ALASKA VITAL SIGNS

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Inside:

- The ratio of Native to white infant deaths was 1.96 for the period 1993-1997 and 1.98 for 1998-2002.
- Although the Alaska Native infant mortality rate decreased 47 percent between 1993 and 2002, they continue to experience rates almost twice that of whites.
- Alaska's national ranking improved from twenty-second (tied with one other state) in 1993 to tenth (tied with two other states) in 2002.
- In 2002, Alaska's infant mortality rate was 5.5 deaths per 1,000 live births, compared to 8.1 per 1,000 in 1993.
- Both the Alaska Native and white neonatal rates decreased during the period and are currently (2002) at their lowest point in over a decade.
- The postneonatal rate for Alaska was consistently higher than the U.S. rate during the period and has remained nearly unchanged since 1993.

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Infant Mortality, 1993-2002

Objectives: This newsletter examines trends in the number of infant deaths and the infant mortality rate for Alaska during the ten-year period 1993-2002. An analysis of race reporting on infant death certificates compared to the mother's and father's race reported on the birth certificate is also included.

Methods: Infant mortality rates were based on linked birth and death certificates for Alaska resident decedents less than 1 year of age and were calculated using the death cohort method.

Results: Infant mortality rates in Alaska have decreased 32.1 percent since 1993, with the most significant decrease occurring between 2001 and 2002 (33.7 percent). During the ten-year period 1993-2002, both Alaska Natives and Alaska whites experienced decreases in infant mortality rates; however, the Alaska Native rate remains over 1.5 times higher than the overall Alaska rate and almost twice as high as the Alaska white rate.

Introduction

Infant mortality is considered to be an important and comprehensive measure of the overall health of a community. Improvements in sanitation, nutrition, patient education, and the adequacy of prenatal care have drastically lowered infant mortality rates in most countries over the last century. Despite the significant declines, disparities in the risk of infant death remain. In Alaska, this is particularly evident between Alaska Natives and other racial groups.

The Alaska Department of Health and Social Services developed and published a state health plan (*Healthy Alaskans 2010*) that targets specific health indicators and provides the goals and framework for improving the health status of all Alaskans. Infant mortality and the disparities by race are addressed in this plan with a target objective to decrease the overall rate in Alaska as well as the Alaska Native rate to 4.5 infant deaths per 1,000 live births by year 2010.[1]

This newsletter examines trends in infant deaths and mortality rates in Alaska during the ten-year period 1993-2002. In addition, inconsistencies in race reporting between infant birth and death certificates, which has caused some concern among health officials in Alaska that Native infant deaths were being under-reported, is also discussed.

Methods

Infant death information was obtained from the 1993-2002 Bureau of Vital Statistics (BVS) birth and death files which contain records of all births and deaths that occur in Alaska. Alaska resident infant death certificates are linked through the BVS system to the corresponding birth certificate. In situations where the birth and or death of an Alaska resident infant occurred in another state, an abstract is prepared by the state of occurrence and is forwarded to Alaska to use for analysis purposes only.

The Bureau of Vital Statistics uses the National Center for Health Statistics (NCHS) guidelines for establishing a child's race at birth. The race of the child is considered to be the same as the reported race of the mother on the birth certificate. For analysis purposes, the infant's race on the death certificate was compared to the mother's race on the birth certificate and was changed to that of the mother when they did not agree. See page 3 for additional information regarding the determination of the infant's race.

Infant mortality rates are reported in the number of infant deaths per 1,000 live births and are calculated using the death cohort method.

Results

The number of infant deaths to Alaskans between 1993 and 2002 ranged from a high of 90 deaths in 1993 to a low of 55 deaths in both 1999 and 2002, averaging approximately 73 infant deaths per year. For the entire period (1993-2002) there was a total of 726 infants in Alaska who died prior to their first birthday. Of these, 357 (49.2 percent) were neonatal deaths (less than 28 days old), and 369 (50.8 percent) were postneonatal deaths (28 days to 1 year of age).

Despite some significant year-to-year variations in infant mortality rates, Alaska's neonatal infant mortality rate was reduced 57.8 percent between 1993 and 2002 and, with the exception of 1995, remained consistently lower than that of the U.S. Both the Alaska Native and white neonatal rates decreased during the period and are currently at their lowest point in over a decade at 2.1 and 1.6 infant deaths per 1,000 live births, respectively. The Alaska Native neonatal rate fell 63.2 percent and the white rate 55.6 percent between 1993 and 2002.

