

Deaths related to opioids and other drugs

Annual Report 2021

Muskegon County

This report is in memory of those who lost their life or a loved one to substance use. These losses must motivate us all to prevent future deaths.

Purpose: This data was collected by the Office of the Medical Examiner (MEO) in the Department of Pathology at Western Michigan University Homer Stryker M.D. School of Medicine (WMed). Unless otherwise noted, data is from 2021 and includes deaths where drugs were the immediate cause of death. This report is meant to provide up to date statistics to those involved in efforts to reduce the number of drug-related deaths.

Sections with the following headings are approximations and frequencies may be higher than what is reported: Health Factors, Mental Health Factors, Social Factors, Children and Substance Use History.

Sources: All data was extracted from a Medical Examiner database, law enforcement (LE) reports, EMS runsheets, death certificates, obituaries, medical records, toxicology reports, and autopsy reports.

Note: A=Asian; B=Black/African-American; H=Hispanic; ME=Middle Eastern; W=White
E=Female; M=Male

Please email questions to pathology@med.wmich.edu

Office of the Medical Examiner
Department of Pathology
Homer Stryker M.D. School of Medicine

Deaths Related to Opioids and Other Drugs

Muskegon

All drug-related deaths

Age	Race	Sex	Death certificate: Substances contributing to death	Injury Zip code
19	W	F	fentanyl, mitragynine	49440
19	B	M	amitriptyline	49442
20	W	M	fentanyl, heroin	49441
21	W	F	fentanyl, methamphetamine	49444
22	W	M	mitragynine	49461
23	B	M	ethanol, fentanyl	49441
26	W	F	cocaine, ethanol, fentanyl	49441
28	W	F	cocaine, fentanyl	49440
29	W	M	fentanyl, methamphetamine	49441
29	B	F	alprazolam, fentanyl, hydrocodone	49441
29	W	F	fentanyl, methamphetamine, morphine	49442
30	W	M	fentanyl, methamphetamine	49456
30	W	M	fentanyl, methamphetamine, para-fluorofentanyl	49442
30	H	M	methamphetamine	Unknown
32	B	M	acetyl fentanyl, chlorpheniramine, diphenhydramine, fentanyl, hydrocodone	49442
33	W	F	fentanyl, gabapentin, morphine, para-fluorofentanyl, tramadol	49461
33	W	F	fentanyl, heroin, methamphetamine, para-fluorofentanyl	49444
33	ME	M	cocaine, fentanyl, hydroxyzine, gabapentin	49442
34	W	F	1,1-difluoroethane	49437
35	W	F	cocaine, fentanyl, para-fluorofentanyl	49441

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Age	Race	Sex	Death certificate: Substances contributing to death	Injury Zip code
36	B	M	cocaine, ethanol, fentanyl	49442
36	W	M	diphenhydramine, fentanyl, methamphetamine, para-fluorofentanyl	49445
37	W	F	methamphetamine, mitragynine	49444
37	W	M	fentanyl	49442
38	W	F	diphenhydramine, fentanyl, gabapentin, trazodone	49441
39	W	M	cocaine, fentanyl	49442
40	W	M	fentanyl, methamphetamine, xylazine	49451
40	W	F	fentanyl, methamphetamine, para-fluorofentanyl	49441
40	W	M	amphetamine, cyclobenzaprine, diazepam, fentanyl, heroin, oxycodone	49445
43	W	F	fentanyl	49442
45	W	M	methamphetamine	49437
46	B	M	cocaine, cocaethylene, ethanol, fentanyl, methamphetamine	49442
47	W	M	fentanyl	49441
47	W	M	butyrylfentanyl, diphenhydramine, fentanyl	49442
48	W	M	fentanyl, hydrocodone, para-fluorofentanyl	Unknown
49	W	F	methamphetamine, methylphenidate	49444
49	B	M	cocaine, ethanol, fentanyl, morphine, para-fluorofentanyl	49444
49	W	F	fentanyl, methamphetamine, nordiazepam, para-Flourofentanyl	49441
51	W	M	fentanyl, methamphetamine	49442
51	W	M	cocaethylene, cocaine, ethanol, fentanyl, heroin	49441

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All drug-related deaths

Age	Race	Sex	Death certificate: Substances contributing to death	Injury Zip code
52	W	M	cocaethylene, cocaine, ethanol, fentanyl	49442
53	B	M	cocaine, fentanyl	49442
53	W	F	fentanyl, methamphetamine	49461
54	W	M	cyclobenzaprine, ethanol, fentanyl, gabapentin	49441
56	W	F	cocaine, fentanyl	49441
56	B	F	cocaine, fentanyl	49441
56	A	F	ibuprofen	49445
57	B	M	cocaine, fentanyl, heroin	49442
57	W	F	fentanyl, gabapentin	49442
57	B	M	cocaethylene, cocaine, ethanol, fentanyl, flubromazepam, para-fluorofentanyl, xylazine	49444
58	B	M	carisoprodol, fentanyl, hydrocodone, oxycodone, para-fluorofentanyl	49444
59	W	M	amphetamine, ethanol, fentanyl, hydrocodone	49444
59	B	F	fentanyl, methadone, methamphetamine	49444
60	W	M	salicylate	49442
60	W	M	fentanyl	49440
61	W	M	cocaine	49457
61	W	M	cocaethylene, cocaine, ethanol, fentanyl	49442
64	W	M	fentanyl, para-fluorofentanyl	49415
66	W	M	fentanyl	49421
66	W	F	acute and chronic ethanol use*	49441

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All drug-related deaths

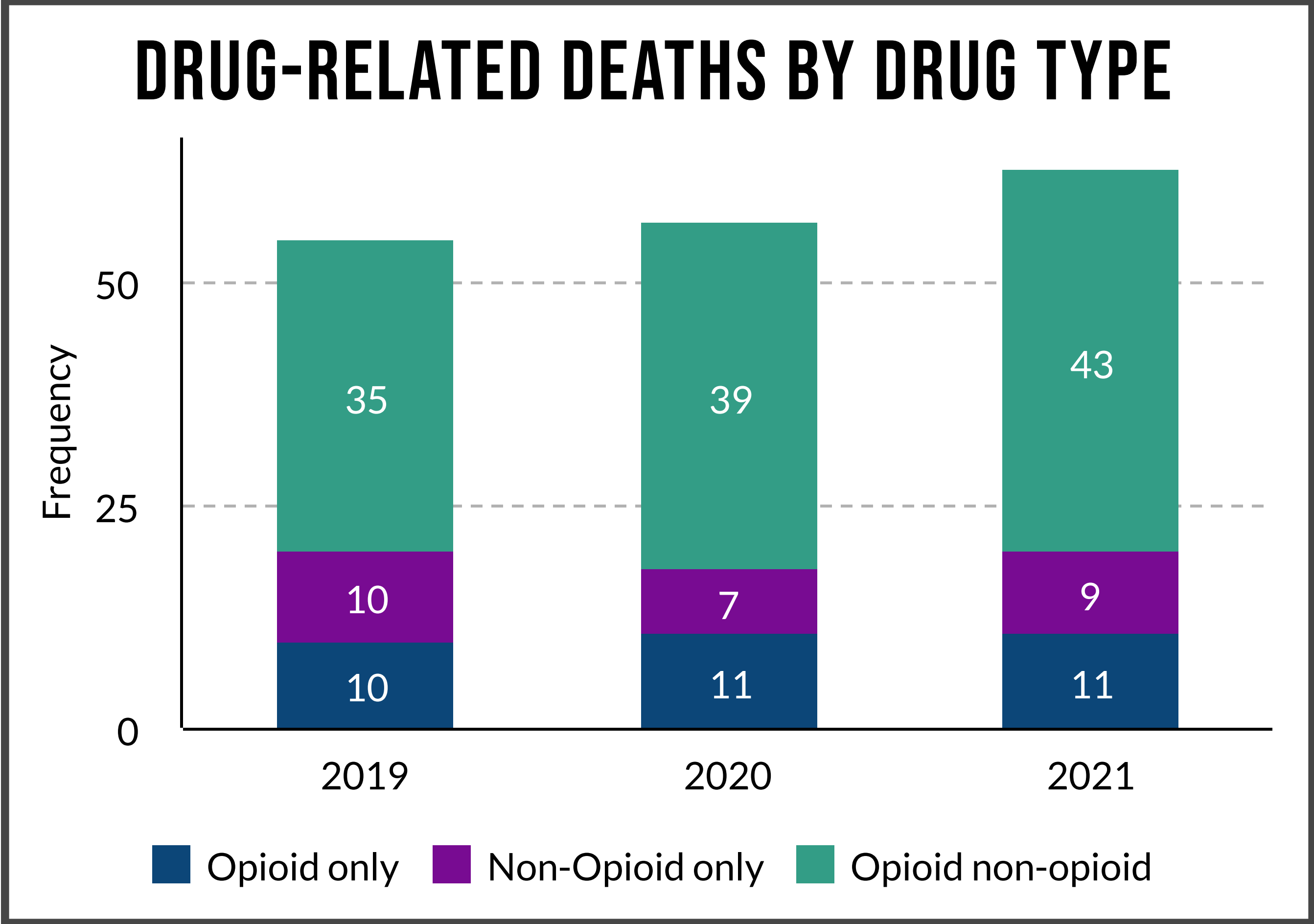
Age	Race	Sex	Death certificate: Substances contributing to death	Injury Zip code
66	B	F	cocaethylene, cocaine, ethanol	49444
68	B	M	acetyl-fentanyl, fentanyl, heroin	49441
73	B	M	cocaine, hydrocodone, para-fluorofentanyl	49444
90	W	M	apixaban, hydrocodone, morphine	49441

*Not included in report (n=1)

