

Nonfatal Opioid Overdoses at Emergency Departments Participating in the Relay Initiative, 2021

Drug overdose deaths in New York City (NYC) are at their highest level since reporting began in 2000, with 2,668 unintentional overdose deaths in 2021. The highest rates of overdose death were among Bronx residents, males, and Black New Yorkers;¹ these racial and geographic disparities reflect the health inequities caused by structural racism and disinvestment in communities. Fentanyl was involved in 80% of overdose deaths in 2021,¹ demonstrating the significant risk posed by an increasingly contaminated drug supply in which even non-opioid substances may contain fentanyl.² Experiencing a nonfatal overdose increases the risk of having a fatal overdose in the future.³ Many people who experience a nonfatal opioid overdose are brought into hospital emergency departments (EDs), which presents an opportunity to engage patients immediately following their overdose to provide harm reduction services and reduce their risk of fatal overdose in the future.

In 2017, the NYC Department of Health and Mental Hygiene implemented Relay, a peer-led nonfatal overdose response system, to engage individuals during an ED visit for a suspected opioid overdose, regardless of whether the opioid use was intentional. Relay operates 24 hours a day, seven days a week in 14 hospitals located in neighborhoods across the city with high rates of overdose. Relay peers, called Wellness Advocates, are individuals with lived experience of substance use. Using a harm reduction approach, Wellness Advocates provide peer support, naloxone kits, overdose risk reduction education, and connections to care and supportive services. Individuals who are eligible for Relay may also agree to receive follow-up from a Wellness Advocate for up to 90 days after their ED visit. Data collected as part of the Relay initiative serve as a unique source of information about people experiencing nonfatal overdoses. This report summarizes data from the Relay initiative in 2021.

Definitions:

Relay is a program that responds to suspected opioid overdose events in 14 hospitals in the Bronx (3), Brooklyn (2), Manhattan (4), Queens (2), and Staten Island (3).

Relay services include up to 90 days of Wellness Advocate support following hospital discharge for a nonfatal overdose, or support in the emergency department only.

Relay eligibility:

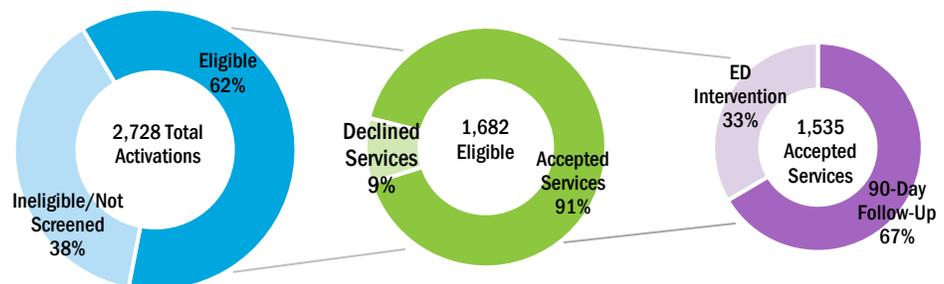
Individuals ages 18 or older who experienced a nonfatal opioid overdose and who are not currently incarcerated or in police custody are eligible for Relay.

Relay Wellness Advocates responded to over 2,700 suspected nonfatal overdoses in 2021

- The largest proportion (38%) of suspected nonfatal overdoses occurred in the Bronx.
- Of those eligible for Relay, 91% received services in the ED (e.g., naloxone kits, overdose risk reduction education, referrals); two-thirds (67%) of those who accepted ED services also consented to 90 days of Relay follow-up.

Almost all eligible referrals accepted Relay services

Relay activations by eligibility and service acceptance, New York City, 2021



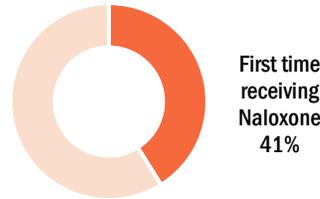
Activation= a suspected nonfatal opioid overdose for which Relay was called; activations do not represent unique individuals
Source: Relay database 2021

- Individuals may be offered Relay services multiple times; the 1,682 eligible referrals in 2021 represent 1,571 unique individuals. Ninety-one individuals had more than one nonfatal overdose in the reporting period and were offered Relay services more than once.