The postneonatal rate for Alaska remained consistently higher than the U.S. rate during the period and has remained nearly unchanged since 1993. Although the Alaska Native postneonatal rate between 1993 and 2002 was over twice that of the white rate, the white rate actually increased 21.7 percent while the Alaska Native rate decreased 35.1 percent.

There were 265 infant deaths to Alaska Natives and 374 to whites between 1993 and 2002. Both races experienced a significant decrease in deaths between 2001 and 2002 and are currently at their lowest numbers for the entire period.

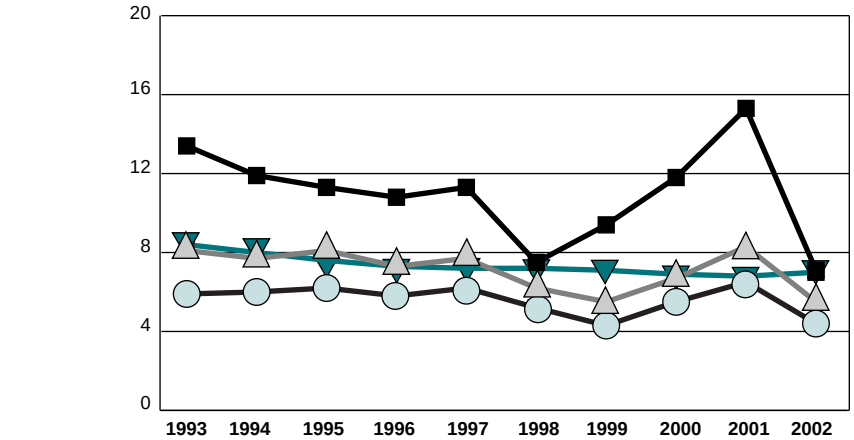
Between 1993 and 2002, infant deaths accounted for 2.7 percent of all deaths to Alaskan residents with a high of 3.8 percent in 1993 and a low of 1.8 percent in 2002.

Infant deaths as a percentage of all deaths varied greatly between Alaska Natives and whites. Alaska Native infant deaths as a percentage of all Alaska Native deaths decreased from 5.4 percent in 1993 to 4.2 percent in 2002 while infant deaths for whites declined from 2.7 percent of all white deaths in 1993 to 2.0 percent in 2002.

In 2002, Alaska's infant mortality rate was 5.5 deaths per 1,000 live births, compared to 8.1 per 1,000 in 1993, a decrease of 32.1 percent. The downward trend has also been occurring at the national level with the U.S. infant mortality rate falling 16.7 percent from 8.4 deaths to 7.0 deaths per 1,000 live births.

Although the infant mortality rate for Alaska Natives decreased 47 percent between 1993 and 2002, they continue to experience rates almost twice that of whites (11.0 infant deaths per 1,000

Figure 1. Infant Mortality Rates by Race, 1993-2002



	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Native	13.4	11.9	11.3	10.8	11.3	7.5	9.4	11.8	15.3	7.1
White	5.9	6.0	6.2	5.8	6.2	5.2	4.3	5.5	6.5	4.4
Alaska	8.1	7.7	8.1	7.3	7.7	6.2	5.5	6.7	8.3	5.5
U.S.	8.4	8.0	7.6	7.3	7.2	7.2	7.1	6.9	6.8	7.0

Table 1. Infant Mortality Rates* (Death Cohort) by Type and Race, Alaska and the U.S. 1003-2002