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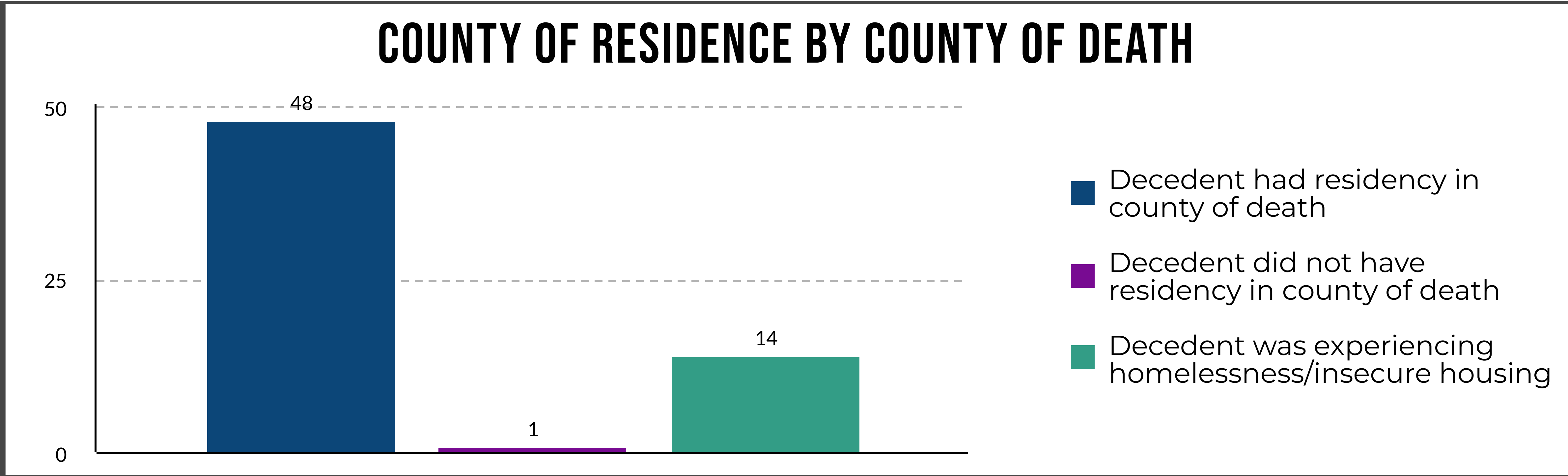
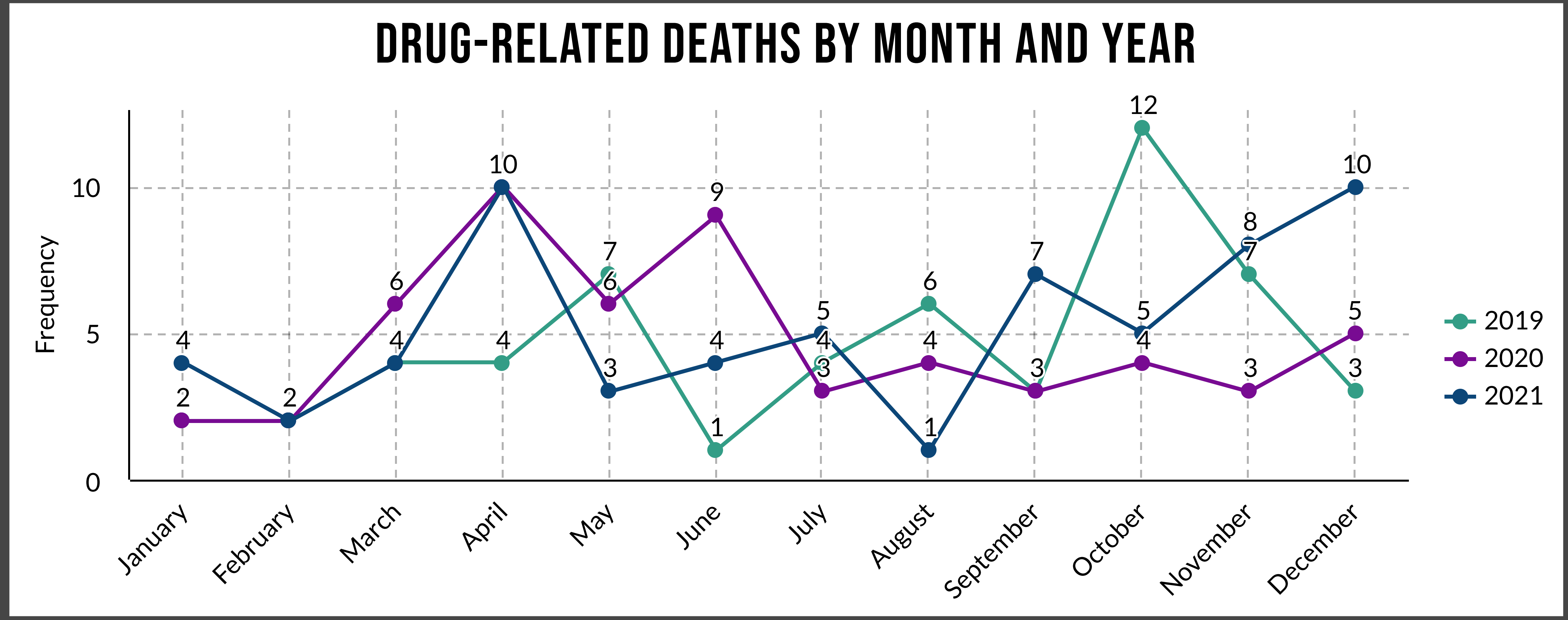
Total Drug-Related Deaths



