

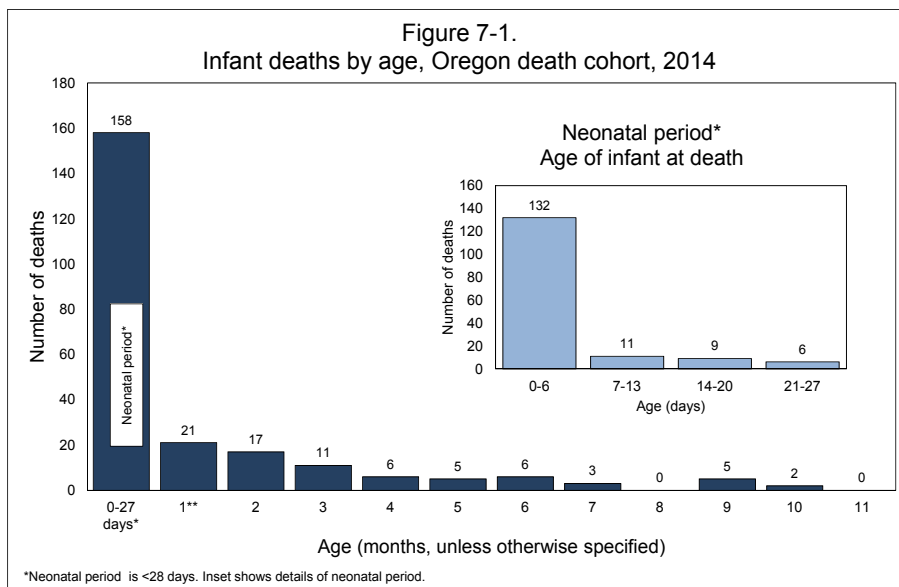
Fetal and infant mortality

Introduction

This report presents fetal and infant mortality data. Infant deaths occur within one year of birth. Fetal deaths included in this report are for fetuses weighing at least 350 grams at delivery, or at least 20 weeks' gestation if delivery weight is unknown. This definition applies to data after 1998.

Although fetal and infant death records are useful for statistical descriptions of deaths within a given time frame, their fundamental purpose is to help discover and evaluate preventive strategies to improve infant health. As an aid to understanding and monitoring health trends, this report divides fetal and infant deaths into five overlapping categories, which are not necessarily mutually exclusive: fetal deaths, perinatal deaths, infant deaths, neonatal deaths and postneonatal deaths. These categories are consistent with the definitions established by the National Center for Health Statistics (see Figure 7-2).

The five categories of fetal and infant death were analyzed using three databases: fetal deaths, infant deaths and births. National publications covering the subject of fetal and infant death may use one or any combination of these databases. As a result, death rates often vary slightly depending on whether birth or death cohorts were used as the data source



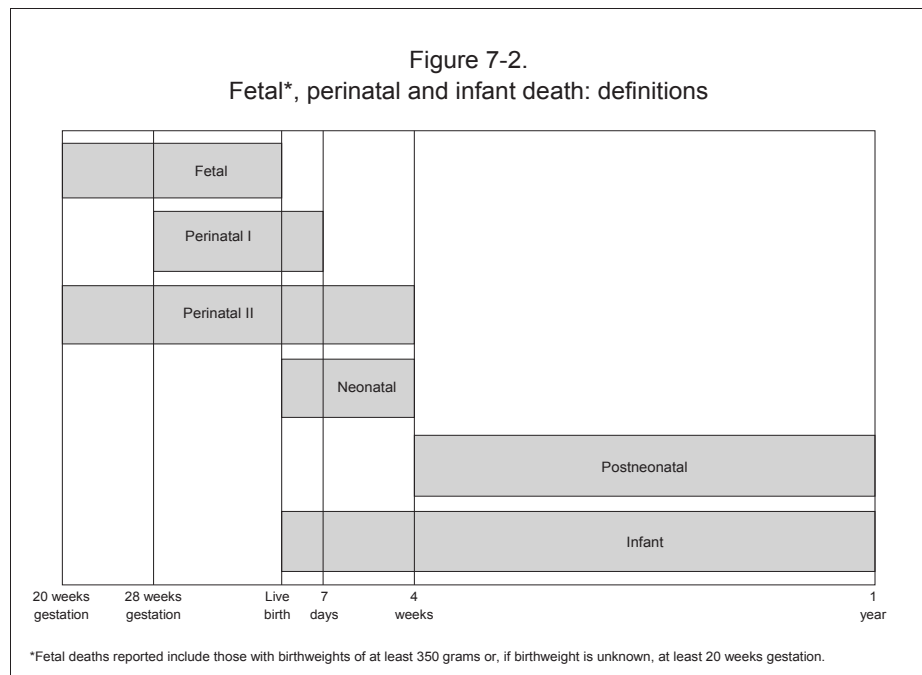
for statistical analysis. The definitions for birth and death cohorts are discussed in the next section.

Throughout this report, some tables display rates and ratios based on small numbers of events. Rates and ratios based on fewer than five events are unreliable. It is important to avoid inferring causal relationships based solely on the data contained in these tables..

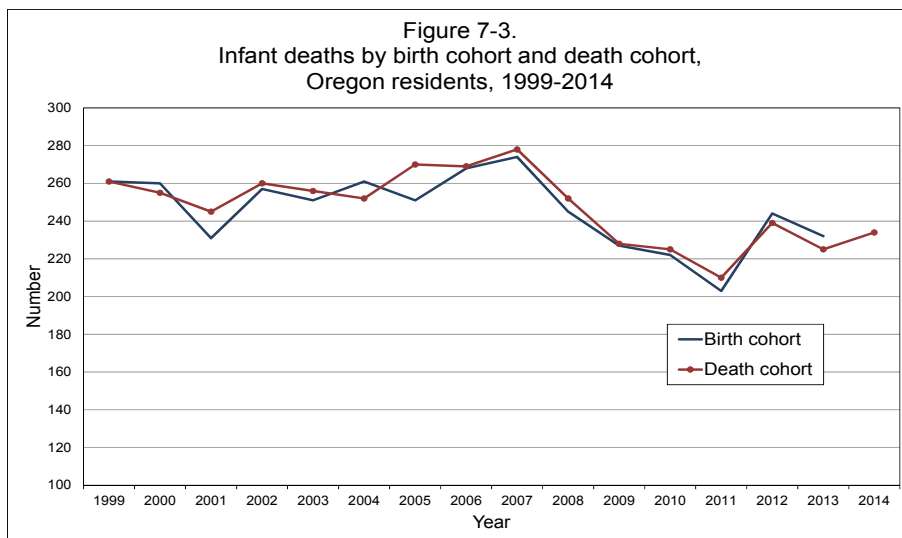
Definitions and methodology

The following are definitions of fetal and infant death data components.

- The **birth cohort** for matched infant deaths (each death certificate matched to its corresponding birth certificate) is based on analysis of infants born in the same calendar year that die within one year of their birth. In this report, the birth cohort consists of infants born in 2013 that died in either 2013 or 2014. Analysis based on a birth cohort is typically not as timely; however, it allows the analysis of characteristics from the birth certificate, such as mother’s race, age and factors affecting the birth outcomes (e.g., birthweight, prenatal care, mother’s use of tobacco). Rates using the birth or death cohorts may differ slightly, but the difference is usually small. Tables 7-8 through 7-18 are based on an infant birth cohort.



- The **death cohort** for infant death includes all infant deaths occurring in any given calendar year. In this report, the death cohort consists of infants that died in 2014 and could have been born in either 2013 or 2014. Data from the death cohort are usually available sooner than birth cohort data, as described below. The focus and analysis of the death cohort is on death certificate information, such as age, residence of the infant and cause of death. Tables 7-1 and 7-2 are based on a death cohort.
- **Fetal deaths** occur to fetuses weighing at least 350 grams at delivery, or that have completed at least 20 weeks' gestation if delivery weight is unknown. For an event to be classified as a fetal death, the developing fetus dies either in utero or during delivery. Fetal deaths are classified as “early” (20–27 weeks' gestation) or “late” (28 or more weeks' gestation). Oregon public health and safety laws require fetal death reporting (1).
- **Infant deaths** occur during a child's first year (i.e., measured from birth through 364 days). Infant deaths include both neonatal and postneonatal deaths.
 - » **Neonatal deaths** occur during the first 27 days of life. Neonatal deaths may be “early” (under seven days) or “late” (seven to 27 days).
 - » **Postneonatal deaths** occur from day 28 through day 364 after birth.



- **Perinatal deaths definition I** includes fetal deaths at 28 weeks of gestation or more and infant deaths of less than seven days.
- **Perinatal deaths definition II** includes fetal deaths at 20 weeks or more of gestation and infant deaths of less than 28 days.

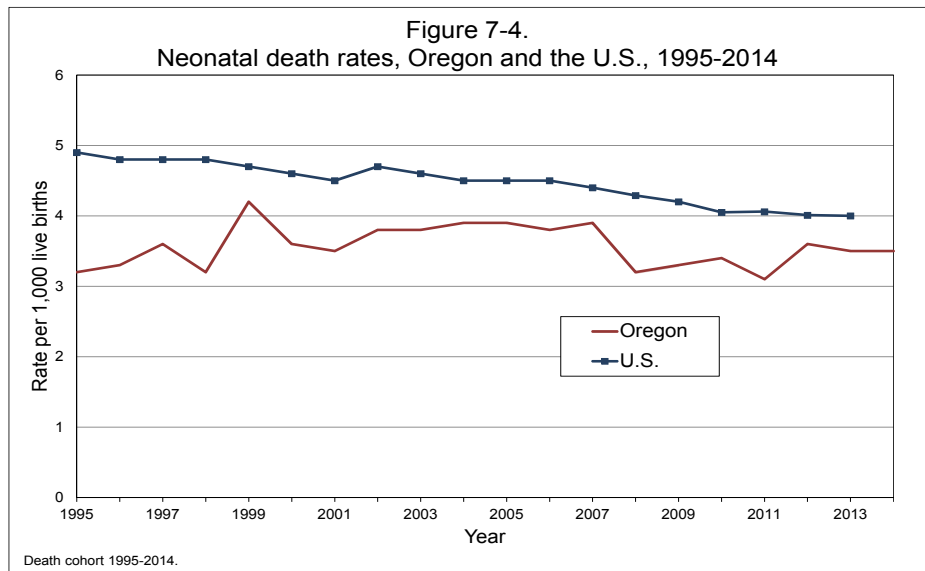
Use of the 2014 death cohort

This chapter uses data from the 2014 death cohort in the first two tables. Much of the discussion is on the cause of death. Infant characteristics at the time of death are derived from death certificates, with the primary focus on age at death, county of residence at death and underlying cause of death. Total age-specific and cause-specific mortality ratios are computed by dividing the number of infant deaths in a calendar year by the number of births in the same calendar year.

