INCIDENCE AND REPORTED CAUSES OF STILLBIRTHS IN ARIZONA

Fifth Annual Report
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Executive Summary

This report completes the annual requirement set forth by the Arizona State Legislature to present the incidence and causes of stillbirth. Fetal death certificate data were utilized to draw conclusions about the risks of stillbirth by women's age, race, education, initiation of prenatal care, and tobacco/alcohol use during pregnancy. The report also examined the prevalence and causes of stillbirth, and the use of autopsy by region and county.

The findings of this report indicate that the incidence of stillbirth remained unchanged over the past five years. The 2008 rate of stillbirth in Arizona (5.5 per 1,000 live births and fetal deaths) is lower than the last reported U.S. rate in 2005 (6.2).[1] However, unless there is a significant decline in the rate of stillbirths in 2009, Arizona will not meet the Healthy People 2010 objective of 4.1 stillbirths per 1,000 live births plus stillbirths.

This report also demonstrates that disparities in the rate of stillbirths persist. African American women are significantly more likely to experience a stillbirth compared to all other races. The largest preventable risk behavior for stillbirth, tobacco use during pregnancy, was more commonly found in women delivering a stillbirth compared to mothers delivering a live birth. Risk markers such as limited education, pregnancy beyond 35 years of age, and late initiation of prenatal care remain significantly associated with stillbirth in Arizona. Maricopa and Pima Counties accounted for the vast majority of stillbirths (77 percent) in 2008, and the rate of stillbirth in Arizona's urban counties (5.5 per 1,000 live births plus stillbirths) was greater than the rate in rural counties (4.9) (see Appendix A).

Length of gestation and delivery weight were associated with the incidence and causes of stillbirth. The majority of stillbirths weighed less than 1,500 grams (59 percent) and were more likely to occur early term (46 percent) rather than at term (17 percent). Malformations were the reported as the leading cause of death for early term stillbirths, while cord problems were the leading cause of death in term/late term stillbirths. Autopsy was more often conducted on later term stillbirths with greater delivery weight. Although autopsy is recognized as the most useful procedure in determining cause of death, only 10 percent of stillbirths delivered in 2008 underwent the procedure. This report did not examine the medical, legal or infrastructure barriers to increasing the autopsy rate for stillbirths. Arizona's continued use of the outdated 1989 U.S. Standard Fetal Death Certificate restricts a more profound examination of the incidence and causes of stillbirth.

INTRODUCTION

Background

As required by Arizona law (ARS 36-2291), the first annual report on the Incidence and Reported Causes of Stillbirths was completed in May of 2005 using data from the 2003 fetal death cohort. Because of the relatively small number of cases, the second annual report examined data from 2000 through 2004 and the fourth annual report also used a five-year cohort of fetal deaths from 2003 through 2007. The Fifth Annual report uses a one year cohort of fetal deaths from 2008 for most analyses.

Methodology

Arizona electronic fetal death certificate data for deaths occurring between the1st of January, 2008 and the 31st of December 2008 are summarized in this report. To conduct the analyses, an electronic file was created with fetal death and live birth data from tables generated by the Health Status and Vital Statistics Section of the Bureau of Public Health Statistics within the Arizona Department of Health Services. These files contain data on stillbirths which are reported to occur at or after 20 weeks of gestation, and if gestational age is unknown, the deaths of fetuses of at least 350 grams. In this report, the cohort was limited to those cases that reported residence in Arizona.

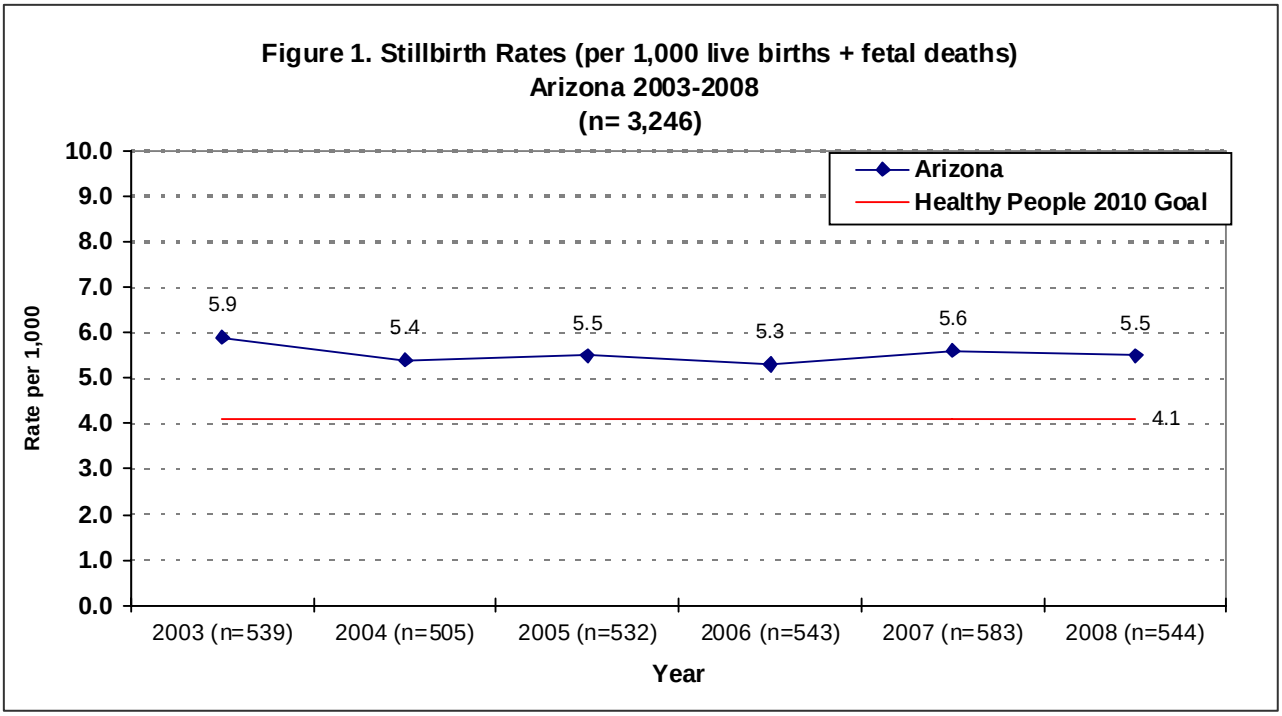
This report focuses on the incidence of stillbirth, maternal risk markers/risk factors for stillbirth, and reported causes of stillbirths. The number of incident deaths and stillbirth rates are useful when looking at trends over time, comparing one geographic population to another and comparing subgroups within a population. In this report, live births from the birth certificate database and fetal deaths (excluding induced abortions) are combined as an estimate of the total pregnancies among Arizona residents that are at risk for a fetal loss. Stillbirth rates are expressed as the number of deaths per 1,000 live births and fetal deaths. Stillbirth rates are presented in this report by race and ethnicity, maternal age, and education level. Two behavioral risk markers, smoking and alcohol consumption, are analyzed in this report. The prevalence of autopsy is examined by weight, age, and geographic region of stillbirths. Finally, the reported causes of stillbirth are addressed, limitations of these data are considered, and input from national and international experts is presented.

