

Public Health Data Watch

Racial Disparities in Infant Mortality: An Update King County, 1980-2002

Introduction

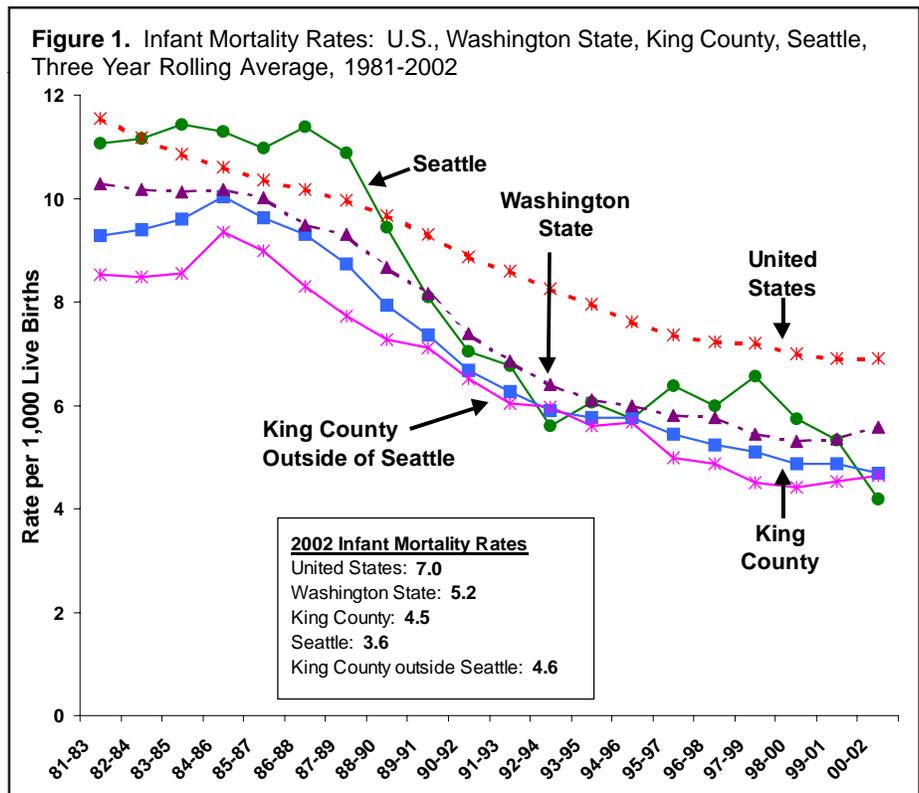
Infant mortality, defined as death in the first year of life, is an important indicator of community health and well being. This indicator represents many factors, among them the health of mothers and infants, the capacity and quality of health care systems, income, education, and numerous aspects of the neighborhoods in which families live¹⁻².

Over the last two decades, infant mortality rates (IMRs) in Seattle and King County have steadily declined, reflecting trends in Washington state and nationwide. These improvements are largely attributed to technological advances in medical care, policies and programs to expand health services and insurance coverage, and successful health education campaigns. The overall declines in infant mortality, however, conceal wide and persistent disparities by race, socioeconomic status and neighborhood. For instance, African American and American Indians/Alaska Natives in King County continue to experience IMRs more than two times higher than other groups.

In this issue of *Data Watch*, we update infant mortality trends in King County to include data through 2002 and suggest evidence-based strategies for reducing these disparities.

Trends in Overall Infant Mortality (Figure 1)

- In 2002, there were 97 infant deaths in King County, for an all-time low rate of 4.5 deaths per 1,000 live births. The infant death rate here has dropped 56% since its peak 20 years ago, with most of the decline occurring in the last 15 years.
- Infant mortality rates in King County remain well below the national average¹⁻² and the rates of most other metropolitan counties. Infant mortality in the 15 largest counties in the U.S. (for 2000, the latest available year) ranged from a low 4.5 deaths per 1,000 live births for Santa Clara County to 11.0 deaths per 1,000 live births for Wayne County, Michigan. King County was the second lowest with a rate of 4.6 deaths per 1,000 live births.
- In 2002, in contrast to previous years, infant mortality in Seattle was lower than for the county outside of Seattle.

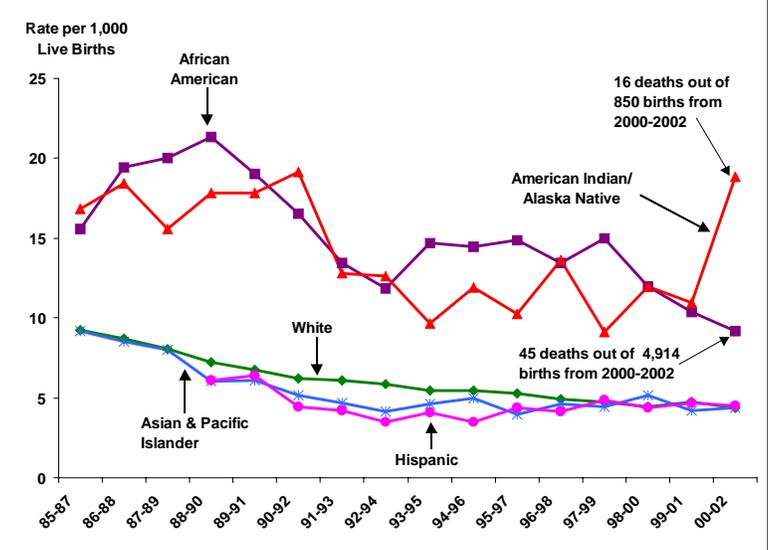


- In 2002, 23% of King County infant deaths were to residents of the city of Seattle and 77% were to residents living outside the city limits. These percentages reflect the composition of the population of King County in which 29% of births were among women residing in Seattle and 71% were among those residing outside of the City of Seattle.

Trends in Infant Mortality, By Race and Ethnicity - Disparities Continue (Figure 2)

- Between 1993 and 1999, the African American infant mortality rate hovered around 14 deaths per 1,000 live births, but since 1999, infant mortality in African Americans has trended downward to 9.2 (2000-2002 average). Despite these improvements, African American infants are more than twice as likely as white infants to die in the first year of life.
- American Indians/Alaska Natives had an infant mortality rate of 18.8 per 1,000 live births for the three-year period from 2000-2002, over four times the rate for whites. The direction of the trend over time for American Indian/Alaska Native infants is difficult to interpret because of the relatively small number of American Indian births and infant deaths. The rate is of great concern and bears close monitoring given that this three-year rate is higher than all other periods since the early 1990s.