Demographics

During 2014, 234 Oregon resident infants under one year of age died, an increase from 225 in 2013. The infant mortality rate was 5.1 deaths per 1,000 births (see Table 7-1), and increased 2.0% from the previous year's rate of 5.0. The increase was not statistically significant. Oregon's infant death rate is 14.7% lower than the 2013 (the most recent available data) United States rate of 6.0 per 1,000 births (2). As in previous years, most infants (67.5%) that died during 2014 were less than 28 days old. More than one-half (56.4%) of infant deaths occurred within the first week of life (see Figure 7-1).

During 2014, 234 infants under age 1 died.



During the five-year period between 2010 and 2014, the infant mortality rates for Oregon counties ranged from 3.5 to 7.8 (excluding counties with less than five infant deaths). One Oregon county had infant mortality rates significantly higher than the state rate (5.0): Klamath (7.8). None of the counties had infant mortality rates significantly lower than the state rate.

Sudden infant death syndrome

Sudden infant death syndrome (SIDS) is the sudden and unexpected death of an apparently healthy infant under one year of age, usually during the postneonatal period. Historically, Oregon's SIDS rate has been higher than the national rate, and SIDS has been a leading cause of death among Oregon infants (see Figure 7-4). However, since 2001 Oregon's and the nation's rates have been similar. Oregon's rate dropped quickly after the implementation of "Back to Sleep," a national educational campaign to encourage non-prone sleeping positions for infants, in 1994. As the number of SIDS-related events decreases, there will be more variability in Oregon's rate of SIDS deaths due to smaller numbers of SIDS deaths in rate calculations.

The number of SIDS deaths increased slightly from 23 deaths in 2013 to 25 in 2014, and the SIDS death rate among infants increased from 0.5 per 1,000 live births in 2013 to 0.6 per 1,000 live births in 2014. The increase in the number of SIDS deaths was not statistically significant. In 2014, SIDS accounted for 10.7% of the Oregon's total infant deaths and 32.9% of all postneonatal deaths (see Table 7-2).

There was a increase in SIDS deaths in 2014.

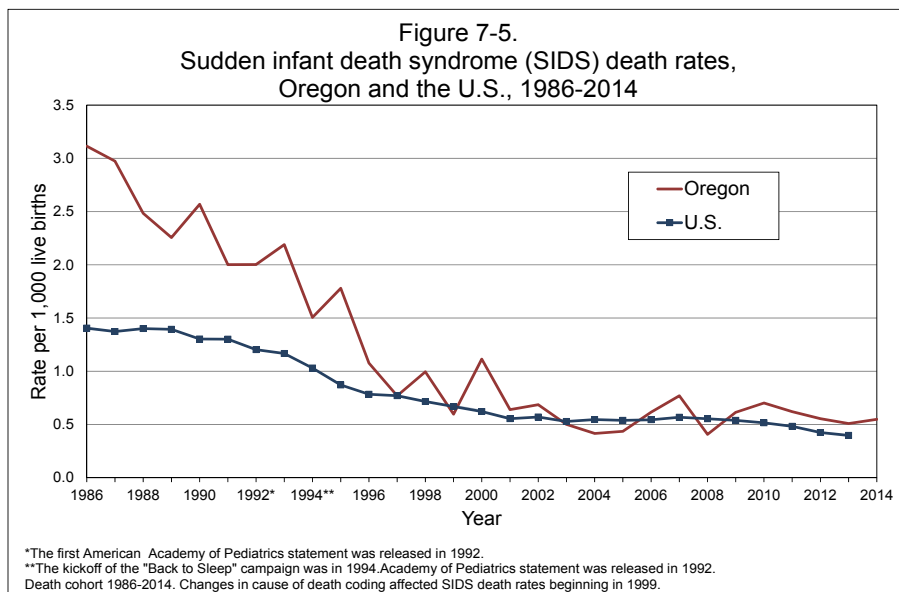


Table A - Neonatal deaths due to Respiratory Distress Syndrome, 1998-2014			
Year	Number	Percent*	Rate**
1998	8	5.6	17.7
1999	7	3.1	13.3
2000	6	3.6	13.1
2001	5	3.2	11
2002	4	2.3	8.9
2003	3	1.7	6.5
2004	6	3.4	13.1
2005	10	5.6	21.8
2006	5	2.7	10.3
2007	9	4.7	18.2
2008	3	1.9	6.1
2009	2	1.3	4.2
2010	3	2.0	6.6
2011	4	2.8	8.9
2012	4	2.5	8.9
2013	4	2.6	8.9
2014	2	1.3	4.4

- Quantity is zero.
* Percent of neonatal deaths due to RDS.
**Per 100,000 live births.

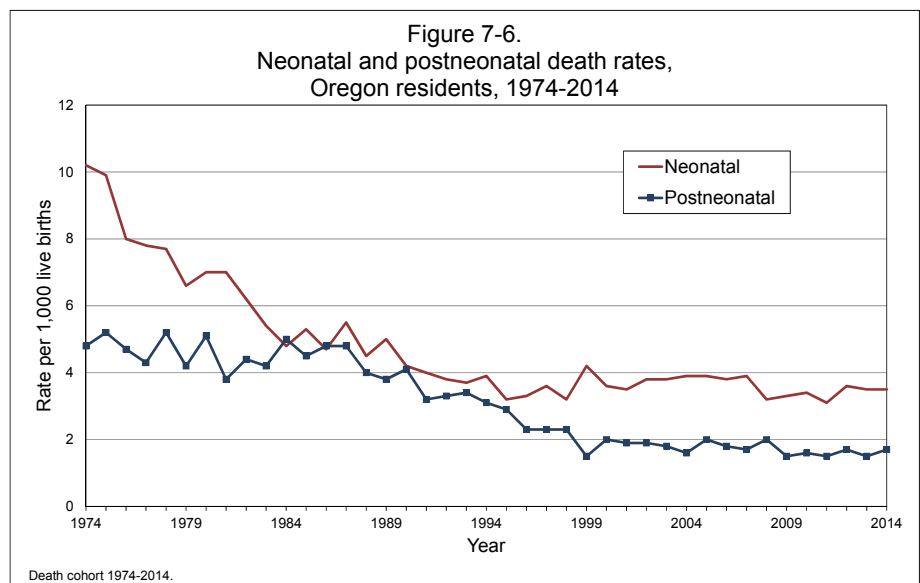
Neonatal death

Neonatal and postneonatal death rates have been declining since 1936 when the neonatal death rate was 29.0 per 1,000 births, and the postneonatal death rate was 15.3 per 1,000 births. In 2014, the neonatal death rate was 3.5 per 1,000 live births, the same as in 2013. The postneonatal death rate was 1.7, a slight increase from 1.5 in 2013 (see Figure 7-6 and Table 7-1).

In 2014, 158 infants died during the neonatal period, an increase from 156 in 2013. Oregon's neonatal death rate has consistently been below that of the United States (see Figure 7-5). The 2014 Oregon rate (3.5) is 12.7% lower than the 2013 national rate of 4.0 (2). Short gestation and fetal growth were responsible for more neonatal deaths than any other cause (35.4%), followed by congenital anomalies (17.7%) and maternal factors (17.7%) (see Table 7-2). There were two neonatal deaths due to respiratory distress syndrome (RDS) in 2014 (see Table A). The numbers of RDS deaths vary considerably from year to year. This fluctuation is due to physicians citing it less frequently as the cause of death — a change of only a few RDS events can incorrectly appear as an alarming increase or decrease; e.g., there were four neonatal RDS events reported in 2013, but only two in 2014.

Postneonatal death

In 2014, 76 infants died during the postneonatal period, representing 32.5% of all infant deaths. The postneonatal death rate (1.7 per 1,000 births) is an increase from 2013 (1.5 per 1,000 births); however, the difference is not



statistically significant (see Figure 7-6). Sudden infant death syndrome (SIDS) was the most common cause of death (32.9%). Unintentional injuries was the second most common cause of death and accounted for 18.4% of postneonatal deaths. Congenital anomalies was the third most common cause of postneonatal death (11.8%) (see Table 7-2). Before 1996, Oregon’s postneonatal death rate was higher than the U.S. rate; since then, the state rate has been lower than the national postneonatal rate (1.7 per 1,000 births for Oregon in 2014 vs. 1.9 per 1,000 births for the latest U.S. data available in 2013) (2).

AGE	YEAR				
	2014	2013	2012	2011	2010
Total	4.2	4.2	4.6	4.1	4.0
15-44	4.1	4.1	4.6	4.1	4.0
15-19	5.4	3.5	7.4	6.4	5.1
20-24	3.1	4.2	3.9	4.6	3.5
25-29	4.2	4.3	3.4	2.9	3.4
30-34	3.6	3.2	5.0	3.9	3.7
35-39	4.9	5.7	5.2	4.6	6.3
40-44	7.5	4.7	7.8	8.1	*

* Ratio was not calculated because there were fewer than five fetal deaths in this category.

Fetal death

Fetal deaths were first reported to the Public Health Division in 1928, when the ratio of fetal deaths to live births was 29.0 for every 1,000 births. Since then, the ratio has generally decreased, and has remained under 5.0 since 1998 (see Figure 7-7 and Table 5-2). In 2014, there were 191 Oregon resident fetal deaths, or 4.2 fetal deaths per 1,000 live births (see Table 7-3). This is not a statistically significant increase from 2013 when 189 fetal deaths were reported and the ratio to births was 4.2.

