

Supplemental Table 1. Rates of homicide, suicide, and unintentional opioid-involved overdose deaths during pregnancy and the first year postpartum by data source, North Carolina 2018-2019

| | Number of deaths | Rate per 100,000 live births^a |
|--|-------------------------|---|
| Homicide | | |
| Pregnancy checkbox on the death certificate only | 16 | 6.7 |
| Linked NC-MMRC and NC-VDRS | 23 | 9.7 |
| Suicide | | |
| Pregnancy checkbox on the death certificate only | 8 | 3.4 |
| Linked NC-MMRC and NC-VDRS | 9 | 3.8 |
| Unintentional opioid-involved overdose | | |
| Pregnancy checkbox on the death certificate only | 24 | 10.1 |
| Linked NC-MMRC and NC-SUDORS | 36 | 15.1 |

Note: NC – North Carolina; MMRC – Maternal Mortality Review Committee; VDRS – Violent Death Reporting System; SUDORS – Statewide Unintentional Drug Overdose Reporting System

^aFrom 2018-2019 in North Carolina, there were 237,679 live births per the North Carolina State Center for Health Statistics (<https://schs.dph.ncdhhs.gov/data/vital/ims/2021/2021-IMR-TABLE-10b-FINAL.html>)

Supplemental Table 2. Substance class categorization of literal text drug mentions in North Carolina death certificate data

| Substance class | Literal text drug mentions ^a |
|---------------------------------------|--|
| Opioids | ACETYLFENTANYL, ACRYLFENTANYL, BUPRENORPHINE, BUTYRFENTANYL, CARFENTANIL, CODEINE, CYCLOPROPYLFENTANYL, FENTANYL, FLUOROBUTYRFENTANYL, FLUOROFENTANYL, FLUOROISOBUTYRYLFENTANYL, FURANYLFENTANYL, HEROIN, HYDROCODONE, HYDROMORPHONE, KRATOM, MEPERIDINE, METHADONE, METHOXYACETYLFENTANYL, METHYLFENTANYL, MITRAGYNINE, MORPHINE, NARCOTIC, OPIOID, OXYCODONE, OXYMORPHONE, PROPOXYPHENE, TAPENTADOL, TRAMADOL, U47700, U48800, U49900, VALERYLFENTANYL |
| Psychostimulants | ALPHA PVP, AMPHETAMINE, BENZOYLECGONINE, CAFFEINE, CHLOROMETHCATHINONE, COCAINE, DIBUTYLONE, ETHYLONE, ETHYLPENTYLONE, EUTYLONE, FLUOROPHENMETRAZINE, MEPHEDRONE, METHAMPHETAMINE, METHYLONE, METHYLPHENIDATE, MIDOMAFETAMINE, STIMULANT, TENAMFETAMINE |
| Benzodiazepines | ALPRAZOLAM, AMINOCLONAZEPAM, BENZODIAZEPINE, CHLORDIAZEPOXIDE, CLOBAZAM, CLONAZEPAM, CLONAZOLAM, CLORAZEPATE, CLORAZEPIC ACID, CLOZAPINE, DELORAZEPAM, DIAZEPAM, ETIZOLAM, FLUALPRAZOLAM, FLUBROMAZEPAM, FLUBROMAZOLAM, FLURAZEPAM, LORAZEPAM, MIDAZOLAM, NORDAZEPAM, OXAZEPAM, PHENAZEPAM, TEMAZEPAM, TRIAZOLAM |
| Alcohol | ALCOHOL, ETHANOL, ISOPROPYL ALCOHOL |
| Antiepileptics/ Sedative-Hypnotics | BARBITURATE, BUTALBITAL, CARBAMAZEPINE, DIVALPROEX, ESZOPICLONE, GABAPENTIN, GAMMA HYDROXYBUTYRIC ACID, LACOSAMIDE, LAMOTRIGINE, LEVETIRACETAM, OXCARBAZEPINE, PENTOBARBITAL, PHENIBUT, PHENOBARBITAL, PHENYTOIN, PREGABALIN, PRIMIDONE, RAMELTEON, SECOBARBITAL, SEDATIVE, TOPIRAMATE, VALPROIC ACID, ZALEPLON, ZOLPIDEM, ZONISAMIDE |
| Antidepressants | AMITRIPTYLINE, ANTIDEPRESSANT, ATOMOXETINE, BUPROPION, CITALOPRAM, CLOMIPRAMINE, DESVENLAFAXINE, DOXEPIN, DULOXETINE, ESCITALOPRAM, FLUOXETINE, FLUVOXAMINE, IMIPRAMINE, MIRTAZAPINE, NORTRIPTYLINE, PAROXETINE, SERTRALINE, TIANEPTINE, TRAZODONE, VENLAFAXINE |