Arizona 2008

As per the Arizona Vital Records Fetal Death Certificate database, there were a total of 544 stillbirths reported to have occurred at 20 weeks or more gestation (or if gestational age was unknown, the deaths of fetuses of at least 350 grams) during the 1st of January 2008 through the 31st of December 2008. Figure 1 shows that the stillbirth rate ranged from a high of 5.9 per 1,000 live births and fetal deaths in 2003 to a low of 5.3 in 2006. The 2008 rate is not significantly different from the baseline rate in 2003.* The stillbirth rate in Arizona for the combined six-year period was 5.5 per 1,000 live births and fetal deaths, which was lower than the U.S. rate of 6.2 per 1,000 for 2005 (see Appendix B).[1] Nevertheless, the stillbirth rate in Arizona for 2008 remains 34 percent greater than the Healthy People 2010 objective of 4.1 per 1,000 live births and fetal deaths.[2] If Arizona had

* *P* =.28 (CI: -0.28 - 1.10)

met the Healthy People 2010 standard from 2003 to 2008, approximately 850 stillbirths would have been averted.



MATERNAL RISK MARKERS

Few hypothesized "risk factors" have been causally linked to stillbirth.[3] A more appropriate term to describe the many associations with stillbirth is maternal risk marker. These physical, behavioral and environmental markers are used as proxies for unavailable causal data, or as yet to be discovered "risk factors" that actually cause stillbirth.

Pregnancy History

Previous history of stillbirth has been associated with a higher risk for future stillbirth.[4] Twenty-seven percent of women with valid data in the 2008 stillbirth cohort reported between one and six previous spontaneous or induced terminations of pregnancy. It is unknown what proportion of these "terminations" met the definition of stillbirth (spontaneous termination of pregnancy at 20 or more weeks gestation). In addition, it is possible that some women who delivered a stillbirth in 2008 also delivered a live infant and are part of the 2008 live birth cohort. Therefore, determining risk for stillbirth based on previous history of stillbirth is not possible in this report.

Multiple gestations have also been associated with stillbirth. Approximately 10 percent of all stillbirths in the United States are delivered by women carrying multiple fetuses. The risk for stillbirth increases with the number of fetuses carried during pregnancy.[3] For multiparous women residing in Arizona, the rate of stillbirth was 14.4 per 1,000 live multiple births and fetal deaths. The rate of stillbirth among singleton pregnancies (5.2 per 1,000 live singleton births and fetal deaths) was significantly less than for multiple pregnancies.[*]

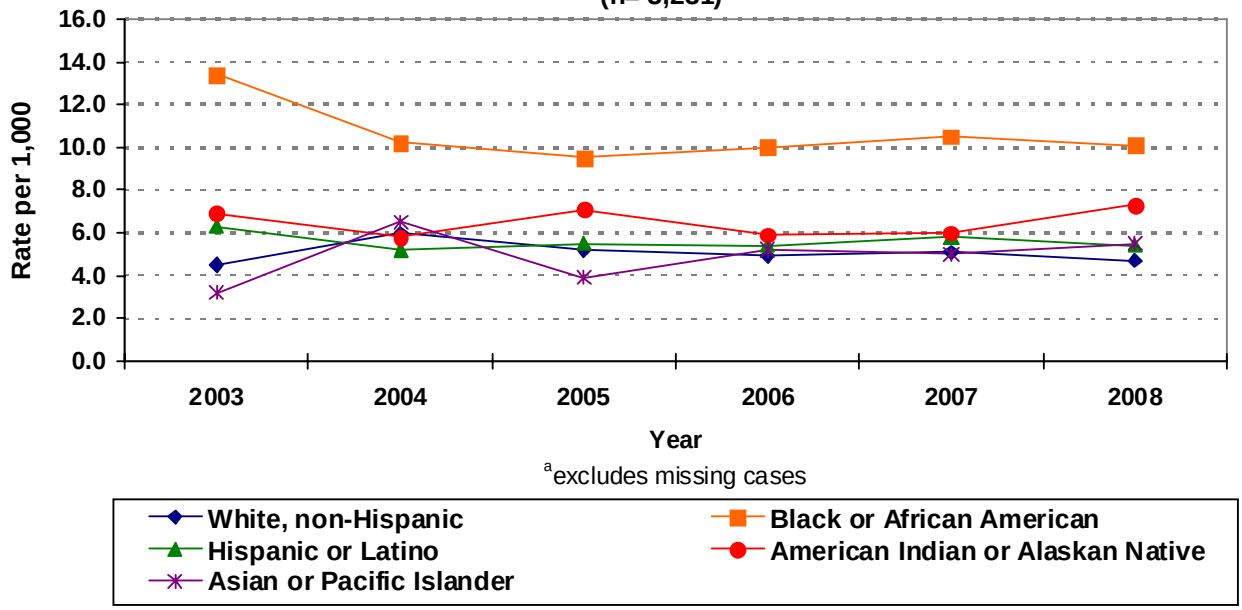
[*] *P*<0.0001(CI: 6.50 - 11.90)

Although assisted reproductive technology (ART) has been associated with both multiple gestation and stillbirth, no data exist for women using ART in the fetal or birth certificate databases. There is no consensus about whether multiple fetuses have additional risk because they were conceived with ART.[3]

Race/Ethnicity

Figure 2 shows the stillbirth rates by stillbirths with reported race/ethnicity for the 2003 through 2008 time period in Arizona. The stillbirth rate was lowest for White, non-Hispanic women (4.7 per 1,000 live births and fetal deaths) and highest for Black or African American women (10.1 per 1,000 live births and fetal deaths) in 2008. A significant disparity in stillbirth rates persisted between Black or African American women and other racial/ethnic groups in 2008.* Pregnant Black or African American women had 1.84 times the risk of having a stillbirth as non-African American women. This disparity is apparent in stillbirth rates across the United States (Appendix B).[5] Healthy People 2010 calls for a significant reduction in the disparity of stillbirth rates across all racial and ethnic groups.[3]

Figure 2. Stillbirth Rates (per 1,000 live births+fetal deaths) by Race/Ethnicity Arizona 2003-2008 (n= 3,231)[a]



Maternal Age

Age is a risk marker for stillbirth. Maternal age is used as a proxy measure of unknown and unmeasured biological changes that are causal for stillbirth.[3] Figure 3 indicates the relationship between reported maternal age and stillbirth. It is evident from figure 3 that the highest risks of stillbirth were for adolescent and older women. However, in 2008 women under 20 years of age did not assume a statistically greater risk for stillbirth than women 20 to 34 years old.** The risk of experiencing a stillbirth also increases for women 35 years of age and older. For these women, the risk for stillbirth was 1.3 times as great as women in their twenties.***