Fetal cause of death

Causes of Oregon’s 191 fetal deaths in 2014 are shown in Table 7-4. Fetal death of unspecified cause was the most frequently reported cause of fetal death in 2014 (a total of 96 deaths). Complications of the placenta, cord and membranes was the second most common cause of fetal death with 55 deaths. Congenital anomalies was the third

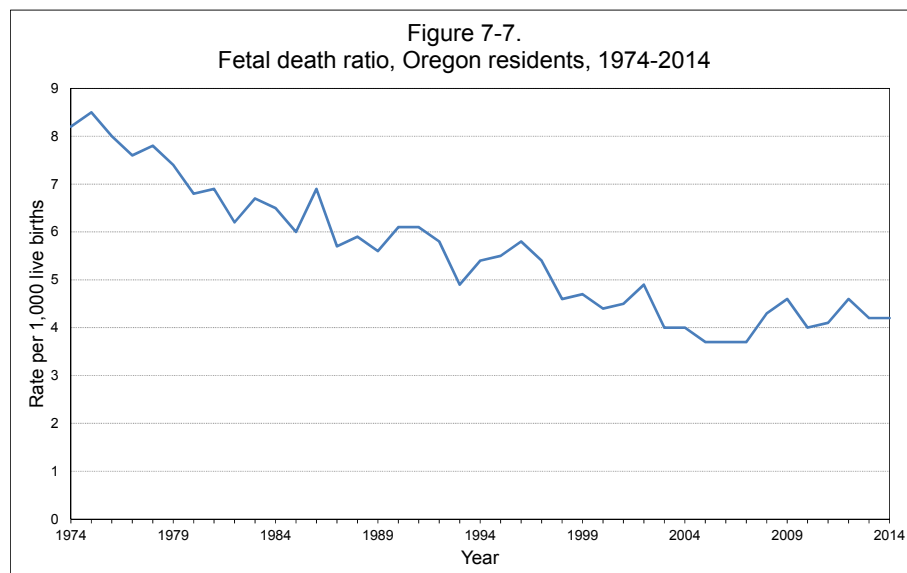


Table C - Percentage of fetal deaths by weeks of gestation, 2005-2014			
Year	weeks of gestation		
	<28	28-36	37+
2005	47.7	28.5	23.8
2006	42.1	36.5	21.3
2007	45.3	31.5	22.7
2008	41.5	31.6	26.4
2009	33.3	40.3	26.4
2010	39.2	35.4	24.9
2011	36.6	36.6	26.9
2012	36.4	33.5	29.6
2013	39.2	29.1	31.7
2014	34.0	39.3	26.7

most common cause of fetal demise with 16 deaths. These three causes of death represented 87.4% of all 2014 Oregon fetal deaths. In 1999, the first year Oregon used ICD-10 codes, fetal death of unspecified cause represented 18.4 % of all fetal deaths. In 2014, this same cause made up 50.3% of fetal deaths, a 173.4% increase.

2013 birth cohort for infant deaths

Infant mortality analyses can also be performed using birth cohort data. The numerators for all rates and ratios are based on the number of infants born in a given year that die prior to their first birthday. Perinatal analyses also include all fetal deaths occurring in the same year. Because infants can be born in one year and die the following year, use of the birth cohort requires inclusion of the 2014 death data in the report on the 2013 birth cohort. For illustration, 232 of the infants born in 2013 died within the first year of life; of these 232 deaths, 201 died in calendar year 2013, and 31 died in 2014. Those that died in 2014 also appear in this year's report as part of the 2014 death cohort.

The Center for Health Statistics has produced tables containing infant and perinatal death data from the birth, fetal death and matched infant death files. These birth cohort tables display data for infant and perinatal deaths according to several maternal risk factors and low birthweight. Additionally, this report presents neonatal and postneonatal deaths that were matched to their corresponding birth. Thus, a birth occurring at the end of December 2013 may have a matched postneonatal death that occurred up to one year later, at the end of December 2014.

Use of a birth cohort from a matched birth and death file allows analysis of characteristics of an infant's mother during pregnancy and delivery. These are the characteristics of interest: mother's marital status, age, ethnicity, race, education, start of prenatal care and tobacco use. The characteristics of the infant derived from the birth certificate and fetal death certificate include birthweight, gestational age and county of residence at time of birth.

Small numbers

Due to the small number of events in some risk factor categories, this report uses three-year groupings of the

risk characteristics to improve statistical reliability. Single-year tables displaying risk factors are also included for comparison with statistics of prior years, but the analysis of risk factors and maternal characteristics are done using only the three-year tables.

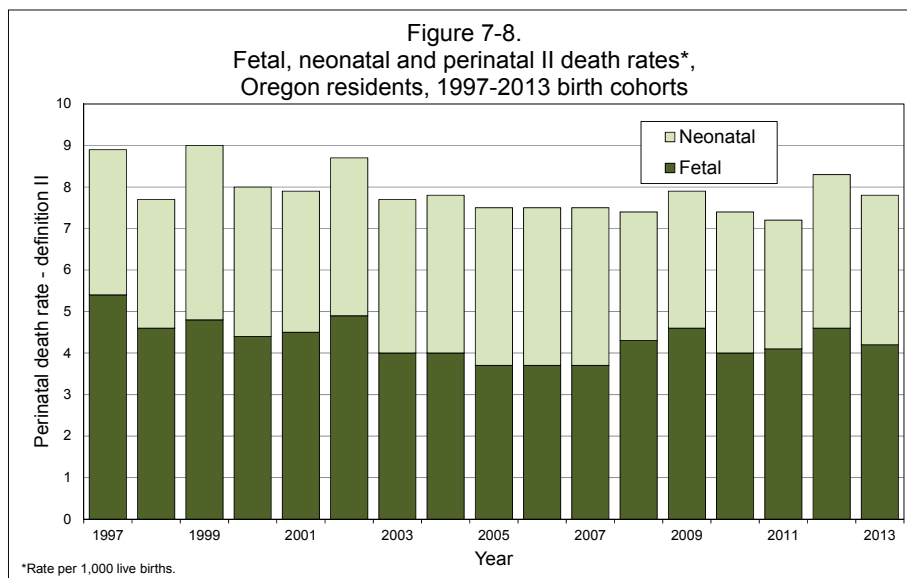
Perinatal deaths

Perinatal death, reported in Tables 7-13 through 7-16, combines fetal deaths of specific gestation and neonatal deaths (see Figure 7-2). These tables present a comprehensive picture of late gestation fetal deaths and neonatal deaths. As shown in Figure 7-8, the perinatal death rate (the combined rates of fetal and neonatal death) is generally lower than the rates seen in the 1990s. The 2013 birth cohort's neonatal death rate was 3.6, a decrease from 3.7 comparing to the 2012 birth cohort. Both the fetal and neonatal death rates fluctuate year-to-year due to the small number of cases. The fetal death rate hit a low of 3.7 in the 2005 to 2007 period, but has increased slightly since that time.

Neonatal deaths: 2011–2013 birth cohorts

Some maternal characteristics may influence pregnancy outcomes of infants that died during the neonatal period. In this section, marital status, age, ethnicity and race, education, prenatal care, and tobacco use are discussed (see Table 7-18).

***Birthweight has long
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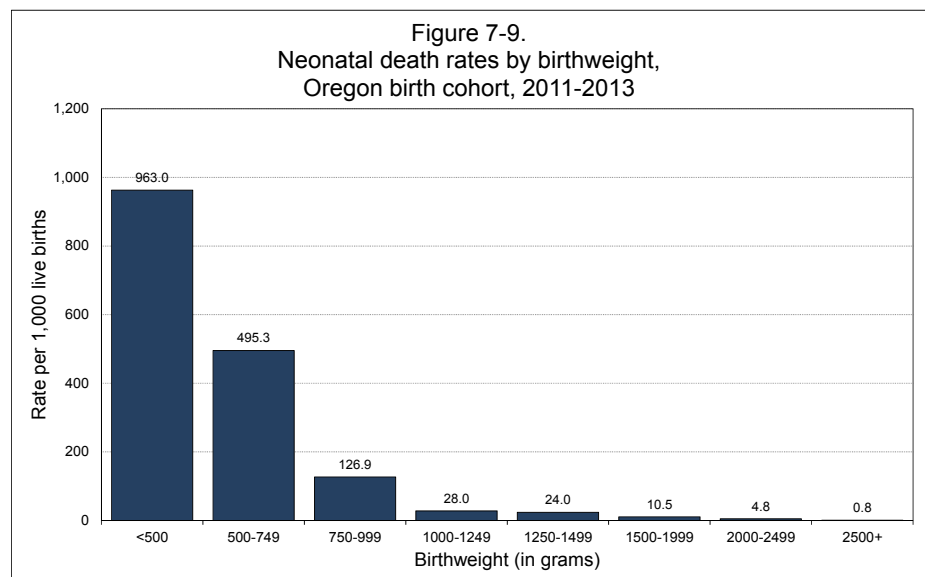
Birthweight

The birthweight of an infant has long been a predictor of subsequent survival. An increase in birthweight is correlated with a decrease in the risk of neonatal death. For the 2011–2013 period, the neonatal death rate decreased, on average, by approximately one-half for each 250 to 500 gram increase in birthweight for infants weighing less than 3,000 grams at birth (see Table 7-12). The death rate for infants weighing less than 350 grams was 1000.0 per 1,000 live births, decreasing to 0.8 per 1,000 live births for infants weighing more than 2,500 grams (see Table 7-12 and Figure 7-9).

Many behavioral, social and medical conditions are associated with higher rates of infant death. These conditions may also have confounding or mitigating effects on each other. This report does not try to account for or hold all these variables constant in relation to each other. Instead, it presents a simple descriptive analysis.

Maternal characteristics

The neonatal death rate among women reported being married at the time of birth was lower than for unmarried women during the period 2011–2013 (3.2 versus 3.7 per 1,000); however, the difference was not significantly different. Women with at least some high school education had a lower neonatal death rate (3.2 per 1,000) than women in other education categories, but the differences



between these rates were not statistically significant. Non-Hispanic White mothers had a significantly lower rate of neonatal infant death than non-Hispanic American Indian and Alaskan Native mothers (3.3 versus 7.4). Mothers of other and unknown race had a significantly higher rate of neonatal infant death than mothers that were non-Hispanic White, Asian, two or more races and Hispanic (16.4 versus 3.3, 2.8, 2.4, and 3.5). None of the other differences in rates between race and ethnic groups was significant. Mothers aged 40-44 had a significantly higher rate of neonatal infant death than mothers of age groups 20-24, 25-29, 30-34, 35-39 (7.3 versus 3.2, 3.2, 3.3 and 3.8). Mothers of multiple births had significantly higher rates of neonatal deaths than those with single births (22.6 versus 2.8, see Table 7-18.)

Prenatal care

Women that received prenatal care, regardless of when it began, had significantly lower rates of neonatal deaths than women that received no prenatal care (3.0 versus 21.1 per 1,000 births) (see Table 7-18).