Relay Wellness Advocates provided thousands of services to reduce overdose risk in 2021

- In 2021, Relay distributed 1,649 naloxone kits and overdose prevention training to individuals seen in the ED and their networks. Forty-one percent of individuals who received a naloxone kit from Relay in 2021 reported that this was the first naloxone kit they had received.
- Relay Wellness Advocates provided tailored overdose risk reduction information and tips 2,242 times in 2021.

Two in five Naloxone kit recipients had never received a kit before
 Proportion among individuals seen in the ED by Relay, New York City, 2021



Source: Relay database 2021

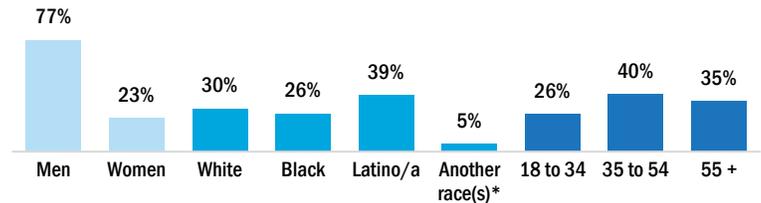
- Referrals provided by Wellness Advocates in 2021 included 100 to prescribers of medication for opioid use disorder, 151 for other substance use disorder treatment or detox services, and 161 for harm reduction or peer support services.

Data Source: Relay database, New York City Health Department 2021: Database maintained by the Bureau of Alcohol and Drug Use Prevention, Care, and Treatment of all suspected overdose patients assessed at 14 NYC hospitals as part of the Relay initiative since its launch in 2017; database includes eligibility, demographic characteristics, circumstances of the overdose event, and services received. Data from 2021 accessed 5/18/2022.

In 2021, nonfatal opioid overdoses among participants eligible for Relay disproportionately impacted men, people of color, and people without stable housing

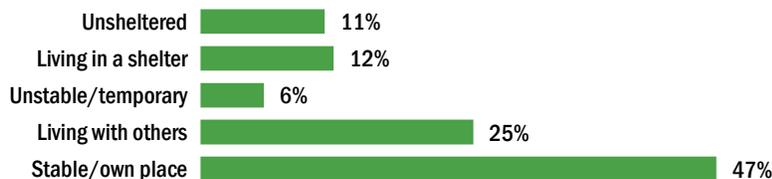
- Of the 1,571 unique individuals eligible for Relay in 2021, over three-quarters (77%) identified as men.
- Among eligible individuals, the largest proportion identified as Latino/a (39%), followed by White (30%) and Black (26%).
- A third (35%) of eligible individuals were ages 55 or older, but age groups varied by race/ethnicity; only 22% of White individuals were ages 55 or older compared with 34% of Latino/a individuals and 54% of Black individuals.

Individuals eligible for Relay in 2021 were mostly male and over age 35
 Characteristics of eligible individuals by gender identity, race/ethnicity, and age group, New York City, 2021



*“Men” and “Women” includes both cisgender and transgender men and women, respectively. *Another race(s) includes Asian, Middle Eastern or North African, American Indian or Alaska Native, Multiracial, or any other self-described race/ethnicity. White, Black, and “Another race(s)” categories exclude Latino/a ethnicity. Latino/a includes Hispanic or Latino/a of any race.
 Source: Relay database 2021

Nearly a quarter of individuals eligible for Relay were experiencing homelessness
 Housing status of eligible individuals, New York City, 2021



Source: Relay database 2021

- Nearly a quarter (23%) of individuals eligible for Relay in 2021 were experiencing homelessness, either living in a shelter (12%) or unsheltered (11%).
- Less than half (47%) had stable housing (i.e., were living in their own place).

