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ABSTRACT

The social, economic, and health status advances experienced by Minnesota's White population have eluded significant numbers of the State's Black and Indian populations. This report contains statistical data and analyses of the health status of minorities in Minnesota. The information is meant to contribute to an intensified effort to improve the health status of the State's minority peoples. Data are included on the following: (1) demographic characteristics of minority populations in Minnesota; (2) pregnancy and childbirth; (3) infant mortality; and (4) mortality. Recommendations are made for improving health, preventing health problems during the first year of life, and creating intervention programs. Appendices include information on population by race, infant birth and death statistics, formulae for constructing infant mortality rates, and data pertaining to the Hispanic population. Findings are illustrated in 34 tables and 22 figures. (PS)

M I N O R I T Y P O P U L A T I O N S

I N

M I N N E S O T A

A HEALTH STATUS REPORT

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MINNESOTA'S MINORITIES--AN OVERVIEW OF HEALTH STATUS

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MINNESOTA'S MINORITIES—AN OVERVIEW OF HEALTH STATUS

INTRODUCTION

. . . Bulgaria
Cuba
Cyprus
Czechoslovakia
Greece
Guadeloupe
Hong Kong
Hungary
Martinique
Poland
Samoa . . .

The images these nations evoke are numerous and varied, however all[1] have one common element . . . each possessed an infant mortality rate in 1982 which was lower than that of Minnesota's Black population for the same year. The untimely death of an infant represents an irrevocable loss to society; the discovery of states of ill-health which are elevated above that of the majority White population requires a response. Accordingly, the Minnesota Department of Health began analytical work, focused on its own data, in 1983.

The results of this analysis suggest that bold initiatives may be needed. Consider, for example, the following observations associated with the interval 1978-1982:

- Twenty three percent of Black and American Indian families lived at or below the poverty level in 1980.

- Ten percent of Black and American Indian mothers were under 18 years of age at time of their infants' birth.

- Over one-half of American Indian women starting families during the five-year period were teenagers under the age of 20. Forty one percent of Black women starting families were under the age of 20.

- Fifty five percent of all Black and American Indian births occurred out-of-wedlock during the interval between 1978 and 1982.

- Proportionately, almost three times as many Black women and six times as many American Indian women initiated prenatal care late in their pregnancy or received no care at all as compared to White or Asian women.

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[1] Many nations, too numerous to cite, experienced infant mortality rates equal to or lower than Minnesota's Black and Indian populations during the 1978-1982 Surveillance period.

- Twelve percent of all Black infants weighed less than 2,500 grams at birth.

- Black births were twice as likely to be high risk when contrasted with White births. American Indian births were 1.5 times as likely to be high risk when contrasted with White births.

- The Black infant mortality rate was double that of the White population and well over double that of the Asian and Pacific Islander population.

- Young (ages 1-4) Black and Indian children are three to four times as likely to die of injury as are White children.

- Black adolescents between the ages of 15 and 24 are at greater risk of death due to homicide than any other single cause. In fact their rate of death due to homicide is fourteen times that of the White population. An Indian adolescent experiences a risk of death due to homicide which is eight times that of the White population.

- Cirrhosis of the liver is a leading cause of death among Indian females aged 25-44 . . . Indian women are at four times the risk of death due to this cause than Indian men of the same age.

- The overall mortality rate of Indian men and women aged 25-44 is almost four times that of White men and women of the same age.

- Indian men and women aged 45-64 experienced overall mortality rates significantly above that of both Black and White people of similar ages.

These observations confirm that the social, economic and health status advances experienced by Minnesota's White population have eluded significant numbers of our Black and Indian populations. This must not continue. The analyses contained within this volume are offered in an attempt to contribute to intensified effort focused on improving the health status of Minnesota's special population . . . its minority peoples.

The data for this report come from the United States 1980 Decennial Census and the 1978 through 1982 Minnesota vital records. The demographic characteristics pertain to 1980, while pregnancy, child birth and mortality statistics cover the five year period from 1978 through 1982. Rates are calculated using the population in 1980 as the denominator since it is the midpoint.[2] Data pertaining to a five year period were necessary because of the small size of Minnesota's minorities and the correspondingly small number of health-related events that occurred in any single year.