Figure 2. Infant Mortality Rates by Race/Ethnicity, King County, Three Year Rolling Averages, 1985-2002



Infant Death by Cause: African Americans and Whites, 2000-2002 (Figure 3 and 4)

- The 45 African American infant deaths were most often due to *Prematurity*, and *Perinatal Conditions occurring during Labor and Delivery*. *Sudden Infant Death Syndrome (SIDS)* was the third leading cause of death, followed by *Infections (including perinatal infections)*, *Congenital Anomalies* and "Other" (external causes and 'other miscellaneous causes'). (Figure 3)
- The 200 white infant deaths followed a different pattern. *Congenital Anomalies* accounted for the greatest percentage of white infant deaths followed by *Perinatal Conditions occurring during Labor and Delivery*. *Prematurity* was the third leading cause of white infant deaths followed by *Infections*, *SIDS* and "Other". (Figure 4)

Figure 3. Causes of African American Infant Deaths, King County, 2000-2002 (N = 45)

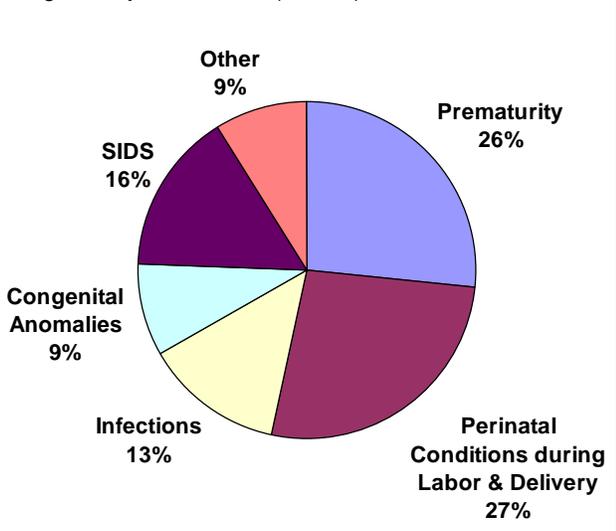
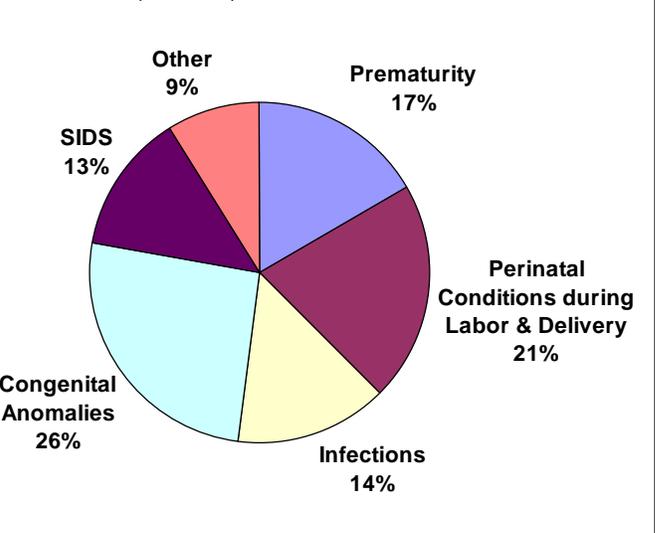
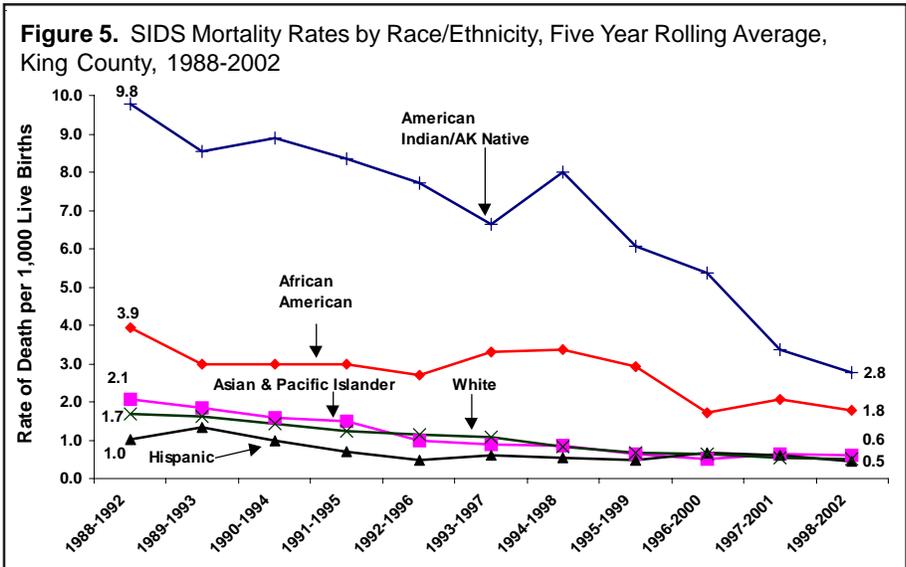


Figure 4. Causes of White Infant Deaths, King County, 2000-2002 (N = 200)

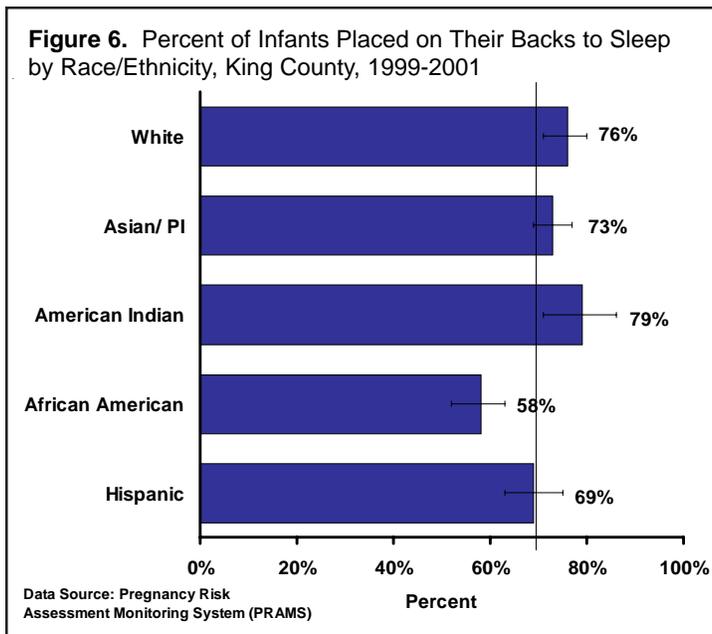


- As in previous years, higher rates of infant mortality are seen for African Americans for most causes of death in comparison to whites. The 2000-2002 analysis showed some evidence of declining differences between the rates of cause-specific death for African Americans and whites.
- The greatest disparity in infant mortality was found among deaths resulting from prematurity and perinatal conditions occurring during labor and delivery. African American infants had 2.4 deaths due to each of these causes per 1,000 live births, compared to 0.7 and 0.9 per 1,000, respectively, for white infants. As in the past, these differences between African Americans and whites continue to be statistically significant. (data not shown)