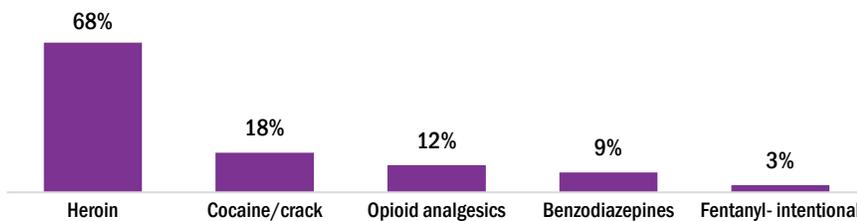
Definitions: Gender Identity Individuals are asked to describe their own gender identity. For the purposes of this publication, “Men” includes both cisgender and transgender men and “Women” includes both cisgender and transgender women.
Race/Ethnicity: Individuals are asked to describe their own race/ethnicity. Latino/a includes people of Hispanic, Latino/a, or Spanish origin of any race. “Another race(s)” includes Asian, Middle Eastern or North African, American Indian or Alaska Native, Multiracial, or any other race/ethnicity. White, Black, and “Another race(s)” categories exclude Latino/a ethnicity.
Housing Status: Unsheltered includes sleeping on the street, in an abandoned building, or in a place not intended for sleeping (e.g., subway station or park). Unstable/temporary housing includes transitional housing, substance use treatment facilities, single room occupancy and hotels. Living with others includes couch surfing and other temporary stays with friends or family.

Heroin was the substance most commonly taken before nonfatal opioid overdoses in 2021

- When asked about the substance(s) they thought they had used before overdosing, 68% of individuals eligible for Relay reported using heroin, 18% reported using cocaine, and 12% reported using opioid analgesics.
- Only 3% of eligible individuals reported that they had intentionally used fentanyl.
- Of those who reported using heroin, 43% thought that fentanyl was also present in their drugs.
- Among eligible individuals who had used cocaine before experiencing an opioid overdose, half (50%) said they had not intentionally used an opioid.

Over two-thirds of individuals eligible for Relay reported using heroin

Self-reported substance(s) taken prior to overdose, New York City, 2021



Individuals may report taking more than one substance; percentages may add up to >100%
Source: Relay database 2021

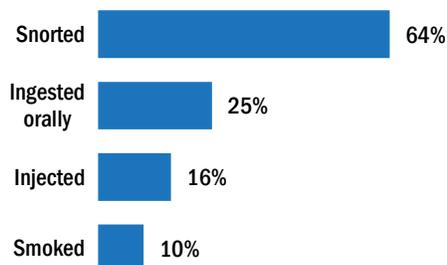
Definitions: Information on drugs and how they were taken prior to the overdose event is based on self-report. Drugs involved in nonfatal overdose events are not mutually exclusive as individuals may report using multiple drugs; percentages will not equal 100%.

Opioids include substances derived from “natural” opium, such as morphine or heroin, and synthetic drugs, such as methadone or fentanyl. **Opioid analgesics** are commonly known as prescription pain relievers, such as oxycodone (Percocet®) and hydrocodone (Vicodin®).

Fentanyl includes fentanyl and fentanyl analogs and can be one of two types: synthetic opioid analgesics pharmaceutically manufactured to manage severe pain or non-pharmaceutically manufactured. Fentanyl can be taken intentionally or unintentionally (i.e., added without the knowledge of the person using the drugs).

Most individuals eligible for Relay in 2021 reported snorting their drugs; few reported injection drug use

Self-reported route(s) of administration prior to overdose, New York City, 2021



Individuals may report more than one route of drug administration; percentages may add up to >100%
Source: Relay database 2021

- In 2021, a majority (64%) of individuals eligible for Relay reported they had used drug(s) intranasally (snorted) before overdosing.
- Only 16% reported having injected drug(s) before overdosing.
- More than two in five (44%) had overdosed previously.
- Syringe Service Programs (SSP) provide multiple services to people who use drugs, including safe drug use supplies, naloxone, health education, and service referrals. Among individuals eligible for Relay, 3% who reported using drugs intranasally and 18% who reported injecting a drug before overdosing were engaged in harm reduction services at an SSP.
- One in five (20%) eligible individuals who reported using an opioid were currently prescribed a medication for opioid use disorder (MOUD).
- More than half (56%) of overdoses among eligible individuals took place in a public space.

