SECTION 7: FETAL AND INFANT MORTALITY

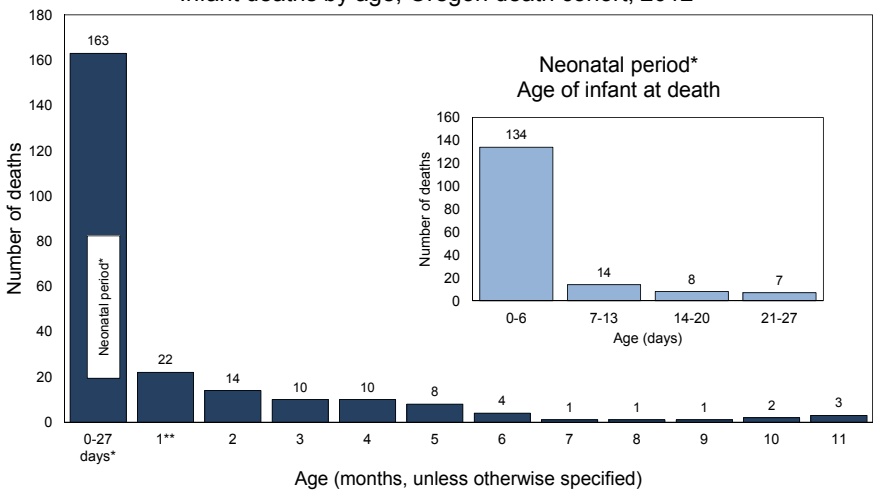
Fetal and infant mortality

Introduction

This report presents fetal and infant mortality data. Infant deaths are deaths occurring 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

Figure 7-1.
Infant deaths by age, Oregon death cohort, 2012



*Neonatal period is <28 days. Inset shows details of neonatal period.

for statistical analysis. The definition for birth and death cohorts will be discussed in the next section.

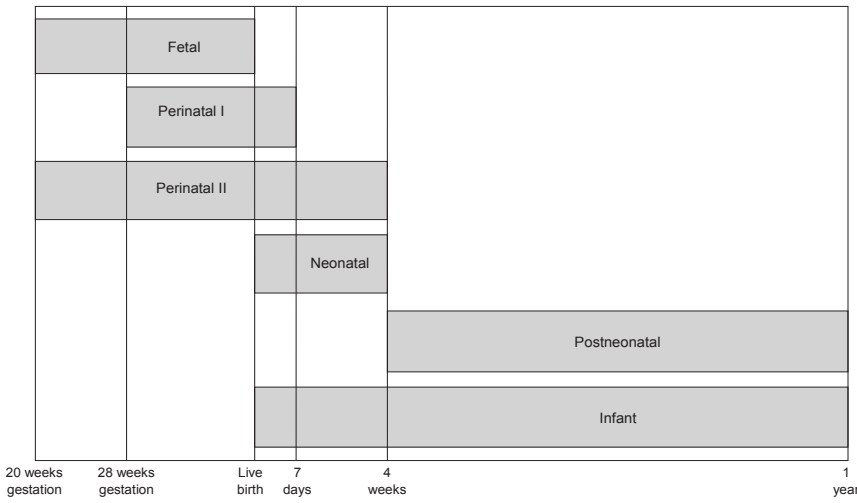
Throughout this report, some tables display rates and ratios based on small numbers of events. Rates and ratios based on fewer than five events are unreliable; great caution is urged in inferring causal relationships based solely on the data contained in these tables.

Definitions and methodology

Before analyzing fetal and infant death data, it is necessary to define their different components.

- **Fetal deaths** occur to fetuses weighing at least 350 grams at delivery, or at least 20 weeks gestation if delivery weight is unknown. For an event to be classified as a fetal death, the developing fetus either dies 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" (7–27 days).

Figure 7-2.
Fetal*, perinatal and infant death: definitions

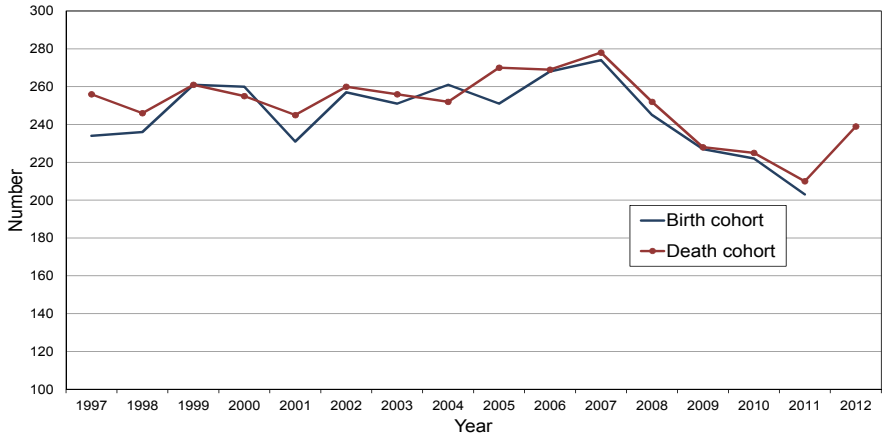


*Fetal deaths reported include those with birthweights of at least 350 grams or, if birthweight is unknown, at least 20 weeks gestation.

» **Postneonatal deaths** ooccur from day 28 through day 364 after birth.

- **Perinatal deaths – definition I** includes fetal deaths at 28 weeks 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.
- The **death cohort** for infant death, or the **Infant Mortality Rate,**[2] includes all infant deaths occurring in any given calendar year, divided by the total number of babies born in the same calendar year. In this report, the death cohort consists of infants who died in 2012 and could have been born in either 2011 or 2012. 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.
- 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 who die within one year of their birth. In this report, the birth cohort consists of infants born in 2011 who died in either 2011 or 2012. Analysis based on a birth cohort is typically not as timely, but allows the analysis of characteristics from the birth

Figure 7-3.
Infant deaths by birth cohort and death cohort,
Oregon residents, 1997-2012



certificate, such as mother's race, age and factors affecting the birth outcomes (i.e., 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.

Use of the 2012 death cohort

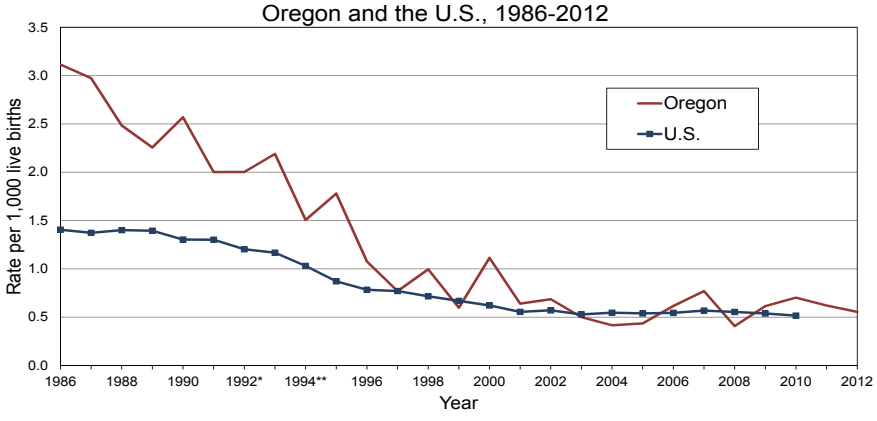
This chapter uses data from the 2012 death cohort in the first two tables. Much of the discussion is on the cause of death. Infant characteristics at the time of death are derived from death certificates, with the primary focus on age at death, county of residence at death, and underlying cause of death. 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 2012, 239 infants under age 1 died.

During 2012, 239 Oregon resident infants under age 1 died, up from 210 in 2011. The infant mortality rate was 5.3 deaths per 1,000 births (see Table 7-1), and increased 0.6% from the previous year's rate of 4.7. The increase was not statistically significant. Oregon's infant death rate is 14.5% lower than the preliminary 2011(the most recent available data) United States rate of 6.2 per 1,000 births.[3] As in previous years, most infants (68. 2%) who died during 2012 were less than 28 days old. Over one-half (56.1%) of infant deaths occurred within the first week of life (see Figure 7-1).