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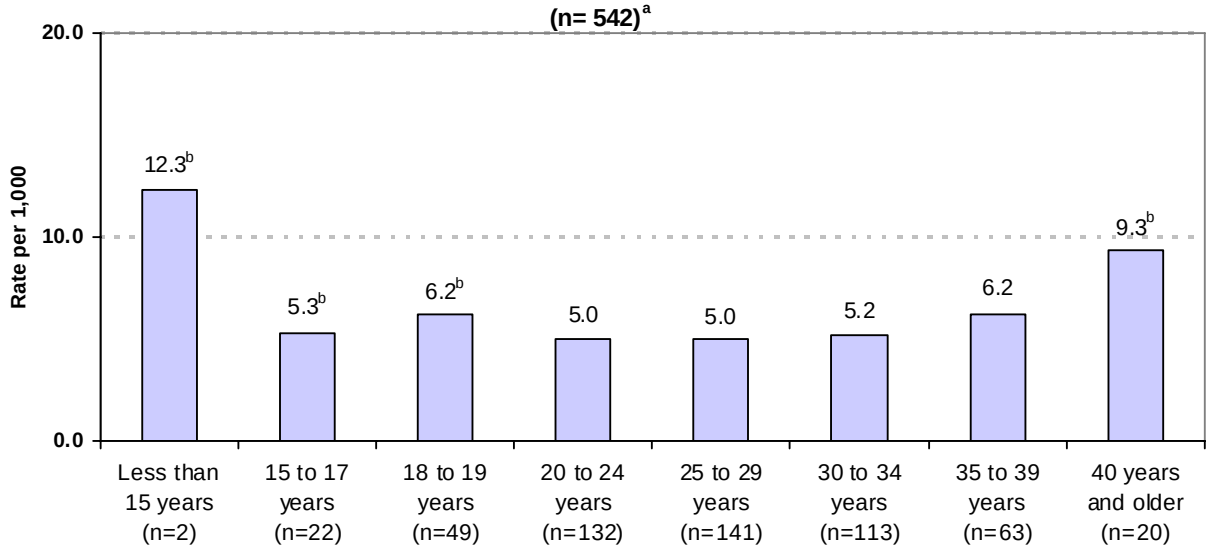
* *P*<0.0001 (CI: 1.8 - 7.8)
** *P*=.240 (CI: -0.63 - 2.3)
*** *P*=0.017 (CI: 0.15 - 3.25)

Figure 3. Stillbirth Rates (per 1,000 live births + fetal deaths) by Maternal Age
Arizona 2008
(n= 542)[a]

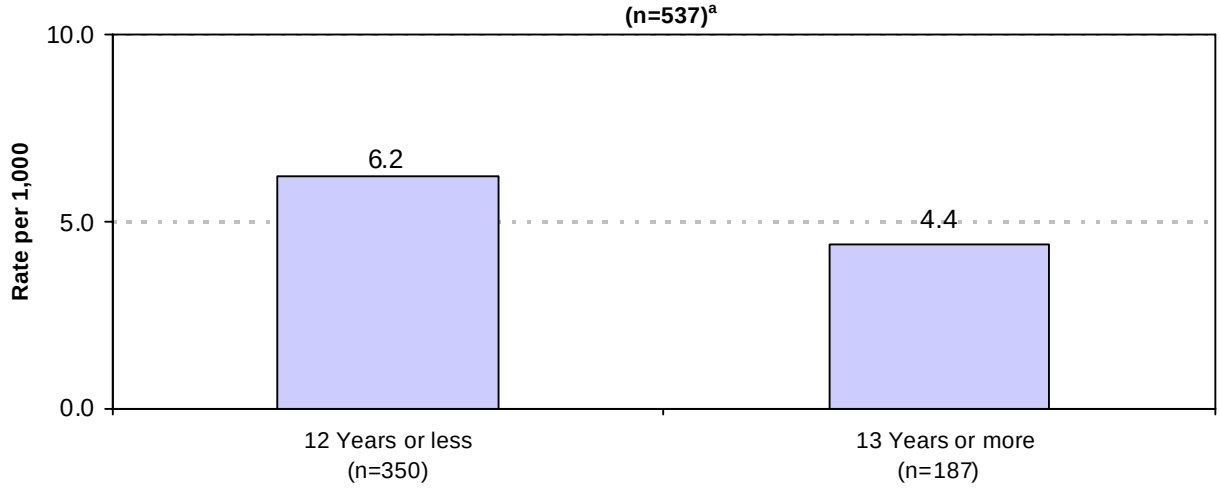


[a]excludes unknown and missing cases.
[b]interpret rate with caution due to small sample size.

Maternal Education

Figure 4 shows the stillbirth rates by reported level of maternal education. High school education or less is a risk marker for stillbirth that may serve as a proxy measure for other causal risk factors, such as elevated stress associated with lower socio-economic status. Women with 12 years of education or less (6.2 per 1,000 births and fetal deaths) experienced significantly higher rates of stillbirths than women with 13 years or more of education (4.4 per 1,000).[*]

Figure 4. Stillbirth Rates (per 1,000 live births + fetal deaths)
by Level of Education, Arizona 2008
(n=537)[a]



[a]excludes unknown and missing cases

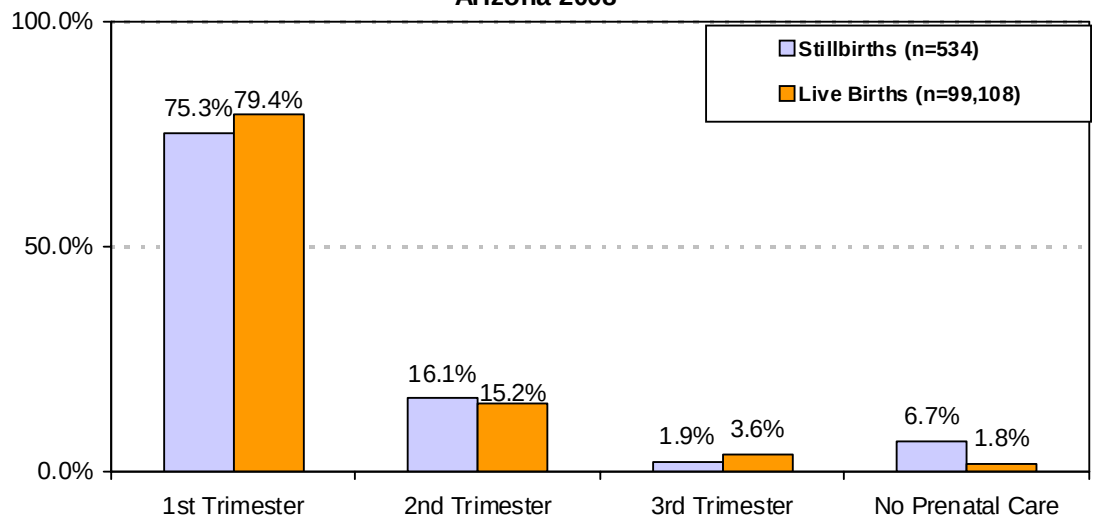
[*]*P*<0.0001(CI: 0.89 - 2.70)

Prenatal Care

Determining the adequacy of prenatal care in stillbirths through a review of fetal death certificate data is complicated. Birth certificate data and fetal death certificate data do not contain any information on the quality or content of prenatal care. Methodologies for determining adequacy of prenatal care in live births, such as the Kotelchuck Index [6], look at both the timing of entry into care and the number of prenatal visits received. "Adequacy of care", in terms of the number of expected visits, may be different for women at risk of experiencing a stillbirth. If a woman enters prenatal care early and a risk factor is identified, she may require more prenatal care visits than a woman without an identified risk factor. Conversely, women who receive no prenatal care or enter prenatal care late in pregnancy may be at higher risk for delivering a stillborn infant because a preventable risk factor is not identified and addressed early enough to positively affect the health of the fetus. Therefore, interpreting adequacy of prenatal care measures for fetal deaths is not presented in this report.