Year	Total deaths	Deaths per 10,000
2019	55	3.2
2020	57	3.3
2021	63	3.6

Percent change

 11% from 2020 to 2021

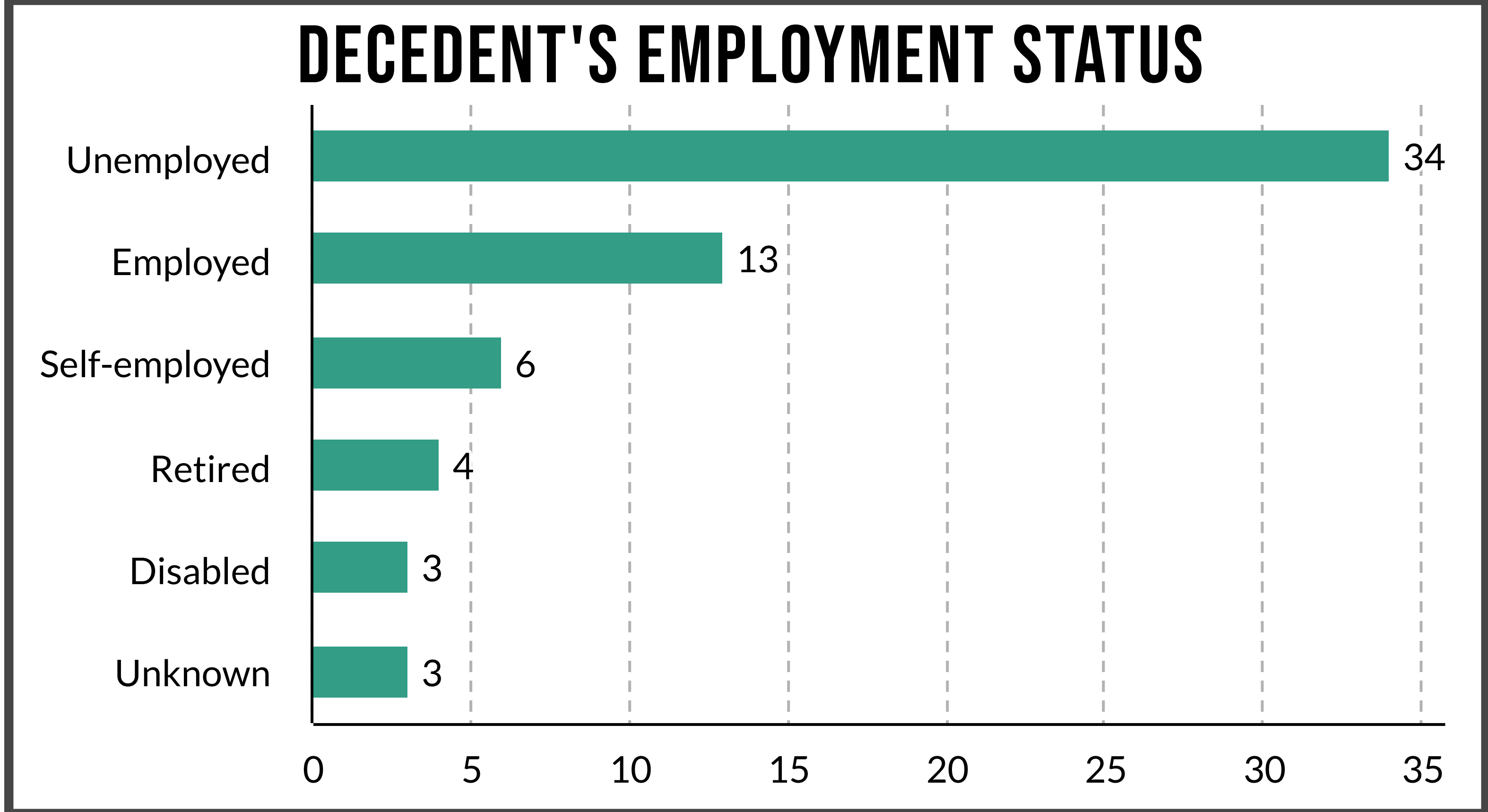


Deaths Related to Opioids and Other Drugs

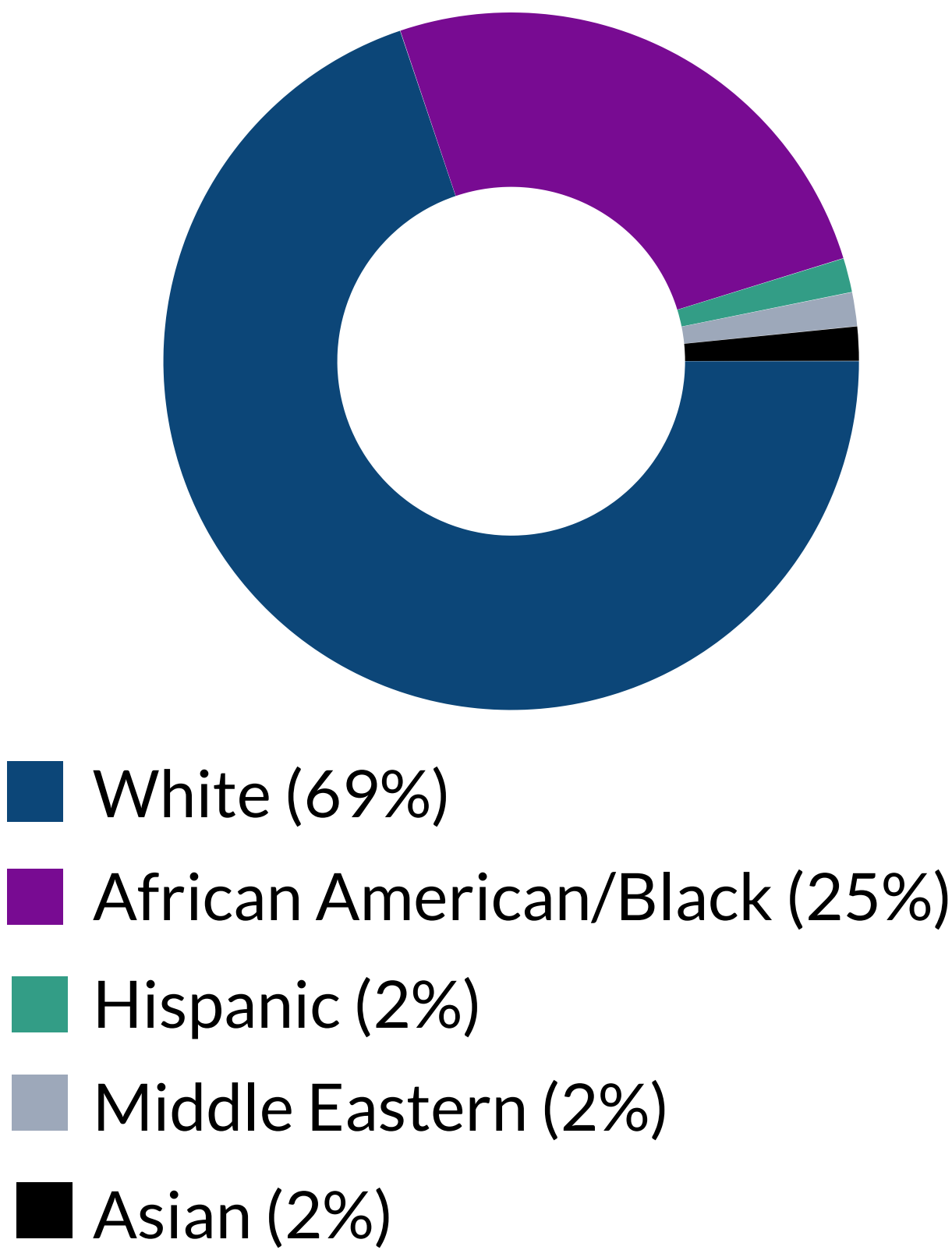
Muskegon

Demographics

DECEDENT'S EMPLOYMENT STATUS



RACE



SEX

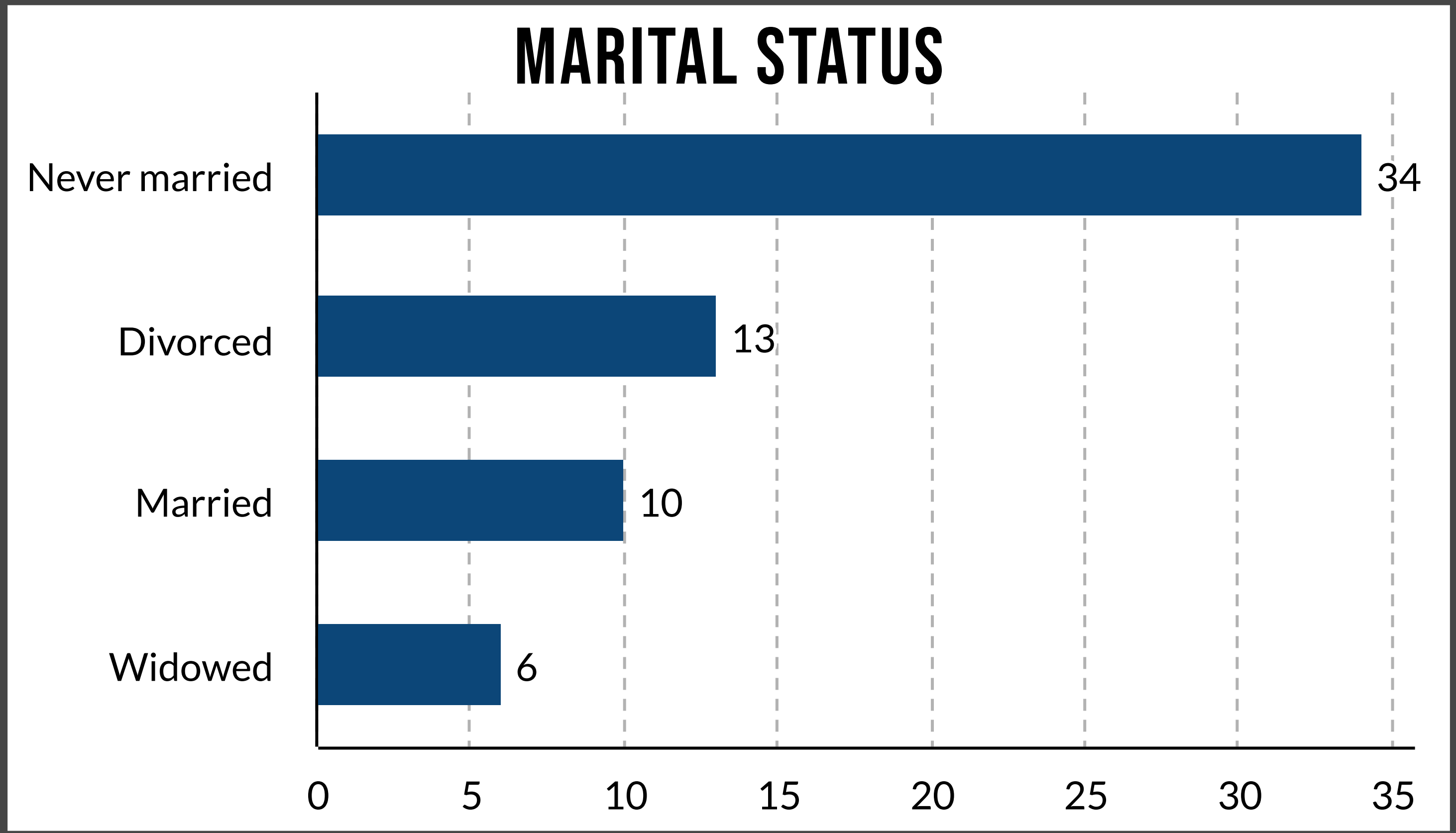


38%



62%

MARITAL STATUS



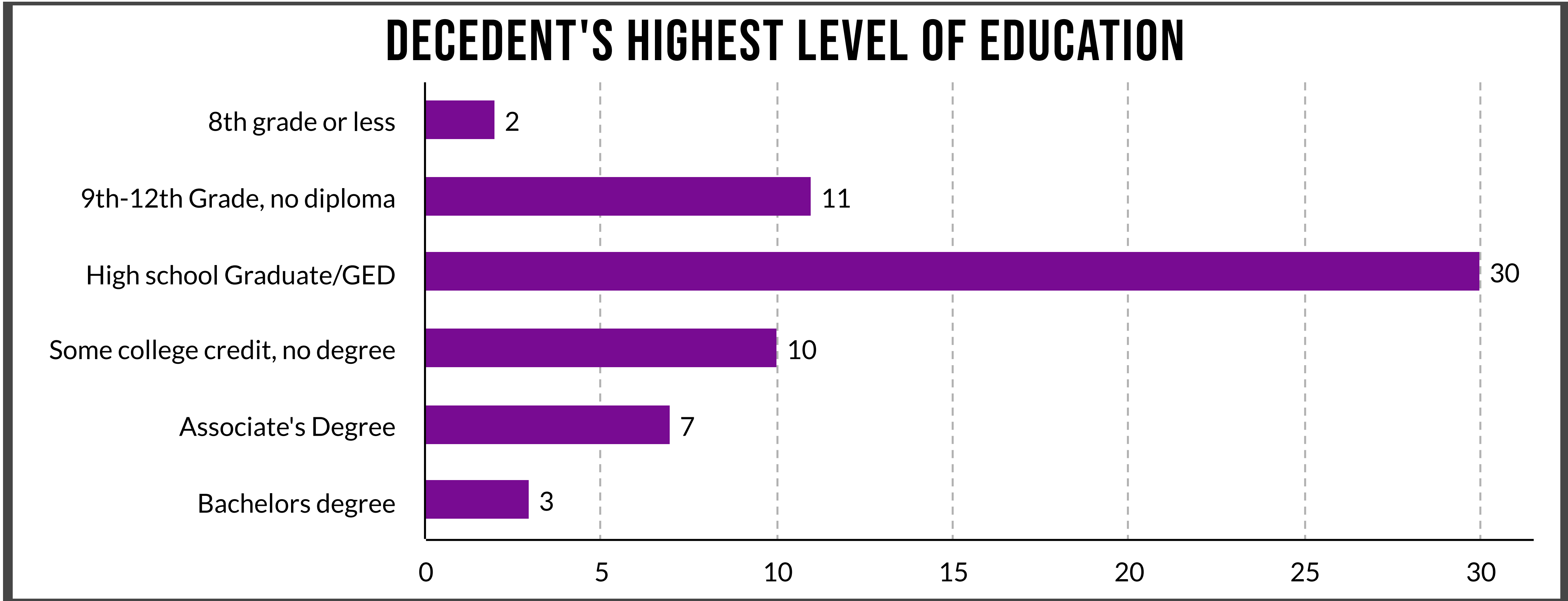
AGE

Minimum Age
19 years

Maximum Age
90 years

Average Age
45 years

DECEDENT'S HIGHEST LEVEL OF EDUCATION

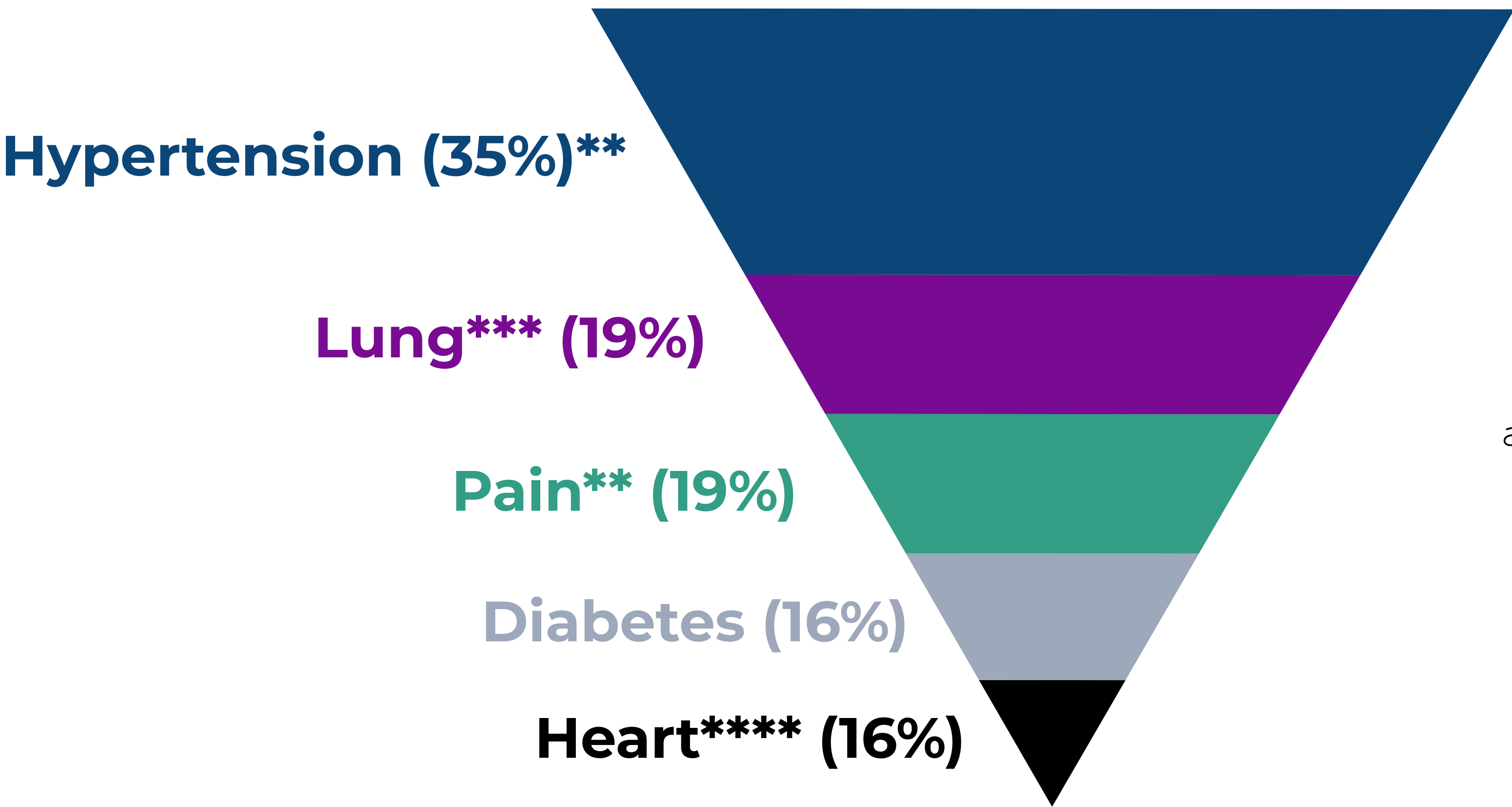


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Health Factors

MOST COMMON AILMENTS*

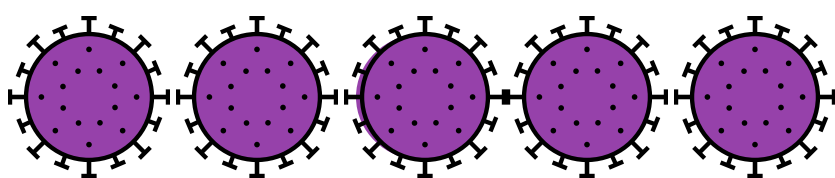


*Decedents may be represented in more than one category. Only illnesses with diagnosis by a medical professional are included.