Figure 7-4.
Sudden infant death syndrome (SIDS) death rates,
Oregon and the U.S., 1986-2012



*The first American Academy of Pediatrics statement was released in 1992.
**The kickoff of the "Back to Sleep" campaign was in 1994.Academy of Pediatrics statement was released in 1992.
Death cohort 1986-2012. Changes in cause of death coding affected SIDS death rates beginning in 1999.

During the five-year period between 2008 and 2012, the infant mortality rates for Oregon counties ranged from 2.9 to 11.8 (excluding counties with less than five infant deaths). Four Oregon counties had infant mortality rates significantly higher than the state rate (5.0): Baker (11.8), Jefferson (10.2), Klamath (8.4) and Marion (6.7). One county, Jackson (3.4), had infant mortality rates significantly lower than the state rate.

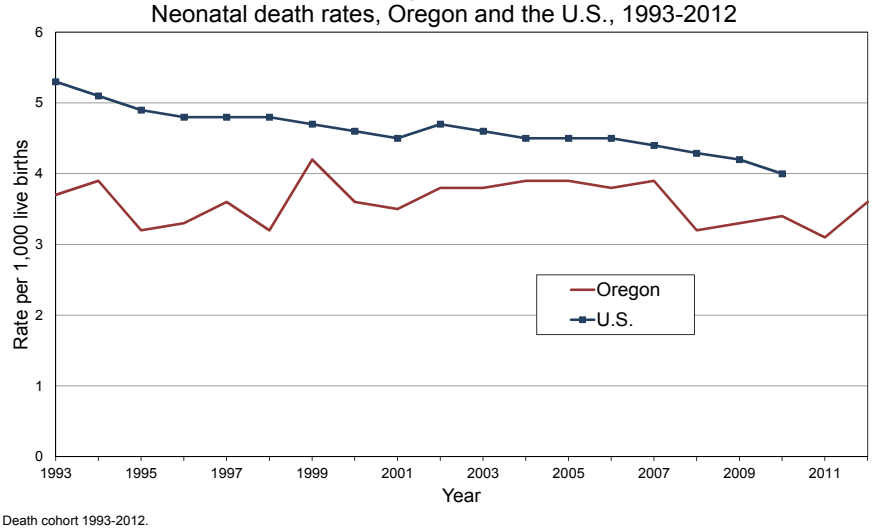
Sudden infant death syndrome

There was an decrease in SIDS deaths in 2012.

Sudden infant death syndrome (SIDS) is the sudden and unexpected death of an apparently healthy infant under 1 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 rates and the nation's rates have been very similar. Oregon's rate started dropping quickly after "Back to Sleep," a national educational campaign to encourage non-prone sleeping positions for infants, kicked off in 1994. As the number of SIDS-related events decrease, there will be more variability in Oregon's rate of SIDS deaths due to smaller numerators in rate calculations.

The number of SIDS deaths decreased from 28 deaths in 2011 to 25 in 2012, and the SIDS death rate among infants remained the same at 0.6 per 1,000 live births (see Table 6-7). The decrease in the number of SIDS deaths was not statistically significant. In 2012, SIDS accounted for 10.5% of the Oregon's total infant deaths and 28.9% of all postneonatal deaths (see Table 7-2).

Figure 7-5.
Neonatal death rates, Oregon and the U.S., 1993-2012



Death cohort 1993-2012.

Table A - Neonatal deaths due to Respiratory Distress Syndrome, 1996-2012

Year	Number	Percent*	Rate**
1996	5	3.4	11.5
1997	2	1.3	4.6
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

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

Neonatal death

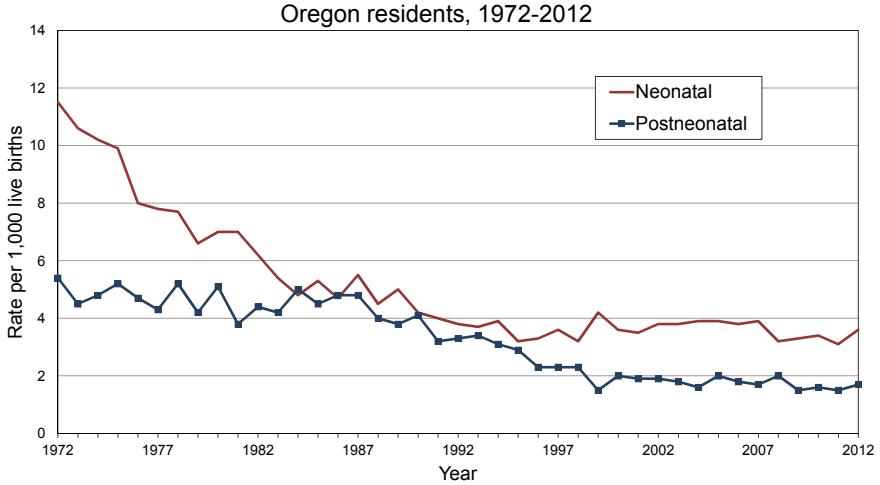
Neonatal and postneonatal death rates have been declining since 1936, when the neonatal death rate was 29.0 per 1,000 births, and the postneonatal death rate was 15.3 per 1,000 births. In 2012, the neonatal death rate was 3.6 per 1,000 live births (an increase from 3.1 in 2011), and the postneonatal death rate was 1.7 (an increase from 1.5 in 2011) (see Figure 7-6 and Table 7-1).

In 2012, 163 infants died during the neonatal period, an increase from 141 in 2011. Oregon's neonatal death rate has consistently been below that of the United States (see Figure 7-5). The 2012 Oregon rate (3.6) is 10.0% lower than the preliminary 2012 national rate of 4.0.[3] Congenital anomalies were responsible for more neonatal deaths than any other cause (24.5%), followed by short gestation and fetal growth (22.7%) and maternal factors (14.7%) (see Table 7-2). There were four neonatal deaths due to respiratory distress syndrome (RDS) in 2012 (see Table A). The numbers of RDS deaths vary considerably from year to year. This is due to physicians citing it less frequently as the cause of death — a change of only a few RDS events incorrectly appears as an alarming increase or decrease; for example there were 10 neonatal RDS events reported in 2005, but only five in 2006.

Postneonatal death

In 2012, 76 infants died during the postneonatal period, representing 31.8% of all infant deaths. The postneonatal death rate (1.7 per 1,000 births) is an increase from 2011 (1.5 per 1,000); however, the difference is not statistically

Figure 7-6.
Neonatal and postneonatal death rates,
Oregon residents, 1972-2012



Death cohort 1972-2012.

significant (see Figure 7-6). Sudden infant death syndrome (SIDS) was the most common cause of death (28.9%). Unintentional injuries were the second most common cause of death and accounted for 25.0% of postneonatal deaths. Congenital anomalies were the third most common cause of postneonatal death (13.2%) (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 2012 vs. 2.0 per 1,000 births for the latest U.S. data available in 2011).[3]

Table B - Fetal death ratios per 1,000 live births, by mother's age, 2008-2012

AGE	YEAR				
	2012	2011	2010	2009	2008
Total	4.6	4.1	4.0	4.6	4.3
15-44	4.6	4.1	4.0	4.6	4.3
15-19	7.4	6.4	5.1	8.1	5.6
20-24	3.9	4.6	3.5	4.4	5.0
25-29	3.4	2.9	3.4	3.4	3.3
30-34	5.0	3.9	3.7	4.3	4.7
35-39	5.2	4.6	6.3	4.8	3.9
40-44	7.8	8.1	*	8.6	*

* 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 6.0 since 1992 (see Figure 7-7 and Table 5-2). In 2012, there were 206 Oregon resident fetal deaths, or 4.6 fetal deaths per 1,000 live births (see Table 7-3). This is not a statistically significant increase from 2011 when 186 fetal deaths were reported and the ratio to births was 4.1.