Figure 5 compares entry into prenatal care for women experiencing stillbirths and entry into prenatal care for women giving birth to live infants in 2008. Delivery status (stillbirth or live birth) was significantly associated with first trimester prenatal care.* In addition, women delivering a stillbirth were more likely to delay entry into prenatal care until the third trimester.

Figure 5. Women Entering Prenatal Care by Trimester
Arizona 2008[a]



[a]excludes unknown and missing cases

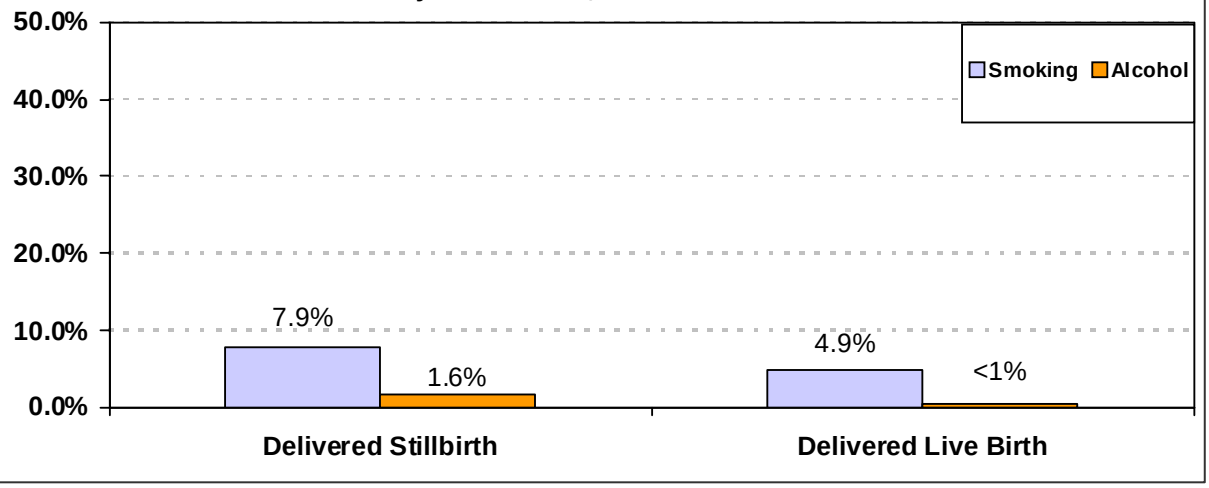
* Chi-square 5.64 (1), *P*=0.018

Behavioral Risk Markers

Cigarette use is the largest preventable cause of stillbirth. Cessation of smoking during the first trimester has been shown to lower the risk of stillbirth to equivalent rates found in non-smoking women.[3] The consumption of alcohol during pregnancy has found to be associated with stillbirth in some, but not all studies . As with tobacco use, the consumption of alcohol may play a larger role in stillbirth later in pregnancy.[3]

Cigarette and alcohol use during pregnancy are recorded on the fetal death certificate. This analysis is restricted to women with known responses to the questions of smoking or drinking in the 2008 stillbirth cohort (n= 520 smoking responses; n= 517 drinking responses) and live birth cohort (n= 98,973 smoking responses; n= 98,836 drinking responses). The Arizona fetal death certificate does not contain information about cigarette or alcohol use by trimester. Figure 6 shows the percentage of women who reported smoking cigarettes or drinking alcohol during pregnancy for the 2008 stillbirth and live birth cohorts.

Figure 6. Women Reporting Cigarette or Alcohol Use during Pregnancy by Birth Status, Arizona 2008



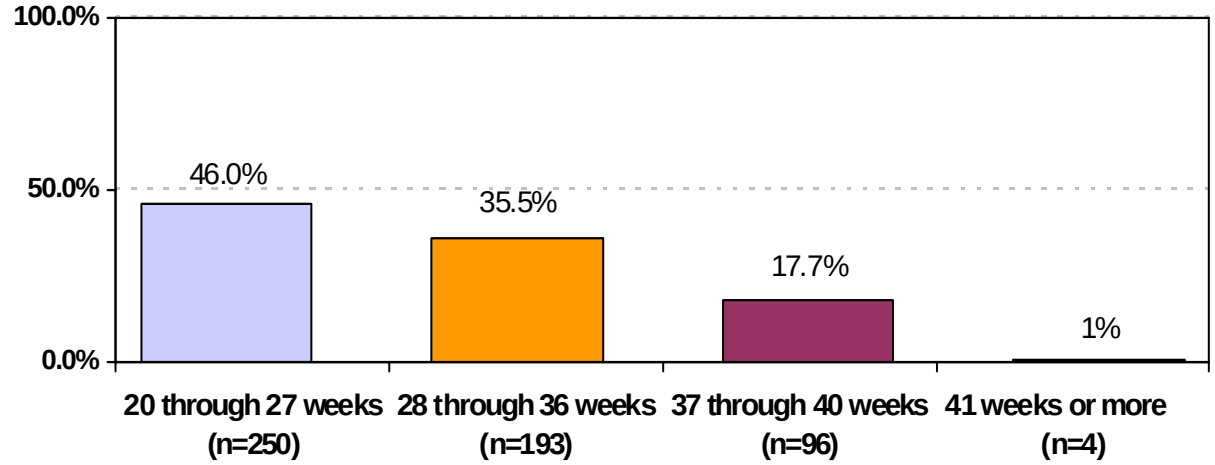
Approximately eight percent of women who had a stillbirth reported smoking and 1.6 percent reported drinking while pregnant. Only 4.9 percent of women delivering a live birth reported smoking and less than one percent reported drinking alcohol during pregnancy. Within this sample, the rate of stillbirth among women who reported smoking during pregnancy (8.4 per 1,000 live births + stillbirths) was significantly greater than the rate of stillbirth among non-smokers (5.1 per 1,000).* The rate of stillbirth for women who reported drinking alcohol during pregnancy is not presented because of limited response size. Response bias due to the stigma of smoking and drinking during pregnancy likely resulted in underreporting of these two behaviors across both the stillbirth and live birth cohorts. If the behavior was stopped early in pregnancy, recall bias may also limit the reliability of these data. When Arizona adopts the U.S. Revised Fetal Death and Birth Certificates, information about alcohol use during pregnancy will no longer be collected.