Trends in Rates of Cause-Specific Infant Mortality by Race/Ethnicity (Figure 5)

- Rates of death from SIDS have declined for all race/ethnicity groups so that in 2000-2002 there was no longer a statistically significant difference between race/ethnicity groups in the rate of SIDS.
- The most dramatic declines in SIDS mortality were seen in American Indian/Alaska Native infants. In 1988-1992 the rate was 9.8 deaths from SIDS per 1,000 live births and in 1998-2002 the rate had declined to 2.8 per 1,000. Despite the magnitude of this decline, however, the trend was only of borderline statistical significance because of the small numbers of infants involved.
- Rates of SIDS deaths among African American infants declined significantly from 3.9 deaths per 1,000 in 1988-1992 to 1.8 per 1,000 in 1998-2002. African American infants did not experience significant declines in rates of death from any other causes. (data not shown)
- Among white infants, SIDS mortality rates declined significantly from 1988 to 2002. Mortality rates from Perinatal Conditions during Labor and Delivery, Infections and Congenital Anomalies also declined significantly during this period. (data not shown)



Prevalence of Back Sleep Position (Figure 6)

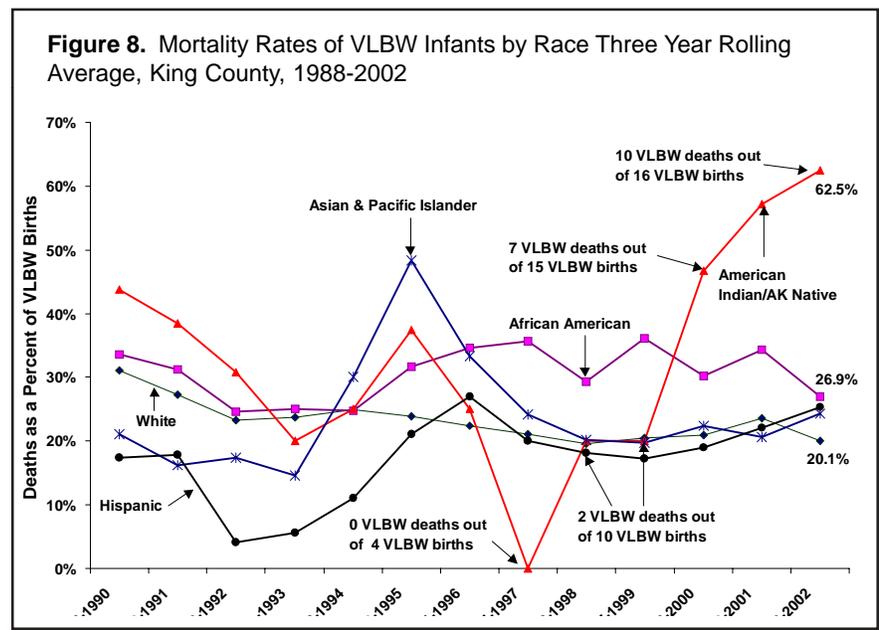
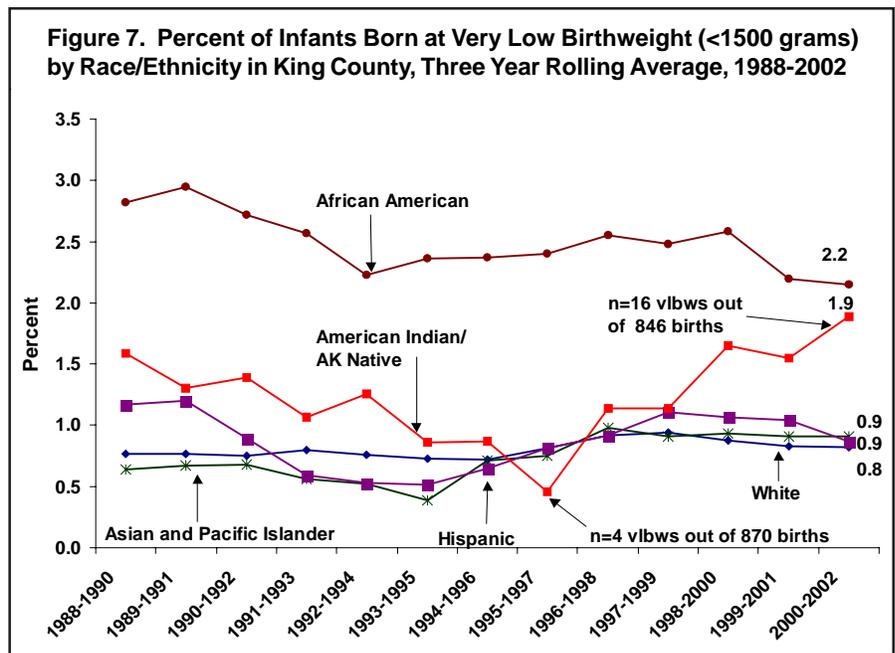
- Infants who are placed on their stomachs and sides for sleep are at increased risk of dying from Sudden Infant Death Syndrome (SIDS). There has been extensive public and professional education on the importance of back sleep position in King County from the mid-1980s through 2002.
- Since the mid-1990s, the percentage of mothers placing infants to sleep on their backs has increased to 76% in 2001 from 43% in 1996 according to data on sleep position derived from the Pregnancy Risk Assessment Monitoring System (PRAMS) survey of King County women who had recently given birth. Significant increases in the percentage of babies placed on their backs to sleep over this 5 year time period were evident in all race/ethnicity groups surveyed, African Americans, American Indian/

Alaska Natives, Asian/Pacific Islanders, Latinos and whites. However, as in previous years³, African American women continue to be less likely to put their infants to sleep on their backs in comparison with all other race/ethnicity groups.

- These results suggest that the promotion of safe sleep position campaigns correlate with changes in reported behavior, which may in part account for the significant declines in SIDS mortality.