**Pain includes arthritis, neck, back and knee pain, fibromyalgia, and neuropathy

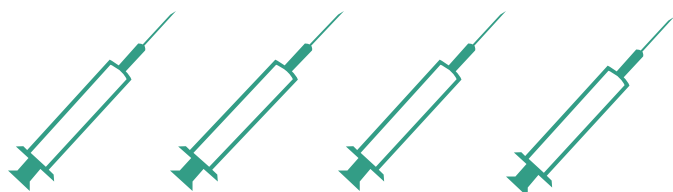
***Lung includes asthma, COPD, and emphysema

****Heart CAD, CHF, MI, and AFib (see end of page)



At least **5** decedents were **Hepatitis C** positive

3 of these decedents were known to use **drugs intravenously**



Decedent used tobacco

86%



Decedent drank alcohol

51%



Decedent had a PCP*

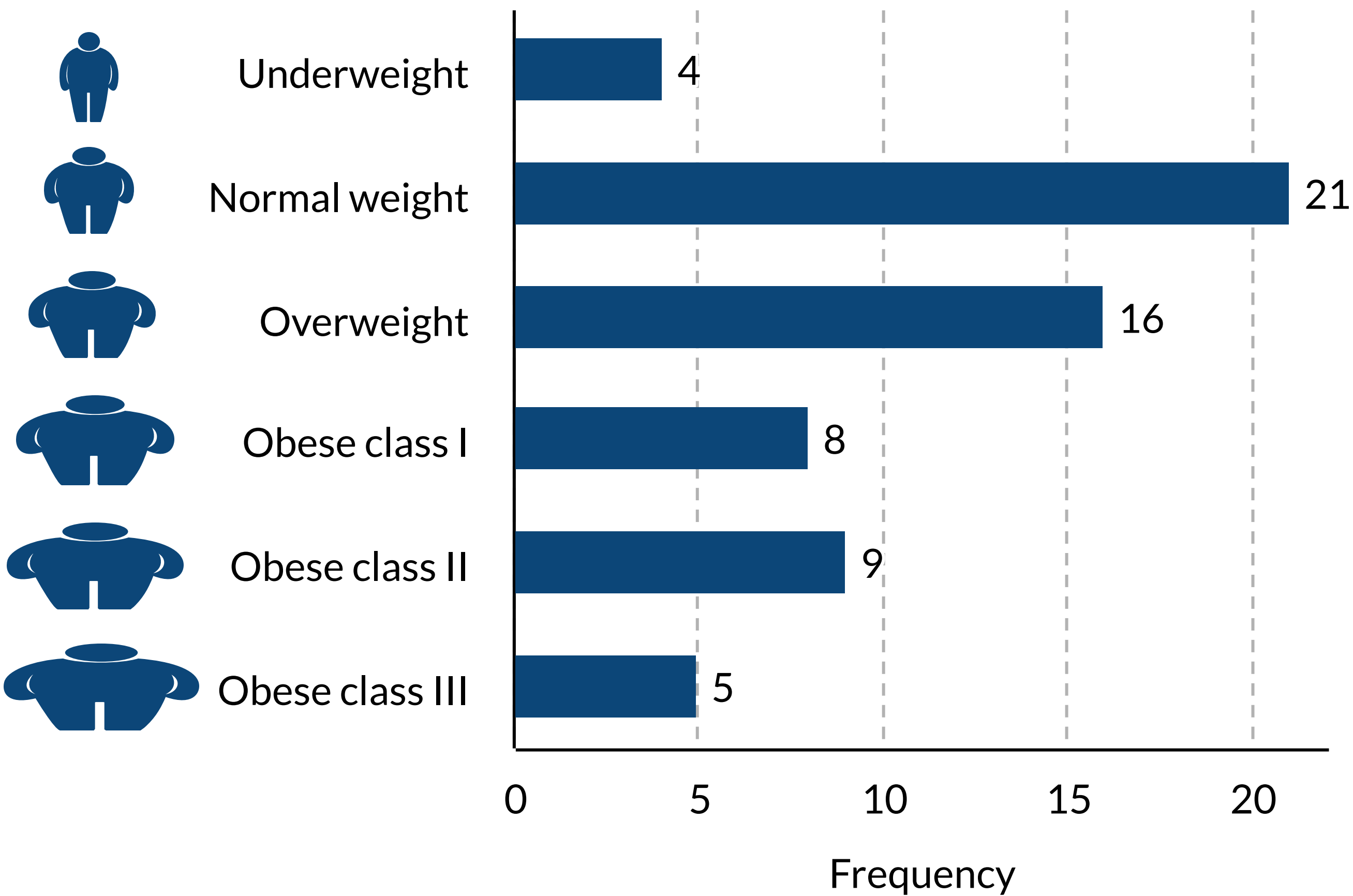
48%



*Moderate to heavy use

*Primary care physician

BODY MASS INDEX (BMI)



COPD=Chronic obstructive pulmonary disease; CHF=Congestive heart failure; MI=Myocardial infarction; CAD=Coronary artery disease; AFib=Atrial fibrillation

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Mental Health Factors

MOST COMMON MENTAL ILLNESSES

Depression (48%)

Anxiety (32%)

Bipolar (21%)

Schizophrenia (13%)

ADD/ADHD (8%)

*Decedents may be represented in more than one category. Only mental illnesses with official documented diagnosis are included.

PERCENTAGE OF DECEDENTS

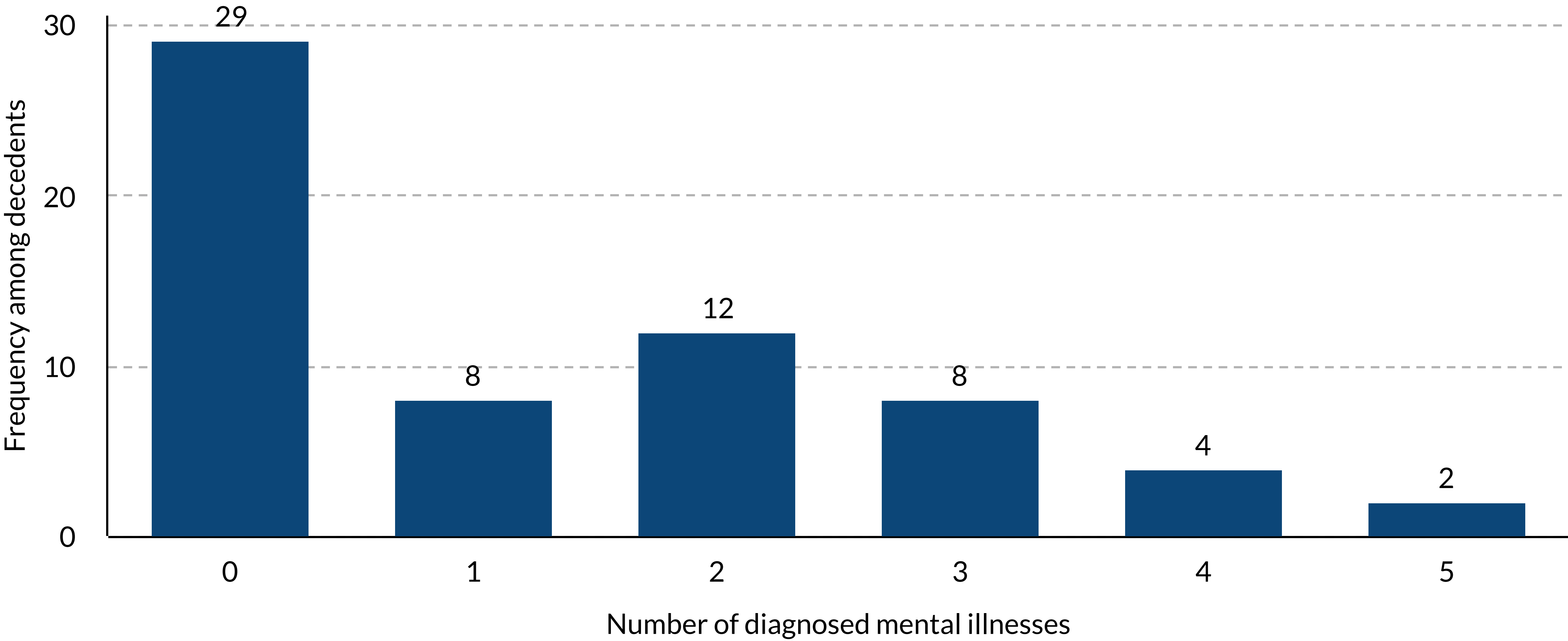
32%

...who have ever had **suicidal ideation**

20%

...with **previous suicide attempts**

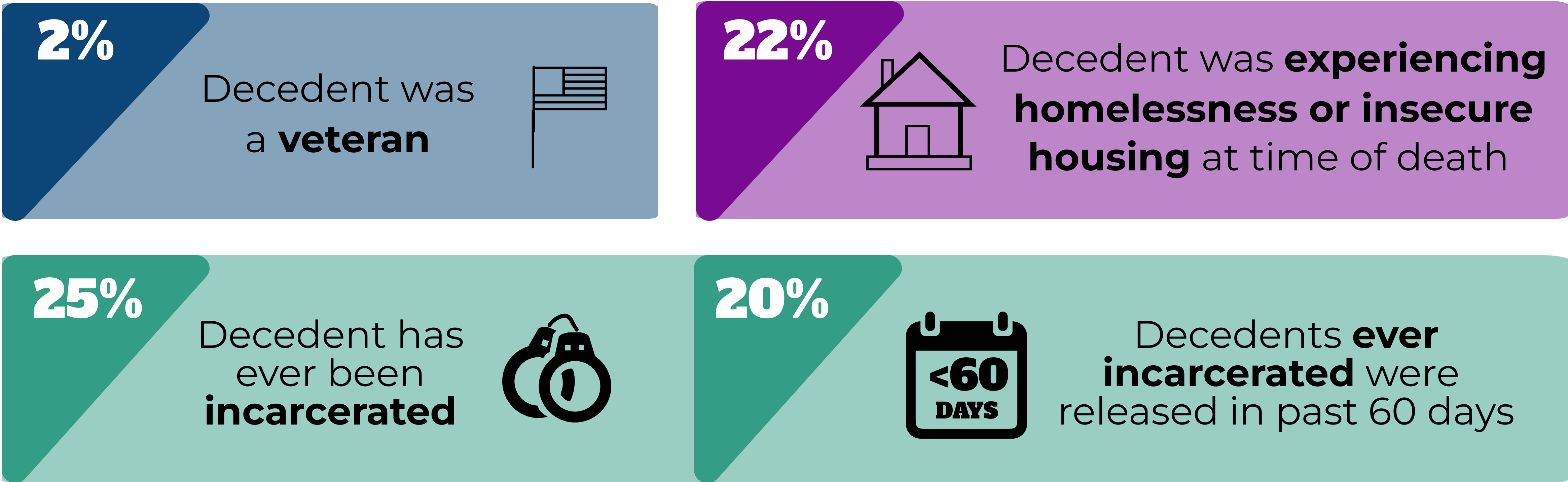
NUMBER OF DIAGNOSED MENTAL ILLNESSES AMONG DECEDENTS