Fetal cause of death

Causes of Oregon's 206 fetal deaths in 2012 are shown in Table 7-4. Fetal death of unspecified cause was the most frequently reported cause of fetal death in 2012 (84 deaths). Complications of the placenta, cord and membranes were the second most common cause of death (43 deaths). Congenital anomalies and maternal complications of

Figure 7-7.
Fetal death ratio, Oregon residents, 1972-2012

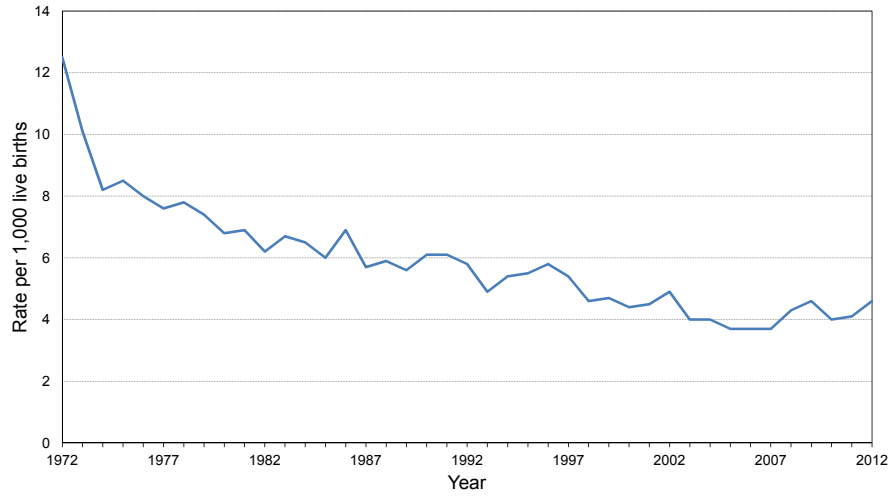


Table C - Percentage of fetal deaths by weeks of gestation, 2003-2012

Year	weeks of gestation		
	<28	28-36	37+
2003	29.9	37.5	31.5
2004	34.2	34.2	31.5
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

pregnancy were tied as the third most common causes of death (17 deaths respectively). These four causes of death represented 78.2% of all 2012 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 2012, this same cause made up 40.8% of fetal deaths, a 121.7% increase.

2011 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 2012 death data in the report on the 2011 birth cohort. For illustration, 203 of the infants born in 2011 died within the first year of life; of these 203 deaths, 186 died in calendar year 2011, and 17 died in 2012. Those who died in 2012 are also reported in this year's report as part of the 2012 death cohort.

Small numbers

Because of 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 neonatal death rate for the 2011 birth cohort (3.1) was one of the lower rates seen in the past decade. 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: 2009–2011 birth cohorts

Some maternal characteristics may influence pregnancy outcomes of infants who 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).

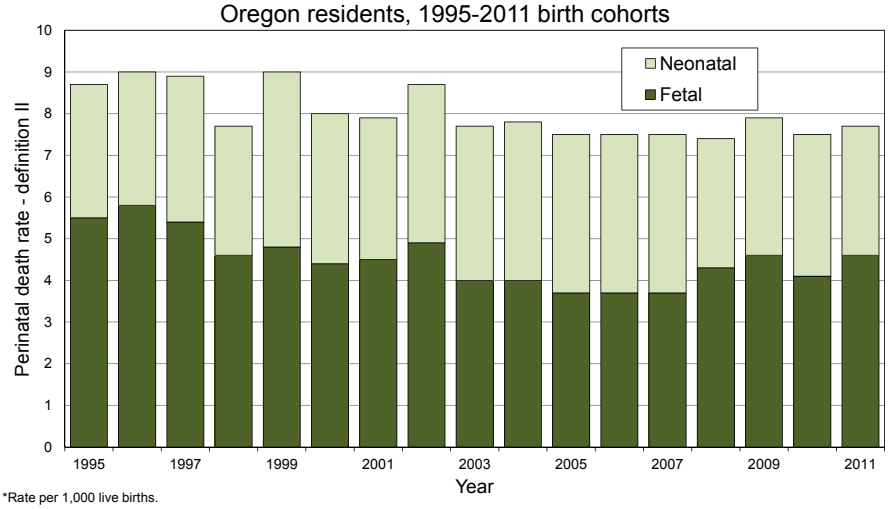
Birthweight

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 period 2009–2011, the neonatal death rate decreased, on average, by about 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 0.7 per 1,000 live births for infants weighing more than 2,500 grams (see Table 7-12 and Figure 7-9).

Birthweight has long been a predictor of survival.

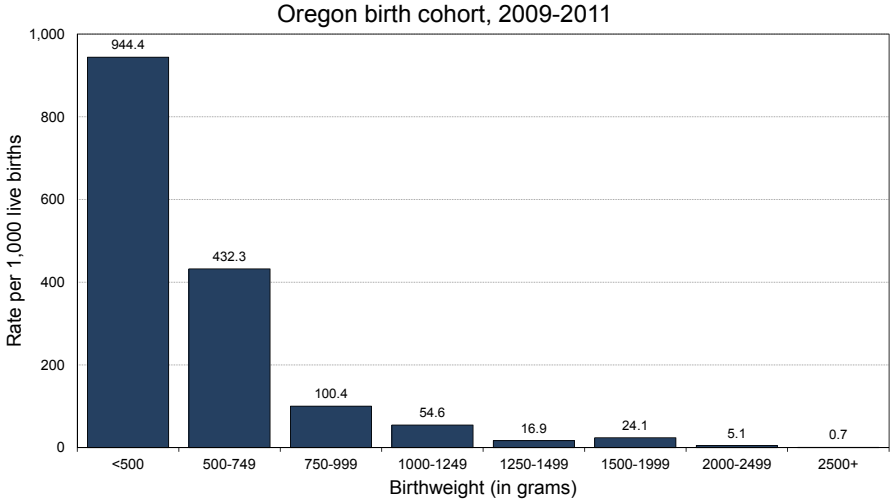
Many behavioral, social and medical conditions are associated with higher rates of infant death. These conditions may also have confounding or mitigating effects on each other. This report does not try to account for or hold all these variables constant in relation to each other. Instead, it presents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

Figure 7-8.
Fetal, neonatal and perinatal II death rates*,
Oregon residents, 1995-2011 birth cohorts



*Rate per 1,000 live births.

Figure 7-9.
Neonatal death rates by birthweight,
Oregon birth cohort, 2009-2011



Maternal characteristics

Though a majority of women reported being married at the time of birth, the neonatal death rate was significantly higher for unmarried women than for married women during the period 2009–2011 (3.7 versus 3.0 per 1,000). Women with at least some college education had a lower neonatal death rate (3.0 per 1,000) than women with fewer years of education, but the differences between these rates were not significant. Non-Hispanic White mothers had a significantly lower rate of neonatal infant death than non-Hispanic Pacific Islander mothers (3.1 versus 8.8). None of the other differences in rates between race and ethnic groups were significant. Mothers aged 45 or older had a significantly higher rate of neonatal death than did mothers in all other age categories. Mothers of multiple births also had significantly higher rates of neonatal deaths than those with single births (20.9 versus 2.7) (see Table 7-18).

Prenatal care

Women who received prenatal care, regardless of when it began, had significantly lower rates of neonatal deaths than women who received no prenatal care (2.9 versus 26.0 per 1,000 births) (see Table 7-18).

Tobacco use

The infants of women who smoked during pregnancy had a higher rate of neonatal deaths than infants of women who did not use tobacco (3.8 versus 3.1 per 1,000). However,

the difference was not statistically significant. Tobacco use may be underreported, thereby eliminating some high-risk mothers from the analysis and lowering the neonatal death rates for this category (see Table 7-18).