*P<0.002 (CI: 0.57-5.79)

CHARACTERISTICS OF STILLBIRTHS

Cases in the fetal death certificates are defined by gestational age, and when age is not available, delivery weight of at least 350 grams is used. Figure 7 shows the breakdown of stillbirths by reported early, late, full term, and post-term gestational ages.[7] Similar to national statistics,[3] 46 percent of stillbirths in Arizona occurred prior to 28 weeks gestation and 17.7 percent were 'at term'. Although gestational age is determined by physician's estimate (clinical estimate) and not reported date of last menstrual period, reliability and validity issues persist.[8]

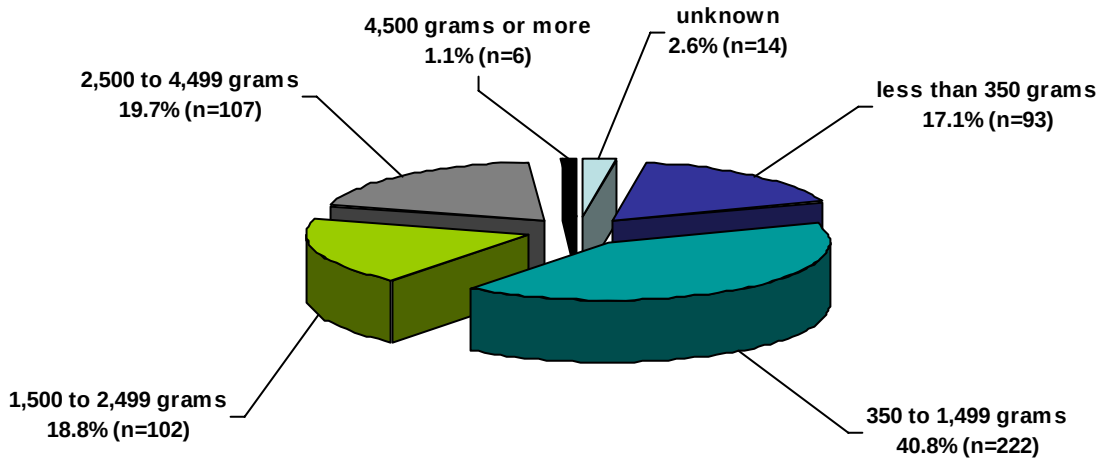
Figure 7. Stillbirths by Gestational Age
Arizona 2008 (n= 543)[a]



[a]excludes unknown and missing cases

Figure 8 shows the reported weight of stillbirths from the 2008 cohort.

Figure 8. Delivery Weight of Stillbirths
Arizona 2008
(n=544)



It is evident from Figure 8 that approximately 41 percent of stillbirths delivered in 2008 were reported to weigh between 350 to 1,499 grams, and 19 percent weighed between 1,500 and 2,499 grams. Another 17 percent were reported to weigh less than 350 grams and 14 cases were missing data for birth weight. Most fetuses that survive to 20 weeks gestation weigh over 350 grams.[9] Therefore, it is possible that some of the reported weights of less than 350 grams were either data errors or misclassified cases of miscarriage.

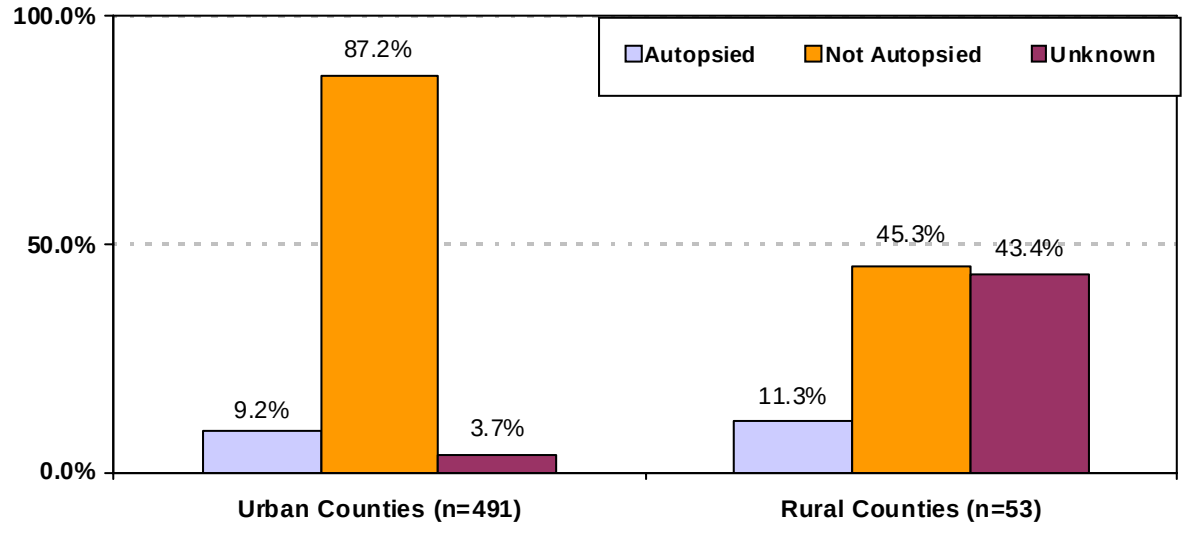
County of Occurrence and Frequency of Autopsy

Although the majority of stillbirths in 2008 continued to occur among female residents of urban counties, rates of stillbirth varied more widely in rural counties (1.4 to 8.5 per 1,000) compared to urban counties (5.3 to 5.7) due to the relatively small size of rural populations (appendix B). In 2008, 64 percent of those stillbirths were delivered by residents of Maricopa County (n=350), 13 percent in Pima county (n=73), and the remainder of stillbirths with known maternal residence occurred in 12 other counties (n=120).

Fetal autopsies are the most useful diagnostic procedure for information on the cause of death.[3,10] However, only 10 percent (n=51) of stillbirths with complete data in 2008 received an autopsy. The proportion of stillbirths receiving an autopsy has decreased from a high of 16.4 percent in 2004. Additionally, the quality of data declined each year over the reported autopsy field. Fewer than one percent of cases were coded as “unknown” in 2003, but 7.5 percent coded as “unknown” in 2008.

Figure 10 shows the proportion of stillbirths delivered in urban and rural counties that received an autopsy. The percentage of “unknown” autopsied cases in rural counties makes it impossible to determine if there was a significant urban/rural difference. Although the proportion of stillbirths autopsied was greater in Maricopa County compared to Pima County (9.1 percent compared to 7.5 percent), the difference was not significant.*

Figure 9. Stillbirths Autopsied by Urban and Rural Counties
Arizona 2008 (n=544)

