

# **Surveillance of Apparent Opioid Overdoses in New Brunswick**

**2019 – Quarter 1**

June 2019

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## Introduction

This quarterly surveillance report describes data on apparent opioid overdoses and deaths that are collected by Ambulance New Brunswick (ANB) and the Chief Coroner's Office, respectively, and reported to the Office of the Chief Medical Officer of Health. Additional sources of data will be included in future reports as they become available and validated. Data sources are updated at different time periods and may change in subsequent reports.

## Data Sources

Comparisons should not be made between different data sources as each represents a different population. Together these data sources add to our understanding of the complex opioid overdose situation in New Brunswick.

### Ambulance New Brunswick

Data from ANB are aggregate and include information about:

- a) patients who were administered naloxone by a paramedic for an accidental/suspected opioid overdose, and
- b) patients who responded to naloxone.

The number of patients who were administered naloxone might be an overestimation of the actual number of opioid overdoses; therefore, the number of patients responding to naloxone is also collected and reported. If a patient responds to naloxone, this indicates that the patient was experiencing an opioid-related overdose as naloxone only has an effect if opioids were consumed. Data in this report reflect data received from ANB as of April 23, 2019.

**Limitations:** The number of accidental/suspect opioid overdoses is an estimate based on the decision to administer naloxone by a paramedic. As such, the data do not include overdoses where patients were already dead on arrival or those who were not given naloxone.

See Appendix A for a detailed description of ANB data.

### Chief Coroner's Office

Data received from the Chief Coroner's Office include a line list of all apparent drug (opioid and non-opioid) overdose deaths. Data in this report reflect data received from the Chief Coroner's Office as of April 10, 2019.

**Limitations:** Due to the inherent delay in investigating deaths, the reported number of apparent opioid overdose deaths is preliminary and may change over time as investigations continue and more information is acquired or new cases are added.

See Appendix A for a detailed description of Coroner Data

## Methodology

Data are received quarterly from ANB and the Chief Coroner's office, then validated and analyzed. Descriptive analyses were conducted for suspect opioid overdoses and apparent opioid overdose deaths. Throughout this report, estimated rates are calculated using person-time contributed to the specified time period. This method is used to provide a better estimate of rates that are calculated for partial years. Caution should be used when interpreting data in this report as small numbers can lead to wide variations.

The reported data are preliminary and numbers are subject to change in the coming reports. Since the last report, updates have been made to previously reported counts and rates based on revised data.

See Appendix B for a detailed description of the methodology.