Tobacco use

The infants of women that smoked pre-pregnancy or during pregnancy had higher rates of neonatal deaths (6.0 and 3.9 per 1,000 respectively) than infants of women that did not use tobacco (3.3 per 1,000). Tobacco use may be underreported, thereby eliminating some high-risk mothers from the analysis and potentially lowering the neonatal death rates for this category (see Table 7-18).

Postneonatal deaths:

2011–2013 birth cohort

Postneonatal death refers to an infant's death between its 28th and 364th day of life. In this section, the influence(s) of marital status, age, ethnicity and race, education, prenatal care, and tobacco on birth outcomes are discussed (see Table 7-18).

Maternal characteristics

Single mothers had a statistically higher rate of postneonatal death than married mothers (2.6 versus 1.0). The postneonatal death rate was also higher for mothers that gave birth to multiple infants, 4.0 versus 1.5 for singleton

births. Women with more than a high school education had a significantly lower postneonatal death rate than those with some high school (1.3 versus 2.9). The postneonatal mortality rate for non-Hispanic American Indian mothers was significantly higher than the rate for non-Hispanic White, non-Hispanic Asian, and Hispanic mothers (6.2 versus 1.4, 1.6, and 1.4, respectively). Non-Hispanic African American mothers had a significantly higher postneonatal mortality rate than non-Hispanic White mothers (3.6 versus 1.4). Infants of younger mothers had higher death rates than infants of older mothers. Infants born to mothers aged 30–34 had the lowest postneonatal death rate (0.8). This age group had significantly lower death rates than mothers aged 15–19 (2.7), 20–24 (2.2) and 25–29 (1.6) (see Table 7-18).

Prenatal care

Women that received prenatal care during the first trimester of pregnancy (1.2) had lower rates of postneonatal deaths than women that received prenatal care during the second (2.4) or third trimester (2.6) (see Table 7-18).

Tobacco use

The postneonatal death rate among mothers that used tobacco during pregnancy was significantly higher than for mothers that did not smoke (4.4 versus 1.2) (see Table 7-18).

Fetal and early neonatal deaths: birth attendant and place of deliver

In 2011, the Oregon Legislature passed House Bill 2380 that required the Oregon Public Health Division to add two questions to the Oregon Birth Certificate to determine mothers' planned place of birth and birth attendant. Every mother that delivered in a hospital was asked if she planned to deliver at a private home or a freestanding birthing center and the planned primary attendant type at the time she went into labor. Overall, three fetal deaths and two early neonatal deaths with gestation of 37 weeks or more were planned out-of-hospital births in 2014.

There are three different types of midwives in Oregon: certified nurse midwives (CNM), licensed direct entry midwives (LDM) and direct entry midwives (DEM). CNMs have completed an accredited, university-affiliated nurse midwifery program and have an active nurse practitioner

license. They may attend deliveries in hospitals, freestanding birth centers and homes. LDMs are direct entry midwives that have volunteered for state licensure through the Oregon Health Licensing Agency. They must meet qualifications and adhere to regulations set by the Oregon Legislature and Board of Direct Entry Midwifery. Lay midwives are unlicensed but are registered with the Center for Health Statistics to certify births.

In 2014, there were 51 full-term fetal deaths (at least 37 weeks of gestation). Mothers in three of these full-term deaths intended an out-of-hospital birth. Two deaths occurred after intrapartum transfer to a hospital, and one death occurred in a non-hospital setting (see Table 7-19). Licensed direct entry midwives were the intended birth attendants for the two full-term fetal deaths with intrapartum transfers to hospitals. The birth attendant for the one full-term fetal death delivered out of hospital was an unlicensed direct entry midwife.

There were 14 full-term early neonatal deaths in 2014. These are deaths where the infant lived less than seven days after birth, and the gestational period was at least 37 weeks. The mothers in most (12) of these deaths intended to deliver in a hospital. Just two of the full-term early neonatal deaths occurred out-of-hospital, and the attendants in both deaths were LDMs (see Table 7-20).

References

1. Murphy SL, Xu J, Kochanek DF. Deaths: Final data for 2010. National Vital Statistics Reports 2013 May 8 [cited 2016 Jan 25]; 61 No. 4. Available from: www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_04.pdf.2.
2. Centers for Disease Control and Prevention. About underlying cause of death, 1999–2014. [cited 2016 Jan 25]. Available from: <http://wonder.cdc.gov/ucd-icd10.html>.

TABLE 7-1. Infant deaths by age and county of residence, Oregon, 2014

County of residence	Total infant deaths ¹	Infant death rate ²	Neonatal deaths ³ (Age <28 days)				Neonatal rate ²	Post-neonatal deaths ⁴	Post-neonatal rate ²
			Total neonatal	Under 1 day	1-6 days	7-27 days			
Total	234	5.1	158	111	21	26	3.5	76	1.7
Baker	—	—	—	—	—	—	—	—	—
Benton	3	4.1	3	2	—	1	4.1	—	—
Clackamas	20	4.9	13	6	3	4	3.2	7	1.7
Clatsop	5	12.2	4	2	1	1	9.8	1	2.4
Columbia	4	8.1	3	3	—	—	6.1	1	2.0
Coos	1	1.6	—	—	—	—	—	1	1.6
Crook	1	4.5	—	—	—	—	—	1	4.5
Curry	1	6.9	—	—	—	—	—	1	6.9
Deschutes	9	5.0	7	6	1	—	3.9	2	1.1
Douglas	4	3.6	4	3	—	1	3.6	—	—
Gilliam	1	55.6	—	—	—	—	—	1	55.6
Grant	—	—	—	—	—	—	—	—	—
Harney	1	11.4	1	1	—	—	11.4	—	—
Hood River	1	3.3	1	—	—	1	3.3	—	—
Jackson	12	5.2	7	7	—	—	3.0	5	2.2
Jefferson	1	3.6	—	—	—	—	—	1	3.6
Josephine	5	5.8	5	4	—	1	5.8	—	—
Klamath	3	3.8	2	2	—	—	2.5	1	1.3
Lake	1	12.2	—	—	—	—	—	1	12.2
Lane	17	4.6	11	7	3	1	3.0	6	1.6
Lincoln	3	7.0	3	2	—	1	7.0	—	—
Linn	10	7.0	4	—	3	1	2.8	6	4.2
Malheur	4	10.2	1	1	—	—	2.5	3	7.6
Marion	18	4.1	12	8	2	2	2.7	6	1.4
Morrow	—	—	—	—	—	—	—	—	—
Multnomah	48	5.1	38	24	3	11	4.0	10	1.1
Polk	8	9.4	5	5	—	—	5.9	3	3.5
Sherman	—	—	—	—	—	—	—	—	—
Tillamook	3	11.7	3	3	—	—	11.7	—	—
Umatilla	3	2.9	3	1	2	—	2.9	—	—
Union	3	10.3	2	2	—	—	6.9	1	3.4
Wallowa	—	—	—	—	—	—	—	—	—
Wasco	—	—	—	—	—	—	—	—	—
Washington	40	5.7	25	21	3	1	3.5	15	2.1
Wheeler	—	—	—	—	—	—	—	—	—
Yamhill	4	3.5	1	1	—	—	0.9	3	2.6

— Quantity is zero.

1 Infant death is the death of a child prior to its first birthday.

2 Rates per 1,000 live births.

3 Neonatal deaths occur during the first 27 days of life.

4 Postneonatal deaths occur from day 28 through 364 after birth.

WARNING: Rates based on less than five events are unreliable.

TABLE 7-2. Infant deaths by cause and age, Oregon residents, death cohort, 2014

Selected causes of death (and their ICD-10 codes)	Total infant deaths ¹	Neonatal deaths ²				Post- neo- natal deaths ³
		Under 1 day	1-6 days	7-27 days	Total neo- natal	
Total	234	111	21	26	158	76
Rate ⁴	5.1	2.4	0.5	0.6	3.5	1.7
Infections & parasitic disease (A00-B99)	5	—	—	2	2	3
Gastroenteritis of infectious origin (A09)	2	—	—	—	—	2
Septicaemia (A40-A41)	1	—	—	1	1	—
Diseases of blood & immune disorders (D50-D89)	2	—	—	—	—	2
Endocrine, nutritional, & metabolic disease (E00-E88)	2	—	1	—	1	1
Diseases of the nervous system (G00-G99)	6	—	1	1	2	4
Meningitis (G00,G03)	2	—	—	1	1	1
Diseases of the circulatory system (I00-I99)	3	—	—	—	—	3
Diseases of the heart (I00-I09, I11, I13, I20-I51)	1	—	—	—	—	1
Diseases of the digestive system (K00-K92)	2	—	—	—	—	2
Perinatal conditions (P00-P96)	129	92	16	16	124	5
Fetus & newborn affected by maternal factors (P00-P04)	28	27	—	1	28	—
Gestation & fetal growth (P05-P08)	58	55	1	—	56	2
Birth trauma (P10-P15)	1	—	—	—	—	1
Intrauterine hypoxia & asphyxia (P20-P21)	1	1	—	—	1	—
Respiratory distress (P22)	2	—	2	—	2	—
Congenital pneumonia (P23)	1	—	—	1	1	—
Other respiratory (P24-P28)	5	2	3	—	5	—
Bacterial sepsis of newborn (P36)	5	—	1	3	4	1
Haemorrhagic disorders of newborn (P50-P61)	8	1	4	3	8	—
Congenital anomalies (Q00-Q99)	37	18	3	7	28	9
Anencephaly (Q000)	4	3	—	—	3	1
Malformation of the heart (Q20-Q24)	7	1	1	2	4	3
Down's syndrome & other chromosomal (Q90-Q99)	5	3	—	1	4	1
Symptoms, signs not elsewhere classified (R00-R99)	29	—	—	—	—	29
Sudden infant death syndrome (R95)	25	—	—	—	—	25
Other ill-defined and unspecified causes (R99)	3	—	—	—	—	3
External causes of death (V01-Y89)	18	1	—	—	1	17
Accidents (V01-X59, Y85-Y86)	14	—	—	—	—	14
Transport accidents (V01-V99, Y85)	1	—	—	—	—	1
Nontransport accidents (W00-X59,Y86)	13	—	—	—	—	13
Accidental suffocation/strangulation in bed (W75)	10	—	—	—	—	10
Assault (homicide) (X85-Y09, Y87.1)	2	1	—	—	1	1
Events of undetermined intent (Y10-Y34, Y87.2, Y89.9) ...	2	—	—	—	—	2
Strangulation/suffocation, undeterm intent (Y20)	1	—	—	—	—	1

¹ Infant death is the death of a child prior to its first birthday.