			Year of Death										
			1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	1993-2002
Neonatal	**Native**	Deaths	14	14	16	11	11	8	8	15	8	5	110
Infant Deaths		**Rate**	5.7	6.0	7.0	4.6	4.6	3.3	3.3	6.1	3.2	2.1	4.6
	White	Deaths	27	18	26	21	20	22	14	19	28	10	205
		Rate	3.6	2.5	3.7	3.1	3.0	3.3	2.2	3.0	4.5	1.6	3.1
	All Races	Deaths	50	35	51	36	36	32	25	35	38	19	357
		Rate	4.5	3.3	5.0	3.6	3.6	3.2	2.5	3.5	3.8	1.9	3.5
	U.S.	**Rate**	5.3	5.1	4.9	4.8	4.8	4.8	4.7	4.6	4.5	4.7	***
Postneonatal	**Native**	Deaths	19	14	10	15	16	10	15	14	30	12	155
Infant Deaths		**Rate**	7.7	6.0	4.3	6.2	6.7	4.2	6.1	5.7	12.1	5.0	6.4
	White	Deaths	17	26	17	18	21	12	14	15	12	17	169
		Rate	2.3	3.5	2.4	2.7	3.2	1.8	2.2	2.4	1.9	2.8	2.5
	All Races	Deaths	40	47	32	37	41	29	30	32	45	36	369
		Rate	3.6	4.4	3.1	3.7	4.1	2.9	3.0	3.2	4.5	3.6	3.6
	U.S.	**Rate**	3.0	3.0	2.7	2.5	2.4	2.4	2.3	2.3	2.3	2.3	***
All Infant	**Native**	Deaths	33	28	26	26	27	18	23	29	38	17	265
Deaths		**Rate**	13.4	11.9	11.3	10.8	11.3	7.5	9.4	11.8	15.3	7.1	11.0
	White	Deaths	44	44	43	39	41	34	28	34	40	27	374
		Rate	5.9	6.0	6.2	5.8	6.2	5.2	4.3	5.4	6.5	4.4	5.6
	All Races	Deaths	90	82	83	73	77	61	55	67	83	55	726
		Rate	8.1	7.7	8.1	7.3	7.7	6.2	5.5	6.7	8.3	5.5	7.1
	U.S.**	**Rate**	8.4	8.0	7.6	7.3	7.2	7.2	7.1	6.9	6.8	7.0	***

***Number of infant deaths per 1,000 live births.**

****Kenneth D. Kochanek, M.A., and Joyce A. Martin, M.P.H., "Supplemental Analyses of Recent Trends in Infant Mortality," *National Center for Health Statistics-Health E Stats,* n.d., <http://interdev2.nchs.cdc.gov/nchs/under_contr/health_estat_infantmort/infantmort.htm> (February 10, 2004).

*****U.S. Infant Mortality rates for the period 1993-2002 are not available.

live births vs. 5.6, respectively for the period 1993-2002).

Whites have also seen a drop in infant mortality rates since 1993 (25.4 percent) with the most substantial decreases occurring between 2001 and 2002 (32.3 percent). The ratio between the Alaska Native and white infant mortality rates has also declined significantly in the last ten years, dropping from 2.3 in 1993 to 1.6 in 2002.

Discussion

The overall infant mortality rate decreased significantly between 1993 and 2002 meaning that proportionately fewer Alaskan children are dying before their first birthday than were a decade ago. If the infant mortality rate had remained at the 1993 level through 2003, there would have been approximately 100 more infant deaths during this period.

Alaska Natives experienced a spike in the number of infant deaths during 2001, increasing from 29 deaths in 2000 to 38 deaths in 2001 and then dropping again to 17 deaths in 2002. The increase in deaths in 2001 can be attributed to an increase in both neonatal and postneonatal deaths. Neonatal deaths typically occur due to problems originating in either pregnancy or childbirth while postneonatal deaths are more often caused by environmental conditions.

The overall Native infant mortality rate decreased over 47 percent between 1993 and 2002. Despite the decrease, disparities remain between whites and Natives as the Native rate was almost double that of the white rate (11.0 Native infant deaths per 1,000 live births vs. 5.6 for whites) for the ten-year period. The disparity between Natives and whites has essentially remained unchanged as the white infant death rate has also significantly decreased during this time. The ratio of Native to white infant deaths was 1.96 for the period 1993-1997 and 1.98 for 1998-2002.

The U.S. infant mortality rate reached its all-time low in 2001 of 6.8 per 1,000 live births and has steadily declined during the period 1993 to 2002. With the exception of 2001, the Alaska infant mortality rate has

decreased as well, improving the Alaska's national ranking from twenty-second[2] (tied with one other state) in 1993 to tenth[3] (tied with two other states) in 2002.

Infant's Race

The Bureau of Vital Statistics uses the National Center for Health Statistics (NCHS) guidelines for establishing a child's race at birth. The race of the child is considered to be the same as the reported race of the mother on the birth certificate. NCHS uses this method because in the past twenty years there has been an increase in the percentage of births where the race of the father is not stated. In addition, research suggests that maternal behaviors during pregnancy have more of an influence on infant mortality rates than paternal behaviors. On a death certificate, however, an informant reports the race of the decedent. The informant is usually a family member of the decedent; for infants, it is typically a parent. If more than one race is reported, it is Bureau policy to record the first reported race listed on the death certificate. This policy is necessary since our current information system only allows the reporting of one race.