# Suspect Opioid Overdoses

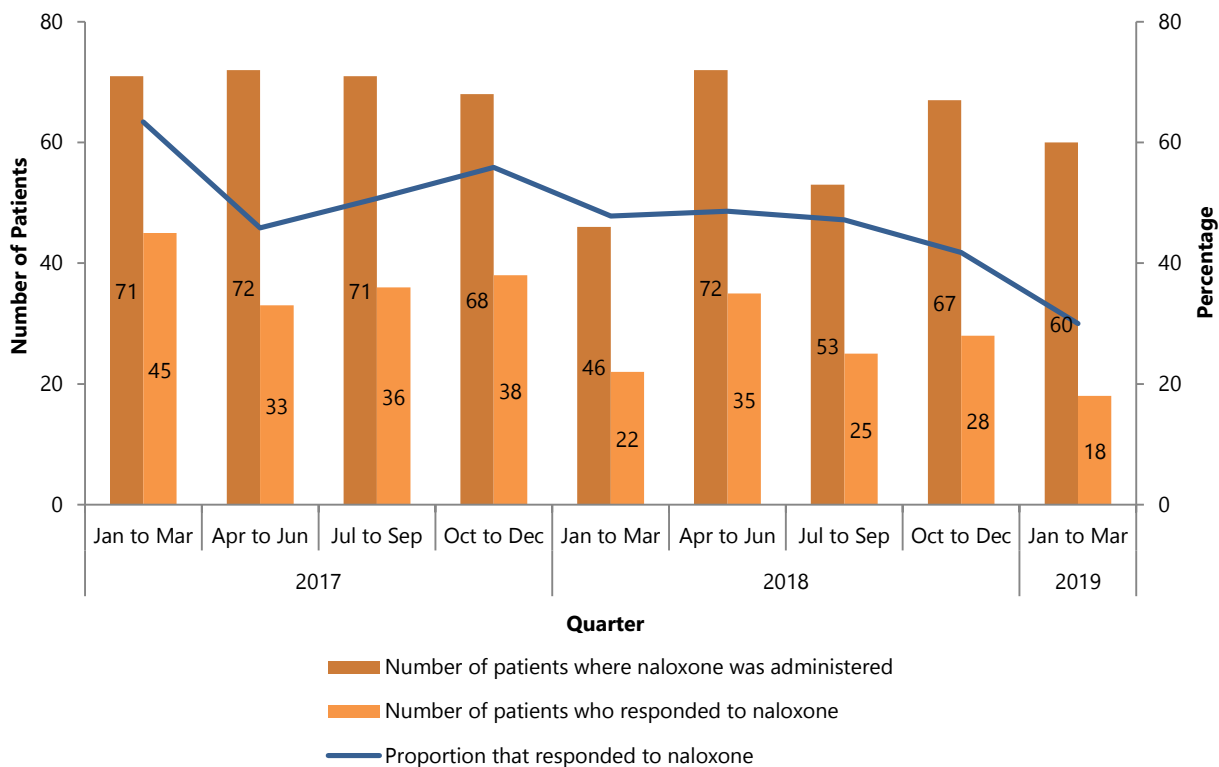
## Ambulance New Brunswick

### 2019 Q1 (January 1 to March 31)

During the first quarter of 2019, **naloxone was administered to 60 suspect opioid overdose patients** (Graph 1), with 20 cases per month. Of the 60 suspect opioid overdose patients, **18 (30.0%) responded to naloxone** which corresponds to an average of 6 per month (range: 3 to 9).

Since January 2017, there has been an overall downward trend of the proportion of individuals who have responded to naloxone (Graph 1). Multiple factors could be influencing this observation, including the distribution of take-home naloxone kits to the public, potentially reducing the number of paramedics responding to an overdose and administering naloxone; an increased awareness and therefore increased number of 911 calls for drug-overdoses; a decrease in the number of true opioid overdoses; increased administration of naloxone to non-opioid overdose patients; or the late administration of naloxone. Additionally, the small numbers involved can lead to widely variable changes in proportions over time.

**Graph 1.** Number of suspect opioid overdose patients who were administered naloxone and number and percentage of patients who responded to naloxone, quarterly in New Brunswick, from January 2017 to March 31, 2019.