Supplemental Table 2. Substance class categorization of literal text drug mentions in North Carolina death certificate data

| Substance class | Literal text drug mentions^a |
|--|---|
| Systemic/ Hematological Agents | ANTICOAGULANT, ANTIEMETIC, ANTIHISTAMINE, BLEOMYCIN, CALCINEURIN INHIBITOR, CETIRIZINE, CHEMOTHERAPEUTIC AGENT, CHLORPHENIRAMINE, CRIZOTINIB, DIPHENHYDRAMINE, DOXYLAMINE, IRON, LORATADINE, MECLIZINE, METHOTREXATE, METOCLOPRAMIDE, NIVOLUMAB, RODENTICIDE, SIROLIMUS, WARFARIN |
| Antipsychotics | ARIPIRAZOLE, BUSPIRONE, CHLORPROMAZINE, FLUPHENAZINE, HALOPERIDOL, HYDROXYZINE, LITHIUM, LURASIDONE, MEPROBAMATE, OLANZAPINE, PERPHENAZINE, PROMETHAZINE, QUETIAPINE, RISPERIDONE |
| Smooth Skeletal Muscle/ Respiratory System Agents | BENZONATATE, COUGH MEDICINE, CYCLOBENZAPRINE, DEXTROMETHORPHAN, GUAIFENESIN, NEUROMUSCULAR DRUG, PROPYLHEXEDRINE, ROCURONIUM |
| Cardiovascular Agents | ACE INHIBITOR, AMIODARONE, AMLODIPINE, CALCIUM CHANNEL BLOCKER, CLONIDINE, DIGITALIS, DIGOXIN, DILTIAZEM, DOFETILIDE, FLECAINIDE, ISOSORBIDE, LISINAPRIL, NIFEDIPINE, NITRATE, NITRITE, PROPAFENONE, RANOLAZINE, VERAPAMIL |
| Non-Opioid Analgesics | ACETAMINOPHEN, ASPIRIN, IBUPROFEN, NAPROXEN, NSAID, SALICYLATE |
| Gastrointestinal Agents | LACTULOSE, LOPERAMIDE |
| Autonomic Nervous System Drugs | ATENOLOL, BETA BLOCKER, CARVEDILOL, DONEPEZIL, EPHEDRINE, METOPROLOL, PHENYLPROPANOLAMINE, PRAZOSIN, PROPRANOLOL, PSEUDOEPHEDRINE |
| Antiparkinsonism Drugs | BACLOFEN, BENZTROPINE, CARISOPRODOL, METAXALONE, METHOCARBAMOL, ORPHENADRINE, ROPINIROLE, TIZANIDINE |
| Hormones | GLIPIZIDE, INSULIN, METFORMIN, METHYLPREDNISOLONE |
| Anesthetics | BUPIVACAINE, CHLOROETHANE, DESCHLOROKETAMINE, ISOFLURANE, KETAMINE, LIDOCAINE, NITROUS OXIDE, PROPOFOL, SEVOFLURANE |
| Psychodysleptics | CANNABINOID, DRONABINOL, MARIJUANA, PHENCYCLIDINE |

Supplemental Table 2. Substance class categorization of literal text drug mentions in North Carolina death certificate data

| Substance class | Literal text drug mentions^a |
|--------------------------|--|
| Anti-Infectives | DIDANOSINE, HYDROXYCHLOROQUINE, NITROFURANTOIN |
| Topical Agents | CHLORAMINE, SILICON, TETRAHYDROZOLINE |
| Antibiotics | ANTIBACTERIAL, VANCOMYCIN |
| Other Psychotropic Drugs | MEMANTINE |
| Other/Unspecified Drugs | BRODIFACOUM, DIFLUOROETHANE, ETHYLENE GLYCOL, HERBAL SUPPLEMENT, PHENTERMINE, POTASSIUM, TORSEMIDE |

^a Includes all specific drugs identified in 2015-2020 North Carolina death certificate literal text data, which is not necessarily comprehensive with respect to other time periods or states (e.g., NORFENTANYL is not listed above as it was never mentioned in the 2015-2020 North Carolina death certificate data)

Supplemental Table 3. Definitions of circumstances surrounding homicide and suicide deaths from the North Carolina Violent Death Reporting System and unintentional opioid-related overdose dose deaths from the North Carolina Statewide Unintentional Drug Overdose Reporting System