Postneonatal deaths: 2009–2011 birth cohort

Mothers who were unwed, had a high school education or less, used tobacco during pregnancy or gave birth to multiple infants had significantly higher rates of postneonatal death. The postneonatal mortality rate for non-Hispanic Black mothers was significantly higher than the rate for non-Hispanic White and Hispanic mothers (3.5 versus 1.4 and 1.1, respectively). 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 (5.9 versus 1.4, 0.9 and 1.1, respectively). Infants of younger mothers had higher death rates than infants of older mothers. Infants born to mothers who were aged 30–34 had the lowest postneonatal death rate (0.9) (see Table 7-18).

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

In 2011, the Oregon Legislature passed House Bill 2380, which required the Oregon Public Health Division to add two questions to the Oregon Birth Certificate to determine planned place of birth and birth attendant. Every mother who delivered in the 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, four fetal deaths and four early neonatal deaths with gestation of 37 weeks or more were planned out-of-hospital births in 2012.

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

who have volunteered for state licensure through the Oregon Health Licensing Agency. They must meet qualifications and adhere to regulations set by the state. Lay midwives are unlicensed, but are registered with the Center for Health Statistics to certify births.

In 2012, eight term fetal deaths and four term early neonatal deaths with gestation of 37 weeks or more were planned hospital deliveries and attended by a CNM. Women who planned out-of-hospital births reported the following planned attendants: CNMs (zero term fetal death and one term early neonatal death), LDM (two term fetal deaths and two term early neonatal deaths), naturopathic physicians (one term fetal death and zero term early neonatal death) and other midwives (one term fetal death and one term early neonatal death) (see Table 7-19 and Table 7-20).

Endnotes

1. Prior to Nov. 10, 1998, fetal deaths occurring at 20 weeks of gestation or more were reported. Effective Nov. 10, 1998, the Oregon Legislature amended ORS 432.333 to read, "Each fetal death of 350 grams or more, or, if weight is unknown, of 20 completed weeks gestation or more, calculated from the date last normal menstrual period began to the date of delivery, that occurs in this state shall be reported within 5 days after delivery to the county registrar of the county in which the fetal death occurred or to the Center for Health Statistics or as otherwise directed by the Center for Health Statistics." Currently, hospitals and reporting facilities send all fetal deaths' reports directly to the Oregon Center for Health Statistics rather than to county registrars.
2. See definitions under "Statistical measure and definitions" at the National Association of Health Statistics and Information Systems website:

   www.naphsis.org/Pages/StatisticalMeasuresandDefinitions.aspx or the Volume 61, Number 4, National Vital Statistics Reports at the National Center for Health Statistics website: *www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_04.pdf*.

3. Preliminary 2011 U.S. data obtained from the Volume 61, Number 6, National Vital Statistics Reports at the National Center for Health Statistics website: *www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_06.pdf*.

TABLE 7-1. Infant Deaths by Age and County of Residence, Oregon, 2012

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	239	5.3	163	101	33	29	3.6	76	1.7
Baker	1	5.7	1	1	–	–	5.7	–	–
Benton	6	7.9	5	4	1	–	6.6	1	1.3
Clackamas	17	4.3	8	4	2	2	2.0	9	2.3
Clatsop	3	6.8	2	2	–	–	4.6	1	2.3
Columbia	5	11.1	5	5	–	–	11.1	–	–
Coos	1	1.6	1	–	1	–	1.6	–	–
Crook	–	–	–	–	–	–	–	–	–
Curry	1	5.4	1	–	1	–	5.4	–	–
Deschutes	7	4.3	6	3	1	2	3.6	1	0.6
Douglas	7	6.4	6	3	1	2	5.5	1	0.9
Gilliam	–	–	–	–	–	–	–	–	–
Grant	–	–	–	–	–	–	–	–	–
Harney	–	–	–	–	–	–	–	–	–
Hood River	–	–	–	–	–	–	–	–	–
Jackson	8	3.5	7	2	5	–	3.1	1	0.4
Jefferson	–	–	–	–	–	–	–	–	–
Josephine	10	12.2	7	3	2	2	8.5	3	3.7
Klamath	12	15.6	8	4	3	1	10.4	4	5.2
Lake	–	–	–	–	–	–	–	–	–
Lane	16	4.6	12	8	1	3	3.4	4	1.1
Lincoln	2	4.3	2	1	–	1	4.3	–	–
Linn	1	0.7	1	1	–	–	0.7	–	–
Malheur	2	5.1	–	–	–	–	–	2	5.1
Marion	28	6.4	14	12	1	1	3.2	14	3.2
Morrow	1	6.3	1	–	–	1	6.3	–	–
Multnomah	48	5.1	36	24	6	6	3.8	12	1.3
Polk	3	3.5	1	1	–	–	1.2	2	2.3
Sherman	–	–	–	–	–	–	–	–	–
Tillamook	4	15.3	2	2	–	–	7.6	2	7.6
Umatilla	8	7.2	5	2	–	3	4.5	3	2.7
Union	1	3.4	1	–	1	–	3.4	–	–
Wallowa	–	–	–	–	–	–	–	–	–
Wasco	2	6.8	2	–	–	2	6.8	–	–
Washington	36	5.0	22	14	6	2	3.0	14	1.9
Wheeler	–	–	–	–	–	–	–	–	–
Yamhill	9	8.1	7	5	1	1	6.3	2	1.8

– 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 5 events are unreliable.

TABLE 7-2. Infant Deaths by Cause and Age, Oregon Residents, Death Cohort, 2012

Selected Causes of Death (and their ICD-10 codes)	Total Infant Deaths[1]	Neonatal Deaths[2]				Post-Neonatal Deaths[3]
		Under 1 Day	1-6 Days	7-27 Days	Total Neonatal	
Total	239	101	33	29	163	76
Rate[4]	5.3	2.2	0.7	0.6	3.6	1.7
Infections & parasitic disease (A00-B99)	2	–	–	1	1	1
Gastroenteritis of infectious origin (A09)	1	–	–	–	–	1
Malignant neoplasms (C00-C97)	1	–	1	–	1	–
Diseases of Blood & Immune Disorders (D50-D89)	1	–	–	–	–	1
Endocrine, Nutritional, & Metabolic Disease (E00-E88)	3	–	–	–	–	3
Diseases of the Nervous System (G00-G99)	5	–	–	1	1	4
Meningitis (G00,G03)	1	–	–	1	1	–
Diseases of the Circulatory System (I00-I99)	3	–	2	–	2	1
Diseases of the heart (I00-I09, I11, I13, I20-I51)	3	–	2	–	2	1
Diseases of the Respiratory System (J00-J99)	2	–	–	–	–	2
Diseases of the Digestive System (K00-K92)	2	–	–	1	1	1
Diseases of the Genitourinary System (N00-N99)	1	–	–	–	–	1
Perinatal Conditions (P00-P96)	113	75	21	14	110	3
Fetus & newborn affected by maternal factors (P00-P04)	24	23	1	–	24	–
Gestation & fetal growth (P05-P08)	38	37	–	–	37	1
Intrauterine hypoxia & asphyxia (P20-P21)	8	5	3	–	8	–
Respiratory Distress (P22)	4	2	1	1	4	–
Congenital pneumonia (P23)	2	–	1	–	1	1
Other respiratory (P24-P28)	4	1	1	1	3	1
Bacterial sepsis of newborn (P36)	8	1	1	6	8	–
Haemorrhagic disorders of newborn (P50-P61)	12	2	7	3	12	–
Congenital Anomalies (Q00-Q99)	50	26	6	8	40	10
Anencephaly (Q000)	2	1	–	–	1	1
Malformation of the heart (Q20-Q24)	11	3	1	3	7	4
Down's syndrome & other chromosomal (Q90-Q99)	14	10	2	2	14	–
Symptoms, Signs Not Elsewhere Classified (R00-R99)	28	–	1	3	4	24
Sudden infant death syndrome (R95)	25	–	–	3	3	22
Other ill-defined and unspecificed causes (R99)	3	–	1	–	1	2
External Causes of Death (V01-Y89)	28	–	2	1	3	25
Accidents (V01-X59, Y85-Y86)	22	–	2	1	3	19
Nontransport accidents (W00-X59,Y86)	22	–	2	1	3	19
Accidental suffocation/strangulation in bed (W75)	19	–	2	1	3	16
Assault (homicide) (X85-Y09, Y87.1)	3	–	–	–	–	3
Events of undetermined intent (Y10-Y34, Y87.2, Y89.9)	3	–	–	–	–	3
Strangulation/suffocation, undeterm intent (Y20)	3	–	–	–	–	3