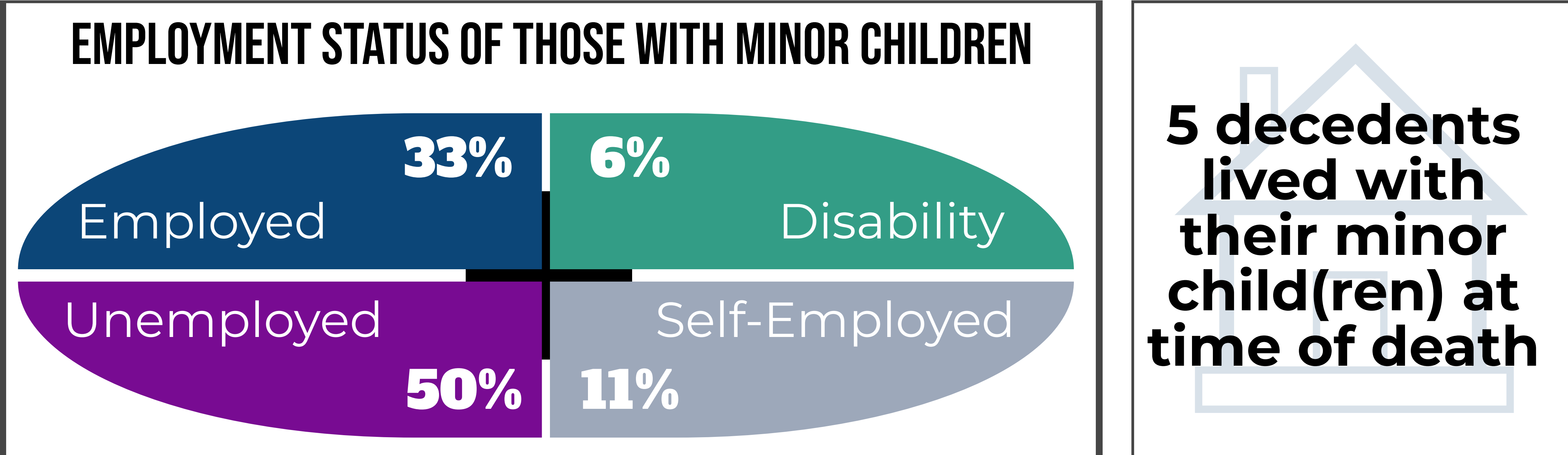
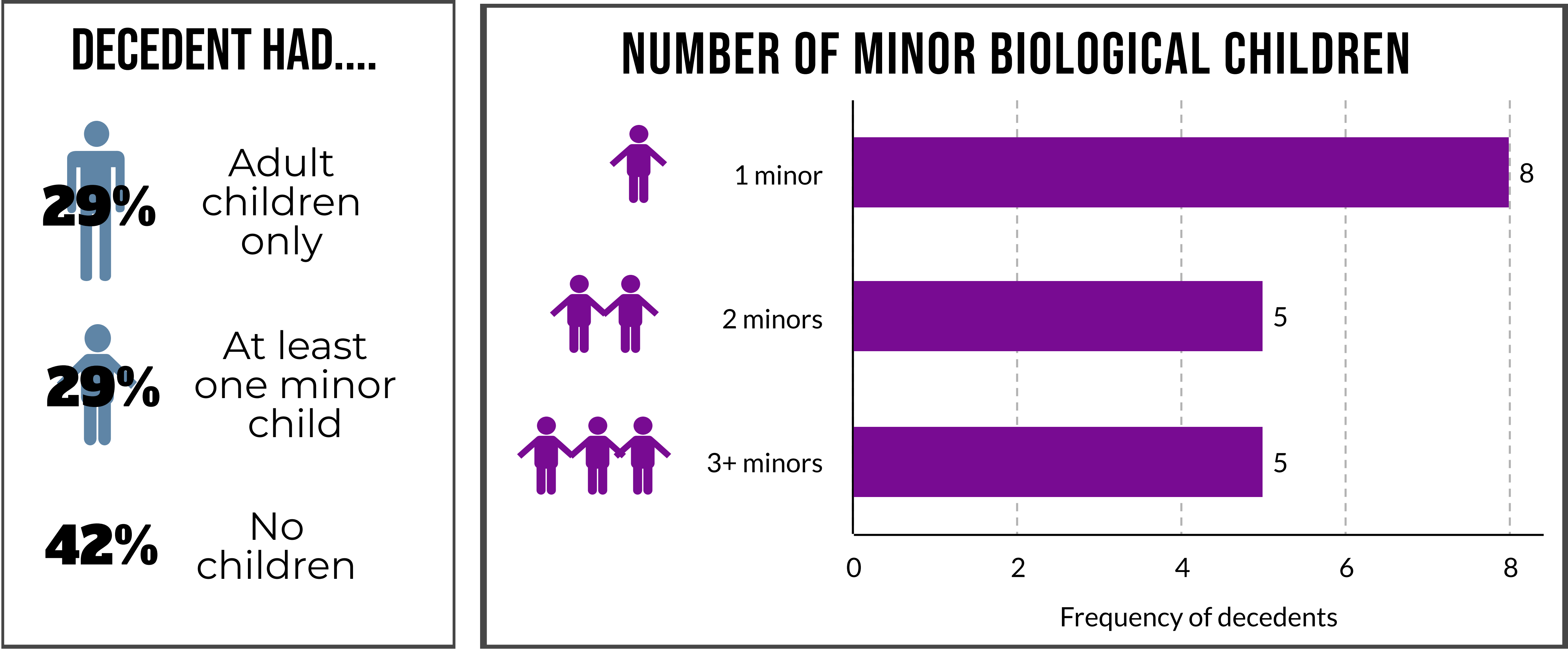
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Social Factors



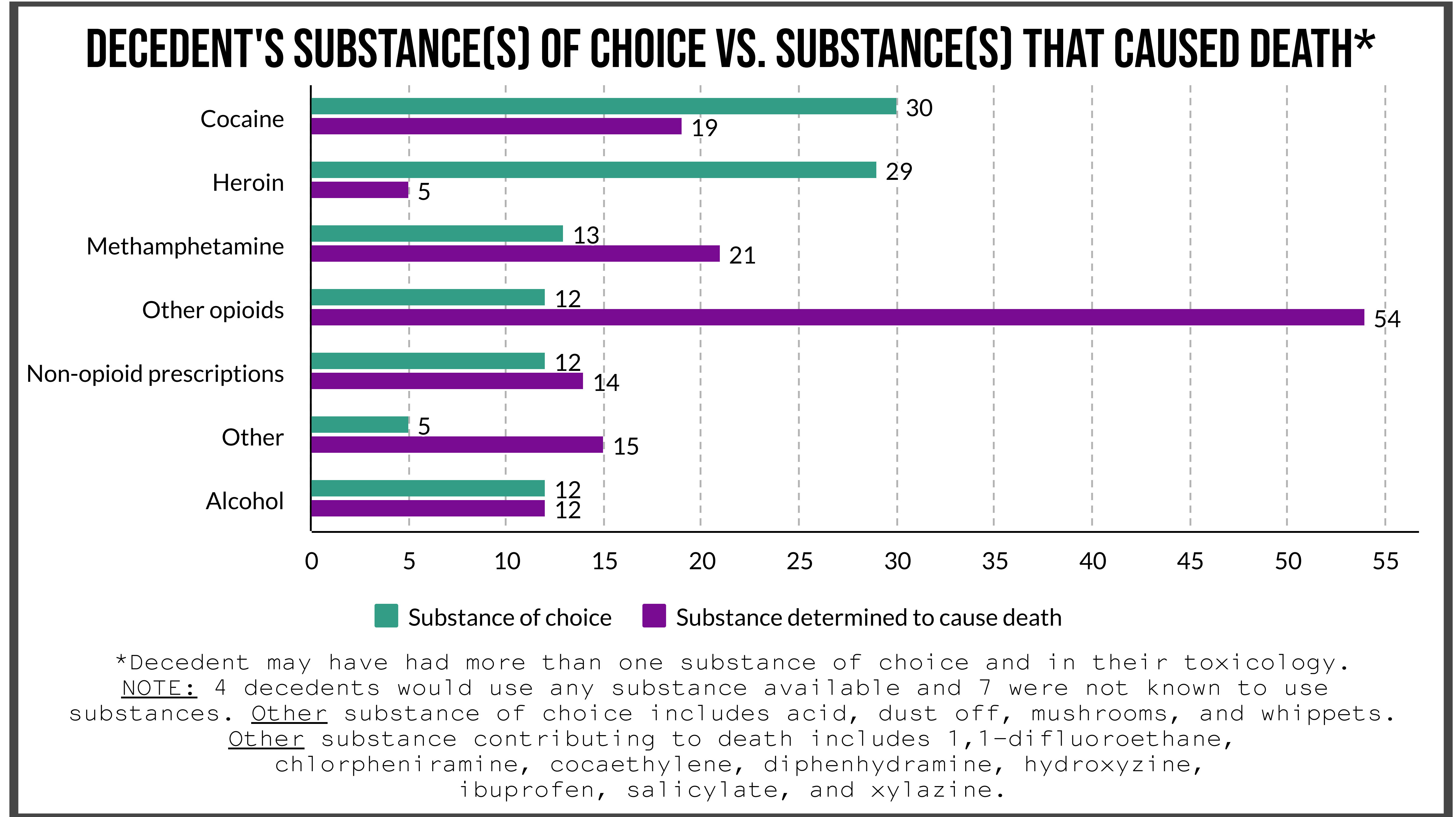
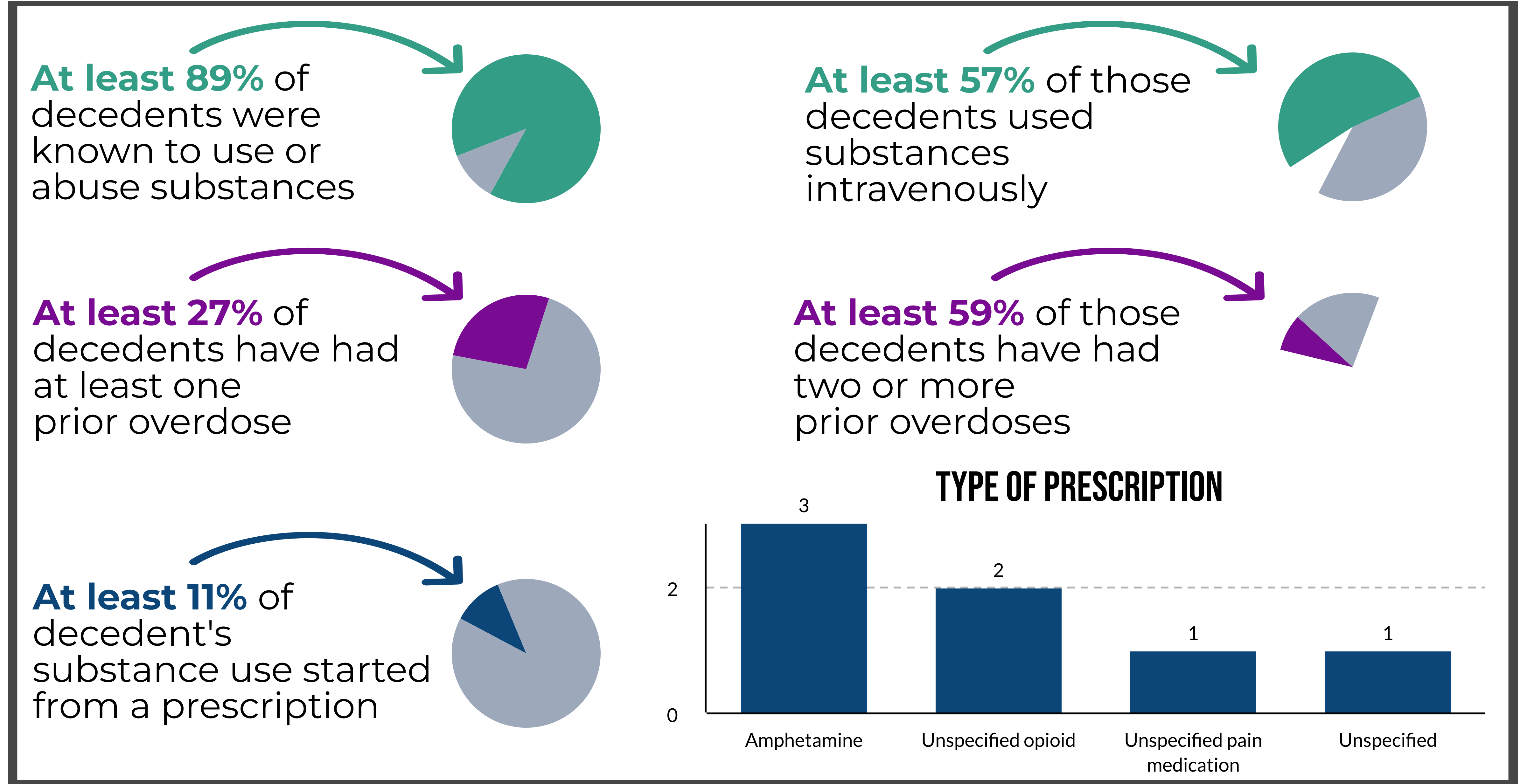
Children