² Neonatal deaths occur during the first 27 days of life.

³ Postneonatal deaths occur from day 28 through 364 after birth.

⁴ Rates per 1,000 live births.

— Quantity is zero.

TABLE 7-3. Fetal deaths by age of mother and county of residence, Oregon, 2014

County of residence	Total	Age of mother								
		<15	15-19	20-24	25-29	30-34	35-39	40-44	45+	N.S.
Total	191	—	13	29	55	47	31	10	1	5
Ratio to births ¹	4.2	—	5.4	3.1	4.2	3.6	4.9	7.5	*	**
Baker	—	—	—	—	—	—	—	—	—	—
Benton	4	—	—	—	2	1	1	—	—	—
Clackamas	15	—	—	4	3	2	4	2	—	—
Clatsop	—	—	—	—	—	—	—	—	—	—
Columbia	2	—	—	—	—	1	—	—	—	1
Coos	3	—	—	1	—	1	—	1	—	—
Crook	1	—	1	—	—	—	—	—	—	—
Curry	1	—	—	—	—	1	—	—	—	—
Deschutes	5	—	1	1	—	2	—	1	—	—
Douglas	3	—	1	1	—	1	—	—	—	—
Gilliam	—	—	—	—	—	—	—	—	—	—
Grant	—	—	—	—	—	—	—	—	—	—
Harney	—	—	—	—	—	—	—	—	—	—
Hood River	—	—	—	—	—	—	—	—	—	—
Jackson	10	—	—	2	5	1	1	—	—	1
Jefferson	2	—	—	1	—	1	—	—	—	—
Josephine	11	—	3	3	1	2	2	—	—	—
Klamath	2	—	—	—	2	—	—	—	—	—
Lake	—	—	—	—	—	—	—	—	—	—
Lane	14	—	—	4	3	2	3	1	1	—
Lincoln	1	—	—	—	—	—	—	1	—	—
Linn	10	—	—	2	3	5	—	—	—	—
Malheur	2	—	—	1	1	—	—	—	—	—
Marion	22	—	1	—	11	6	4	—	—	—
Morrow	1	—	—	—	—	—	1	—	—	—
Multnomah	36	—	3	5	12	8	6	1	—	1
Polk	2	—	1	—	—	—	1	—	—	—
Sherman	—	—	—	—	—	—	—	—	—	—
Tillamook	—	—	—	—	—	—	—	—	—	—
Umatilla	3	—	1	—	1	—	—	—	—	1
Union	1	—	—	—	—	—	1	—	—	—
Wallowa	—	—	—	—	—	—	—	—	—	—
Wasco	—	—	—	—	—	—	—	—	—	—
Washington	30	—	1	2	8	11	6	2	—	—
Wheeler	—	—	—	—	—	—	—	—	—	—
Yamhill	9	—	—	2	3	2	1	1	—	—
Unknown	1	—	—	—	—	—	—	—	—	1

— Quantity is zero.

¹ All ratios per 1,000 live births.

* Ratios are not calculated for fewer than five events.

** Ratio for unknown age group is not calculated.

TABLE 7-4. Fetal deaths by weeks of gestation and cause of death, Oregon, 2014

Selected causes of death (and their ICD-10 codes)	Total	Weeks of gestation*								
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+
Total	191	2	32	31	33	29	13	35	12	4
Perinatal conditions (P00-P96)	171	1	25	27	29	28	11	34	12	4
Maternal conditions unrelated to present pregnancy (P00)	11	-	4	4	1	1	1	-	-	-
Maternal complications of pregnancy (P01)	4	1	3	-	-	-	-	-	-	-
Complications of placenta, cord and membranes (P02)	55	-	7	8	10	9	5	11	3	2
Other complications of labor and delivery (P03)	2	-	-	1	-	-	-	-	1	-
Short gestation and low birthweight disorders, NEC (P07)	1	-	1	-	-	-	-	-	-	-
Transitory endocrine and metabolic disorders specific to fetus (P70-P74)	1	-	-	-	-	-	1	-	-	-
Other perinatal conditions (P80-P96)	96	-	10	14	17	18	4	23	8	2
Fetal death of unspecified cause (P95)	96	-	10	14	17	18	4	23	8	2
Congenital malformations (Q00-Q99)	16	-	6	4	3	-	2	1	-	-
Of the nervous system (Q00-Q07)	3	-	3	-	-	-	-	-	-	-
Congenital hydrocephalus (Q03)	2	-	2	-	-	-	-	-	-	-
Of the heart (Q20-Q24)	2	-	1	-	-	-	-	1	-	-
Of musculoskeletal system, limbs and integument (Q65-Q85) ..	3	-	1	1	1	-	-	-	-	-
Chromosomal abnormalities, NEC (Q90-Q99)	7	-	1	2	2	-	2	-	-	-
Down's syndrome (Q90)	3	-	-	-	2	-	1	-	-	-
Edward's syndrome (Q91.0-Q91.3)	2	-	-	1	-	-	1	-	-	-

- Quantity is zero.

* Based on clinical estimate of gestation.

TABLE 7-5. Fetal deaths by weeks of gestation and age of mother, Oregon, 2014

Age of mother	Total	Weeks of gestation*								
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+
Total	191	2	32	31	33	29	13	35	12	4
<15	—	—	—	—	—	—	—	—	—	—
15-19	13	—	4	1	2	4	1	1	—	—
20-24	29	—	5	7	5	7	1	3	1	—
25-29	55	—	9	8	10	10	4	9	4	1
30-34	47	2	6	6	9	5	3	10	3	3
35-39	31	—	5	6	3	2	2	10	3	—
40-44	10	—	1	2	2	1	2	2	—	—
45+	1	—	—	—	1	—	—	—	—	—
N.S.	5	—	2	1	1	—	—	—	1	—

TABLE 7-6. Births by weeks of gestation and weight, Oregon residents, 2013

Birthweight (in grams)	Total	Weeks of gestation*									
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+	N.S.
Total	45,136	12	60	153	297	1,535	1,373	25,106	11,253	5,302	45
349 and less	20	11	9	—	—	—	—	—	—	—	—
350-499	32	—	24	7	1	—	—	—	—	—	—
<500	52	11	33	7	1	—	—	—	—	—	—
500-749	91	—	27	59	3	2	—	—	—	—	—
750-999	89	—	—	61	26	2	—	—	—	—	—
1000-1249	104	—	—	17	77	7	—	2	—	1	—
1250-1499	112	—	—	8	65	37	1	—	—	1	—
1500-1999	543	—	—	—	104	329	63	44	3	—	—
2000-2499	1,854	—	—	—	18	678	324	765	53	13	3
<2500	2,845	11	60	152	294	1,055	388	811	56	15	3
2500-2999	6,679	—	—	—	—	381	589	4,651	835	217	6
3000-3499	16,908	—	—	—	—	77	308	10,709	4,273	1,523	18
3500-3999	13,932	—	—	—	2	18	65	7,003	4,503	2,328	13
4000-4499	4,039	—	—	—	—	3	17	1,623	1,379	1,015	2
4500+	727	—	—	—	—	1	6	309	206	204	1
Unknown	6	1	—	1	1	—	—	—	1	—	2

— Quantity is zero.

* Based on clinical estimate of gestation.

TABLE 7-7. Fetal deaths by weeks of gestation and weight, Oregon residents, 2013

Birthweight (in grams)	Total	Weeks of gestation*								
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+
Total	189	4	37	33	18	31	6	42	13	5
350-499	32	2	22	8	—	—	—	—	—	—
<500	32	2	22	8	—	—	—	—	—	—
500-749	30	2	9	14	5	—	—	—	—	—
750-999	16	—	2	10	4	—	—	—	—	—
1000-1249	7	—	1	—	3	3	—	—	—	—
1250-1499	6	—	—	—	3	3	—	—	—	—
1500-1999	13	—	—	—	3	8	2	—	—	—
2000-2499	20	—	—	—	—	11	3	4	2	—
<2500	124	4	34	32	18	25	5	4	2	—
2500-2999	20	—	—	1	—	4	—	11	4	—
3000-3499	20	—	—	—	—	1	1	17	1	—
3500-3999	12	—	—	—	—	—	—	7	3	2
4000-4499	5	—	—	—	—	—	—	2	1	2
4500+	4	—	—	—	—	—	—	1	2	1
Unknown	4	—	3	—	—	1	—	—	—	—

— Quantity is zero.

* Based on clinical estimate of gestation.

TABLE 7-8. Early neonatal deaths¹ by weeks of gestation and weight, Oregon residents, birth cohort 2013

Birthweight (in grams)	Total	Weeks of gestation								
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+
Total ²	128	12	52	32	3	9	3	10	3	4
001-349	20	11	9	—	—	—	—	—	—	—
350-499	28	—	23	4	1	—	—	—	—	—
<500	48	11	32	4	1	—	—	—	—	—
500-749	38	—	20	18	—	—	—	—	—	—
750-999	9	—	—	8	—	1	—	—	—	—
1000-1249	2	—	—	1	1	—	—	—	—	—
1250-1499	1	—	—	—	1	—	—	—	—	—
1500-1999	1	—	—	—	—	1	—	—	—	—
2000-2499	5	—	—	—	—	4	1	—	—	—
<2500	104	11	52	31	3	6	1	—	—	—
2500+	22	—	—	—	—	3	2	10	3	4
2500-2999	7	—	—	—	—	3	1	3	—	—
3000-3499	5	—	—	—	—	—	1	2	1	1
3500-3999	6	—	—	—	—	—	—	3	2	1
4000-4499	3	—	—	—	—	—	—	1	—	2
4500+	1	—	—	—	—	—	—	1	—	—

¹ Early neonatal deaths occur through day six after birth.

² Includes unknown weight.

— Quantity is zero.

NOTE: Calculated gestation from reported date of last menses. If calculated gestation is unknown, the clinical estimate of gestation is used. Total includes reports with unknown birthweight and/or gestation.