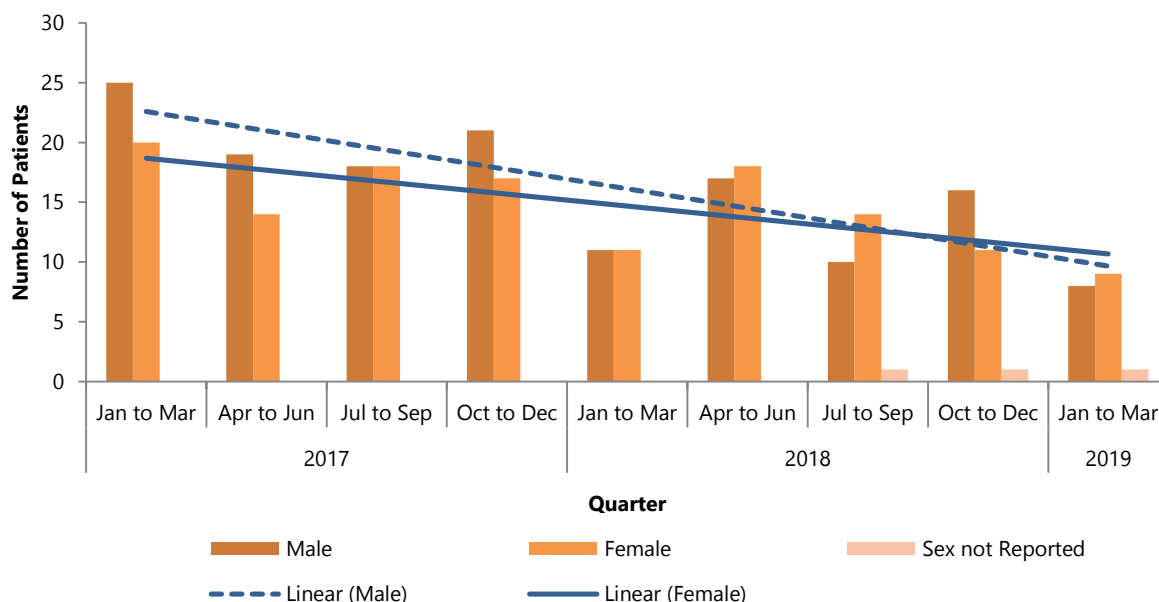


Data source: Ambulance New Brunswick, April 23, 2019

Among the 18 patients who responded to naloxone:

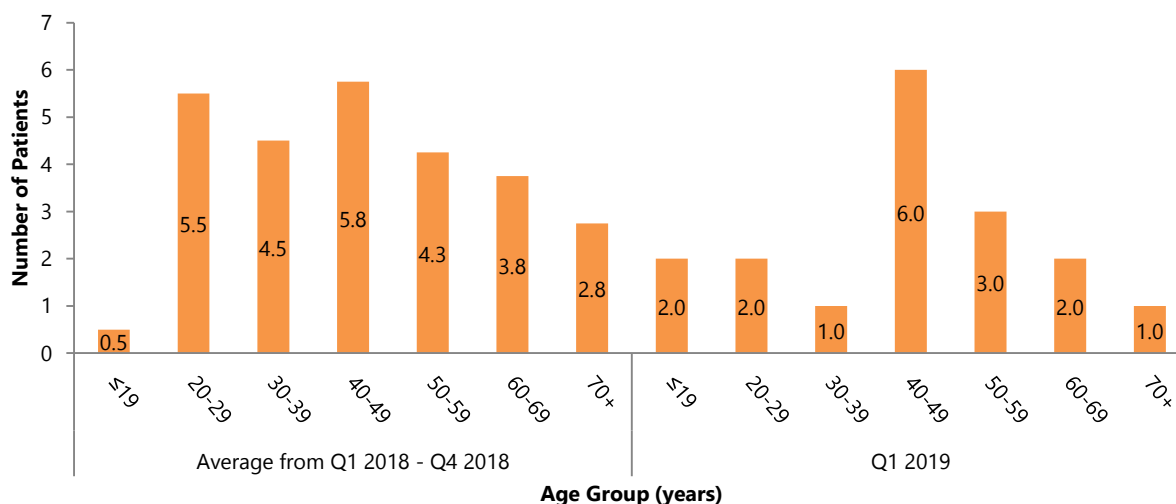
- **Nine (50.0%) were female**, 8 (44.4%) were male, and the sex was not reported for 1 (5.6%). Since January 2017, the number of patients responding to naloxone has decreased over time, with males experiencing a slightly greater downward trend than females (Graph 2).
- **Six (33.3%) were between 40 and 49 years old** (Graph 3). Compared to the average of the previous four quarters (i.e. Q1 2018-Q4 2018), the age group distribution in Q1 2019 does not include as many individuals in the younger age groups.

**Graph 2.** Number of patients who responded to naloxone, quarterly in New Brunswick, from January 2017 to March 2019.



Data source: Ambulance New Brunswick, April 23, 2019

**Graph 3.** Number of suspect opioid overdose patients who responded to naloxone, by age group and sex in New Brunswick, Q1 2019 and Q1 2018 – Q4 2018 average.



