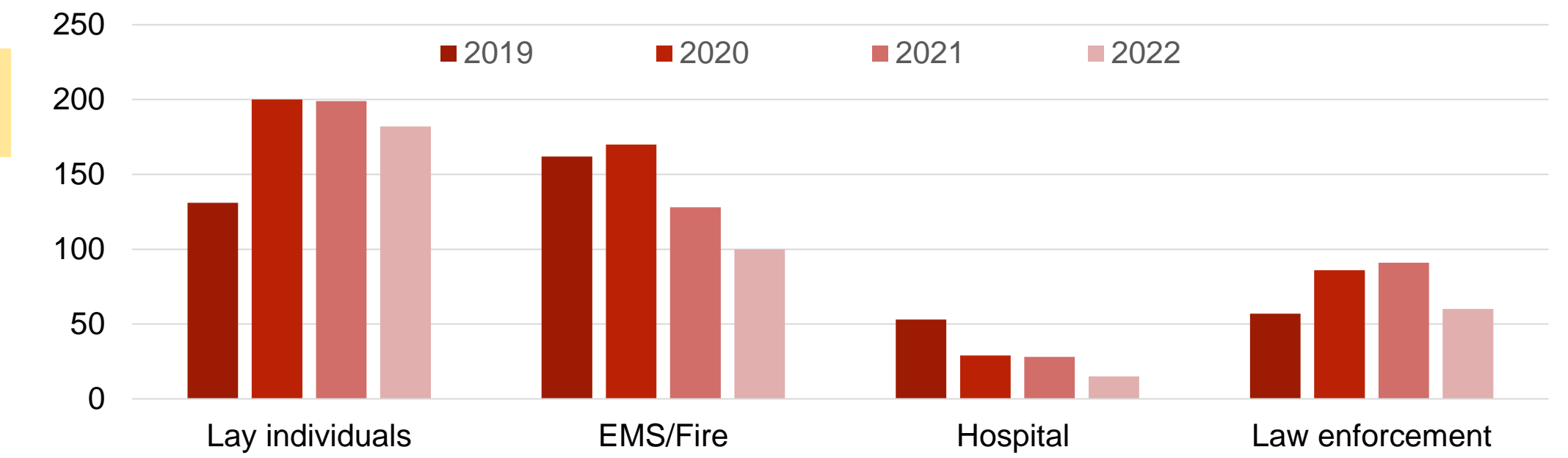
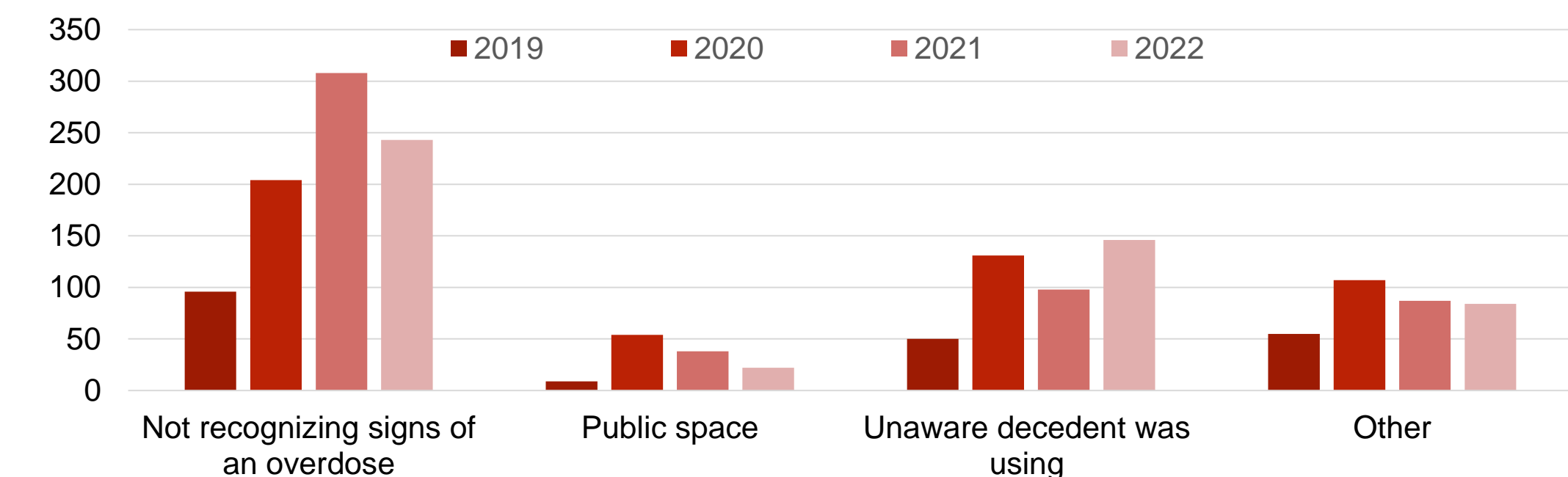


Figure 4: Trends of Non-Response Reasons When Intervention Was Possible



Discussion

Most people (88%) who were bystanders at a fatal opioid overdose did not recognize the person was experiencing an overdose. These bystanders were most likely to be friends, family, or intimate partners of the individual experiencing the overdose. Furthermore, these overdoses were most likely to occur in the home of the person who died, or in another private home (as opposed to a public location or supervised housing). Targeted educational messaging on overdose symptom recognition may improve the likelihood that bystanders could successfully intervene to prevent some overdoses. This messaging should be directed towards family, friends, and intimate partners of those who use drugs. This outreach should be coupled with naloxone provision and should involve all those most likely to be bystanders, as well people with substance use disorders.

References:

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