1 Infant death is the death of a child prior to its first birthday.
2 Neonatal deaths occur during the first 27 days of live.
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, 2012

County of Residence	Total	Age of Mother								
		<15	15-19	20-24	25-29	30-34	35-39	40-44	45+	N.S.
Total	206	–	21	38	44	61	31	10	1	–
Ratio to Births[1]	4.6	–	7.4	3.9	3.4	5.0	5.2	7.8	*	–
Baker	2	–	1	–	1	–	–	–	–	–
Benton	2	–	–	–	1	1	–	–	–	–
Clackamas	17	–	2	3	3	6	3	–	–	–
Clatsop	3	–	–	–	1	2	–	–	–	–
Columbia	3	–	–	1	–	1	–	1	–	–
Coos	4	–	1	3	–	–	–	–	–	–
Crook	–	–	–	–	–	–	–	–	–	–
Curry	–	–	–	–	–	–	–	–	–	–
Deschutes	7	–	–	1	3	2	1	–	–	–
Douglas	5	–	1	1	–	1	2	–	–	–
Gilliam	–	–	–	–	–	–	–	–	–	–
Grant	2	–	–	–	–	2	–	–	–	–
Harney	–	–	–	–	–	–	–	–	–	–
Hood River	2	–	–	–	–	1	1	–	–	–
Jackson	15	–	3	4	2	4	2	–	–	–
Jefferson	1	–	–	–	–	–	1	–	–	–
Josephine	6	–	–	2	–	3	1	–	–	–
Klamath	4	–	–	1	1	2	–	–	–	–
Lake	–	–	–	–	–	–	–	–	–	–
Lane	21	–	3	3	5	4	5	1	–	–
Lincoln	–	–	–	–	–	–	–	–	–	–
Linn	7	–	–	3	1	3	–	–	–	–
Malheur	5	–	–	–	2	1	1	1	–	–
Marion	26	–	3	3	11	8	–	1	–	–
Morrow	–	–	–	–	–	–	–	–	–	–
Multnomah	40	–	3	5	3	16	8	4	1	–
Polk	5	–	1	2	2	–	–	–	–	–
Sherman	–	–	–	–	–	–	–	–	–	–
Tillamook	–	–	–	–	–	–	–	–	–	–
Umatilla	3	–	1	–	1	–	1	–	–	–
Union	–	–	–	–	–	–	–	–	–	–
Wallowa	1	–	–	1	–	–	–	–	–	–
Wasco	–	–	–	–	–	–	–	–	–	–
Washington	21	–	2	4	6	3	4	2	–	–
Wheeler	–	–	–	–	–	–	–	–	–	–
Yamhill	4	–	–	1	1	1	1	–	–	–
Unknown	–	–	–	–	–	–	–	–	–	–

– Quantity is zero.
1 All ratios per 1,000 live births.
* Ratios are not calculated for fewer than five events.

TABLE 7-4. Fetal Deaths by Weeks of Gestation and Cause of Death, Oregon, 2012

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+	N.S.
Total	206	5	38	32	25	37	7	47	4	10	1
Perinatal conditions (P00-P96)	167	5	30	27	20	28	6	39	3	8	1
Maternal conditions unrelated to present pregnancy (P00)	11	–	2	3	1	3	–	1	1	–	–
Maternal complications of pregnancy (P01)	17	2	10	–	1	1	–	2	–	1	–
Complications of placenta, cord and membranes (P02)	43	1	4	10	4	8	2	12	1	1	–
Other complications of labor and delivery (P03)	1	–	–	–	1	–	–	–	–	–	–
Slow fetal growth and fetal malnutrition (P05)	2	–	–	–	–	2	–	–	–	–	–
Short gestation and low birth weight disorders, NEC (P07)	1	–	–	–	–	–	1	–	–	–	–
Transitory endocrine and metabolic disorders specific to fetus (P70-P74)	4	–	–	–	1	2	–	1	–	–	–
Other perinatal conditions (P80-P96)	87	2	14	13	12	12	3	23	1	6	1
Fetal death of unspecified cause (P95)	84	2	14	12	10	12	3	23	1	6	1
Congenital malformations (Q00-Q99)	17	–	2	4	3	5	–	2	–	1	–
Of the nervous system (Q00-Q07)	3	–	–	1	1	–	–	–	–	1	–
Anencephaly and similar malformations (Q00)	2	–	–	1	–	–	–	–	–	1	–
Encephalocele (Q01)	1	–	–	–	1	–	–	–	–	–	–
Of the heart (Q20-Q24)	6	–	1	3	1	1	–	–	–	–	–
Of the urinary system (Q60-Q64)	1	–	1	–	–	–	–	–	–	–	–
Of musculosketetal system, limbs and integument (Q65-Q85)	1	–	–	–	–	1	–	–	–	–	–
Other congenital malformations (Q86-Q89)	1	–	–	–	–	1	–	–	–	–	–
Chromosomal abnormalities, NEC (Q90-Q99)	4	–	–	–	–	2	–	2	–	–	–
Edward's syndrome (Q91.0-Q91.3)	1	–	–	–	–	1	–	–	–	–	–
Patau's syndrome (Q91.4-Q91.7)	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, 2012

Age of Mother	Total	Weeks of Gestation*									
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+	N.S.
Total	206	5	38	32	25	37	7	47	4	10	1
<15	–	–	–	–	–	–	–	–	–	–	–
15-19	21	–	7	4	2	5	1	2	–	–	–
20-24	38	1	7	5	9	7	2	4	1	2	–
25-29	44	1	6	5	7	10	–	10	2	2	1
30-34	61	1	10	11	4	9	3	18	–	5	–
35-39	31	1	6	4	2	5	1	10	1	1	–
40-44	10	1	2	2	1	1	–	3	–	–	–
45+	1	–	–	1	–	–	–	–	–	–	–
N.S.	–	–	–	–	–	–	–	–	–	–	–

– Quantity is zero.
* Based on clinical estimate of gestation.

TABLE 7-6. Births by Weeks of Gestation and Weight, Oregon Residents, 2011

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	11	53	140	293	1,424	1,411	24,528	11,766	5,484	26
349 and less	27	11	14	2	–	–	–	–	–	–	–
350-499	29	–	23	5	1	–	–	–	–	–	–
<500	56	11	37	7	1	–	–	–	–	–	–
500-749	62	–	15	40	6	1	–	–	–	–	–
750-999	89	–	–	59	30	–	–	–	–	–	–
1000-1249	117	–	–	32	67	16	1	–	–	1	–
1250-1499	124	–	–	2	77	41	–	4	–	–	–
1500-1999	548	–	–	–	100	345	61	40	1	1	–
2000-2499	1,773	–	–	–	12	565	367	760	56	12	1
<2500	2,769	11	52	140	293	968	429	804	57	14	1
2500-2999	6,742	–	–	–	–	362	632	4,617	922	206	3
3000-3499	16,996	–	–	–	–	76	273	10,573	4,456	1,613	5
3500-3999	13,686	–	–	–	–	16	58	6,582	4,649	2,370	11
4000-4499	4,166	–	–	–	–	–	15	1,653	1,444	1,050	4
4500+	770	–	–	–	–	2	3	297	238	230	–
Unknown	7	–	1	–	–	–	1	2	–	1	2

– Quantity is zero.
* Based on clinical estimate of gestation.