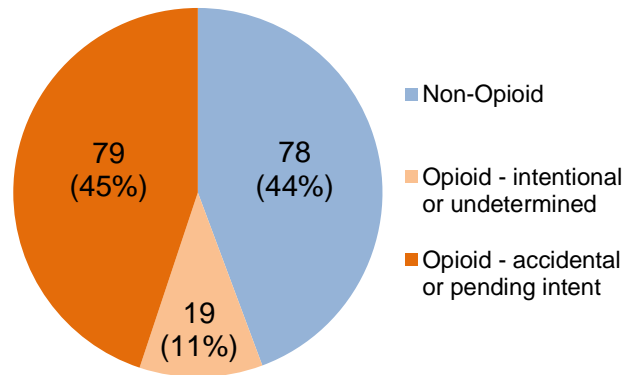
Data source: Ambulance New Brunswick, April 23, 2019

In Q1 2019, the estimated crude rate of suspect opioid overdose patients who responded to naloxone in New Brunswick was **9.3 cases per 100,000 person-years**. The provincial rate for Q1 2019 is smaller than the 2018 and 2017 annual rates of 14.3 cases per 100,000 person-years and 15.4 cases per 100,000 person-years, respectively. Regional rates for Q1 2019 were not calculated as the small numbers involved led to unstable rates.

# Apparent Opioid Overdose Deaths

## Chief Coroner's Office

Drug related deaths have taken a toll on the lives New Brunswickers, their families, and their friends. Since surveillance of apparent opioid overdose deaths began in 2016, there have been 176 drug-related deaths (Figure 1). However, opioid related deaths are responsible for the majority (56%) of all drug-related deaths. Opioid-related deaths classified as accidental or pending intent account for 45% of all drug related deaths. In 2018, **53 deaths** (including intentional, accidental, pending intent and undetermined) due to any type of drug (opioids and non-opioids) occurred, of which **27 (50.9%) were related to opioids.**



**Figure 1.** Percent distribution of drug related deaths in New Brunswick, by drug type and intent, January 2016 to March 2019\*

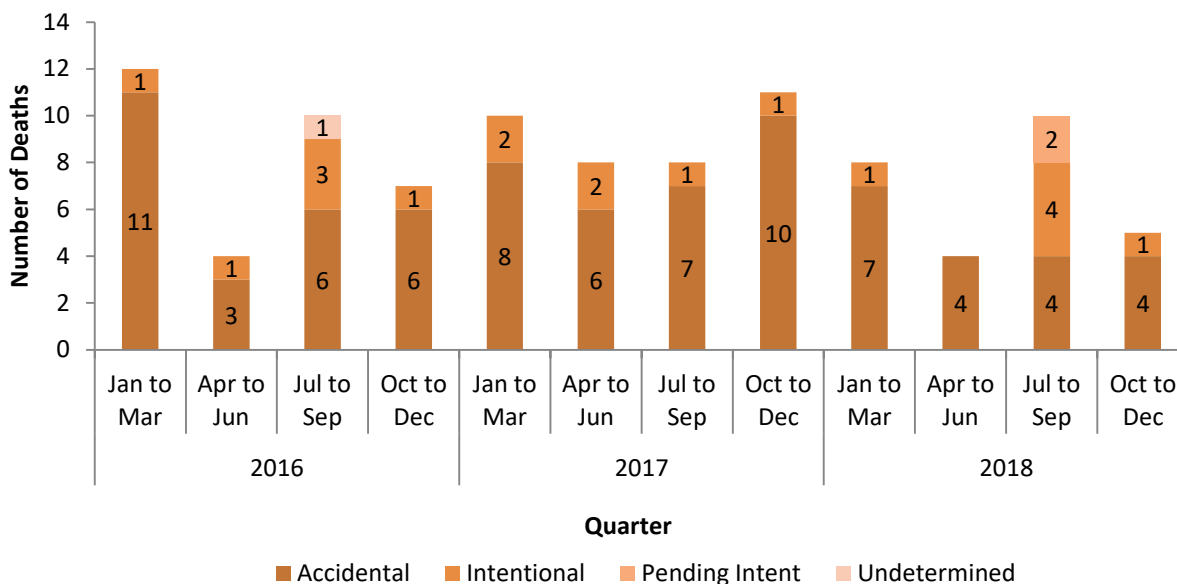
\*These numbers may change as more information becomes available and coroner investigations continue