Trends in Very Low Birth Weight Incidence and Mortality by Race

- Small infants have substantially greater likelihood of dying in the first year of life, especially very low birth weight (VLBW) infants whose weight at birth is less than 1500 grams or approximately 3.3 pounds.
- VLBW births can have an impact on infant mortality disparities in two ways. First, the occurrence of VLBW births can be higher for some communities compared to others. Second, the risk of death among VLBW (called VLBW-specific mortality) can vary by community. Understanding the relative contribution of each of these to the overall infant mortality rate can be important to the selection of the appropriate prevention approach. For example, efforts to reduce the incidence of very low birth weight infants would focus on the health of the mother prior to pregnancy, appropriate weight gain of the mother during pregnancy and the prevention of preterm delivery (prior to 37 completed weeks of gestation). Efforts to reduce disparities in the rate of VLBW-specific mortality would focus on access to and delivery of neonatal intensive care.
- In 2000-2002, the VLBW rate for African American and American Indian/Alaska Native infants was more than twice the rate for other race/ethnicity groups. (Figure 7)



- While the prevalence of VLBW births has been declining in the African American community, the prevalence of VLBW among American Indian/Alaska Natives increased over this period. This increase in VLBW births appears to be associated with multiple births because the trend does not occur among singleton births.
- Interestingly, the rate of VLBW births increased significantly for Asian/Pacific Islanders and remained significant for singletons when multiple births were excluded from the analysis (data not shown).
- In 2000-2002, the American Indian/Alaska Native VLBW-specific mortality rate was considerably higher than that of all other race/ethnicity groups. (Figure 8)

- It is unclear why this rate has increased. It is likely, however, that the increase in infant mortality noted for American Indian/Alaska Natives in recent years is in part due to the increase in the incidence of VLBW births as well as the increasing mortality rates of American Indian/Alaska Native VLBW infants. This trend has not been seen with other race/ethnicity groups for whom the mortality rate of VLBW infants has remained relatively stable since the mid-1990s.
- In the previous issue of the Data Watch³ it was noted that African American VLBW-specific mortality had been increasing and this was cause for concern. It appears that the rates for African Americans have stabilized and have not shown further increase.

Table 1. Prevalence and Trends in Birth Risk Factors by Race, King County

	African Americans		American Indian/ Alaska Natives		Whites		African American: White Rate Ratio (2000-2002)	American Indian/Alaska Native: White Rate Ratio (2000-2002)
	% of Births 2000-2002	Time Trend 1993-2002	% of Births 2000-2002	Time Trend 1993-2002	% of Births 2000-2002	Time Trend 1993-2002		
Low Birth Weight (< 2500 g)	10.5*	--	6.6	--	5.3	▲	2*	1.3
Very Low Birth Weight (< 1500 g)	2.2*	--	1.9*	▲	0.8	--	2.6*	2.3*
Preterm (<37 weeks gestation, calc.)	18.9*	--	16.9*	--	11.9	▲	1.6*	1.4*
Multiple Birth (twins, triplets, etc.)	4.1	▲	3.2	▲	3.6	▲	1.2	0.9
Mother's Age < 18	4.0*	▼	6.4*	▼	1.5	▼	2.7*	4.2*
Single Mother	54.1*	▼	58.7*	--	20.5	▲	2.6*	2.9*
Late (3rd) or No Prenatal Care	4.8*	▼	6.5*	▼	2.0	▼	2.4*	3.3*
Inadequate Prenatal Care (Kotelchuck)	19.2*	▼	18.8*	▼	7.7	▼	2.5*	2.4*
Smoking During Pregnancy	11.1*	▼	19.8*	▼	8.0	▼	1.4*	2.5*
Alcohol Use During Pregnancy	1.6	▼	4.0	▼	2.7	▼	0.6	1.5

Rates and rate ratios followed by an asterisk (*) are statistically significantly higher than the rate for whites.
 ▲ Indicates a statistically significant increase over the period 1993-2002.
 ▼ Indicates a statistically significant decrease over the period 1993-2002.

Prevalence and Trends in Birth Risk Factors by Race (Table 1)

- In addition to being more likely to be born very low birth weight as noted above, African American and American Indian/Alaska Native infants in King County remain more likely than whites to be born preterm (<37 completed weeks of gestation) and low birth weight (<2500 grams).
- Although elevated compared to whites, African American and American Indian/Alaska Native rates of low birth weight and preterm delivery have been stable over the last 10 years.
- Rates of low birth weight and preterm delivery increased significantly for whites from 1993 to 2002. This increase appears to be associated with an increase in the rates of multiple birth, potentially a result of the increased use of assisted reproductive technologies, which are known to increase the likelihood of multiples. The rate of very low birth weight births remained stable over this time period.
- Over the last 10 years, from 1993 to 2002 the rate of multiple births has increased significantly for whites, African Americans and American Indian/Alaska Natives.
- Young maternal age and single marital status (i.e. unmarried) do not pose direct risks for infant mortality, but can be thought of as markers for other unmeasured risks such as low socioeconomic status. In King County, African Americans and American Indian/Alaska Natives are 2-3 times more likely to have these birth risk factors than whites.
- For American Indian/Alaska Natives, the percentage of births to females less than 18 years of age declined significantly while the percentage of single mothers remained stable.
- Both of these risk factors declined significantly for African Americans from 1993 through 2002.
- White mothers also had a decline in the percentage of women under age 18 giving birth. There was, however, a statistically significant increase in the percentage of white single mothers from 1993 to 2002.
- Rates of many of the individual risk factors for infant mortality have declined significantly for African Americans, American Indian/Alaska Native and white women over the period from 1993-2002. Significant declines were seen in all three communities for maternal smoking, alcohol use during pregnancy and receiving late or inadequate prenatal care.