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Substance Use History



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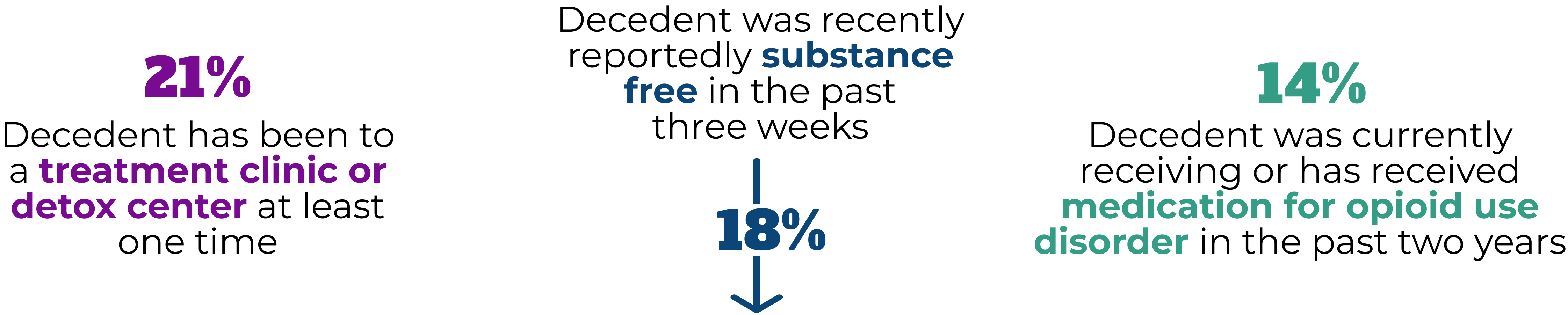
Substance Use History, cont.

PREFERRED METHOD OF ADMINISTRATION*

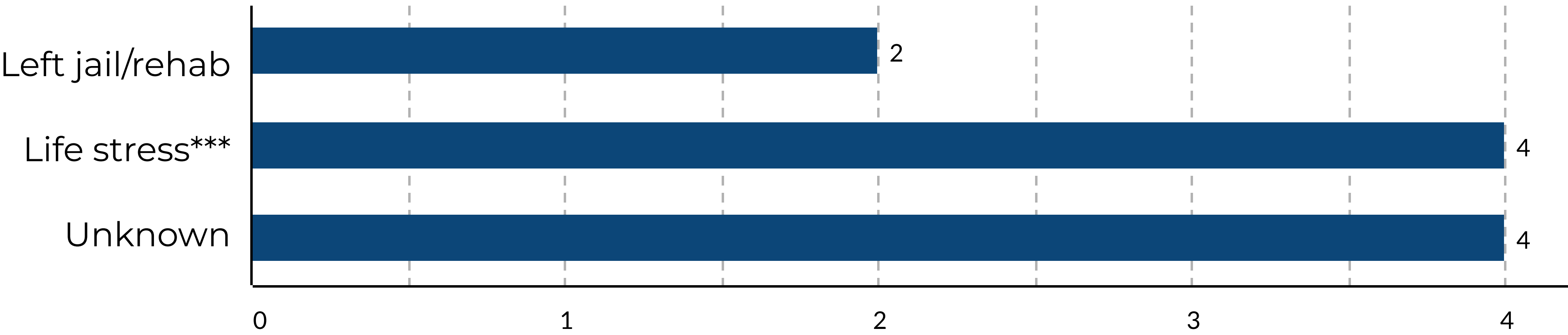
Method	Male (n=32)	Female (n=22)	White (n=41)	Black (n=12)	Total** (n=54)
Intravenous	17	13	26	4	30
Snort	15	4	16	3	19
Smoke	12	9	16	5	21
Transdermal	0	0	0	0	0
Huff	1	1	2	0	2
Oral	5	5	7	3	10
Unknown	2	0	0	2	2

*Decedent may have had more than one preferred method of administration. Only includes decedents with a substance use history. **Decedents of Hispanic and Middle Eastern descent are excluded (n=2).

RECOVERY HISTORY (N=56)*



SUSPECTED REASON FOR RELAPSE**



*ONLY Decedents known to use substances are included.

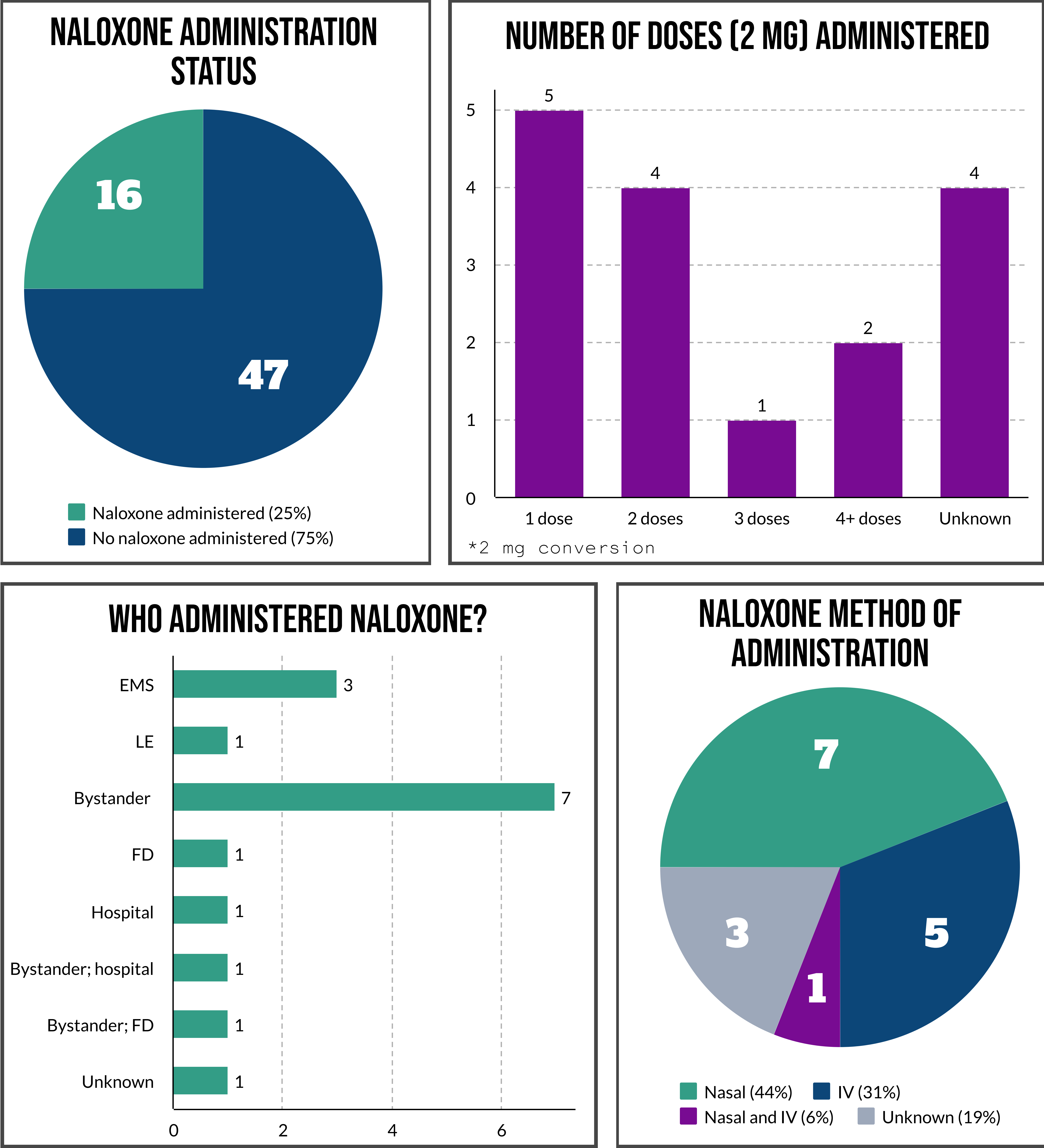
**These factors were mentioned by those close to the decedent for why they may have begun to use substances again after being substances free for at least three weeks.

***Life stress includes the death of someone close to the decedent, separations of loved ones, and social circle pressure.

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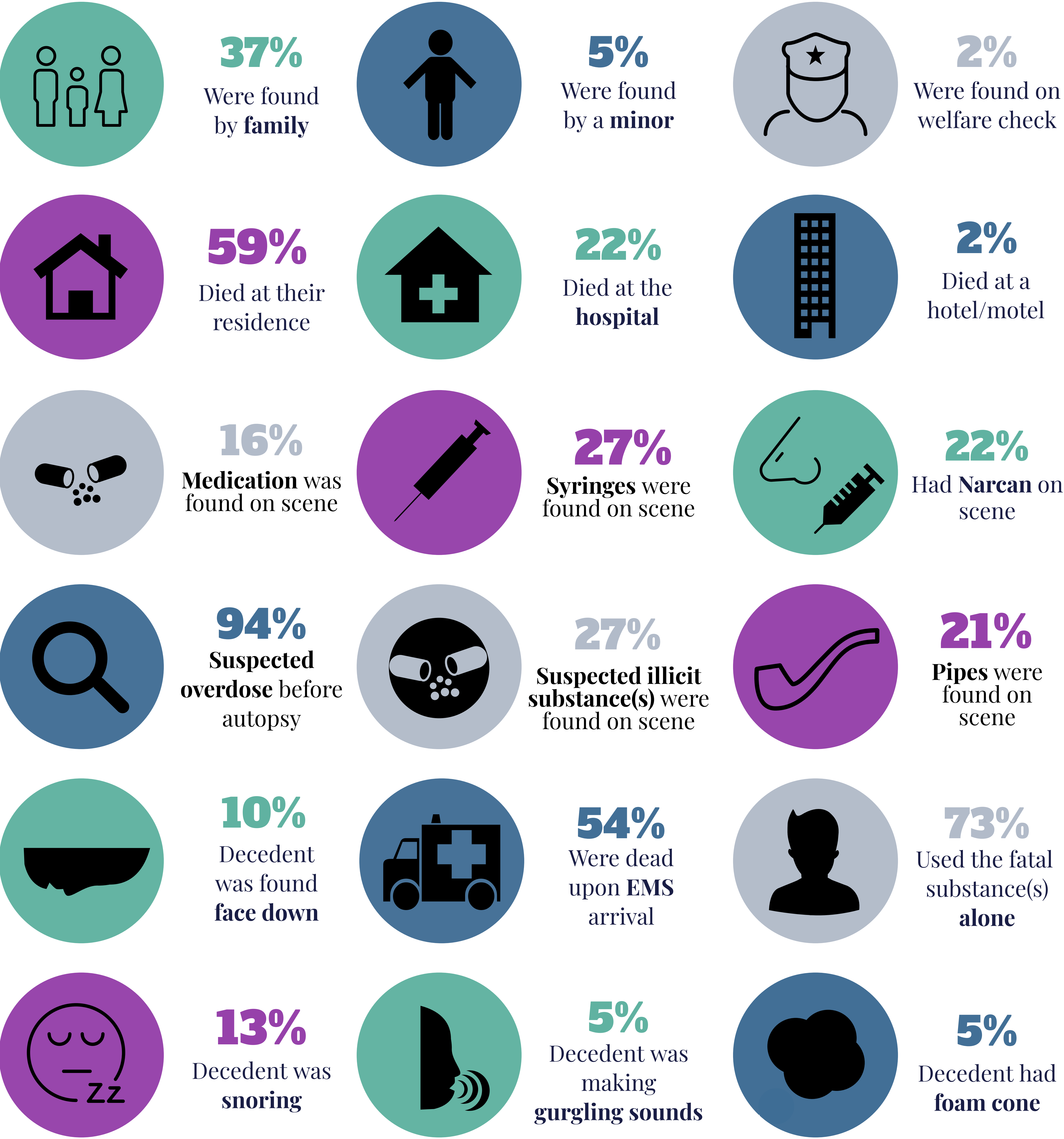
Naloxone Administration