### Accidental and Pending Intent Deaths Due to Opioids

**Twenty-one (77.8%)** of the 27 apparent opioid overdose deaths in 2018 **were classified as accidental or with pending intent** at the time of reporting (Graph 4). Only **one case (4.8%) was associated with fentanyl**, compared to 7 (22.6%) in 2017 and 4 (15.4%) in 2016.



**Graph 4.** Number of apparent opioid-related overdose deaths by intent (intentional, accidental, pending intent or undetermined), quarterly in New Brunswick, from January 2017\* to December 2018\*\*



Data Source: Chief Coroner's Office, April 10, 2019

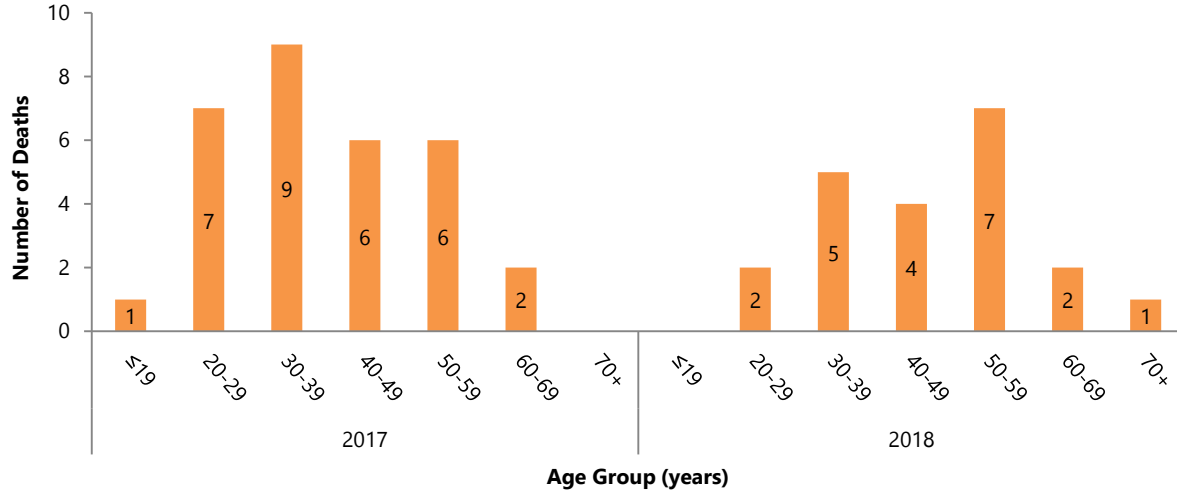
\*Two active cases in 2017 may result in changes in upcoming reports

\*\*These numbers may change as more information becomes available and coroner investigations continue

Of the 21 apparent opioid overdose deaths classified as accidental or with pending intent in 2018:

- **12 (57.1%) were female** and 9 (42.9%) were male. This is the first year in which females accounted for the majority of deaths. This observation is predominantly driven by the sex distribution in Q1 in which there were 7 females and no males.
- **7 (33.3%) were 50-59 years old** (Graph 5) with an average of 47.4 years and a median of 47 years. The age distribution for the entirety of 2018 did not reflect the shift towards a younger age that was observed in 2017; the average and median age for 2018 are the highest to date.
- **10 (47.6%) were from prescribed opioids**, 8 (38.1%) were from illicit opioids, and 3 (14.3%) were from unknown opioid source. Different than previous years, the majority of deaths from prescribed opioids were among females (7, 70.0%). However, like previous years, males represented the majority of deaths from illicit opioid sources (5, 62.5%).