TABLE 7-9. Late neonatal deaths¹ by weeks of gestation and weight, Oregon residents, birth cohort 2013

Birthweight (in grams)	Total	Weeks of gestation								
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+
Total ²	35	–	–	12	5	–	1	12	3	2
001-349	–	–	–	–	–	–	–	–	–	–
350-499	2	–	–	2	–	–	–	–	–	–
<500	2	–	–	2	–	–	–	–	–	–
500-749	8	–	–	7	1	–	–	–	–	–
750-999	3	–	–	2	1	–	–	–	–	–
1000-1249	2	–	–	–	2	–	–	–	–	–
1250-1499	1	–	–	1	–	–	–	–	–	–
1500-1999	–	–	–	–	–	–	–	–	–	–
2000-2499	3	–	–	–	1	–	–	2	–	–
<2500	19	–	–	12	5	–	–	2	–	–
2500+	16	–	–	–	–	–	1	10	3	2
2500-2999	5	–	–	–	–	–	1	3	1	–
3000-3499	6	–	–	–	–	–	–	4	1	1
3500-3999	5	–	–	–	–	–	–	3	1	1
4000-4499	–	–	–	–	–	–	–	–	–	–
4500+	–	–	–	–	–	–	–	–	–	–

¹ Late neonatal deaths occur from day seven through 27 after birth.

² Includes unknown weight.

– Quantity is zero.

NOTE: Calculated gestation from reported date of last menses. If calculated gestation is unknown, the clinical estimate of

gestation is used. Total includes reports with unknown birthweight and/or gestation.

**TABLE 7-10. Postneonatal deaths¹ by weeks of gestation and weight,
Oregon residents, birth cohort 2013**

Birthweight (in grams)	Total	Weeks of gestation								
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+
Total ²	69	-	-	7	6	8	5	33	8	2
001-349	-	-	-	-	-	-	-	-	-	-
350-499	-	-	-	-	-	-	-	-	-	-
<500	-	-	-	-	-	-	-	-	-	-
500-749	5	-	-	2	1	2	-	-	-	-
750-999	1	-	-	1	-	-	-	-	-	-
1000-1249	5	-	-	1	3	1	-	-	-	-
1250-1499	4	-	-	3	1	-	-	-	-	-
1500-1999	4	-	-	-	1	1	1	1	-	-
2000-2499	5	-	-	-	-	3	-	2	-	-
<2500	24	-	-	7	6	7	1	3	-	-
2500+	45	-	-	-	-	1	4	30	8	2
2500-2999	19	-	-	-	-	1	4	11	2	1
3000-3499	16	-	-	-	-	-	-	12	4	-
3500-3999	7	-	-	-	-	-	-	5	1	1
4000-4499	2	-	-	-	-	-	-	1	1	-
4500+	1	-	-	-	-	-	-	1	-	-

¹ Postneonatal deaths occur from day 28 through 364 after birth.

² Includes unknown weight.

- Quantity is zero.

NOTE: Calculated gestation from reported date of last menses. If calculated gestation is unknown, the clinical estimate of gestation is used. Total includes reports with unknown birthweight and/or gestation.

TABLE 7-11. Neonatal deaths by birthweight, Oregon residents, birth cohort 2013

Birthweight (in grams)	Deaths	Rate ¹
Total ²	163	3.6
001-349	20	909.1
350-499	30	937.5
<500	50	925.9
500-749	46	754.1
750-999	12	133.3
1000-1249	4	*
1250-1499	2	*
1500-1999	1	*
2000-2499	8	4.4
<2500	123	44.3
2500+	38	0.9
2500-2999	12	1.8
3000-3499	11	0.6
3500-3999	11	0.8
4000-4499	3	*
4500+	1	*

¹ Rate per 1,000 live births.

² Includes unknown weight.

* Rates are not calculated when there are fewer than five deaths in a category.

TABLE 7-12. Neonatal deaths by birthweight, Oregon residents, birth cohort 2011-2013

Birthweight (in grams)	Deaths	Rate ¹
Total ²	468	3.5
001-349	69	1000.0
350-499	87	935.5
<500	156	963.0
500-749	106	495.3
750-999	34	126.9
1000-1249	9	28.0
1250-1499	9	24.0
1500-1999	17	10.5
2000-2499	26	4.8
<2500	357	42.5
2500+	103	0.8
2500-2999	26	1.3
3000-3499	41	0.8
3500-3999	24	0.6
4000-4499	7	0.6
4500+	5	2.2

¹ Rate per 1,000 live births.

² Includes unknown weight.

* Rates are not calculated when there are fewer than five deaths in a category.

**TABLE 7-13. Perinatal death rates by county of residence,
Oregon residents, birth cohort 2013**

County of residence	Perinatal I ¹			Perinatal II ²			Neonatal ³	
	No.	Rate	Ratio	No.	Rate	Ratio	No.	Rate
Total ⁴	243	5.4	5.4	348	7.7	7.7	163	3.6
Baker	1	*	*	1	*	*	—	—
Benton	1	*	*	2	*	*	2	*
Clackamas	15	3.8	3.8	28	7.0	7.0	12	3.0
Clatsop	1	*	*	1	*	*	1	*
Columbia	3	*	*	4	*	*	1	*
Coos	3	*	*	5	7.8	7.8	2	*
Crook	2	*	*	2	*	*	1	*
Curry	1	*	*	2	*	*	2	*
Deschutes	10	6.1	6.1	14	8.5	8.5	3	*
Douglas	7	6.4	6.4	10	9.1	9.1	7	6.4
Gilliam	—	—	—	—	—	—	—	—
Grant	1	*	*	1	*	*	—	—
Harney	2	*	*	2	*	*	2	*
Hood River	2	*	*	4	*	*	2	*
Jackson	12	5.3	5.3	15	6.6	6.6	8	3.5
Jefferson	3	*	*	4	*	*	2	*
Josephine	4	*	*	6	7.3	7.3	5	6.1
Klamath	3	*	*	6	7.8	7.8	3	*
Lake	—	—	—	1	*	*	—	—
Lane	25	7.2	7.2	33	9.4	9.5	18	5.2
Lincoln	2	*	*	3	*	*	1	*
Linn	12	8.4	8.4	20	14.0	14.0	8	5.6
Malheur	3	*	*	3	*	*	—	—
Marion	23	5.3	5.3	34	7.8	7.8	13	3.0
Morrow	—	—	—	—	—	—	—	—
Multnomah	54	5.8	5.8	70	7.4	7.5	36	3.8
Polk	5	5.8	5.8	6	6.9	7.0	5	5.8
Sherman	—	—	—	—	—	—	—	—
Tillamook	—	—	—	—	—	—	—	—
Umatilla	7	6.3	6.3	7	6.3	6.3	4	*
Union	2	*	*	3	*	*	1	*
Wallowa	1	*	*	1	*	*	1	*
Wasco	5	16.9	16.9	7	23.6	23.6	2	*
Washington	31	4.3	4.3	51	7.0	7.0	20	2.8
Wheeler	—	—	—	—	—	—	—	—
Yamhill	2	*	*	2	*	*	1	*

¹ Perinatal definition I includes fetal deaths at 28 weeks of gestation or more and infant deaths of less than 7 days.

² Perinatal definition II includes fetal deaths at 20 weeks of gestation or more and infant deaths of less than 28 days.

³ Neonatal deaths include infant deaths of less than 28 days.

⁴ Includes unknown county of residence.

* Rates are not calculated when there are fewer than five deaths in a category.

— Quantity is zero.

NOTE: Perinatal I and perinatal II ratios and neonatal rates are per 1,000 births. Perinatal I rates include all live births and fetal deaths at 28 weeks gestation or more. Perinatal II rates include all live births and fetal deaths at 20 weeks of gestation or more.

**TABLE 7-14. Perinatal death rates by county of residence,
Oregon residents, birth cohort 2011-2013**

County of residence	Perinatal I ¹			Perinatal II ²			Neonatal ³	
	No.	Rate	Ratio	No.	Rate	Ratio	No.	Rate
Total ⁴	746	5.5	5.5	1,040	7.7	7.7	468	3.5
Baker	3	*	*	5	9.6	9.7	1	*
Benton	9	4.1	4.1	15	6.9	6.9	9	4.1
Clackamas	48	4.1	4.1	76	6.4	6.4	32	2.7
Clatsop	9	7.1	7.1	11	8.7	8.7	5	4.0
Columbia	11	7.7	7.7	13	9.0	9.1	6	4.2
Coos	7	3.8	3.8	14	7.6	7.7	4	*
Crook	2	*	*	2	*	*	1	*
Curry	7	12.3	12.4	8	14.1	14.2	6	10.6
Deschutes	26	5.1	5.1	37	7.3	7.3	14	2.8
Douglas	24	7.4	7.4	35	10.7	10.8	17	5.2
Gilliam	—	—	—	—	—	—	—	—
Grant	2	*	*	3	*	*	—	—
Harney	2	*	*	2	*	*	2	*
Hood River	4	*	*	7	8.2	8.2	3	*
Jackson	36	5.2	5.2	51	7.3	7.3	19	2.7
Jefferson	6	6.8	6.8	8	9.0	9.0	4	*
Josephine	15	6.2	6.2	21	8.7	8.7	13	5.4
Klamath	19	8.0	8.0	28	11.7	11.8	15	6.3
Lake	—	—	—	1	*	*	—	—
Lane	63	6.0	6.0	87	8.3	8.3	37	3.5
Lincoln	4	*	*	7	5.4	5.4	3	*
Linn	26	6.0	6.0	40	9.2	9.2	15	3.5
Malheur	11	8.4	8.4	13	9.9	10.0	4	*
Marion	84	6.4	6.5	109	8.3	8.4	46	3.5
Morrow	2	*	*	3	*	*	2	*
Multnomah	145	5.1	5.1	195	6.9	6.9	95	3.4
Polk	13	5.0	5.1	16	6.2	6.2	6	2.3
Sherman	—	—	—	—	—	—	—	—
Tillamook	5	6.8	6.8	5	6.8	6.8	4	*
Umatilla	16	4.8	4.8	24	7.2	7.3	11	3.3
Union	5	5.4	5.4	7	7.5	7.6	4	*
Wallowa	4	*	*	4	*	*	3	*
Wasco	7	7.9	8.0	12	13.5	13.7	5	5.7
Washington	111	5.1	5.1	157	7.2	7.3	70	3.2
Wheeler	—	—	—	1	*	*	—	—
Yamhill	20	6.0	6.1	23	6.9	7.0	12	3.6

¹ Perinatal definition I includes fetal deaths at 28 weeks of gestation or more and infant deaths of less than 7 days.

² Perinatal definition II includes fetal deaths at 20 weeks of gestation or more and infant deaths of less than 28 days.

³ Neonatal deaths include infant deaths of less than 28 days.

⁴ Includes unknown county of residence.

* Rates are not calculated when there are fewer than five deaths in a category.

— Quantity is zero.