References: 1 Askari MS, Bauman M, Ko C, Tuazon E, Mantha S, Harocopos A. Unintentional Drug Poisoning (Overdose) Deaths in New York City in 2021. *New York City Department of Health and Mental Hygiene: Epi Data Brief* (133); 2022.

2 New York City Department of Health and Mental Hygiene. Presence of fentanyl in cocaine contributing to increase in overdose deaths. *Health Advisory #10*. 2017.

3 Caudarella A, Dong H, Milloy MJ, et al. Non-fatal overdose as a risk factor for subsequent fatal overdose among people who inject drugs. *Drug Alcohol Depend*. 2016;162:51–55.

4 Brand D. Drug Overdoses Continue to Rise Inside NYC Homeless Shelters. *City Limits*. June 30, 2022. <https://citylimits.org/2022/06/30/drug-overdoses-continue-to-rise-inside-nyc-homeless-shelters/>

5 Kunins, HV. Structural Racism and the Opioid Overdose Epidemic: The Need for Antiracist Public Health Practice. *J Public Health Manag Pract*. 2020;26(3):201-05.

6 Hawk KF, Vaca FE, D’Onofrio G. Reducing Fatal Opioid Overdose: Prevention, Treatment and Harm Reduction Strategies. *Yale J Biol Med*. 2015;88(3):235-45.

7 Harocopos A, Gibson BE, Saha N, et al. First 2 Months of Operation at First Publicly Recognized Overdose Prevention Centers in US. *JAMA Netw Open*. 2022;5(7):e2222149.

Implications

Information learned from the Relay initiative provides valuable insight into the characteristics of ED patients who have experienced a nonfatal opioid overdose and been transported to one of NYC's 14 participating EDs. These data mirror what has been observed in overdose deaths in NYC overall: men, Black and Latino/a New Yorkers, Bronx residents,¹ and those experiencing homelessness⁴ comprised a large proportion of individuals experiencing nonfatal opioid overdose. These disparities underscore the far-reaching effects of structural racism, including drug policy that has led to the inequitable incarceration of people of color, which increases the likelihood of overdose after release and excludes people from opportunities for housing and employment. Structural racism in drug policy and treatment has also resulted in limited access to buprenorphine among people of color—a less restrictive option for MOUD than highly supervised methadone treatment.⁵

Several factors can reduce the risk of nonfatal overdose for people who use drugs,⁶ including access to harm reduction services, evidence-based treatments such as MOUD, Overdose Prevention Centers, and a safe drug supply. However, many of the individuals seen by Relay were not engaged with the services that could aid a reduction in overdose risk, despite 44% having previously survived an overdose. Relay works to fill that gap, both by directly providing naloxone and overdose risk reduction education and by connecting participants to other resources and service providers.

The NYC Health Department is committed to reducing longstanding health inequities by ensuring access to and availability of lifesaving services in communities which have been disproportionately impacted by the overdose epidemic. In addition to implementing Relay, the Health Department has adopted various strategies, including: distributing over 100,000 naloxone kits each year; increasing access to fentanyl test strips; supporting the expansion of syringe service program hours to increase the availability of harm reduction services; expanding access to MOUD, including among people experiencing homelessness; and, investing resources to promote availability of buprenorphine treatment in safety net primary care clinics. To help address the increasingly contaminated unregulated drug supply, the NYC Health Department is conducting a drug-testing pilot at multiple syringe service programs where people can test their drugs on site and receive tailored risk reduction education.

