



Environmental Public Health Tracking Portal

Birth Outcome Indicator Definitions

Public health institutions have a long history of tracking infant mortality and other birth outcomes as a way of characterizing the health of a population. Though most of the birth outcome indicators we have chosen to present in our Environmental Public Health Tracking (EPHT) portal are similar to traditional measures, their definitions result in slightly different values from those reported by the New York City (NYC) Bureau of Vital Statistics. We provide precise definitions and rationales for EPHT birth outcome indicators below.

| Indicator | EPHT Measure | How Measure is Calculated | Rationale for EPHT Measure |
|---|--|---|---|
| Infant, Neonatal, Perinatal, and Postneonatal Mortality | Mortality counts and rates use the period linked birth – infant death approach (deaths are linked to birth certificates, and only deaths from births among NYC resident women are counted) | Mortality rates are calculated by dividing the number of deaths from the period linked birth – infant death file by the number of live births among NYC resident mothers in the same year; expressed as deaths per 1,000 live births. Note: An exact calculation of this measure is not possible, because only the NYC resident births and deaths that <i>occur</i> in NYC (and are therefore registered with the NYC Bureau of Vital Statistics) are available for analysis at this time. | Because we are interested in infant deaths that may be related to prenatal environmental factors specific to NYC, we restrict our count of infant deaths to those that can be linked to births that occur among NYC resident mothers. |
| Fertility | Total (lifetime) fertility | Sum of annual age-specific birth rates (grouped by 5-year age intervals, from 10 - 49 years) among NYC residents, multiplied by 5; expressed per 1,000 women. Note: An exact calculation of this measure is not possible, because only the NYC resident births that <i>occur</i> in NYC (and are therefore registered with the NYC Bureau of Vital Statistics) are available for analysis at this time. | There are a variety of ways to statistically represent fertility – or birth rates – in a population. Total (lifetime) fertility has an interpretational advantage, because it reflects the extent to which current birth rates will result in an increase or decrease in population size. |

| Indicator | EPHT Measure | How Measure is Calculated | Rationale for EPHT Measure |
|--------------------------------|--|--|---|
| Preterm and Very Preterm Birth | Preterm (less than 37 weeks) and very preterm (< 32 weeks) births among singleton births | Number of live, singleton births occurring at less than 37 or 32 weeks gestation among residents of an area, divided by the number of live, singleton births with non-missing gestational age among residents of the area; expressed as percent. Note: An exact calculation of this measure is not possible, because only NYC resident births that <i>occur</i> in NYC (and are therefore registered with the Bureau of Vital Statistics) are available for analysis at this time. | Multiple births (twins or more) are more often preterm or low birth weight than singletons, and are more likely to occur among older mothers and in in-vitro pregnancies. We restrict our preterm measure to singletons to rule out multiple births as an explanation for geographical or temporal variation in numbers or percents. |
| Very Low Birth Weight | Very low birth weight (less than 3 lbs, 5 oz) among singleton births | Number of live, singleton births with a birth weight less than 1,500 grams (3 lbs 5 oz) among residents of an area, divided by the number of live, singleton births with non-missing birth weight among residents of the area; expressed as percent. Note: An exact calculation of this measure is not possible, because only NYC resident births that <i>occur</i> in NYC (and are therefore registered with the Bureau of Vital Statistics) are available for analysis at this time. | We use very low birth weight (VLBW) measures as indicators of prematurity for several reasons: 1) VLBW is highly correlated with prematurity; 2) measurement of gestational age is prone to error; and 3) birth weight is measured with a high degree of accuracy. Multiple births (twins or more) are more often preterm or VLBW than singletons, and are more likely to occur among older mothers and in in-vitro pregnancies, so we restrict our VLBW measures to singletons to rule out multiple births as an explanation for geographical or temporal variation in numbers or percents. |
| Growth Retardation | Low birth weight (less than 5 lbs, 8 oz) in singleton births born at term | Number of live, singleton, term births with a birth weight less than 2,500 grams (5 lbs 8 oz) among residents of an area, divided by the total number of live, singleton, term births with non-missing birth weight among residents of the area; expressed as percent. All births are restricted to those with a gestational age of 37 weeks or more. Note: An exact calculation of this measure is not possible, because only NYC resident births that <i>occur</i> in NYC (and are therefore registered with the Bureau of Vital Statistics) are available for analysis at this time. | Low birth weight is a traditional public health measure that has the disadvantage of reflecting both prematurity and growth retardation, since many preterm babies are also born with a low birth weight. To focus on growth retardation as a separate medical phenomenon, we restrict our indicator of growth retardation to low birth weight in babies born at term (37 or more weeks of pregnancy). |

| Indicator | EPHT Measure | How Measure is Calculated | Rationale for EPHT Measure |
|--------------------|---|---|---|
| Sex Ratio at Birth | Ratio of male to female singleton births born at term | Number of male births divided by the number of female births among resident mothers of the area. Births are restricted to singletons with a gestational age of 37 weeks or more. Note: An exact calculation of this measure is not possible, because only the NYC resident births that <i>occur</i> in NYC (and are therefore registered with the NYC Bureau of Vital Statistics) are available for analysis at this time. | Historically, the ratio of male to female births has been relatively constant. Some researchers have hypothesized that exposure to certain chemicals in the environment can reduce the number of male births, so sex ratio may be useful as an environmental public health indicator. |

Definition of Terms:

Fertility

Actual conception and birth, as opposed to fecundity, which is the potential ability to bear a child and bring it to term. Fertility is often measured by the rate of childbirth in a population.

Gestation

The period of time from conception to birth.

Growth retardation

A healthy fetus grows at a certain rate over the course of pregnancy. When a fetus does not achieve its potential size, we call this intrauterine growth retardation.

Infant mortality

Deaths among children under one year of age.

Linked birth – infant death file

A file that links data from infant death certificates to data from birth certificates. The completeness of this file requires sharing of birth and death certificate data between jurisdictions.

Neonatal mortality

Deaths among children from birth up to but not including 28 days of age.

Perinatal mortality

Fetal deaths combined with infant deaths that occur up to 6 days after birth. Fetal deaths are defined as those that occur at 28 or more weeks gestation.

Postneonatal mortality

Deaths among children from 28 days up to but not including 1 year of age.