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Death Scene Findings

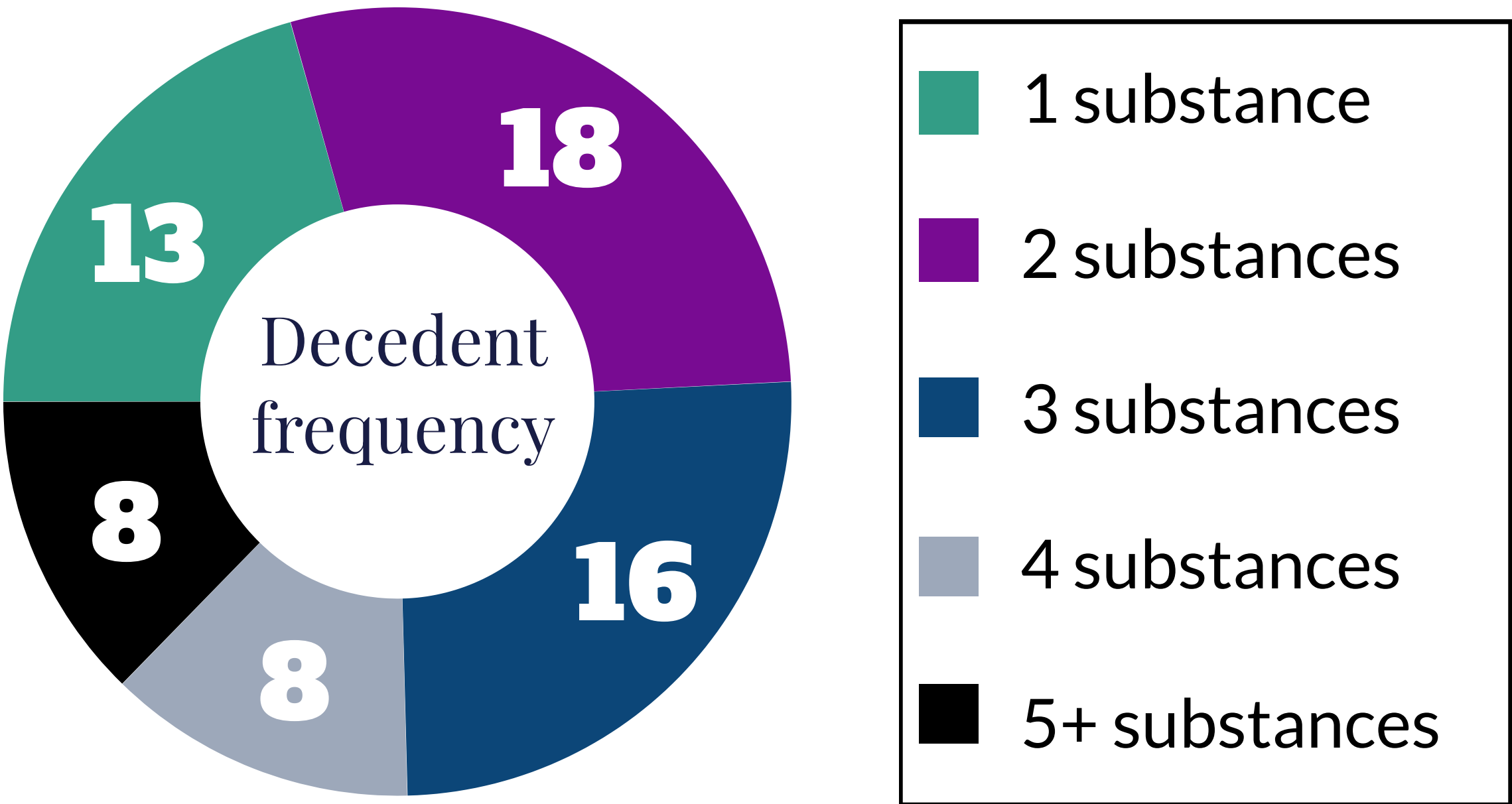


Deaths Related to Opioids and Other Drugs

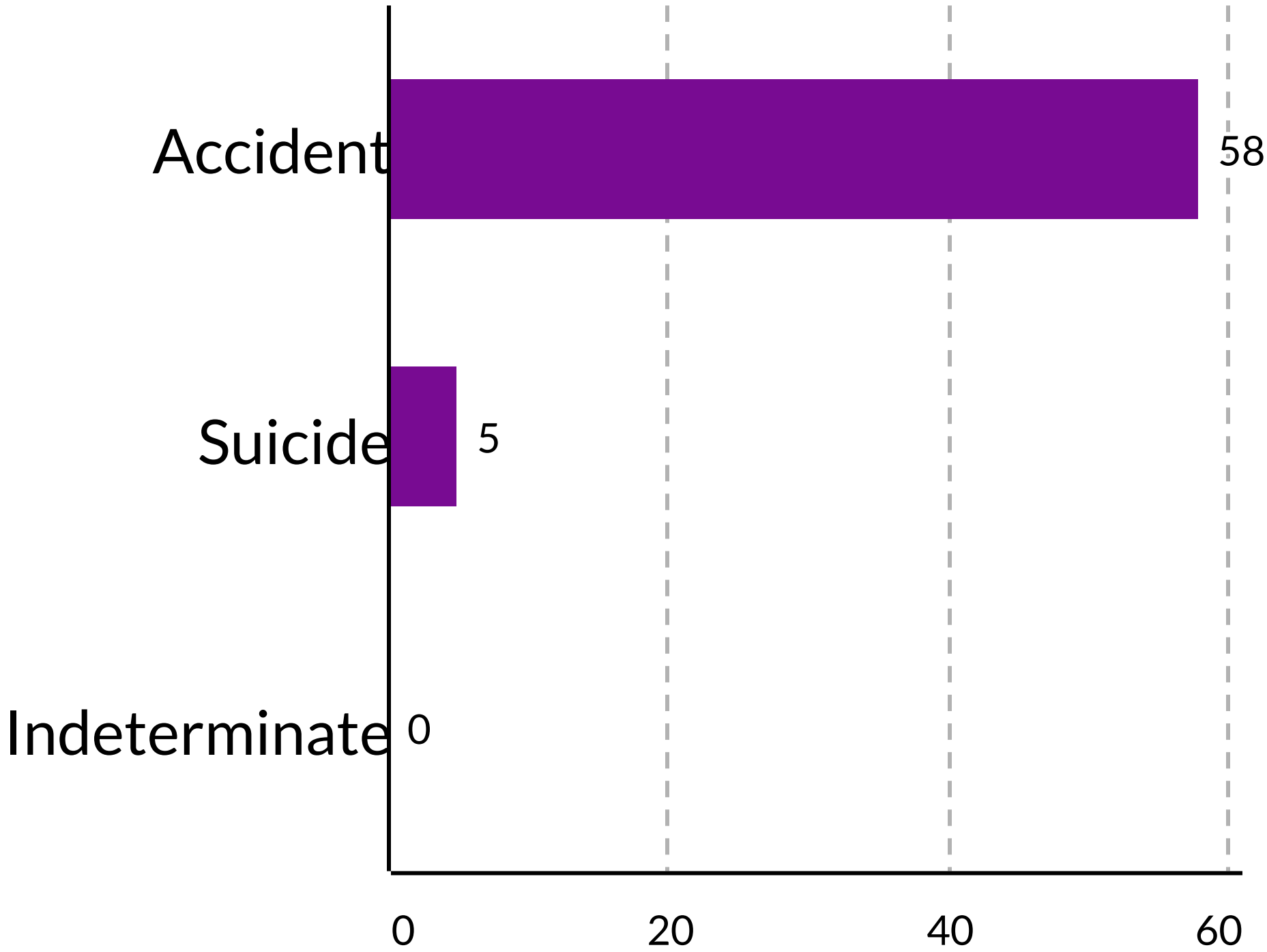
Muskegon

Autopsy and Toxicology Results

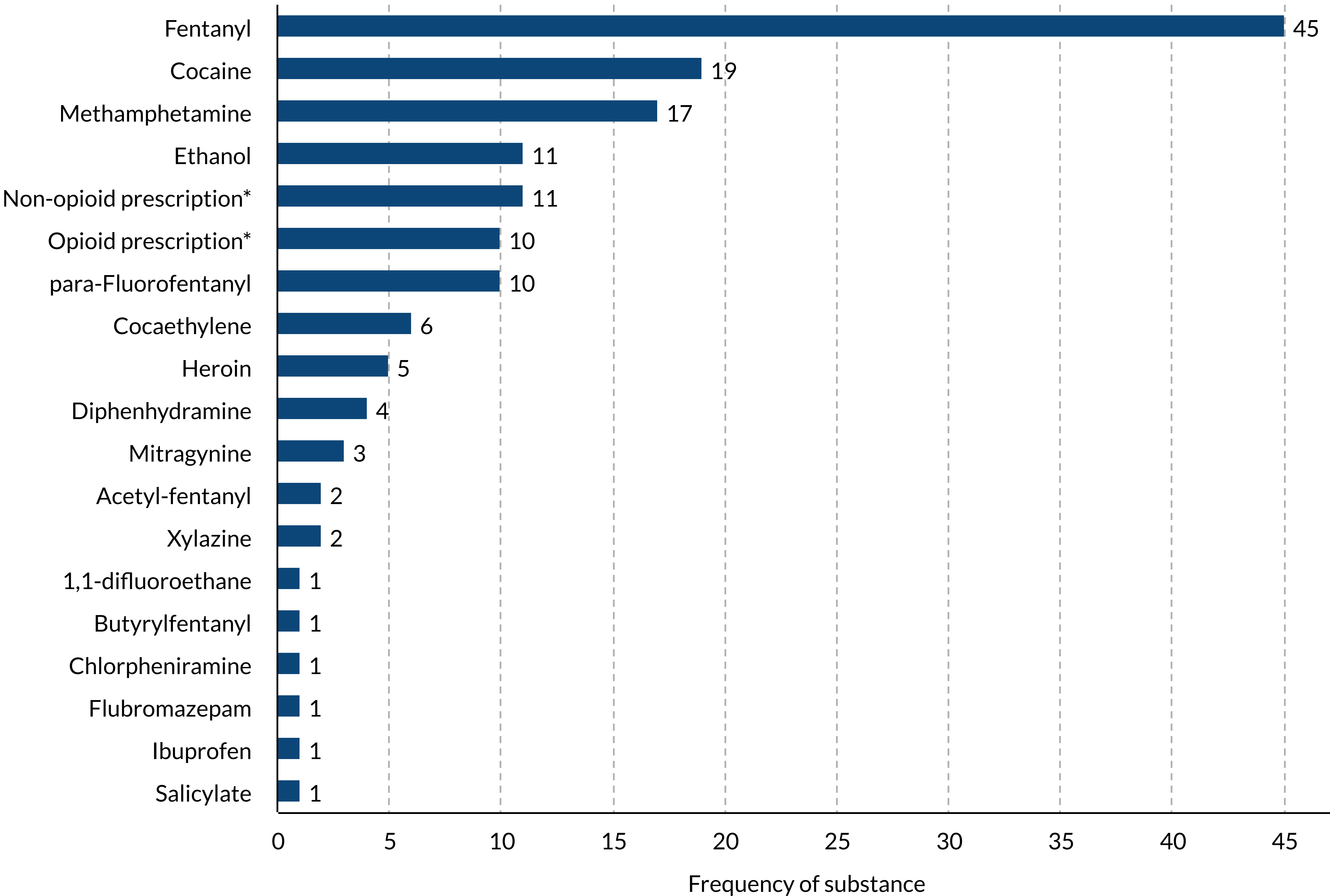
NUMBER OF SUBSTANCES
CONTRIBUTING TO DEATH