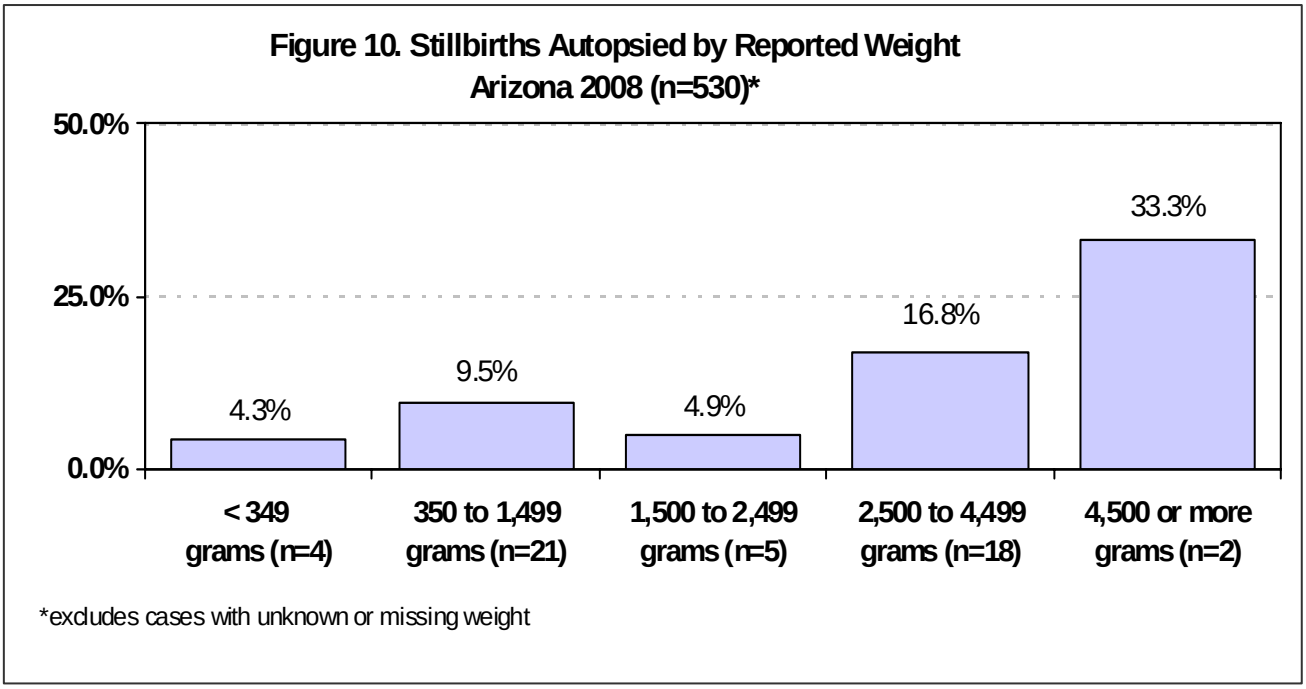


* Chi-square .21 (1), *P*=.65

The proportion of autopsies was also analyzed by race, ethnicity, gestational age, and reported weight of the fetus. In terms of race and ethnicity, the percentage of stillbirths delivered by non-Hispanic women that received an autopsy was 9.3 percent compared to 11 percent of stillbirths delivered by Hispanic women. The proportions of stillbirths autopsied for White (7.6 percent), African American (11.4 percent), and Asian (10.5 percent) women were all higher than for stillbirths autopsied for American Indian women (4.7 percent). However, the high percentage of 'unknown autopsy status' among American Indian stillbirths (27.7 percent) limits the interpretation of the disparity.

Although nearly half of all stillbirths were delivered prior to 28 weeks gestation, only 7.8 percent of these very early term stillbirths received an autopsy. There was no significant difference in autopsy rates between stillbirths occurring at or after 28 weeks gestation (11.3 percent) and those occurring very early term.[*]

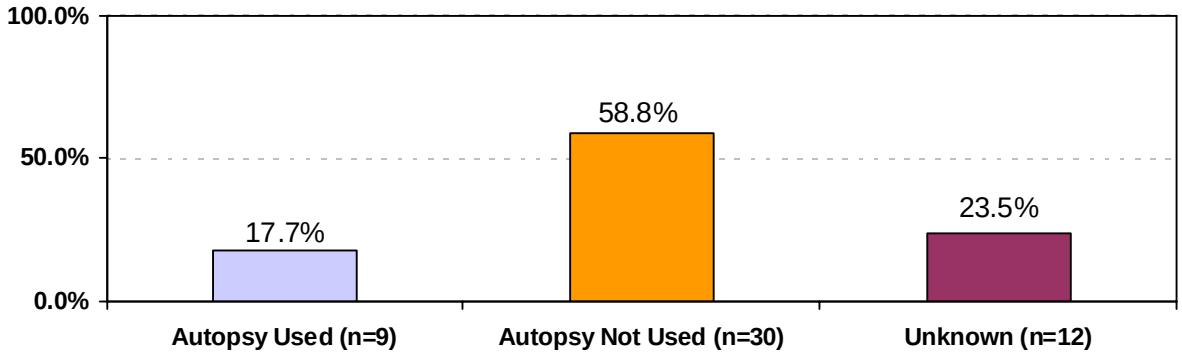
Figure 10 shows the percentage of stillbirths that were autopsied by reported gestational weight. Of stillbirths that received an autopsy, the majority were either very low weight (350 to 1,499 grams) or normal weight (2,500 to 4,499 grams). Only 5 percent of stillbirths weighing 1,500 to 2,400 grams received an autopsy.



[*]Chi-square 2.68 (1) *P*=0.10

Figure 11 shows the percentage of autopsies that were actually used to determine the cause of death among stillbirths that received an autopsy. Although autopsy is considered the most useful procedure in determining the cause of stillbirth,[3,4] the procedure was rarely utilized to ascertain the cause of fetal demise in Arizona.

Figure 11. Percent of Autopsies Used in Determining Cause of Death among Stillbirths Receiving an Autopsy Arizona 2008 (n=51)*



*total number of stillbirths autopsied

Reported Cause of Death

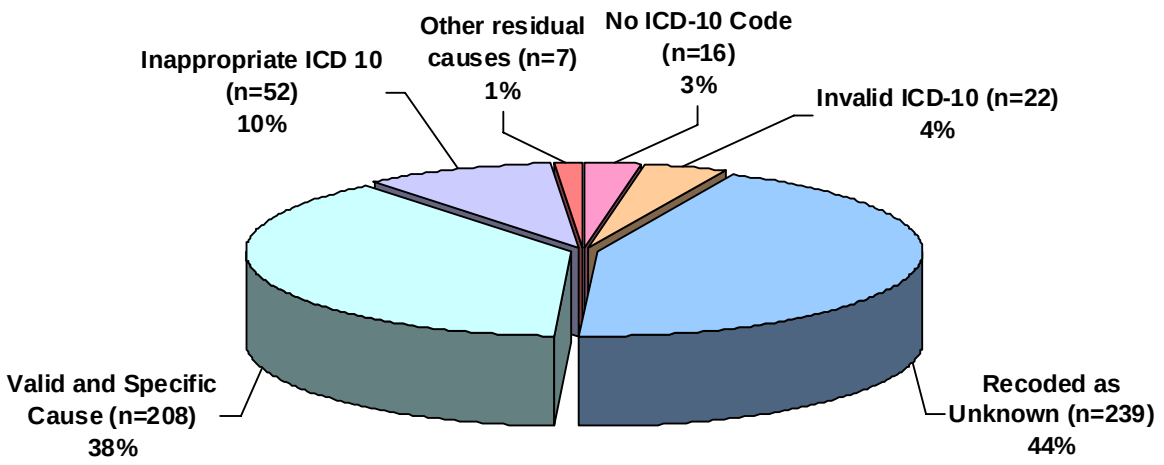
Most conditions that have been linked to stillbirth can be classified as associations rather than unequivocal causes.[3] As reported in the first Incidence and Reported Causes of Stillbirth Report (2005), the cause of stillbirth often remains unknown, even when a concerted effort is made to determine the cause of death. In Arizona, three causes of death can be entered onto the fetal death certificate – a primary cause of death and two contributing factors. Since 2000, the cause of death has been coded using ICD-10 codes in Arizona.

Coding for fetal death certificates is completed by Arizona Department of Health Services Vital Records staff. The staff person responsible for coding fetal deaths reviews a hard copy of the fetal death certificate and, using all three fields on the death certificate, makes a determination of the most appropriate ICD-10 code. In 2008 there were 58 distinct ICD-10 codes used to classify cause of death in the fetal death certificate data. The ICD-10 codes and their associated descriptions were reclassified into categories based on their similarities and potential prevention efforts.*

*ICD-10 codes were reclassified according to a matrix created by Dr. Mike Clement of the Arizona Perinatal Trust in 2006. The use of other classification systems, such as Gardosi's ReCoDe[4] , was not possible due to the absence of key variables in the 1989 U.S. Standard Fetal Death Certificate.