Finally, the NYC Health Department supported the opening of two Overdose Prevention Centers (OPCs), an evidence-based approach to preventing overdose deaths.⁷

Despite the robust and innovative approaches implemented in NYC to mitigate the overdose epidemic, there is still more to be done. Based on these data, it is critical that harm reduction initiatives continue to engage people who use drugs intranasally, people who use cocaine and other non-opioid drugs (which may be contaminated with opioids), and people at risk of overdose who are experiencing homelessness. Moreover, expanding the above services, including the opening of additional OPCs in other neighborhoods that experience high rates of overdose, would begin to address some of the inequities observed in overdose and overdose deaths in NYC's most marginalized communities.

Health equity is attainment of the highest level of health and well-being for all people. Not all New Yorkers have the same opportunities to live a healthy life. Achieving health equity requires focused and ongoing efforts to address historical and contemporary injustices such as discrimination based on social position (e.g., class, immigration status) or social identities (e.g., race, gender, sexual orientation). For more information, visit the Centers for Disease Control and Prevention's [Health Equity](#) page.

Authors: Kelsey L. Kepler, Alice E. Welch, Tania Bouzy, Dominique Chambless, Angela Jeffers

Acknowledgements: Relay Wellness Advocates and Wellness Advocate Supervisors, as well as all the individuals seen by Relay

Suggested citation: Kepler KL, Welch AE, Bouzy T, Chambless D, Jeffers A. Nonfatal Opioid Overdoses at Emergency Departments Participating in the Relay Initiative, 2021. New York City Department of Health and Mental Hygiene: Epi Data Brief (134);Apr 2023.

MORE New York City Health Data and Publications at nyc.gov/health/data

Visit EpiQuery – the Health Department's interactive health data system at nyc.gov/health/EpiQuery

New York City Department of Health and Mental Hygiene





Epi Data Tables

April 2023, No. 134

Nonfatal Opioid Overdoses at Emergency Departments Participating in the Relay Initiative, 2021

Data Tables

- Table 1.** Relay activations by borough and eligibility/service acceptance, January 1-December 31, 2021
- Table 2.** Services provided by Relay in emergency departments and during follow-up, January 1-December 31, 2021
- Table 3.** Demographic characteristics of individuals eligible for Relay, January 1-December 31, 2021
- Table 4.** Circumstances of overdose among individuals eligible for Relay, January 1-December 31, 2021

Data Sources

Relay database, New York City Health Department 2021: Database maintained by the Bureau of Alcohol and Drug Use Prevention, Care, and Treatment of all suspected overdose patients assessed at 14 NYC hospitals as part of the Relay initiative since its launch in 2017; database includes eligibility, demographic characteristics, circumstances of the overdose event, and services received. Data from 2021 accessed 5/18/2022.



Table 1. Relay activations* by borough and eligibility/service acceptance, January 1-December 31, 2021

Source: Relay Database; Data as of May 18, 2022

	Total		Bronx		Brooklyn		Manhattan		Queens		Staten Island	
	Number	Percent [†]	Number	Percent [†]	Number	Percent [†]	Number	Percent [†]	Number	Percent [†]	Number	Percent [†]
Total Activations*	2728	100.0%	1043	38.2%	322	11.8%	636	23.3%	384	14.1%	343	12.6%
Activations* by Eligibility and Service Acceptance												
Eligible [^]	1682	61.7%	620	59.4%	183	56.8%	377	59.3%	256	66.7%	246	71.7%
Eligible + Accepted 90-day follow-up	1021	60.7%	402	64.8%	105	57.4%	258	68.4%	131	51.2%	125	50.8%
Eligible + Accepted ED services only	514	30.6%	189	30.5%	54	29.5%	95	25.2%	97	37.9%	79	32.1%
Eligible + Declined services	147	8.7%	29	4.7%	24	13.1%	24	6.4%	28	10.9%	42	17.1%
Ineligible- Not an Opioid Overdose	256	9.4%	80	7.7%	39	12.1%	64	10.1%	49	12.8%	24	7.0%
Ineligible- Other Reason ^o	396	14.5%	162	15.5%	60	18.6%	109	17.1%	28	7.3%	37	10.8%
Not Screened	394	14.4%	181	17.4%	40	12.4%	86	13.5%	51	13.3%	36	10.5%

*Activations are defined as a suspected nonfatal opioid overdose for which Relay is called.