MANNER OF DEATH



SUBSTANCES CONTRIBUTING TO DEATH

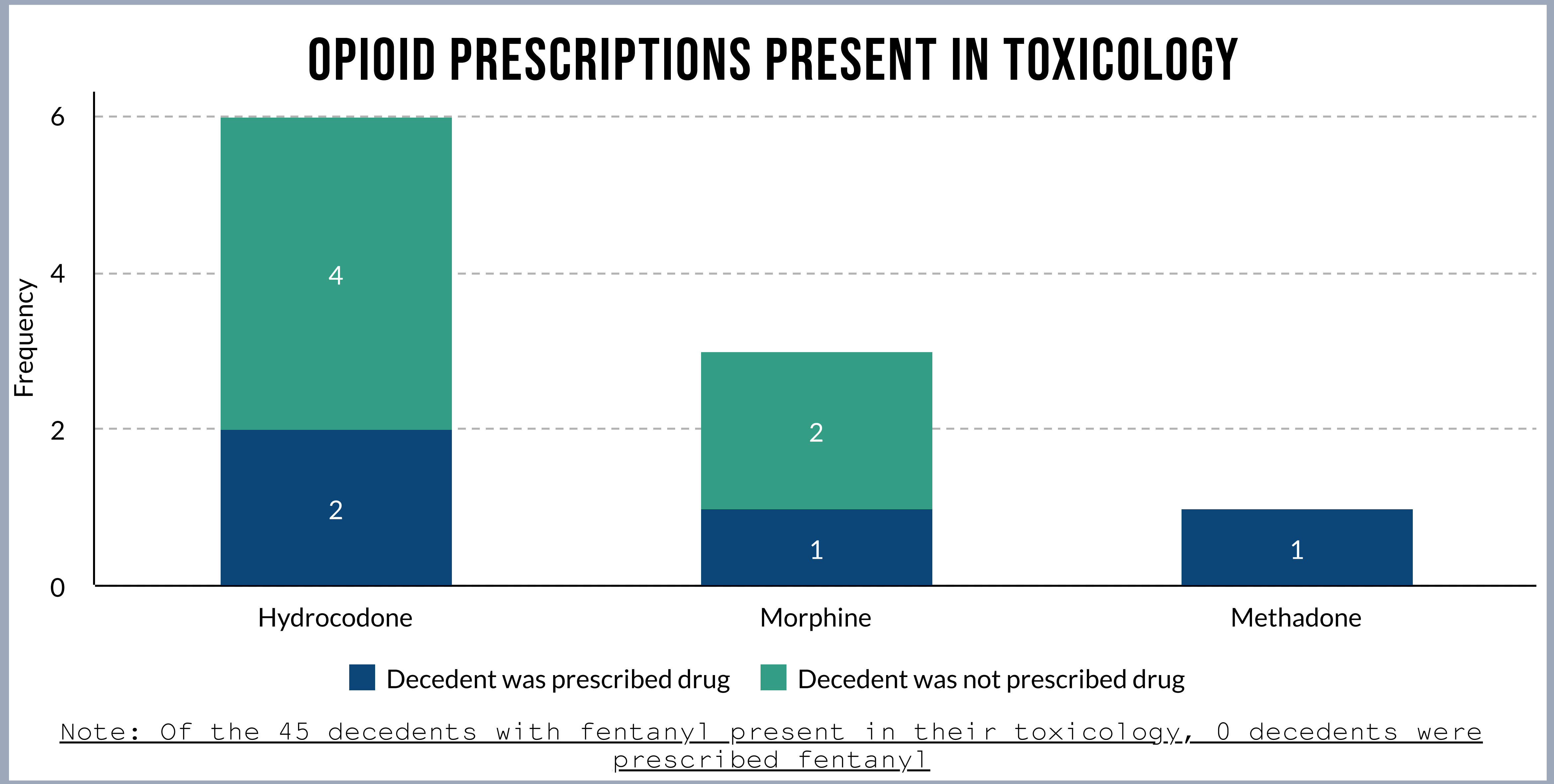
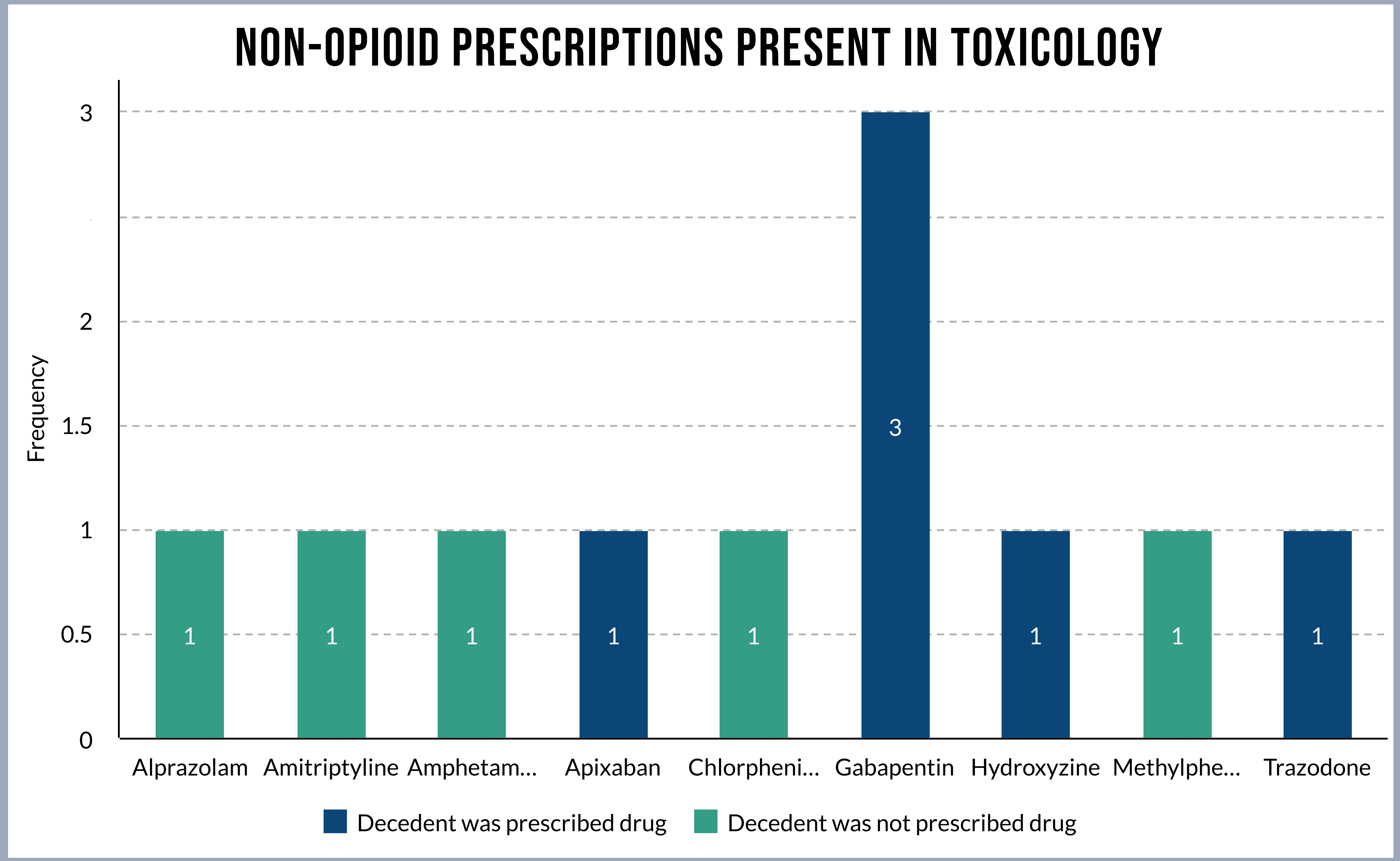


*Please see graphs on the next page for a list of opioid and non-opioid prescriptions.

Deaths Related to Opioids and Other Drugs

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Autopsy and Toxicology Results, cont.



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Highlights

OPIOIDS AND POSITIONAL ASPHYXIA

20% (11 of 54) of decedents who died due an opioid were originally found in a **potentially airway compromising position**

These positions include decedent drowning or decedent found face down on the floor, their bed, or on another surface

11% (1 of 9) of decedents who died due to only non-opioid substance(s) were originally found in a **potentially airway compromising position**

Opioids depress the respiratory system and when coupled with positional asphyxia, there may be an increase risk of death. This MEO suggests that those who use substances not use alone and to ensure they are not at risk for slumping forward onto their face.

NOVEL SUBSTANCES

Butyryl-fentanyl
1 death

- Potent, short-acting synthetic opioid
- Fentanyl analogue
- 1/4 potency of fentanyl

Para-Fluorofentanyl
10 deaths

- Analogue of fentanyl that causes similar effects
- Reportedly more toxic than fentanyl but provides lower levels of pain mitigation
- No approved medical use in the United States

Flubromazepam
1 death

- Benzodiazepine first synthesized in 1960
- Never marketed
- Re-appeared as a novel designer drug in late 2012

SUBSTANCE COMBINATIONS

HEROIN & FENTANYL

6 decedents had heroin in their toxicology
All 6 of these decedents also had fentanyl in their toxicology

XYLAZINE & FENTANYL

2 decedents had xylazine in their toxicology
Both of these decedents also had fentanyl in their toxicology

BENZODIAZEPINES & OPIOIDS

4 decedents had a benzodiazepine and an opioid in their toxicology
2 decedents were prescribed the opioid and benzodiazepine

METHAMPHETAMINE & OPIOIDS

15 decedents had methamphetamine and opioid(s) in their toxicology
14 decedents had methamphetamine and fentanyl in their toxicology