Figure 12 shows causes of stillbirths for the 2008 reporting period. As is true in many studies on the causes of stillbirths[3], the cause of death was unknown in 44 percent of stillbirths for this time period. The lack of a definitive cause of death is often the result of insufficient medical science regarding the etiology of stillbirth.* Additionally, data errors are common across this field as 10 percent of the stillbirths had an inappropriate ICD-10 code, four percent of the stillbirths had an invalid ICD-10 code, and three percent of the stillbirths did not have an ICD-10 code listed under cause of death. The remaining 38 percent of fetal deaths had ICD-10 codes indicating a valid and specific cause of deaths.

Figure 12. Percent of Stillbirths with Valid Cause of Death Arizona 2008 (n=544)



*As per correspondence with Donna Hoyert, PhD, Division of Vital Statistics, NCHS, CDC, on November 25th, 2008.

Of the stillbirths with a known and specific cause of death (Figure 13), the most common causes were malformations (30 percent), placental disorders (27 percent), and cord problems (26 percent). None of the other recoded causes of death accounted for more than five percent of stillbirths with valid ICD-10 data.

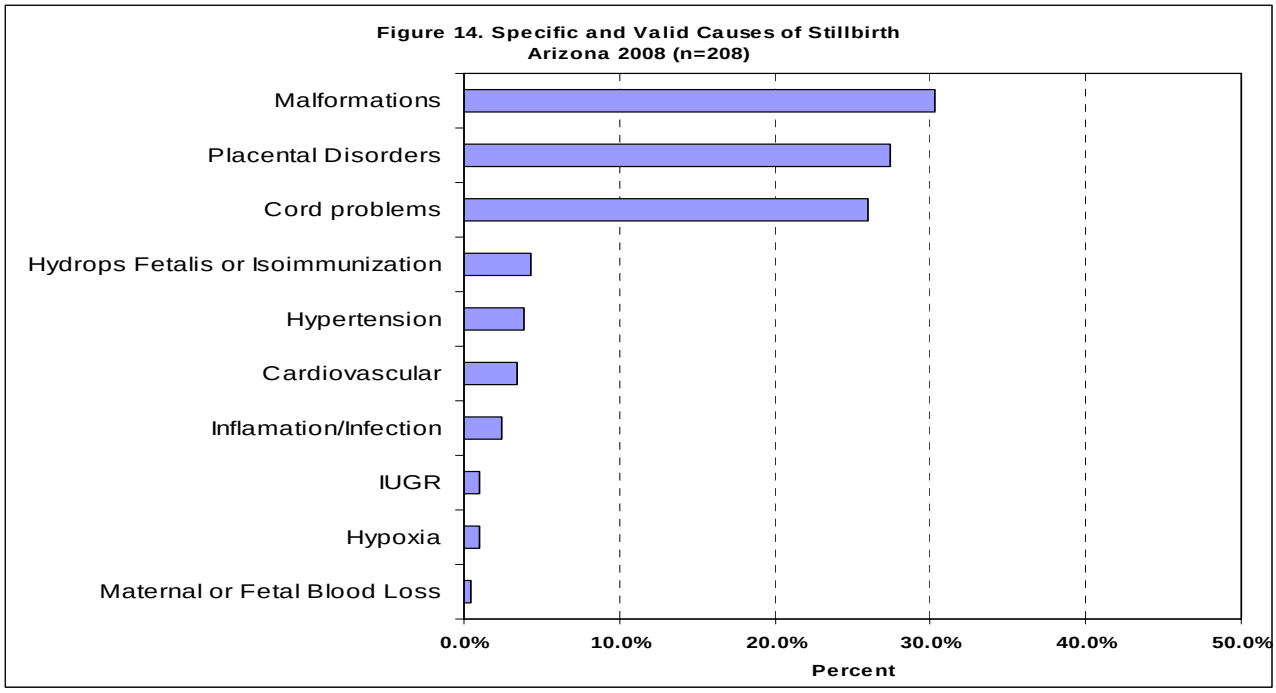
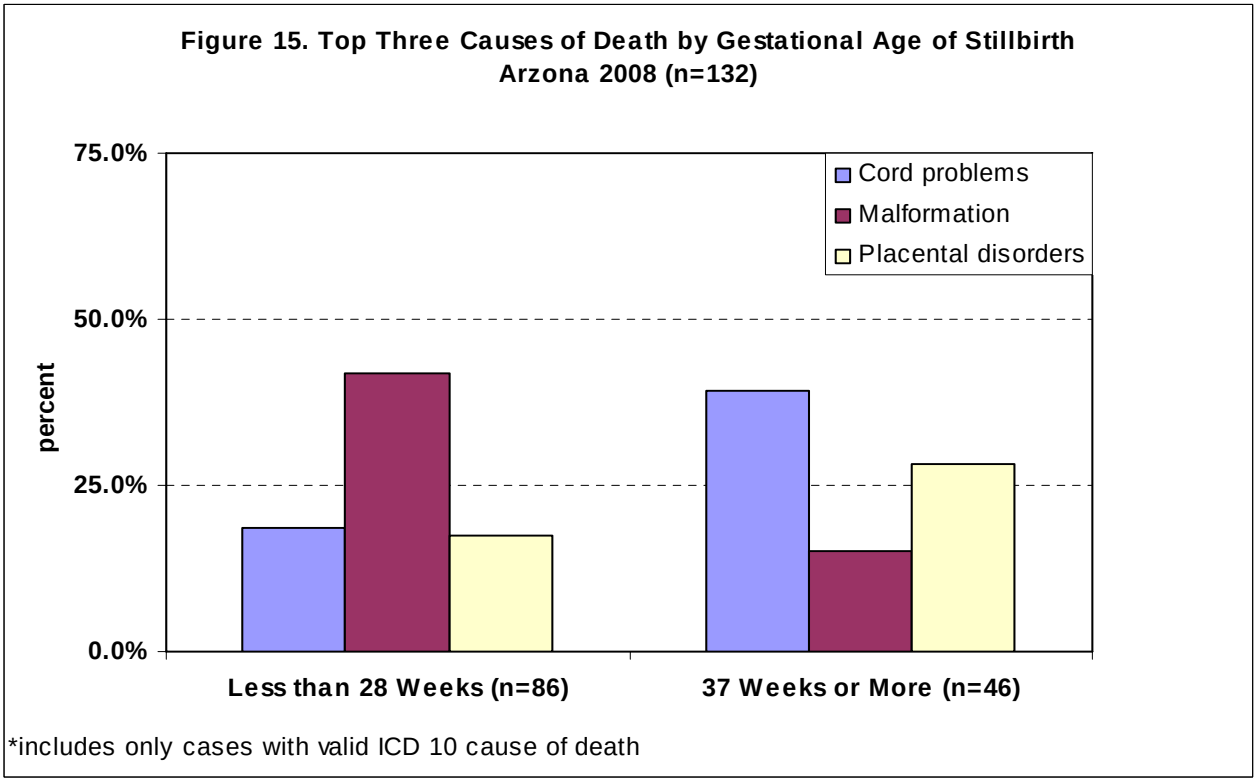


Figure 14 shows the top three reported causes of death by early term (less than 28 weeks) and term/post-term (37 weeks or more) gestational age categories.