**Graph 5.** Number of apparent opioid overdose deaths classified as accidental or with pending intent, by age group in New Brunswick, from January 2017 to December 2018\*.



Data source: Chief Coroner’s Office, April 10, 2019

\*These numbers may change as more information becomes available and coroner investigations continue.

The estimated annual crude mortality rate for accidental or pending intent opioid related deaths in New Brunswick was **2.7 per 100,000 population**. The death rate for 2018 is the smallest to date; 2016 and 2017 had rates of 3.4 and 4.0 deaths per 100,000 population, respectively.

Data for 2018 are expected to change as active cases continue to be investigated and new cases are acquired. Data for Q1 of 2019 are incomplete and numbers are expected to change significantly as coroner investigations continue.

## Summary

When considering data from ANB, a general downward trend in the proportion of individuals who received naloxone and those who responded to naloxone has been observed; however, this trend should be interpreted with caution as numerous factors could influence this observation.

Compared to previous years, the proportion of apparent opioid overdose deaths has shifted from a male majority to a female majority. Additionally, the age distribution does not reflect the shift towards younger years as seen in 2017. Lastly, for the first time since data collection, the highest proportion of accidental/pending intent apparent opioid overdose deaths from prescribed opioids is among females.

Though there have been notable changes in the data and trends since the last report and previous years, interpretation of these results should be done with caution due to the small numbers involved.

## Appendix A: Data Sources

### Ambulance New Brunswick

Data from ANB are abstracted in aggregate form and therefore do not contain patient-level data. Monthly totals for the following variables are broken down by sex (male, female, and sex not reported) and age group in years (<15, 15-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+, and age not reported):

- Accidental/suspect opioid overdoses
- Repeat individual opioid overdose cases
- Individuals who received 1 dose of naloxone
- Individuals who received 2 doses of naloxone
- Individuals who received 3 or more doses of naloxone
- Individuals who responded to naloxone

Data also include the monthly total of referrals to hospitals for patients with accidental/suspect opioid overdoses and those who responded to naloxone. The monthly totals of reason for dispatch are also included.

Data in this report primarily focus on individuals who responded to naloxone and referrals to hospitals for those who responded to naloxone. Any data for monthly totals of individuals who responded to naloxone are a subset of the totals for individuals with an accidental/suspect opioid overdose. Data include accidental/suspect opioid overdoses regardless of intent, and therefore may differ in terms of demographics from other data sources (e.g., apparent opioid overdose deaths).

### Chief Coroner Office

Data from the Coroner's Office include individual-level data. They are sent to the Department of Health on a quarterly basis for the previous quarter. Data include all drug-related deaths with the following variables.

| Variable        | Variable Description                                       | Response Options        |
|-----------------|--|-------------------------|
| Coroner Case ID | Unique ID number that coroner office assigns to each death | Number - Up to 8 digits |
| Quarter         | The quarter of the year in which the death occurred        | 1, 2, 3, 4              |
| Year            | Year in which the death occurred                           | yyyy                    |
| DOD             | Date of death, based on the date the death is pronounced   | (dd-mmm-yy)             |
| Age             | Age of case in years                                       |                         |
| Gender          | Sex of the case  | Male<br>Female          |
| Case Status     | Status of the case investigation.                          | Active<br>Completed     |