TABLE 7-7. Fetal Deaths by Weeks of Gestation and Weight, Oregon Residents, 2011

Birthweight (In Grams)	Total	Weeks of Gestation*									
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+	N.S.
Total	186	–	37	31	26	34	8	39	3	8	–
349 and less	–	–	–	–	–	–	–	–	–	–	–
350-499	37	–	29	6	2	–	–	–	–	–	–
<500	37	–	29	6	2	–	–	–	–	–	–
500-749	26	–	6	16	4	–	–	–	–	–	–
750-999	9	–	–	6	3	–	–	–	–	–	–
1000-1249	13	–	1	2	8	2	–	–	–	–	–
1250-1499	11	–	–	–	6	5	–	–	–	–	–
1500-1999	23	–	–	–	2	15	1	3	2	–	–
2000-2499	19	–	–	–	1	11	2	5	–	–	–
<2500	138	–	36	30	26	33	3	8	2	–	–
2500-2999	15	–	–	–	–	1	4	9	–	1	–
3000-3499	21	–	–	–	–	–	1	16	1	3	–
3500-3999	4	–	–	–	–	–	–	2	–	2	–
4000-4499	5	–	–	–	–	–	–	3	–	2	–
4500+	1	–	–	–	–	–	–	1	–	–	–
Unknown	2	–	1	1	–	–	–	–	–	–	–

– Quantity is zero.
* Based on clinical estimate of gestation.

TABLE 7-8. Early Neonatal Deaths[1] by Weeks of Gestation and Weight Oregon Residents, Birth Cohort 2011

Birthweight (In Grams)	Total	Weeks of Gestation									
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+	N.S.
Total[2]	119	11	51	23	3	8	3	10	4	6	–
001-349	27	11	14	2	–	–	–	–	–	–	–
350-499	24	–	23	1	–	–	–	–	–	–	–
<500	51	11	37	3	–	–	–	–	–	–	–
500-749	25	–	13	12	–	–	–	–	–	–	–
750-999	6	–	–	5	1	–	–	–	–	–	–
1000-1249	4	–	–	3	1	–	–	–	–	–	–
1250-1499	1	–	–	–	1	–	–	–	–	–	–
1500-1999	7	–	–	–	–	4	2	1	–	–	–
2000-2499	3	–	–	–	–	1	1	1	–	–	–
<2500	97	11	50	23	3	5	3	2	–	–	–
2500+	19	–	–	–	–	3	–	7	4	5	–
2500-2999	5	–	–	–	–	1	–	3	–	1	–
3000-3499	6	–	–	–	–	2	–	2	1	1	–
3500-3999	4	–	–	–	–	–	–	1	1	2	–
4000-4499	2	–	–	–	–	–	–	–	2	–	–
4500+	2	–	–	–	–	–	–	1	–	1	–

[1] Early neonatal deaths occur through day 6 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 Deaths[1] by Weeks of Gestation and Weight Oregon Residents, Birth Cohort 2011

Birthweight (In Grams)	Total	Weeks of Gestation									
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+	N.S.
Total[2]	21	–	1	7	3	2	2	4	2	–	–
001-349	–	–	–	–	–	–	–	–	–	–	–
350-499	1	–	–	1	–	–	–	–	–	–	–
<500	1	–	–	1	–	–	–	–	–	–	–
500-749	4	–	1	2	1	–	–	–	–	–	–
750-999	4	–	–	4	–	–	–	–	–	–	–
1000-1249	–	–	–	–	–	–	–	–	–	–	–
1250-1499	1	–	–	–	1	–	–	–	–	–	–
1500-1999	3	–	–	–	1	1	1	–	–	–	–
2000-2499	3	–	–	–	–	–	1	1	1	–	–
<2500	16	–	1	7	3	1	2	1	1	–	–
2500+	5	–	–	–	–	1	–	3	1	–	–
2500-2999	–	–	–	–	–	–	–	–	–	–	–
3000-3499	5	–	–	–	–	1	–	3	1	–	–
3500-3999	–	–	–	–	–	–	–	–	–	–	–
4000-4499	–	–	–	–	–	–	–	–	–	–	–
4500+	–	–	–	–	–	–	–	–	–	–	–

[1] Late neonatal deaths occur from day 7 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 Deaths[1] by Weeks of Gestation and Weight Oregon Residents, Birth Cohort 2011

Birthweight (In Grams)	Total	Weeks of Gestation									
		<20	20-23	24-27	28-31	32-35	36	37-39	40	41+	N.S.
Total[2]	63	–	–	9	2	4	2	34	9	3	–
001-349	–	–	–	–	–	–	–	–	–	–	–
350-499	1	–	–	1	–	–	–	–	–	–	–
<500	1	–	–	1	–	–	–	–	–	–	–
500-749	6	–	–	6	–	–	–	–	–	–	–
750-999	1	–	–	–	1	–	–	–	–	–	–
1000-1249	3	–	–	2	1	–	–	–	–	–	–
1250-1499	–	–	–	–	–	–	–	–	–	–	–
1500-1999	2	–	–	–	–	1	1	–	–	–	–
2000-2499	7	–	–	–	–	2	1	4	–	–	–
<2500	20	–	–	9	2	3	2	4	–	–	–
2500+	42	–	–	–	–	1	–	29	9	3	–
2500-2999	8	–	–	–	–	1	–	5	1	1	–
3000-3499	18	–	–	–	–	–	–	13	3	2	–
3500-3999	12	–	–	–	–	–	–	9	3	–	–
4000-4499	4	–	–	–	–	–	–	2	2	–	–
4500+	–	–	–	–	–	–	–	–	–	–	–

[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 2011

Birthweight (In Grams)	Deaths	Rate[1]
Total[2]	140	3.1
001-349	27	1000.0
350-499	25	862.1
<500	52	928.6
500-749	29	467.7
750-999	10	112.4
1000-1249	4	*
1250-1499	2	*
1500-1999	10	18.2
2000-2499	6	3.4
<2500	113	40.8
2500+	24	0.6
2500-2999	5	0.7
3000-3499	11	0.6
3500-3999	4	*
4000-4499	2	*
4500+	2	*

1 Rate per 1,000 live births.
2 Includes unknown weight.
* Rates are not calculated when there are fewer than 5 deaths in a category.

TABLE 7-12. Neonatal Deaths by Birthweight, Oregon Residents, Birth Cohort 2009-2011

Birthweight (In Grams)	Deaths	Rate[1]
Total[2]	453	3.3
001-349	69	1000.0
350-499	67	893.3
<500	136	944.4
500-749	99	432.3
750-999	27	100.4
1000-1249	20	54.6
1250-1499	7	16.9
1500-1999	40	24.1
2000-2499	28	5.1
<2500	357	41.4
2500+	91	0.7
2500-2999	30	1.4
3000-3499	33	0.6
3500-3999	23	0.5
4000-4499	3	*
4500+	2	*

1 Rate per 1,000 live births.
2 Includes unknown weight.
* Rates are not calculated when there are fewer than 5 deaths in a category.

TABLE 7-13. Perinatal Death Rates by County of Residence, Oregon Residents, Birth Cohort 2011