New Approaches to Understanding Disparities - Racism, Stress and Pregnancy

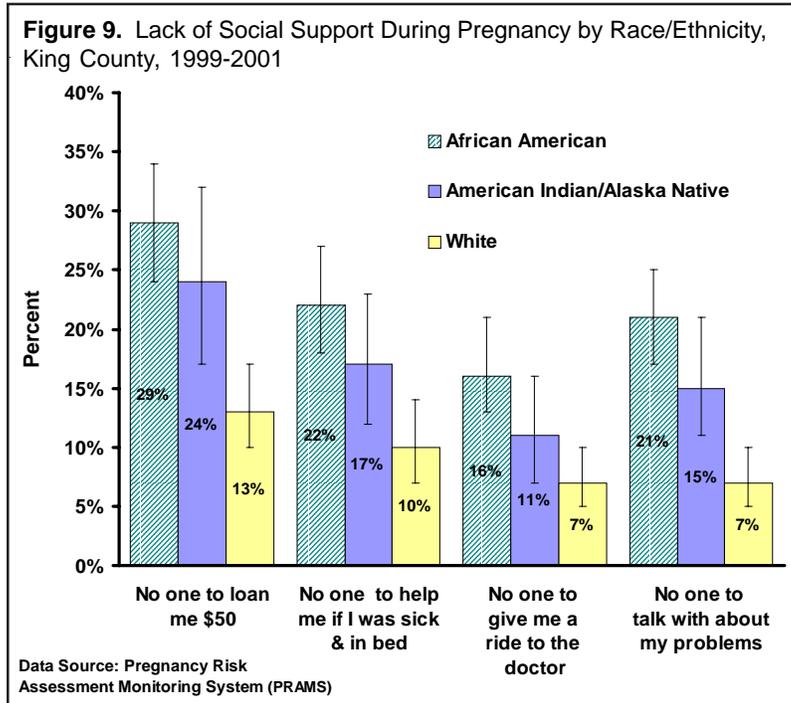
- King County data, as well as that from numerous epidemiologic studies, have found that maternal age, education and behavioral risk factors such as smoking, alcohol and drug use explain only a small portion of the racial disparities in low birth weight and preterm delivery.⁵⁻⁸ In fact, a study of college-educated African American mothers found that they were more likely to have VLBW infants than college-educated white mothers.⁹ Furthermore, the observation that women who have recently immigrated to the U.S. have infants of higher birth weight than do women of the same race/ethnicity who were born and raised here suggests that a societal phenomenon is at work.¹⁰ In a survey conducted in King County in 2001, 46.5% of people of color reported that they had experienced discrimination (of any type) in the past year compared to 25% of whites.¹¹ In recent years researchers have proposed scientifically-based models that postulate how the experience of racism could have negative effects on health in general, as well as on pregnancy outcome in particular.^{5,12-18}
- A growing body of research has found an association between racial discrimination and adverse health outcomes,¹⁹⁻²⁰ including an increased risk of cardiovascular disease²¹⁻²³ and preterm delivery.²⁴⁻²⁶ This has led researchers to propose that racism should be investigated as a factor in research on racial disparities in infant mortality.^{15,20,24,27,28}
- The primary mechanism through which racism is thought to exert its effects on the pregnant woman is by inducing physiologic stress. There is a growing body of literature that links preterm delivery and other adverse birth outcomes with maternal stress.^{18,29-34} Stress has been found to activate a hormonal response involving corticotrophin-releasing hormone (CRH) in the pregnant woman and the fetus, which is thought to affect gestational length and pregnancy outcome.^{18,35-39} CRH is the first hormone released in the body's cascading response to stress and can result in an increase in blood pressure and a decrease in immune function. A pregnant woman's body may react directly to the CRH by initiating preterm labor or it may make her more susceptible to infection which can lead to preterm delivery.^{18,35-39}
- Data from the PRAMS survey⁴ of new mothers in King County indicates that African American and American Indian/Alaska Native mothers were significantly more likely than white mothers to report experiencing stressful life events in the year before delivery. **(Table 2)** Of the thirteen stress events listed on the survey, American Indian/Alaska Native mothers reported experiencing all but two events and African American mothers all but four events at significantly higher rates than whites.

Table 2. Reported Stressful Life Events During Year Before Delivery, King County, 1999-2001

Stress Events	African American	American Indian/ Alaska Native	White
Changed residence (moved)	44%	53%*	33%
Argued with partner more than usual	36%	43%*	17%
Had bills and couldn't pay	31%*	42%*	14%
Someone close died	24%*	25%	15%
Close family member ill and hospitalized	24%	22%	24%
Separated or divorced from partner	20%*	19%*	5%
Someone close had drinking/drug problem	15%	28%*	13%
Partner said he didn't want pregnancy	15%*	21%*	8%
Husband/partner lost job	14%	20%	8%
Mother lost job	21%*	15%*	5%
Mom or partner went to jail	10%*	22%*	4%
Involved in a physical fight	7*	12%*	4*
Homeless	11%*	15%*	1%
Reported 5 or more stress events	12%*	22%*	4*

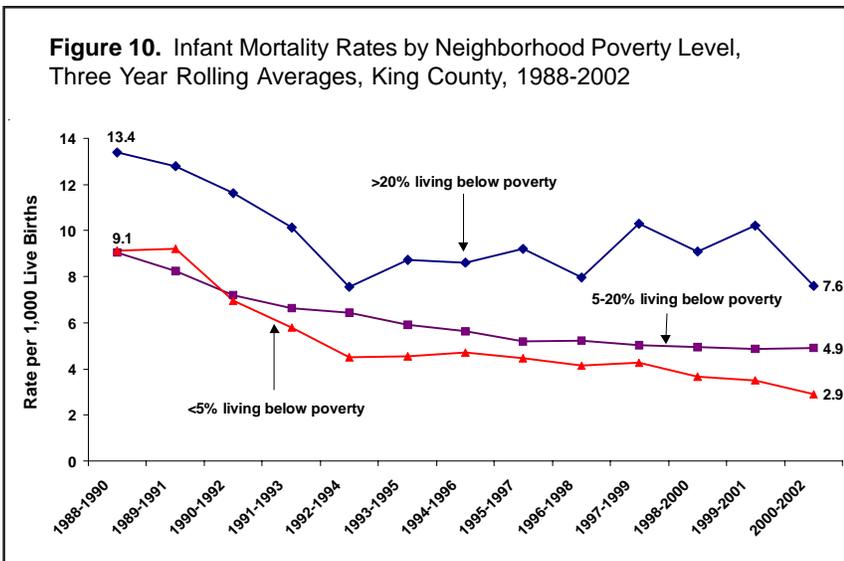
Stress factor prevalences followed by an asterisk () are statistically significantly higher than the estimate for whites.*
Data Source: Pregnancy Risk Assessment Monitoring System (PRAMS)

- American Indian/Alaska Native and African American mothers also reported significantly higher levels of cumulative stress during the year before delivery than their white counterparts. Twenty-three percent of American Indian/Alaska Native mothers and 12% of African American mothers reported experiencing five or more of the listed stress events compared with 4% of white mothers.
- The presence of social support from close family members or friends could potentially buffer the impact of stress. Data on social support from the PRAMS survey⁴ indicated that African American and American Indian/Alaska Native mothers, in addition to experiencing higher levels of stress, reported significantly lower levels of social support in comparison to white mothers. (Figure 9)



Trends in Infant Mortality by Neighborhood Poverty Level (Figure 10)