NOTE: Perinatal I and perinatal II ratios and neonatal rates are per 1,000 births. Perinatal I rates include all live births and fetal deaths at 28 weeks gestation or more. Perinatal II rates include all live births and fetal deaths at 20 weeks of gestation or more.

TABLE 7-15. Perinatal death rates by mother's risk factors, Oregon residents, birth cohort 2013

Risk factors	Perinatal I ¹			Perinatal II ²			Neonatal ³	
	No.	Rate	Ratio	No.	Rate	Ratio	No.	Rate
Total ⁴	243	5.4	5.4	348	7.7	7.7	163	3.6
Marital status								
Married	139	4.8	4.8	207	7.1	7.1	100	3.4
Unmarried	100	6.3	6.3	137	8.6	8.7	59	3.7
Age of mother								
10-14	—	—	—	1	*	*	—	—
15-19	16	5.6	5.6	19	6.6	6.7	10	3.5
20-24	52	5.4	5.4	70	7.2	7.2	30	3.1
25-29	63	4.8	4.8	94	7.2	7.2	41	3.2
30-34	56	4.6	4.6	76	6.2	6.3	37	3.0
35-39	38	6.4	6.4	64	10.7	10.7	30	5.0
40-44	14	10.8	10.9	19	14.7	14.8	13	10.1
45+	1	*	*	1	*	*	1	*
Non-Hispanic race								
White	176	5.7	5.7	247	7.9	8.0	114	3.7
Black	7	7.7	7.7	9	9.8	9.9	7	7.7
American Indian	7	13.4	13.4	7	13.4	13.4	4	*
Asian ⁵	9	4.2	4.2	15	6.9	6.9	7	3.2
Pacific Islander ⁶	2	*	*	4	*	*	1	*
Other & unknown	4	*	*	4	*	*	4	*
Two or more races	1	*	*	5	3.5	3.5	2	*
Total Hispanic	37	4.3	4.3	57	6.7	6.7	24	2.8
Education								
8th grade or less	10	5.4	5.4	15	8.0	8.0	8	4.3
Some high school	29	5.4	5.4	39	7.3	7.3	15	2.8
HS diploma/GED	53	5.2	5.2	75	7.4	7.4	31	3.1
More than HS	131	4.8	4.8	191	6.9	6.9	101	3.7
Start of prenatal care								
Any trimester	206	4.8	4.9	296	6.9	7.0	135	3.2
1st trimester	164	4.9	4.9	240	7.2	7.2	109	3.3
2nd trimester	37	4.9	4.9	51	6.7	6.8	25	3.3
3rd trimester	5	3.3	3.4	5	3.3	3.4	1	*
No prenatal care	10	32.9	33.8	19	61.1	64.2	8	27.0
Tobacco use								
Pre-pregnancy only	3	*	*	7	7.0	7.1	2	*
During pregnancy	40	8.5	8.5	53	11.2	11.3	21	4.5
No tobacco use	195	5.0	5.0	283	7.2	7.3	135	3.5
Multiple birth								
Yes	27	18.0	18.2	36	23.9	24.2	28	18.9
No	216	4.9	5.0	312	7.1	7.2	135	3.1

¹ Perinatal definition I includes fetal deaths at 28 weeks' gestation or more and infant deaths of less than 7 days.

² Perinatal definition II includes fetal deaths at 20 weeks gestation or more and infant deaths of less than 28 days.

³ Neonatal deaths include infant deaths of less than 28 days.

⁴ Due to unreported items, the sum of all categories may not equal the total.

⁵ Includes Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese and other Asian.

⁶ Includes Guamanian, Hawaiian, Samoan and other Pacific Islander.

* Rates are not calculated when there are fewer than five deaths in a category.

— Quantity is zero.

NOTE: Perinatal I and perinatal II ratios and neonatal rates are per 1,000 births. Perinatal I rates include all live births and fetal deaths at 28 weeks gestation or more. Perinatal II rates include all live births and fetal deaths at 20 weeks of gestation or more.

TABLE 7-16. Perinatal death rates by mother's risk factors, Oregon residents, birth cohort 2011-2013

Risk factors	Perinatal I ¹			Perinatal II ²			Neonatal ³	
	No.	Rate	Ratio	No.	Rate	Ratio	No.	Rate
Total⁴	746	5.5	5.5	1,040	7.7	7.7	468	3.5
Marital status								
Married	449	5.2	5.2	618	7.1	7.1	282	3.2
Unmarried	290	6.0	6.1	414	8.6	8.7	179	3.7
Age of mother								
10-14	—	—	—	1	*	*	—	—
15-19	52	6.0	6.1	80	9.3	9.3	30	3.5
20-24	157	5.4	5.4	214	7.3	7.4	92	3.2
25-29	189	4.8	4.8	259	6.6	6.6	124	3.2
30-34	196	5.3	5.3	267	7.3	7.3	122	3.3
35-39	108	6.1	6.1	157	8.8	8.9	67	3.8
40-44	38	9.9	10.0	53	13.8	13.9	28	7.3
45+	3	*	*	5	19.8	19.8	4	*
Non-Hispanic race								
White	513	5.5	5.5	710	7.6	7.6	310	3.3
Black	17	6.1	6.1	27	9.7	9.7	15	5.4
American Indian	14	8.6	8.7	18	11.1	11.1	12	7.4
Asian ⁵	27	4.2	4.2	41	6.4	6.4	18	2.8
Pacific Islander ⁶	8	9.1	9.2	11	12.5	12.6	4	*
Other & unknown	10	18.2	18.2	10	18.2	18.2	9	16.4
Two or more races	16	3.8	3.8	21	4.9	5.0	10	2.4
Total Hispanic	141	5.5	5.5	202	7.8	7.9	90	3.5
Education								
8th grade or less	36	6.5	6.5	49	8.9	8.9	25	4.5
Some high school	101	6.2	6.2	139	8.5	8.6	51	3.2
HS diploma/GED	162	5.3	5.3	229	7.4	7.5	100	3.3
More than HS	380	4.6	4.6	526	6.4	6.4	273	3.3
Start of prenatal care								
Any trimester	634	4.9	5.0	883	6.9	6.9	386	3.0
1st trimester	484	4.8	4.8	689	6.9	6.9	299	3.0
2nd trimester	129	5.5	5.5	171	7.3	7.4	80	3.4
3rd trimester	21	4.5	4.5	23	4.9	4.9	7	1.5
No prenatal care	39	42.3	43.3	57	60.8	63.3	19	21.1
Tobacco use								
Pre-pregnancy only	21	7.5	7.5	29	10.3	10.3	17	6.0
During pregnancy	103	7.3	7.4	141	10.0	10.1	54	3.9
No tobacco use	609	5.2	5.2	853	7.2	7.3	386	3.3
Multiple birth								
Yes	112	25.0	25.1	144	32.0	32.3	101	22.6
No	634	4.8	4.8	896	6.8	6.8	367	2.8

¹ Perinatal Definition I includes fetal deaths at 28 weeks' gestation or more and infant deaths of less than seven days.

² Perinatal Definition II includes fetal deaths at 20 weeks' gestation or more and infant deaths of less than 28 days.

³ Neonatal deaths include infant deaths of less than 28 days.

⁴ Due to unreported items, the sum of all categories may not equal the total.

⁵ Includes Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese and other Asian.

⁶ Includes Guamanian, Hawaiian, Samoan and other Pacific Islander.

* Rates are not calculated when there are fewer than five deaths in a category.

— Quantity is zero.

NOTE: Perinatal I and perinatal II ratios and neonatal rates are per 1,000 births. Perinatal I rates include all live births and fetal deaths at 28 weeks' gestation or more. Perinatal II rates include all live births and fetal deaths at 20 weeks' gestation or more.

TABLE 7-17. Neonatal, postneonatal and infant death rates by mother's risk factors, Oregon residents, birth cohort 2013

Risk factors	Neonatal ¹		Postneonatal ²		Infant ³	
	No.	Rate	No.	Rate	No.	Rate
Total⁴	163	3.6	69	1.5	232	5.1
Marital status						
Married	100	3.4	29	1.0	129	4.4
Unmarried	59	3.7	40	2.5	99	6.3
Age of mother						
10-14	—	—	—	—	—	—
15-19	10	3.5	3	*	13	4.6
20-24	30	3.1	22	2.3	52	5.4
25-29	41	3.2	21	1.6	62	4.8
30-34	37	3.0	12	1.0	49	4.0
35-39	30	5.0	8	1.3	38	6.4
40-44	13	10.1	3	*	16	12.4
45+	1	*	—	—	1	*
Non-Hispanic race						
White	114	3.7	48	1.5	162	5.2
Black	7	7.7	3	*	10	11.0
American Indian	4	*	4	*	8	15.4
Asian ⁵	7	3.2	3	*	10	4.6
Pacific Islander ⁶	1	*	—	—	1	*
Other & unknown	4	*	—	—	4	*
Two or more races	2	*	—	—	2	*
Total Hispanic	24	2.8	11	1.3	35	4.1
Education						
8th grade or less	8	4.3	3	*	11	5.9
Some high school	15	2.8	18	3.4	33	6.2
HS diploma/GED	31	3.1	18	1.8	49	4.8
More than HS	101	3.7	28	1.0	129	4.7
Start of prenatal care						
Any trimester	135	3.2	60	1.4	195	4.6
1st trimester	109	3.3	38	1.1	147	4.4
2nd trimester	25	3.3	17	2.3	42	5.6
3rd trimester	1	*	5	3.4	6	4.0
No prenatal care	8	27.0	2	*	10	33.8
Tobacco use						
Pre-pregnancy only	2	*	—	—	2	*
During pregnancy	21	4.5	22	4.7	43	9.2
No tobacco use	135	3.5	47	1.2	182	4.7
Multiple birth						
Yes	28	18.9	9	6.1	37	24.9
No	135	3.1	60	1.4	195	4.5

¹ Neonatal deaths include infant deaths of less than 28 days.

² Postneonatal deaths occur from day 28 through 364 after birth.

³ Infant death is the death of a child prior to its first birthday.

⁴ Due to unreported items, the sum of all categories may not equal the total.

⁵ Includes Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese and other Asian.

⁶ Includes Guamanian, Hawaiian, Samoan and other Pacific Islander.

* Rates are not calculated when there are fewer than 5 deaths in a category.

— Quantity is zero.

NOTE: All rates per 1,000 live births.