County of Residence	Perinatal I[1]			Perinatal II[2]			Neonatal[3]	
	No.	Rate	Ratio	No.	Rate	Ratio	No.	Rate
Total[4]	237	5.2	5.3	326	7.2	7.2	140	3.1
Baker	1	*	*	1	*	*	–	–
Benton	1	*	*	6	7.9	7.9	2	*
Clackamas	14	3.7	3.7	23	6.0	6.0	12	3.1
Clatsop	4	*	*	5	11.5	11.6	2	*
Columbia	1	*	*	1	*	*	–	–
Coos	1	*	*	4	*	*	1	*
Crook	–	–	–	–	–	–	–	–
Curry	4	*	*	4	*	*	2	*
Deschutes	7	4.1	4.1	9	5.3	5.3	4	*
Douglas	9	8.2	8.3	14	12.8	12.9	4	*
Gilliam	–	–	–	–	–	–	–	–
Grant	–	–	–	–	–	–	–	–
Harney	–	–	–	–	–	–	–	–
Hood River	1	*	*	1	*	*	1	*
Jackson	10	4.2	4.2	14	5.9	5.9	4	*
Jefferson	2	*	*	3	*	*	2	*
Josephine	2	*	*	4	*	*	1	*
Klamath	7	8.5	8.5	10	12.0	12.1	4	*
Lake	–	–	–	–	–	–	–	–
Lane	16	4.6	4.6	21	6.0	6.1	7	2.0
Lincoln	1	*	*	2	*	*	–	–
Linn	11	7.4	7.4	13	8.8	8.8	6	4.1
Malheur	4	*	*	6	13.5	13.6	4	*
Marion	28	6.4	6.4	35	8.0	8.0	18	4.1
Morrow	2	*	*	2	*	*	1	*
Multnomah	37	3.9	3.9	49	5.1	5.2	23	2.4
Polk	3	*	*	4	*	*	–	–
Sherman	–	–	–	–	–	–	–	–
Tillamook	3	*	*	3	*	*	2	*
Umatilla	5	4.7	4.7	9	8.5	8.5	2	*
Union	2	*	*	3	*	*	2	*
Wallowa	2	*	*	2	*	*	2	*
Wasco	2	*	*	3	*	*	1	*
Washington	46	6.4	6.4	63	8.7	8.8	28	3.9
Wheeler	–	–	–	1	*	*	–	–
Yamhill	11	9.5	9.6	11	9.5	9.6	5	4.4

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 5 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 biths 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 2009-2011

County of Residence	Perinatal I[1]			Perinatal II[2]			Neonatal[3]	
	No.	Rate	Ratio	No.	Rate	Ratio	No.	Rate
Total[4]	743	5.4	5.4	1,031	7.4	7.5	453	3.3
Baker	2	*	*	2	*	*	1	*
Benton	9	4.0	4.0	17	7.4	7.5	5	2.2
Clackamas	50	4.2	4.2	69	5.8	5.9	35	3.0
Clatsop	10	8.0	8.1	14	11.2	11.3	6	4.8
Columbia	9	6.0	6.0	14	9.3	9.3	4	*
Coos	9	4.9	4.9	16	8.6	8.7	4	*
Crook	2	*	*	3	*	*	1	*
Curry	5	9.1	9.1	5	9.1	9.1	2	*
Deschutes	19	3.6	3.6	27	5.2	5.2	11	2.1
Douglas	18	5.6	5.6	28	8.7	8.7	8	2.5
Gilliam	–	–	–	1	*	*	–	–
Grant	1	*	*	2	*	*	–	–
Harney	–	–	–	–	–	–	–	–
Hood River	10	11.9	12.0	12	14.2	14.4	3	*
Jackson	33	4.7	4.7	41	5.8	5.8	13	1.8
Jefferson	5	5.4	5.4	9	9.6	9.7	2	*
Josephine	12	5.1	5.1	15	6.4	6.4	9	3.8
Klamath	19	7.8	7.9	27	11.1	11.2	15	6.2
Lake	1	*	*	1	*	*	–	–
Lane	45	4.3	4.3	66	6.2	6.3	26	2.5
Lincoln	8	6.0	6.0	14	10.4	10.5	3	*
Linn	30	6.9	6.9	39	8.9	8.9	23	5.3
Malheur	7	5.1	5.1	10	7.2	7.3	5	3.6
Marion	93	6.8	6.8	124	9.1	9.1	66	4.9
Morrow	3	*	*	3	*	*	1	*
Multnomah	158	5.4	5.4	214	7.3	7.4	95	3.3
Polk	12	4.5	4.5	15	5.6	5.6	7	2.6
Sherman	–	–	–	–	–	–	–	–
Tillamook	6	7.9	8.0	7	9.3	9.3	5	6.6
Umatilla	17	5.3	5.4	30	9.4	9.5	6	1.9
Union	6	6.6	6.6	8	8.7	8.8	5	5.5
Wallowa	2	*	*	2	*	*	2	*
Wasco	5	5.6	5.6	8	9.0	9.0	4	*
Washington	114	5.2	5.2	159	7.2	7.2	76	3.4
Wheeler	–	–	–	2	*	*	–	–
Yamhill	23	6.5	6.5	27	7.6	7.6	10	2.8

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 5 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 biths 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 2011

Risk Factors	Perinatal I[1]			Perinatal II[2]			Neonatal[3]	
	No.	Rate	Ratio	No.	Rate	Ratio	No.	Rate
Total[4]	237	5.2	5.3	326	7.2	7.2	140	3.1
Marital Status								
Married	141	4.9	4.9	185	6.4	6.4	84	2.9
Unmarried	94	5.9	5.9	139	8.7	8.7	54	3.4
Age of Mother								
10-14	–	–	–	–	–	–	–	–
15-19	18	5.7	5.7	29	9.2	9.3	9	2.9
20-24	53	5.4	5.4	76	7.7	7.7	31	3.1
25-29	65	4.9	4.9	80	6.0	6.0	41	3.1
30-34	54	4.5	4.5	78	6.5	6.6	32	2.7
35-39	33	5.8	5.8	44	7.7	7.7	18	3.2
40-44	13	10.4	10.5	17	13.6	13.7	7	5.6
45+	1	*	*	2	*	*	2	*
Non-Hispanic Race								
White	158	5.1	5.1	214	6.9	6.9	89	2.9
Black	5	5.3	5.3	9	9.5	9.6	4	*
American Indian	2	*	*	5	9.3	9.3	3	*
Asian[5]	9	4.2	4.3	13	6.1	6.1	5	2.4
Pacific Islander[6]	4	*	*	4	*	*	1	*
Other & Unknown	2	*	*	2	*	*	1	*
Two or more races	8	5.8	5.8	8	5.8	5.8	4	*
Total Hispanic	49	5.6	5.6	71	8.1	8.1	33	3.8
Education								
8th Grade or Less	14	7.0	7.0	18	8.9	9.0	8	4.0
Some High School	34	6.0	6.0	47	8.3	8.3	19	3.4
HS Diploma/GED	59	5.6	5.6	75	7.1	7.2	34	3.2
More than HS	109	4.1	4.1	152	5.7	5.7	77	2.9
Start of Prenatal Care								
Any trimester	204	4.8	4.8	281	6.5	6.6	118	2.8
1st trimester	156	4.7	4.7	215	6.5	6.5	85	2.6
2nd trimester	42	5.2	5.2	59	7.3	7.3	30	3.7
3rd trimester	6	3.7	3.7	7	4.3	4.4	3	*
No prenatal care	14	43.2	44.6	16	49.1	51.0	4	*
Tobacco Use								
Pre-pregnancy only	10	11.2	11.2	11	12.3	12.4	7	7.9
During pregnancy	28	5.9	5.9	36	7.5	7.6	9	1.9
No tobacco use	195	5.0	5.0	273	7.0	7.0	122	3.1
Multiple Birth								
Yes	43	29.0	29.2	52	35.0	35.3	38	25.8
No	194	4.4	4.4	274	6.3	6.3	102	2.3

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 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: Perinatal I and Perinatal II ratios and Neonatal rates are per 1,000 births. Perinatal I rates include all live biths 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 2009-2011