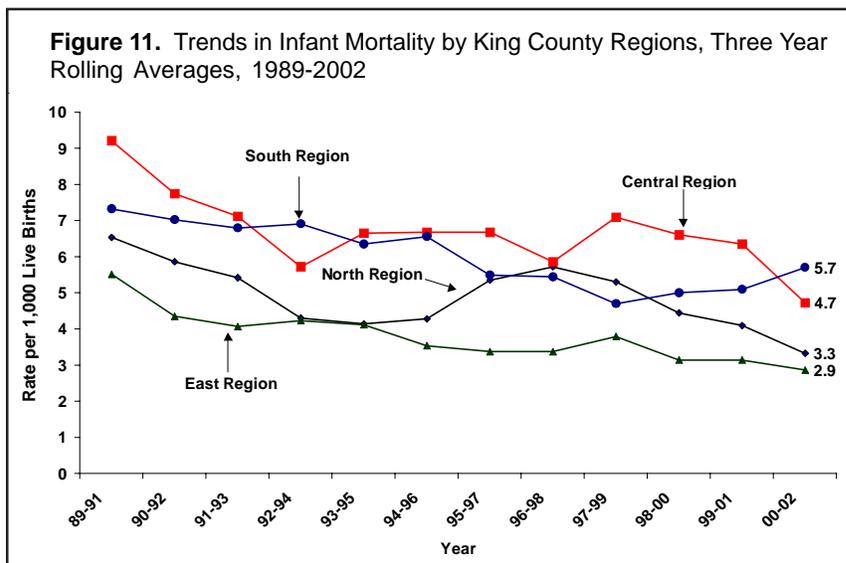
- Infant mortality in high poverty neighborhoods, in which more than 20 percent of the population lives below the federal poverty level, declined in the late 1980s and early 1990s and then has remained essentially unchanged from 1992-2002.
- In low poverty neighborhoods, in which fewer than 5 percent of the population lives below poverty, the rate of infant mortality has shown a gradual decline over the last 15 years with a period of stagnation from 1992-1998. Since 1998, the rate has continued to decline to an all-time low of 2.9 deaths per 1,000 live births.
- The disparity in infant mortality rates between high and low poverty neighborhoods has continued over the last 15 years and currently is as large as it has been in the last 15 years.



- In 2000-2002, high poverty neighborhoods had an infant mortality rate that was 2.6 times that of low poverty neighborhoods. This is an average of 4-5 more deaths per 1,000 live births in the high poverty areas compared to the low poverty areas.
- The rate of infant mortality in the medium poverty areas, in which between 5 and 20 percent of the population lives below poverty has shown a slow, continuous decline until the late 1990s. Over the last five years, from 1998 through 2002 there appears to be little change in the infant mortality in these areas.

Trends in Infant Mortality by King County Region and Health Planning Area (Figure 11)

- The infant mortality rates in North, Central, and East King County have declined in the last 5 years. South King County has not shown any evidence of a decline over the last 5 years and had the highest rates of infant mortality in 2000-2002 in comparison to the other regions.
- For 2000-2002, the rate of infant mortality for South King County was 5.7 deaths per 1,000 live births. For the Central Region the rate was 4.7 deaths per 1,000 live births, for East Region, 2.9 and for North Region, 3.3 deaths per 1,000 live births.



- There has been a migration of low income population to South King County. A recent report¹¹ indicates the population living below 200% of the Federal poverty level has significantly increased over the last three decades in South King County.
- An examination of the Health Planning Areas (HPA) within South King County shows the areas with the highest rates are White Center/Skyway with 6.7 deaths per 1,000 live births, Kent and Highline/Burien each with 6.3 deaths per 1,000 live births, Auburn (5.3 per 1,000) and Renton (4.9 per 1,000). (Table 3)

Table 3. Infant Mortality Rates by Health Planning Area in King County, Five Year Average, 1998-2002

Health Planning Area	Average # of Infant Deaths Per Year	Average # of Live Births Per Year	Infant Mortality Rate Per 1,000 Live Births
Southeast Seattle	10	1409	6.95
Central Seattle	3	448	6.69
White Center/Skyway	7	1049	6.67
Kent	10	1545	6.34
Highline/Burien	8	1274	6.28
West Seattle	6	1049	5.34
Auburn	8	1434	5.30
North Seattle	4	723	5.26
Renton	6	1263	4.91
KING COUNTY	106	22066	4.79
North County	3	722	4.43
Federal Way	6	1313	4.26
North Central Seattle	3	808	4.21
Mercer Island	1	152	--*
Kirkland/Redmond	8	2100	3.62
Bothell/Woodinville	3	868	3.45
Southeast County	3	1019	3.34
North Of Canal Area	6	1860	3.23
Eastgate/Issaquah	4	1231	2.93
Bellevue	2	955	2.51
Vashon Island	0	83	--*
East/Northeast County	1	566	2.12

* Fewer than 5 deaths over the time period so no rate is reported.

Summary

- Over the last decade, King County has seen a dramatic improvement in the rate of infant mortality, which is at an all-time low. This success is likely due to programs implemented to provide access to prenatal care and other maternity support services. In addition, since 1988, there has been a dramatic reduction in the rate of SIDS among all race/ethnicity groups in King County. Education campaigns to promote safe sleep position have probably contributed to these rates.
- In spite of the overall improvements, troubling disparities persist. African American and American Indian/Alaska Native infants are three times more likely to die in the first year of life compared to white infants.
- An emerging concern is that the infant mortality rates in the American Indian/Alaska Native community in the last three years are as high as they have been in the last 20 years. Relatively small numbers limit the conclusions that can be drawn, but AI/AN infant mortality should continue to be closely monitored to see if these trends continue. Meanwhile, the statistically significant elevation in rates of very low birth weight births in recent years suggests a mechanism through which, though not a reason why, elevated infant mortality rates may be occurring. Therefore, rates of VLBW and VLBW-specific mortality for American Indian/Alaska Native infants will be a focus of concern and continued monitoring to understand and ameliorate these disparities.
- The increase in rates of VLBW among Asian/Pacific Islanders also bears further observation. While the infant mortality rate of Asian/Pacific Islanders is generally low, given the strong association between birth weight and infant mortality, the significant increase in VLBW births warrants attention to prevent the development of adverse trends in mortality.
- The highest rates of infant mortality were found in South King County, and within the South Region, White Center/Skyway, Auburn, Kent and Highline/Burien health planning areas were most elevated. Infant mortality in South King County has remained flat while other regions of King County have seen declines. We have seen similar patterns with many health issues in King County. As the availability of affordable housing in Seattle has declined and become scarce, lower income families have been moving to South King County. Recent data have confirmed that in South King County the population living below 200% of poverty has increased significantly over the last three decades while the percent in Seattle has declined.¹¹