[†]Percentages shown for total activation are the row percent for each borough. All other percentages shown are column percents.[^]Individuals aged 18+ who experienced a suspected nonfatal opioid overdose (usually an event in which an unconscious patient responded to naloxone, an opioid antagonist that reverses the effects of opioids) and are not currently incarcerated or in police custody are eligible for Relay. Patients eligible for Relay may accept 90 days of follow-up, services in the emergency department only, or decline services altogether; percentages for each of those groups are shown as % of eligible patients.^oOther reasons include the patient being under the age of 18, in police custody/incarcerated, mentally/cognitively incapable of providing consent, or already participating in Relay.

Table 2. Services provided by Relay in emergency departments and during follow-up, January 1-December 31, 2021

Source: Relay Database; Data as of May 18, 2022

	Services Provided in ED*	Services Provided During Follow-Up
	Number	Number
All Referrals		
All Referrals	372	369
Referrals by type[†]		
Medication for opioid use disorder	56	44
Other substance use disorder treatment/detox	82	69
Harm reduction, overdose prevention centers, or holistic peer support services	82	79
Mental health care	25	43
Primary/other medical care	36	32
Case management	29	41
All other referral types	203	216
Naloxone Kits (with training)		
Patient	1509	77
Network	62	1
Overdose Risk Reduction Education		
	1632	610
Escorts to Service Providers/Appointments		
	17	73

*Services provided in the ED include services delivered to all patients, regardless of eligibility for Relay follow-up.

†Individual referrals may cover multiple service types; numbers may add up to greater than the total number of referrals.

Table 3. Demographic characteristics of individuals eligible for Relay, January 1-December 31, 2021

Source: Relay Database; Data as of May 18, 2022

	Total		Accepted 90-day follow-up		Declined 90-day follow-up*	
	Number	Percent	Number	Percent	Number	Percent
Total†	1571	100.0%	990	100.0%	581	100.0%
Gender Identity^						
Men	1165	76.9%	737	76.1%	428	78.2%
Women	350	23.1%	231	23.9%	119	21.8%
Missing	56	--	22	--	34	--
Race/Ethnicity^o						
White	438	29.7%	267	28.1%	171	32.6%
Black/African American	388	26.3%	260	27.3%	128	24.4%
Latino/a/x	572	38.8%	378	39.7%	194	37.0%
Middle Eastern or North African	19	1.3%	13	1.4%	6	1.1%
Asian/Pacific Islander	13	0.9%	5	0.5%	8	1.5%
Another race(s)	46	3.1%	28	2.9%	18	3.4%
Missing	95	--	39	--	56	--
Age Group						
18 to 24	75	4.8%	50	5.1%	25	4.4%
25 to 34	328	21.0%	194	19.6%	134	23.3%
35 to 44	305	19.5%	177	17.9%	128	22.3%
45 to 54	313	20.0%	206	20.9%	107	18.6%
55 to 64	388	24.8%	258	26.1%	130	22.6%
65 and older	154	9.9%	103	10.4%	51	8.9%
Missing	8	--	2	--	6	--
Housing Status**						
Unsheltered	152	11.2%	102	10.8%	50	11.9%
Living in a shelter	164	12.0%	113	12.0%	51	12.2%
Unstable/temporary	78	5.7%	65	6.9%	13	3.1%
Living with others	335	24.6%	230	24.4%	105	25.1%
Stable/own place	634	46.5%	434	46.0%	200	47.7%
Unknown/missing	208	--	46	--	162	--

Unknown/missing values are excluded from all percent calculations due to differential rates of missingness between groups.

*Declined 90-day follow-up includes eligible patients who accepted ED services only or declined all Relay services.

†Individuals may have multiple overdoses and may participate in Relay more than once; therefore the total number of individuals may not match the number of activations in Table 1.