Forty-six percent of stillbirths delivered at term or late term had a specific cause of death, while only 35 percent delivered at less than 28 weeks had a valid cause of death.* The most common causes of death were cord problems, malformations and placental disorders for both age categories. For stillbirths delivered at term or late term, cord problems (39 percent) accounted for the greatest proportion of deaths, while malformation (42 percent) was the most common cause of death for early term stillbirths.

DATA QUALITY

The analysis for the 2009 Incidence and Reported Causes of Stillbirth in Arizona consisted of a review of frequencies of selected variables to determine the percentage of cases with out-of-range, invalid, and missing values. Fields were chosen for this analysis based on the likelihood that they would be used in an analysis of stillbirths. In addition to reviewing frequencies as described above, the data were reviewed to determine if the cases included in the fetal death files were appropriate for an analysis of fetal deaths.

Case Inclusion

ARS 36-2291 stipulates that a report on the incidences of stillborn infants and the reported causes of deaths will be produced each year. Fetal weights and reported gestational age were reviewed to determine if all records included in these files would be appropriate for a report on the incidence and causes of stillbirths. Of the 544 cases reported in these files, only one record did not have data in the field for reported gestational age. This record had a weight of at least 350 grams indicating that the fetus was likely of an appropriate gestational age for inclusion in this report. The remaining 543 cases had gestational ages of 20 weeks or more according to clinical estimates. Both clinical and calculated estimates of gestational age are subject to reliability issues.[8] Calculation of gestational age by reported last menstrual period is complicated by missing and unreliable data over 11 percent of cases. Nevertheless, when using date of last menses to measure gestational age, approximately four percent (n=23) of stillbirths were less than 20 weeks old and over one-third these cases (n=9) also had reported delivery weights under 350 grams. These cases would not be included in this report had last menses been used instead of clinical estimate to determine gestational age.

Gestational age is the primary criteria used to determine case inclusion in this report. However, the reported weight of all cases was also reviewed to determine whether or not the case was appropriate for inclusion in an analysis of incidence and reported causes of stillbirth. Seventeen percent (n=93) of stillbirths in the data set were reported to weigh less than 350 grams and less than three percent (n=14) had missing birth weight. One delivery facility was responsible for 19 percent of the missing data and cases with birth weight under 350 grams, while accounting for 13 percent of all stillbirth deliveries.

Chi-square 3.61 (1) *P*=0.057

Quality of Data Fields

The quality of data was examined across all selected variables used in this report. When more than five percent of data was missing, this was cited in the report. Additional variables that would have been useful for the analysis of the causes of stillbirth include the amount of cigarettes smoked per week, self-reported exposure to second hand smoke, the number of alcoholic drinks consumed per day by trimester, and the weight and height (or calculated BMI) of the mother at first prenatal care visit. Although the prevalence of obesity has increased among reproductive aged women in Arizona[11] and has been demonstrated as a risk factor for stillbirth,[3,4,5] neither maternal baseline weight nor height is collected for the Arizona fetal death certificate. These missing variables limit the strength of this report.

The revised 2003 U.S. Standard Fetal Death Certificate (see http://www.azdhs.gov /plan/cert/ pdf/fetal.pdf) includes data fields for BMI, pre-pregnancy weight, and trimester/frequency of cigarette use. If adopted in Arizona, the revised fetal death certificate would bolster future analyses of the risks for stillbirth. For instance, Gardosi's classification of stillbirth by relevant condition of death (ReCoDe) utilizes mother's first trimester BMI as a covariate to determine customized fetal delivery weight percentiles. If delivery weight for gestational age is extremely low (< 10th percentile) and no valid cause of death is noted, then the fetal death is reclassified as due to fetal growth restriction. Use of the ReCoDe classification system has resulted in the valid coding of up to 85 percent of fetal deaths.[12,13]

Appendix A

	Total Number of Stillbirths*						Rate of Stillbirths**					
	2003	2004	2005	2006	2007	2008	2003	2004	2005	2006	2007	2008
ARIZONA	539	505	532	543	583	544	5.9	5.4	5.5	5.3	5.6	5.5
Apache	8	5	7	4	9	8	6.4	3.7	5.4	3.4	7.7	6.6
Cochise	15	10	14	12	13	7	8.5	5.5	7.9	6.6	7.0	3.9
Coconino	14	7	9	14	9	7	7.2	3.4	4.3	6.8	4.2	3.5
Gila	1	2	3	11	4	6	1.4	3.0	4.6	16.5	5.7	8.5
Graham	8	2	2	2	0	5	18.1	4.4	4.4	3.7	0.0	7.7
Greenlee	2	1	1	0	0	1	22.5	9.6	10.0	0.0	0.0	7.6
Maricopa	330	339	330	351	360	350	5.6	5.6	5.3	5.3	5.4	5.6
Mohave	10	11	19	15	17	9	4.7	5.0	8.4	6.1	6.9	3.9
Navajo	9	12	15	13	15	15	5.2	6.7	7.8	6.9	7.4	7.7
Pima	80	54	68	79	88	73	6.2	4.1	5.2	5.7	6.3	5.4
Pinal	16	14	21	17	39	33	5.5	4.5	5.7	3.8	7.3	5.7
Santa Cruz	1	4	5	3	0	6	1.3	4.9	6.4	4.0	0.0	7.5
Yavapai	14	15	7	10	14	3	7.5	7.4	3.3	4.2	5.7	1.4
Yuma	30	25	30	12	14	18	9.3	7.5	9.0	3.6	4.3	5.3
La Paz	1	4	0	0	0	2	4.6	17.1	0.0	0.0	0.0	8.1
Unknown	0	0	0	0	0	1	NA	NA	NA	NA	NA	NA

*Includes spontaneous terminations of pregnancy at 20 or more weeks of gestation (or if gestational age is unknown, the deaths of fetuses of at least 350 grams in weight). Excludes induced terminations of pregnancy.

**Per 1,000 live births plus reportable fetal deaths.

Note: Urban counties include Maricopa, Pima, Pinal and Yuma. All other counties are considered rural.
This table is adapted from Table 5C-3 in the 2008 Arizona Health Status and Vital Statistics.

Appendix B

Stillbirths: Arizona and the U.S.

Characteristic	Arizona 2008	U.S. 2005*
Total number	544	25,894
Total rate (per 1,000 live births and fetal deaths)	5.5	6.2
Rate by race:		
Black or African American	10.1	11.1
American Indian or Alaskan Native	7.3	6.2
Asian or Pacific Islander	5.5	4.8
Hispanic or Latina	5.4	5.4
non-Hispanic White	4.7	4.8
Rate by Plurality:		
Triplet or more	16.9**	27.2
Twin	14.3	16.1
Singleton	5.2	5.9
Rate by maternal age:		
< 15 years old	12.3**	12.2
15 thru 19 years old	5.9	7.5
20 thru 24 years old	5.0	5.9
25 thru 29 years old	5.0	5.5
30 thru 34 years old	5.2	5.8
35 thru 39 years old	6.2	7.3
40 thru 44 years old	8.9**	11.1
45 years and older	14.8**	15.5

* most recent data available through the NCHS [1]

** interpret rate with caution due to low sample size

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