Conclusions and Recommendations

- The risk factors typically examined with respect to infant mortality explain only a small percentage of the racial disparities in low birth weight and preterm delivery. These risk factors have declined at a faster rate for African American and American Indian/Alaska Native mothers while the disparities continue and in some cases widen. Additionally, research has shown that for a number of these common risk factors, African Americans with the lowest level of risk have higher infant mortality rates than that of whites with the highest level of risk.³⁹
- The causes of persistent racial and socioeconomic disparities are multiple and complex and likely reflect the interaction of social, environmental and biological factors uniquely and disproportionately experienced by women of color. There is growing scientific support among researchers that there is a linkage between racism and disparities in infant mortality which should be factored into efforts to eliminate these disparities.^{15,20,24-28,39} Furthermore, it is believed that the effects of racism and race-related exposures and experiences accumulate over a lifetime and can not be pinpointed to single points in time. Therefore, efforts to eliminate disparities in infant mortality must move beyond pregnancy and focus on women's interconceptual health before, during, and after pregnancy.^{27,28,39}
- The successes accomplished in King County have resulted from programs and systems of care that affect individual women. In addition to continuing to reduce risk behaviors, improve access to prenatal care and other social services, reducing disparities in infant death will require focused, coordinated efforts by many sectors of the community to defeat the effects of poverty and social injustice which contribute to these disparities.
- Maternal and child health programs across the country have participated in efforts to assess the role of public health in addressing institutional racism as a means for eliminating disparities in health.²⁷ Perinatal Periods of Risk (PPOR) is a tool that is being used by communities to guide the community in mobilizing to eliminate disparities in fetal and infant mortality and target resources for prevention activities.⁴¹

- Recommendations for action based on the emerging scientific data include the following strategies:
 - ◀ Foster community driven strategies to provide support to pregnant women and their families.
 - ◀ Support efforts to reduce social and economic disparities, and to address the impacts of institutionalized racism on women, families, and communities of color.
 - ◀ Provide early and aggressive treatment of maternal infection during pregnancy, according to CDC and ACOG guidelines.⁴²
 - ◀ Support women in planning their pregnancies, through expanded access to contraceptive methods and services.
 - ◀ Protect and improve women's health prior to conception, to identify risks and treat pre-existing conditions.
 - ◀ Ensure a strong system of perinatal regionalization, so that women with high-risk pregnancies deliver at facilities where they can receive the appropriate level of care.
 - ◀ Continue to examine and address the ways that institutionalized racism manifests in health care and contributes to disparities in health.
- In order to implement these strategies, Public Health - Seattle & King County will be working with others in the community to:
 - ◀ Continue to support the work of the Infant Mortality Prevention Network (IMPN) of community-based organizations providing services to the highest risk women including linkage to substance use treatment, prenatal care, nutrition, assistance with housing and food, and advocacy in negotiating the health care system. Build on data-driven strategies and the lessons learned from the IMPN work especially the essential need for safe and affordable housing⁴³ and focus on women's health in general to get needed services to women prior to pregnancy.²⁸
 - ◀ Continue to work with individuals and agencies in the African American and Native American communities to explore ways to increase psychosocial and community support and decrease the impact of inequities and racism on pregnant women and families. These include the Community Mobilization Project, the Native American Women's Dialogue on Infant Mortality (NAWDIM) and collaboration with community-based efforts to increase access to affordable housing.
 - ◀ Use Perinatal Periods of Risk (PPOR)⁴¹ analyses to inform and support the work of the community in identifying areas of focus to reduce disparities in infant mortality.
 - ◀ Collaborate with the Urban Indian Health Institute and work to seek resources to do case reviews of infant deaths as well as very low birth weight births of American Indian/Alaska Native infants to better understand how to prevent these adverse outcomes.
- Through collaboration between government, community groups and the private sector and a broader focus of effort we have a better chance of eliminating disparities and reaching the Healthy People 2010 goal⁴⁴ of 4.5 deaths per 1,000 live births for all King County citizens.

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Glossary

PREMATURITY: Slow fetal growth and fetal malnutrition, disorders relating to short gestation and unspecified low birth weight, respiratory distress syndrome, bronchopulmonary dysplasia, necrotizing enterocolitis in fetus or newborn, chronic respiratory disease arising in the perinatal period, primary atelectasis (ICD-10 codes P05, P07, P22, P77, P27, P28.0).

PERINATAL CONDITIONS:

Labor And Delivery Complications: Birth trauma, intrauterine hypoxia and birth asphyxia, other respiratory conditions of newborn, other and unspecified atelectasis, transitory tachypnea of newborn, other respiratory problems after birth, hemorrhagic and hematological disorders of newborn, syndrome of infant of a diabetic mother and neonatal diabetes mellitus, hydrops fetalis not due to isoimmunization, other perinatal conditions (ICD-10 codes P10-P15 P20-P21 P23-P26 P28.1 P50-P61P28.2-P28.9 P70.0-P70.2 P83.2 P29, P70.3-P76, P78-81, P83.0-P83.1, P83.3-P96)

Maternal Conditions: Fetus or newborn affected by maternal conditions that may be unrelated to present pregnancy (ICD-10 codes P00.0-P00.9, P04).

SIDS: Sudden Infant Death Syndrome (ICD-10 codes R95).

CONGENITAL ANOMALIES: Congenital anomalies (ICD-10 codes Q00-Q99)

INFECTIONS: Infections specific to the perinatal period, certain infectious and parasitic diseases, inflammatory diseases of the central nervous system, diseases of the circulatory system, diseases of the respiratory system, diseases of the digestive system, diseases of the genitourinary system (ICD-10 codes P35-P39, A00-B99, G00-G98, I00-I99, J00-J98, K00-K92, N00-N98).

EXTERNAL CAUSES: External causes of mortality such as positional/accidental asphyxia, motor vehicle accident, trauma, burns, etc. (ICD-10 codes V01-Y89).

OTHER MISCELLANEOUS: Other symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified, all other diseases (ICD-10 codes R00-R53, R55-R94, R96-R99, F01-F99, H00-H57, L00-M99, and C00-E88).

Resources

PREVENTION

Infant Mortality Prevention Network

There are 9 organizations which participate in the Infant Mortality Prevention Network, each of which conducts outreach under a different model of outreach, ranging from intensive case management, to individual health education, to training of parents and outreach workers, to community mobilization.