^Individuals are asked to describe their own gender identity. "Men" includes both cisgender and transgender men and "Women" includes both cisgender and transgender men

^oIndividuals are asked to describe their own race/ethnicity. Latino/a includes people of Hispanic, Latino/a, or Spanish origin of any race. White, Black, Middle Eastern or North African, Asian/Pacific Islander, and Another race(s) categories exclude Latino/a ethnicity. Another race(s) includes Multiracial, American Indian or Alaska Native, and any other race/ethnicity.

**Unsheltered includes sleeping on the street, in an abandoned building, or in a place not intended for sleeping (e.g., subway station or park). Unstable/temporary housing includes transitional housing, substance use treatment facilities, single room occupancy and other hotels. Living with others includes couch surfing and other temporary stays with friends or family.

Table 4. Circumstances of overdose among individuals eligible for Relay, January 1-December 31, 2021

Source: Relay Database; Data as of May 18, 2022

	Total		Accepted 90-day follow-up		Declined 90-day follow-up*	
	Number	Percent	Number	Percent	Number	Percent
Total[†]	1571	100.0%	990	100.0%	581	100.0%
Selected self-reported substance(s) taken prior to overdose[^]						
Heroin	947	68.0%	703	74.0%	244	55.1%
Cocaine/crack	251	18.0%	173	18.2%	78	17.6%
Benzodiazepines	126	9.0%	91	9.6%	35	7.9%
Opioid analgesics	173	12.4%	98	10.3%	75	16.9%
Fentanyl- intentional	46	3.3%	40	4.2%	6	1.4%
No substance use data reported	178	--	40	--	138	--
Self-reported route of administration prior to overdose^{^o}						
Injected	197	16.0%	140	16.0%	57	16.2%
Snorted	787	64.0%	592	67.5%	195	55.4%
Smoked	119	9.7%	94	10.7%	25	7.1%
Ingested orally	302	24.6%	196	22.3%	106	30.1%
Other/unknown/not asked	342	--	113	--	229	--
Overdose took place in a public space						
Yes	732	56.1%	477	54.9%	255	58.6%
No	572	43.9%	392	45.1%	180	41.4%
Unknown/missing	267	--	121	--	146	--
Self-reported lifetime history of overdose						
Yes	499	44.4%	369	46.4%	130	39.5%
No	625	55.6%	426	53.6%	199	60.5%
Unknown/missing	447	--	195	--	252	--
Currently engaged with a syringe service program						
Yes	47	4.1%	36	4.3%	11	3.5%
No	1095	95.9%	794	95.7%	301	96.5%
Unknown/missing	429	--	160	--	269	--
Currently prescribed medication for opioid use disorder						
Yes	217	17.7%	163	18.3%	54	16.2%
No	1007	82.3%	727	81.7%	280	83.8%
Unknown/missing	347	--	100	--	247	--
Selected self-reported risk factors involved in overdose[^]						
Intentional overdose	13	1.1%	9	1.0%	4	1.3%
Thinks fentanyl was added without their knowledge	559	47.6%	434	49.8%	125	41.3%
Not their usual substance/brand/dose	505	43.0%	388	44.5%	117	38.6%
Used alone	382	32.5%	300	34.4%	82	27.1%
More than one substance	395	33.6%	305	35.0%	90	29.7%
Away from routine use location	59	5.0%	49	5.6%	10	3.3%
Recent period of abstinence	278	23.7%	219	25.1%	59	19.5%
Unknown/missing	397	--	119	--	278	--

Unknown/missing values are excluded from all percent calculations due to differential rates of missingness between groups.

*Declined 90-day follow-up includes eligible patients who accepted ED services only or declined all Relay services.

†Individuals may have multiple overdoses and may participate in Relay more than once; therefore the total number of individuals may not match the number of activations in Table 1.

^Categories are not mutually exclusive and percentages may add up to >100%

oRoute of administration is only asked for heroin, cocaine/crack, opioid analgesics, methadone, and benzodiazepines.