|   |   |   |
|---|---|---|
| Death Manner                              | The coroner assigns each case a manner of death   | Accident<br>Suicide<br>Undetermined<br>Natural<br>Homicide  |
| Judicial District                         | The judicial district in which the death occurred.  | Bathurst<br>Campbellton<br>Edmundston<br>Fredericton<br>Miramichi<br>Moncton<br>Saint John<br>Woodstock |
| Residential First 3 Digits of Postal Code | The first three digits of the residential postal code of the case   |   |
| Opioid Related                            | Whether the case is opioid-related or not. This is determined using all available evidence.   | Opioid<br>Not Opioid  |
| Source of Opioid                          | The source of the opioid taken by the case. This information is obtained by reviewing the file.   | Prescribed<br>Illicit<br>Unknown<br>NA  |
| With/Without Other Substances             | Whether the opioid was taken with or without other substances. Other substances include alcohol or non-opioid drugs. This is determined through the toxicology results. | With Other Substance<br>Without Other Substance<br>Unknown<br>NA  |
| Drug 1 - 15                               | List of drugs that were present in the toxicology report.   |   |

### Population Estimates

Population estimates were from 2019 population estimates for 2017 and 2018 received from Statistics Canada, Demography Division, March 2019.

## Appendix B: Methodology

### Ambulance New Brunswick

Data are sent to the Department of Health on a monthly basis, but analyzed on a quarterly basis. Aggregate data are organized into various tables used to conduct descriptive analyses for apparent/suspect opioid overdoses and individuals who responded to naloxone; this includes counts, proportions, means, and rates. The Health Region specific rates are estimated based on hospital of referral as location of dispatch pick-up is not available. Denominator data for the current year are based on the most recent estimates available (e.g. the 2019 version of the population estimates were used for the 2018 population estimates).

All analyses were conducted using Excel 2010.

### Chief Coroner Office

Cases for drug-related deaths are identified by coroner investigations. Once data are received by the Department of Health, the data are validated prior to analyses. Data validation includes verifying the classification of all variables by using case files and the coroner database, identifying any changes to previous cases, and identifying new cases since the last data submission. Once data are validated, they are further classified by intent (accidental, pending intent, intentional and undetermined) and drug type (non-opioids, non-fentanyl opioids, fentanyl opioids).

Using manipulative tables, descriptive analyses were conducted for apparent opioid overdose deaths; this includes counts, proportions, means, and rates. The rates are calculated using denominator data for the current year based on the most recent estimates available (e.g. the 2019 version of the population estimates were used for the 2018 population estimates).

All analyses were conducted using Excel 2010.

## Appendix C: Definitions and Abbreviations

- **Illicit opioid:** A street opioid or an opioid medically prescribed to a person other than the patient/deceased person.
- **Manner of death:**
  - **Accidental death:** A death considered to be unintentional in nature based on the coroner investigation.
  - **Death with pending intent:** An open investigation where the intent of death is yet to be determined by the coroner.
  - **Intentional death:** A death classified as a suicide based on the coroner investigation.
  - **Undetermined death:** A closed death investigation where the intent of death was deemed unknown by the coroner.
- **Naloxone:** An opioid antagonist which reverses or prevents the effects of an opioid, but has no effect in the absence of opioids.
- **Opioid:** A class of pain-relieving drugs that block pain messages by binding to specific receptors (opioid receptors) on cells in the body. They can include either non-fentanyl opioids or fentanyl and fentanyl analogs.
  - **Fentanyl and fentanyl analogs:** Synthetic opioids which are extremely toxic. Includes but is not limited to fentanyl, norfentanyl, acetylfentanyl, 3-methylfentanyl, carfentanil, butyrylfentanyl, furanyl-fentanyl, despropionyl-fentanyl.
  - **Non-fentanyl opioids:** Any opioid which is not a fentanyl or fentanyl analog opioid. Includes but is not limited to buprenorphine metabolites, codeine, dihydrocodeine, heroin, hydrocodone, hydromorphone (total, unconjugated), loperamide, meperidine, methadone, monoacetylmorphine, morphine (unconjugated, unconjugated-RIA), normeperidine, oxycodone, tapentadol, tramadol, U-47700.
- **Prescription opioid:** A medically prescribed opioid to the patient/deceased person.
- **Q1:** Quarter 1, January to March
- **Q2:** Quarter 2, April to June
- **Q3:** Quarter 3, July to September
- **Q4:** Quarter 4, October to December