To estimate infant mortality rates by race, accurate and consistent race classification is crucial for both numerator and denominator data. Some studies have shown inconsistent and/or inaccurate race coding for birth and death records. In particular, some health care officials in Alaska are concerned that Native infant deaths are being under-reported. One area of concern is that the infant's race is being inaccurately reported by an informant who is not familiar with the infant's family.

To test the validity of this concern, Bureau staff manually reviewed 894 infant death certificates created between 1990 and 2000 where the mother's race was known and the child was an Alaska resident at birth and death. For each death certificate, all reported races for the infant were compared to the parent's race on the birth certificate by the type of informant.

Table 2 compares race reporting on an infant death certificate with that of the corresponding birth certificate. Infants of white mothers were identified as white on the death certificate 97 percent of the time while infants of Native mothers were identified as Native on the infant death certificate 92 percent of the time. Infants of black and Asian/PI mothers showed the lowest agreement with the infants race on the death certificate (88 and 72 percent, respectively).

Table 2. Comparison of Mother's Race Reported at Birth with the Infant's Race(s) Reported at Death, 1990-2000

Mother's Race Reported on Birth Certificate	#	Infant's Race Reported on Death Certificate (any mention)			
		Asian/PI	Black	Native	White
Asian/PI	43	31	3	2	13
Black	50	0	44	1	7
Native	331	3	10	303	62
White	470	3	20	14	457

Only certificates of infants who were Alaska residents at birth and at death and whose mother's race was known were used for this analysis

Most of the differences in race reporting in Table 2 can be attributed to infants of multi-race parentage. If the father was the informant, often the father reported his race as the infant's race on the death certificate. However, there were also instances where the mother was the informant but reported the father's race as the infant's race on the death certificate.

Table 3 compares the infant's race on the death certificate reported by the informant(s) with the race of the parents by the type of informant. Between 1990 and 2000 the informant on the death certificate was either one or both parents 87.9 percent of the time. Of these cases, the infant's reported race was consistent with at least one parent's reported race 97.5 percent of the time. When the informant was someone other than a parent (12.1 percent), the race agreed with that of at least one of the parents 98.1 percent of the time. Furthermore, there were no instances of non-agreement between the parent's race(s) and the infant's race when the informant was someone other than a parent.

The results of this analysis confirms that the reported race of an infant on a death certificate most often agrees with at least one parent's race reported on the child's birth certificate, regardless of who is the informant.

Table 3. Comparison of Infant's Race(s) Reported at Death with the Parent's Races on the Birth Certificate, by Informant: 1990-2000

	Agrees with at Least One Parent			Agrees with Neither Parent			Unable to Determine[1]			Total[2]		
Informant	**#**	**Row %**	**Col %**	**#**	**Row %**	**Col %**	**#**	**Row %**	**Col %**	**#**	**Row %**	**Col %**
Mother	300	95.5	35.5	1	.3	25.0	13	4.1	76.5	314	100.0	36.3
Father	342	98.6	40.5	3	.9	75.0	2	.6	11.8	347	100.0	40.1
Both Parents	100	100.0	11.8	0	0.0	0.0	0	0.0	0.0	100	100.0	11.6
Other	102	98.1	12.1	0	0.0	0.0	2	1.9	11.8	104	100.0	12.0
Total	844	97.6	100.0	4	.5	100.0	17	2.0	100.0	865	100.0	100.0

[1] Either the Mother's or Father's race is unknown.
[2] Does not include 31 certificates where the informant type was not provided.

1. Alaska Department of Health and Social Services, Division of Public Health, Data and Evaluation Unit, *Healthy Alaskans 2010, Targets and Strategies for Improved Health Volume I,* April 2002, p. 16-2.

2. Singh GK, Mathews TJ, Clarke SC, et al. *Annual Summary of Births, Marriages, Divorces, and Deaths: United States, 1994.* Monthly Vital Statistics Report; Vol 43 No 13. Hyattsville, MD: National Center for Health Statistics. 1995.

3. Sutton PD. *Births, Marriages, Divorces, and Deaths: Provisional Data for October-December 2002.* National Vital Statistics Reports: Vol 51 No 10. Hyattsville, MD: National Center for Health Statistics. 2003.