- Center For MultiCultural Health

Target Population: Families of Color in Seattle

Services: small group presentations and health information workshops; referral information; assistance with Basic Health Plan and Medicaid enrollment; and blood pressure, cholesterol and glucose screenings.

- El Centro De La Raza

Target Population: Latino Families in Seattle

Services: provides services including referral to alcohol and drug treatment; help with baby supplies, clothing, food and shelter; and Medicaid enrollment; also educational workshops for families with young children. Provide liaison services at UW's Maternal and Infant Care (prenatal care) Clinics.

- Operational Emergency Center's Infant Mortality Prevention Program

Target Population: Low-income families in Seattle and South King County

Services: educational workshops for families with young children; support, resources and baby supplies for families; outreach and education in the community around health care and nutrition access.

- People Of Color Against AIDS Network

Target Population: Native, African American Families in Seattle

Services: provides support for pregnant women and dads, help with Medicaid enrollment and baby supplies, and assist with finding other resources in the community. Provide liaison services at UW's Maternal and Infant Care (prenatal care) Clinics.

- Program for Early Parent Support (PEPS)

Target Population: Families with children, birth to 3, in King County

Services: provides support and resources for new parents; also facilitation of community forum addressing housing for low-income families.

- Seattle Indian Health Board

Target Population: Low-income families and families of color in Seattle

Services: provides outreach, prenatal care, education, case management and maternity support services for pregnant women and their families.

- Street Outreach Services' Infant Mortality Prevention Program

Target Population: Families of Color in Seattle

Services: The program's goal is to reduce harm to pregnant women and their infants through comprehensive outreach and education regarding infant mortality risks; help finding services to meet any of the family's needs; referral to drug and alcohol treatment; referral to housing and shelter when available; assistance locating infant supplies, clothing; and transportation to medical appointments in emergency situations. Provide liaison services at UW's Maternal and Infant Care (prenatal care) Clinics.

- Public Health - Seattle & King County: MOMS Plus - Infant Mortality Prevention

Target Population: Pregnant Women in Seattle including women who are substance-using

Services: Outreach worker provides contact and support to high risk pregnant women to help them get into early prenatal care, alcohol and drug treatment programs and help with other life issues such as basic needs and housing. Provide liaison services at UW's Maternal and Infant Care (prenatal care) Clinics.

- Native American Women's Dialog on Infant Mortality

Target Population: American Indians/Alaska Natives

Services: monthly group of persons interested in Native American infant mortality; sponsored cradleboard classes for Native women as community support.

King County First Steps/Maternity Support Services (MSS)

Target population: low income pregnant women on Medicaid needing assistance with medical care, education, counseling and referrals.

Geographic area: MSS services are available throughout King County at Public Health Centers, community clinics, hospitals and at other social service agencies.

Services: individualized client counseling and education provided by an MSS team comprised of a public health nurse, social worker and nutritionist. Services are available throughout the pregnancy and conclude two months postpartum.

Public Health – Seattle King County Projects

- Public Health Nursing Services

Target Population: Pregnant and/or parenting families in Seattle-King County

Services: provide clinic, home or community visits to assist families with health concerns, parenting, lifestyle issues, and assist in accessing needed community resources.

- Early Post-Birth Discharge Program

Target Population: Women discharged from the University of Washington within 48 hours of birth

Services: Families receive home visit within 48 hours of discharge in which a PHN does a physical assessment on both mother and infant, assessment of transition from hospital to home, and assure medical follow-up for mother and infant.

- Care for Special Populations:

MOMS Plus Co-location of three main programs:

- ◄ MOMS Case Management: Case management services provided by public health nurses to pregnant substance-using population to facilitate prenatal care and prenatal substance abuse treatment. Case management follow-up to infant's first birthday.
- ◄ Mobile WIC: WIC services provided at substance abuse treatment centers and on home visits to teens, and substance using women who are pregnant or parenting.
- ◄ Perinatal Outreach/Infant Mortality Prevention: outreach services provided to high risk pregnant women to encourage prenatal care and substance use treatment to improve birth outcomes and prevent infant mortality.

Northwest Family Center

Target Population: HIV infected women, children, adolescents and their families.

Services: On-site services include case management, financial advocacy, mental health and chemical dependency counseling, child life specialist services, primary HIV care, prenatal care and monitoring and of HIV exposed children. The BABES Network provides support and advocacy. Treatment of HIV infected children is arranged at Children's Hospital Medical Center and deliveries of HIV infected women are usually arranged at University of Washington Medical Center.

Best Beginnings /Nurse Family Partnership

This is a replication of the highly successful David Olds Nurse Home Visitor Program.

Target Population: First time pregnant, low-income, young (under 21 years of age) women living in Seattle, Renton, Auburn or Kent.

Services: These families will receive home visits from the same Public Health Nurse through pregnancy and until the child is 2 years old. They will be offered an average of 2 home visits per month, with weekly visits for the first 4 weeks of enrollment, and the first 6 weeks of the baby's life.

Why: In initial research studies this intensive home visiting model was found to have very positive outcomes, including a reduction in maternal behavioral problems due to drugs or alcohol, decrease in maternal smoking during pregnancy, reduction in subsequent pregnancy among low income unmarried women, fewer ER visits for childhood injuries, a reduction and/or delay of subsequent pregnancies and fewer arrests and convictions of the adolescent children born to mothers while they were enrolled in the program.

Data Sources

Linked birth-infant death files for 1980-2002: Washington State Department of Health, Center for Health Statistics. The infant mortality rate for a given year represents the deaths to King County residents younger than one year of age divided by the live births to King County residents during the same year (multiplied by 1,000).

PRAMS survey data for 1996-1998 and 1999-2001: Washington State Department of Health, Office of Maternal and Child Health. PRAMS is a population-based mail and telephone survey of women who have recently delivered in Washington State. Data for this report reflect live births to King County residents occurring between July 1996 and December 2001.

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Summary

This issue of Public Health Data Watch reports on the ongoing disparities in infant mortality among King County's racial/ethnicity groups. While the infant mortality rate for King County fell to an all-time low of 4.5 deaths per 1,000 live births in 2002, all groups have not shared the reduction equally. African Americans had infant mortality rates twice that of whites. American Indian/Alaska Natives in the County experienced infant death rates that were over four times that of whites and as high as they have been in the last 20 years. In this report we provide an update on current trends in infant mortality in King County and explore the disparities in infant death.

Infant Mortality Rate in King County by Health Planning Area, Average Rate per 1,000 Live Births from 1998-2002