Homicide circumstances

| | |
|---|---|
| Related to intimate partner violence | Related to immediate or ongoing conflict or violence between current or former intimate partners, including girl/boyfriends, dating partners, ongoing sexual partners, and spouses, or deaths where the victim was killed by a current or former intimate partner |
| Related to another type of argument or interpersonal conflict (non-intimate partner violence) | A specific argument was perceived as related to the death (e.g., an argument over money, a relationships problem an insult) |
| Related to drug trade or use | Drug dealing, drug trade, or drug use is suspected o have played a role in precipitating the homicide |
| Precipitated by another serious crime | Related to other criminal activity, specifically felonies (e.g., robbery, drug trafficking, burglary, motor vehicle theft, arson, resisting arrest) |
| Related to a physical fight | There was a physical fight immediately before the homicide death that resulted in the death of those involved in the fight, bystanders, or those trying to stop the fight (i.e., the homicide was not planned and occurred in the heat of a physical fight) |
| Related to a drive-by shooting | Homicide death was the result of a shooting where the suspect(s) drove near the victim or target and shot while driving or used a car to approach and flee the scene but stepped out of the car just long enough to use a weapon |

Suicide circumstances

| | |
|--|---|
| History of mental health treatment | Prior mental health treatment (e.g., had a current prescription for a psychiatric medication, saw a mental health professional) |
| Current mental health treatment | Mental health treatment at the time of death (e.g., had a current prescription for a psychiatric medication, saw a mental health professional within the past two months) |
| Current mental health problem | Current mental health problem including disorders and syndromes listed in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), excluding alcohol and other substance use disorders, or current treatment for a mental health problem |
| Problems with current or former intimate partner | Problems with a current or former intimate partner, including girl/boyfriends, dating partners, ongoing sexual partners, and spouses, appear to have contributed to the suicide (e.g., a divorce, break-up, argument, jealousy, conflict, or discord that contributed to the death) |
| History of suicide attempts | History of attempting suicide prior to the suicide death |
| Disclosed thoughts or plans for suicide | Disclosed to another person thoughts or plans to die by suicide within the last month |

Perceived to have a problem with drugs

A non-alcohol substance use problem (e.g., using illicit drugs, misusing prescription medications)

Perceived to be depressed

Perceived by self or others to be depressed at the time of the suicide death (e.g., sad, despondent, down, blue, low, unhappy)

Unintentional opioid-involved overdose circumstances

Naloxone was administered

There was evidence that naloxone was administered (discovery of used naloxone packaging alone is insufficient) by a layperson (e.g., family, friend, intimate partner, roommate, stranger), emergency medical services/fire, law enforcement, hospital/healthcare staff, or an unknown person)

A bystander was present

A person was physically nearby during or shortly before the overdose death and had the potential to intervene to prevent the death, excluding first responders and medical professionals and children ages <11 years

History of prescription opioid misuse or illicit opioid use

This variable does not require evidence of a diagnosed substance use disorder but does require some indication of either past or ongoing/current prescription opioid (e.g., methadone, oxycodone, hydromorphone) misuse (e.g., using more than the prescribed dose, using prescription opioids not prescribed to them) or illicit opioid (e.g., heroin, illicitly manufactured fentanyl) use, outside of the drugs involved in the overdose death.

History of substance use disorder treatment

Current or prior treatment for a substance use disorder, including cognitive/behavioral therapy, medication for opioid use disorder, Narcotics Anonymous, and inpatient/outpatient rehabilitation

Supplemental Table 4. Rates of homicide, suicide, and unintentional opioid-involved overdose deaths during pregnancy and the first year postpartum by data source, North Carolina 2018-2019

| | Number of deaths | Rate per 100,000 live births^a |
|---|-----------------------------|---|
| Homicide | | |
| NC-VDRS | 14 | 5.9 |
| NC-MMRC | 22 | 9.3 |
| All data sources combined | 23 | 9.7 |
| Suicide | | |
| NC-VDRS | 6 | 2.5 |
| NC-MMRC | 8 | 3.4 |
| All data sources combined | 9 | 3.8 |
| Unintentional opioid-involved overdose | | |
| NC-SUDORS | 17 | 7.2 |
| NC-MMRC | 36 | 15.1 |
| All data sources combined | 36 | 15.1 |

Note: NC – North Carolina; MMRC – Maternal Mortality Review Committee; VDRS – Violent Death Reporting System; SUDORS – Statewide Unintentional Drug Overdose Reporting System

^aFrom 2018-2019 in North Carolina, there were 237,679 live births per the North Carolina State Center for Health Statistics (<https://schs.dph.ncdhhs.gov/data/vital/ims/2021/2021-IMR-TABLE-10b-FINAL.html>)