Risk Factors	Perinatal I[1]			Perinatal II[2]			Neonatal[3]	
	No.	Rate	Ratio	No.	Rate	Ratio	No.	Rate
Total[4]	743	5.4	5.4	1,031	7.4	7.5	453	3.3
Marital Status								
Married	445	5.0	5.0	585	6.6	6.6	267	3.0
Unmarried	293	6.0	6.0	439	9.0	9.0	180	3.7
Age of Mother								
10-14	–	–	–	–	–	–	–	–
15-19	71	6.6	6.6	110	10.2	10.3	40	3.7
20-24	165	5.3	5.3	231	7.4	7.4	102	3.3
25-29	202	5.0	5.0	267	6.6	6.6	136	3.4
30-34	162	4.6	4.6	233	6.6	6.7	98	2.8
35-39	106	6.3	6.3	140	8.3	8.3	52	3.1
40-44	31	8.5	8.6	41	11.3	11.4	18	5.0
45+	4	*	*	7	28.8	29.0	5	20.7
Non-Hispanic Race								
White	492	5.2	5.2	666	7.1	7.1	295	3.1
Black	23	8.0	8.1	34	11.9	11.9	15	5.3
American Indian	5	2.9	2.9	9	5.3	5.3	4	*
Asian[5]	29	4.6	4.6	46	7.2	7.2	23	3.6
Pacific Islander[6]	18	19.6	19.9	26	28.2	28.7	8	8.8
Other & Unknown	9	18.7	18.9	11	22.8	23.1	5	10.5
Two or more races	17	4.3	4.3	23	5.8	5.8	14	3.6
Total Hispanic	150	5.4	5.4	216	7.8	7.8	89	3.2
Education								
8th Grade or Less	44	6.3	6.4	62	8.9	9.0	26	3.8
Some High School	115	6.2	6.2	164	8.8	8.8	68	3.7
HS Diploma/GED	188	5.8	5.8	260	8.0	8.0	108	3.3
More than HS	339	4.3	4.3	452	5.7	5.7	240	3.0
Start of Prenatal Care								
Any trimester	631	4.8	4.8	871	6.7	6.7	372	2.9
1st trimester	465	4.7	4.7	645	6.5	6.5	271	2.7
2nd trimester	142	5.4	5.4	196	7.4	7.4	89	3.4
3rd trimester	24	4.8	4.8	30	6.0	6.1	12	2.4
No prenatal care	50	48.8	50.0	63	60.8	62.9	26	26.0
Tobacco Use								
Pre-pregnancy only	20	7.1	7.1	27	9.6	9.6	12	4.3
During pregnancy	89	5.9	5.9	136	9.0	9.0	57	3.8
No tobacco use	613	5.2	5.2	845	7.1	7.1	367	3.1
Multiple Birth								
Yes	101	22.1	22.2	127	27.7	27.9	95	20.9
No	642	4.8	4.8	904	6.8	6.8	358	2.7

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 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: Perinatal I and Perinatal II ratios and Neonatal rates are per 1,000 births. Perinatal I rates include all live biths 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 7-17. Neonatal, Postneonatal, and Infant Death Rates by Mother's Risk Factors, Oregon Residents, Birth Cohort 2011

Risk Factors	Neonatal[1]		Postneonatal[2]		Infant[3]	
	No.	Rate	No.	Rate	No.	Rate
Total[4]	140	3.1	63	1.4	203	4.5
Marital Status						
Married	84	2.9	27	0.9	111	3.8
Unmarried	54	3.4	36	2.3	90	5.6
Age of Mother						
10-14	–	–	–	–	–	–
15-19	9	2.9	8	2.6	17	5.4
20-24	31	3.1	17	1.7	48	4.9
25-29	41	3.1	18	1.4	59	4.5
30-34	32	2.7	8	0.7	40	3.4
35-39	18	3.2	9	1.6	27	4.8
40-44	7	5.6	2	*	9	7.2
45+	2	*	1	*	3	*
Non-Hispanic Race						
White	89	2.9	40	1.3	129	4.2
Black	4	*	6	6.4	10	10.6
American Indian	3	*	4	*	7	13.1
Asian[5]	5	2.4	2	*	7	3.3
Pacific Islander[6]	1	*	–	–	1	*
Other & Unknown	1	*	–	–	1	*
Two or more races	4	*	3	*	7	5.1
Total Hispanic	33	3.8	8	0.9	41	4.7
Education						
8th Grade or Less	8	4.0	2	*	10	5.0
Some High School	19	3.4	8	1.4	27	4.8
HS Diploma/GED	34	3.2	19	1.8	53	5.1
More than HS	77	2.9	34	1.3	111	4.1
Start of Prenatal Care						
Any trimester	118	2.8	52	1.2	170	4.0
1st trimester	85	2.6	34	1.0	119	3.6
2nd trimester	30	3.7	15	1.9	45	5.6
3rd trimester	3	*	3	*	6	3.7
No prenatal care	4	*	–	–	4	*
Tobacco Use						
Pre-pregnancy only	7	7.9	1	*	8	9.0
During pregnancy	9	1.9	16	3.4	25	5.3
No tobacco use	122	3.1	44	1.1	166	4.2
Multiple Birth						
Yes	38	25.8	7	4.8	45	30.6
No	102	2.3	56	1.3	158	3.6

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 2009-2011

Risk Factors	Neonatal[1]		Postneonatal[2]		Infant[3]	
	No.	Rate	No.	Rate	No.	Rate
Total[4]	453	3.3	199	1.4	652	4.7
Marital Status						
Married	267	3.0	79	0.9	346	3.9
Unmarried	180	3.7	120	2.5	300	6.2
Age of Mother						
10-14	–	–	1	*	1	*
15-19	40	3.7	26	2.4	66	6.2
20-24	102	3.3	66	2.1	168	5.4
25-29	136	3.4	51	1.3	187	4.6
30-34	98	2.8	33	0.9	131	3.8
35-39	52	3.1	18	1.1	70	4.2
40-44	18	5.0	3	*	21	5.8
45+	5	20.7	1	*	6	24.9
Non-Hispanic Race						
White	295	3.1	135	1.4	430	4.6
Black	15	5.3	10	3.5	25	8.8
American Indian	4	*	10	5.9	14	8.3
Asian[5]	23	3.6	6	0.9	29	4.6
Pacific Islander[6]	8	8.8	1	*	9	9.9
Other & Unknown	5	10.5	–	–	5	10.5
Two or more races	14	3.6	7	1.8	21	5.3
Total Hispanic	89	3.2	30	1.1	119	4.3
Education						
8th Grade or Less	26	3.8	11	1.6	37	5.3
Some High School	68	3.7	41	2.2	109	5.9
HS Diploma/GED	108	3.3	62	1.9	170	5.2
More than HS	240	3.0	84	1.1	324	4.1
Start of Prenatal Care						
Any trimester	372	2.9	171	1.3	543	4.2
1st trimester	271	2.7	110	1.1	381	3.8
2nd trimester	89	3.4	48	1.8	137	5.2
3rd trimester	12	2.4	13	2.6	25	5.1
No prenatal care	26	26.0	4	*	30	30.0
Tobacco Use						
Pre-pregnancy only	12	4.3	4	*	16	5.7
During pregnancy	57	3.8	58	3.8	115	7.6
No tobacco use	367	3.1	134	1.1	501	4.2
Multiple Birth						
Yes	95	20.9	19	4.2	114	25.0
No	358	2.7	180	1.3	538	4.0

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 Deaths[1] by Planned Attendant and Planned Place of Birth, Oregon Occurrence, 2012

Planned Birth Attendant[2]	**Total Term Fetal Deaths**	Planned Hospital Birth	Planned Out-of-Hospital Birth
Total	62	58	4
MD's and DO's	49	49	–
Certified Nurse Midwives	8	8	–
Licensed Direct-Entry Midwives	2	–	2
Unlicensed Direct-Entry Midwives	1	–	1
Naturopathic Physicians	1	–	1
Other	1	1	–

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

TABLE 7-20. Term Early Neonatal Deaths[1] by Planned Attendant and Planned Place of Birth, Oregon Occurrence, Preliminary 2012 Birth Cohort

Planned Birth Attendant[2]	**Total Term Early Neonatal Deaths**	Planned Hospital Birth	Planned Out-of-Hospital Birth
Total	30	26	4
MD's and DO's	22	22	–
Certified Nurse Midwives	5	4	1
Licensed Direct-Entry Midwives	2	–	2
Unlicensed Direct-Entry Midwives	1	–	1
Naturopathic Physicians	–	–	–
Other	–	–	–

– Quantity is zero.
1 Term early neonatal deaths include infant deaths of less than 7 days and with gestation of 37 weeks or more.
2 For planned hospital births, actual attendant type is used. For planned out-of-hospital births with intrapartum transfer to hospitals, planned attendant type is reported by mother and not verified.
NOTE: 2012 birth cohort might include infant deaths occurred in 2012 and 2013. Data for 2013 is undergoing edit processes and data in this table is subject to change.