TABLE 7-18. Neonatal, postneonatal and infant death rates by mother's risk factors, Oregon residents, birth cohort 2011-2013

Risk factors	Neonatal ¹		Postneonatal ²		Infant ³	
	No.	Rate	No.	Rate	No.	Rate
Total⁴	468	3.5	211	1.6	679	5.0
Marital status						
Married	282	3.2	87	1.0	369	4.2
Unmarried	179	3.7	124	2.6	303	6.3
Age of mother						
10-14	—	—	—	—	—	—
15-19	30	3.5	23	2.7	53	6.2
20-24	92	3.2	65	2.2	157	5.4
25-29	124	3.2	63	1.6	187	4.8
30-34	122	3.3	31	0.8	153	4.2
35-39	67	3.8	23	1.3	90	5.1
40-44	28	7.3	5	1.3	33	8.7
45+	4	*	1	*	5	19.8
Non-Hispanic race						
White	310	3.3	135	1.4	445	4.8
Black	15	5.4	10	3.6	25	9.0
American Indian	12	7.4	10	6.2	22	13.6
Asian ⁵	18	2.8	10	1.6	28	4.4
Pacific Islander ⁶	4	*	1	*	5	5.7
Other & unknown	9	16.4	1	*	10	18.2
Two or more races	10	2.4	8	1.9	18	4.2
Total Hispanic	90	3.5	36	1.4	126	4.9
Education						
8th grade or less	25	4.5	6	1.1	31	5.6
Some high school	51	3.2	47	2.9	98	6.1
HS diploma/GED	100	3.3	53	1.7	153	5.0
More than HS	273	3.3	103	1.3	376	4.6
Start of prenatal care						
Any trimester	386	3.0	186	1.5	572	4.5
1st trimester	299	3.0	118	1.2	417	4.2
2nd trimester	80	3.4	56	2.4	136	5.9
3rd trimester	7	1.5	12	2.6	19	4.1
No prenatal care	19	21.1	2	*	21	23.3
Tobacco use						
Pre-pregnancy only	17	6.0	3	*	20	7.1
During pregnancy	54	3.9	62	4.4	116	8.3
No tobacco use	386	3.3	142	1.2	528	4.5
Multiple birth						
Yes	101	22.6	18	4.0	119	26.7
No	367	2.8	193	1.5	560	4.3

¹ Neonatal deaths include infant deaths of less than 28 days.

² Postneonatal deaths occur from day 28 through 364 after birth.

³ Infant death is the death of a child prior to its first birthday.

⁴ Due to unreported items, the sum of all categories may not equal the total.

⁵ Includes Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese and other Asian.

⁶ Includes Guamanian, Hawaiian, Samoan and other Pacific Islander.

* Rates are not calculated when there are fewer than 5 deaths in a category.

— Quantity is zero.

NOTE: All rates per 1,000 live births.

TABLE 7-19. Term fetal deaths¹ by planned attendant and planned place of birth, Oregon occurrence, 2014

Planned birth attendant	Total term fetal deaths	Planned hospital birth ²	Planned out-of-hospital birth		
			Total	Intrapartum transfer to hospital ³	Non-hospital delivery ⁴
Total	51	48	3	2	1
MD's and DO's	41	41	–	–	–
Certified nurse midwives	7	7	–	–	–
Licensed direct-entry midwives	2	–	2	2	–
Unlicensed direct-entry midwives	1	–	1	–	1
Naturopathic physicians	–	–	–	–	–
Other	–	–	–	–	–

– Quantity is zero.

¹ Term fetal deaths include fetal deaths with gestation of 37 weeks or more.

² For planned hospital births, actual attendant type is used.

³ For planned out-of-hospital births with intrapartum transfer to hospitals, planned attendant type is reported by mother and not verified.

⁴ For planned out-of-hospital births with non-hospital deliveries, the actual attendant type is used.

TABLE 7-20. Term early neonatal deaths¹ by planned attendant and planned place of birth, Oregon occurrence, preliminary 2014 birth cohort

Planned birth attendant	Total term early neonatal deaths	Planned hospital birth ²	Planned out-of-hospital birth		
			Total	Intrapartum transfer to hospital ³	Non-hospital delivery ⁴
Total	14	12	2	–	2
MD's and DO's	10	10	–	–	–
Certified nurse midwives	2	2	–	–	–
Licensed direct-entry midwives	2	–	2	–	2
Unlicensed direct-entry midwives	–	–	–	–	–
Naturopathic physicians	–	–	–	–	–
Other	–	–	–	–	–

– Quantity is zero.

¹ Term early neonatal deaths include infant deaths of less than seven days and with gestation of 37 weeks or more.

² For planned hospital births, actual attendant type is used.

³ For planned out-of-hospital births with intrapartum transfer to hospitals, planned attendant type is reported by mother and not verified.

⁴ For planned out-of-hospital births with non-hospital deliveries, the actual attendant type is used.

NOTE: The 2014 birth cohort may include infant deaths that occurred in 2014 or 2015. Data for 2015 is undergoing edit processes, and data in this table is subject to change.

Table 7-21: Fetal deaths by maternal characteristics by planned place of birth, Oregon occurrence, 2012 - 2014

Selected maternal characteristics	Total	Planned hospital birth			Planned out-of-hospital birth		
		Clinical estimate of gestation					
		<37	37-40	41+	<37	37-40	41+
Total fetal deaths	600	422	146	12	–	6	7
Mother's age							
<20	49	42	6	–	–	–	–
20-24	113	87	20	2	–	2	–
25-29	158	112	39	3	–	–	2
30-34	152	98	44	5	–	1	3
35-39	100	62	31	2	–	3	2
40+	28	21	6	–	–	–	–
Single mention race²							
White	412	289	99	10	–	4	6
African American	15	12	3	–	–	–	–
American Indian	8	4	4	–	–	–	–
Asian/Hawaiian/Pacific Islander	38	25	10	–	–	–	1
Other/multiple races	16	11	5	–	–	–	–
Hispanic	111	81	25	2	–	2	–
Marital status							
Married	354	235	96	8	–	5	7
Unmarried	244	186	50	4	–	1	–
Mother's education							
8th grade or less	22	16	6	–	–	–	–
Some high school	90	68	15	2	–	2	1
High school graduate/GED	135	97	35	2	–	1	–
Some college	116	82	27	3	–	2	1
Associate's degree	44	37	6	–	–	–	1
Bachelor's degree	82	49	26	2	–	1	3
Postbaccalaureate	47	29	16	1	–	–	1
Pre-pregnancy body mass index							
Underweight (< 18.5)	11	7	3	–	–	–	1
Normal (18.5 - 24.9)	222	159	52	4	–	3	1
Overweight (25.0 - 29.9)	134	84	41	4	–	1	3
Obese (> 30.0)	177	129	41	3	–	2	1
Maternal tobacco use							
Tobacco use	95	71	23	–	–	1	–
No tobacco use	502	350	123	12	–	5	7
Initiation of care							
1st trimester	416	296	108	6	–	1	4
2nd trimester	96	67	21	2	–	3	1
3rd trimester	22	8	11	3	–	–	–
No care	40	29	3	1	–	2	1
Multiple birth							
Yes	43	35	6	–	–	1	–
No	557	387	140	12	–	5	7

– Quantity is zero.

* Numbers within each maternal characteristic may not add up to total fetal death counts due to unknown responses.

1 Total includes six fetal deaths that occurred en route, were unplanned home deliveries, or other out-of-hospital births not otherwise classified. Total also includes one fetal death with unknown gestation.

2 Non-Hispanic single mention race. The Hispanic category may include any mention of race.

Table 7-22: Early neonatal deaths by maternal characteristics by planned place of birth, Oregon occurrence, preliminary 2012 - 2014 birth cohort

Selected maternal characteristics	Total early neonatal deaths ¹	Planned hospital birth			Planned out-of-hospital birth		
		Clinical estimate of gestation					
		<37	37-40	41+	<37	37-40	41+
Total early neonatal deaths	413	345	43	8	-	4	5
Mother's age							
<20	37	33	2	1	-	-	-
20-24	84	70	7	5	-	-	-
25-29	94	72	18	-	-	1	1
30-34	114	95	10	2	-	3	2
35-39	54	49	3	-	-	-	2
40+	29	26	3	-	-	-	-
Single mention race²							
White	263	218	29	4	-	4	5
African American	14	14	-	-	-	-	-
American Indian	8	7	1	-	-	-	-
Asian/Hawaiian/Pacific Islander	20	17	2	1	-	-	-
Other/multiple races	26	20	2	-	-	-	-
Hispanic	82	69	9	3	-	-	-
Marital status							
Married	241	200	27	4	-	3	4
Unmarried	170	145	16	4	-	1	1
Mother's education							
8th grade or less	24	20	3	-	-	-	-
Some high school	47	41	4	-	-	-	-
High school graduate/GED	98	82	11	3	-	-	1
Some college	94	79	6	4	-	1	1
Associate's degree	34	23	11	-	-	-	-
Bachelor's degree	57	48	6	-	-	1	2
Postbaccalaureate	35	30	1	1	-	2	1
Source of payment							
Medicaid/Oregon Health Plan	191	156	25	2	-	2	2
Private insurance	195	168	16	6	-	2	2
Self-pay	14	12	-	-	-	-	1
Other coverage	8	7	1	-	-	-	-
Birth order							
1st	190	154	19	7	-	3	2
2nd	100	84	12	1	-	-	2
3rd	60	51	6	-	-	1	1
4th +	63	56	6	-	-	-	-
Pre-pregnancy body mass index							
Underweight (< 18.5)	8	8	-	-	-	-	-
Normal (18.5 - 24.9)	150	127	15	2	-	2	3
Overweight (25.0 - 29.9)	105	81	13	3	-	2	2
Obese (> 30.0)	116	101	13	2	-	-	-
Maternal tobacco use							
Tobacco use	52	42	8	-	-	-	-
No tobacco use	349	295	35	8	-	4	5
Initiation of care							
1st trimester	297	254	31	4	-	2	3
2nd trimester	63	48	10	2	-	2	1
3rd trimester	3	1	-	1	-	-	1
No care	22	16	1	-	-	-	-
Prenatal care³							
Adequate	227	174	38	6	-	3	4
Inadequate	145	135	3	1	-	-	1

- Quantity is zero.

¹ Total includes six births that occurred en route, were unplanned home deliveries, or other out-of-hospital births not otherwise classified.

Total also includes three births with unknown gestation.

² Non-Hispanic single mention race. The Hispanic category may include any mention of race.

³ Adequate care: Care that began in the first or second trimester and included at least five visits.

Inadequate care: No care, or care that began in the third trimester or fewer than five visits.