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[2] The use of the 1980 Census to calculate (continued on page 3)

DEFINITION OF MINNESOTA'S MINORITY POPULATIONS

Ethnic origin and race are both used to define minority populations. Unfortunately, ethnic origin and race do not produce compatible categorizations of minorities. For example, people of Spanish origin, an ethnic definition, can be classified either Black or White, which are categories of race. In the United States Decennial Census, respondents classify themselves by both ethnic origin and race. The four categories of race used in 1980 were (1) White, (2) Black, (3) Indian, Eskimo and Aleutian, and (4) Asian and Pacific Islander. Spanish origin, as an ethnic category, was used in 1980. Self classification was used for both race and ethnic origin.

The Minnesota Vital Registration System uses only race to classify the population, hence the population is not classified according to Spanish origin (Hispanics are included within "White"). The categories of race employed by the Minnesota Vital Registration System can however be grouped into the same categories as the Decennial Census.

The differences in categorization between the United States Decennial Census and the Minnesota Vital Registration System pose two problems. The most serious is that there is no information pertaining

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[2] (continued from page 2) the rates is appropriate for the White, Black and Indian populations, because the distributions of characteristics have remained unchanged over the five year period. There is a problem, however, in using 1980 Census data for the Asian and Pacific Islander population. This population now consists of large numbers of Hmongs and Laotians and these groups experienced a large growth due to immigration after the 1980 Census was conducted. For example, there were only 289 Asian and Pacific Islander births in 1978, but 1,650 Asian and Pacific Islander births in 1982. Using the 1980 Census population as the denominator when calculating rates for the Asian and Pacific Islander population will result in inflated statistical rates.

Two sets of rates are occasionally presented for the Asian and Pacific Islander population. The overall rates are based on an average of events spanning three years--1980-198. The population base for each year was calculated using the 1980 Census population plus the number of Asian and Pacific Islander births and the number of Asian and Pacific Islander refugees whose original "State of destination" was Minnesota, minus the number of Asian and Pacific Islander deaths in that year. This measure does not take into account the out-migration of the Asian and Pacific Islander population, or the in-migration of refugees who originally settled in another State, but it should be a better estimate than that based on the 1980 Census alone because it includes an estimate of the number of Asian refugees that have settled in Minnesota since 1980. For specific age groups, the numerator consisted of events spanning five years and the 1980 Census population was used as the denominator because available population estimates were not age-specific.

to people of Spanish origin in Minnesota since Hispanics are classified as White people (See Appendix E). Secondly, race is assigned in the Vital Registration System by health care professionals and funeral directors and is determined, often on the basis of visual appearance, at time of completion of each legal certificate. It is assumed that there is a modest (<5%) level of error in the classification of race by health care professionals and funeral directors.

A NOTE ABOUT ORIGIN OF MINNESOTA'S MINORITY POPULATIONS[3]

Like its White population, Minnesota's minority populations are composed of migrant peoples. The earliest migrants to Minnesota were two principal Indian tribes, the Dakota (Sioux) and Ojibway (Chippewa). Both had well-established societies based upon hunting and gathering when White traders and the earliest White settlers arrived. In the middle 1800s, the Hoshungras (Winnebago) were moved from Wisconsin onto reservation territory located within Minnesota.

Free Blacks reached Minnesota in small numbers after 1830, a pace which quickened after the Civil War. They chose to live primarily in the Twin Cities of Minneapolis and St. Paul, where they have consistently accounted for about one percent of Minnesota's population since the 1860s.

To meet the demands of the World War I and II economies, labor recruiters scoured the South for Blacks willing to move to northern industrial centers in return for a better lot in life. Between 1950 and 1970 the Black population increased by 153 percent with most migrants originating from the South and the North Central states. In the post World War II era university students arrived from the African continent, some of whom also chose to remain in Minnesota.

Rapid expansion of the sugar beet industry in the United States was responsible for the first importation of Mexican (Spanish origin) workers into Minnesota. Eventually however, large numbers of Mexicans and Mexican Americans, who travelled to the state as migrant workers, located in St. Paul in the 1930s, and elsewhere in the state in addition to St. Paul in the 1940s-1970s. The first years of the decade of the 1980s witnessed movement of increased numbers of illegal aliens, resulting in perhaps as many as 5,000 settling in Minnesota during the interval 1981-1985.

The first community of Asian people was composed of Chinese, who began to migrate from the western regions of the United States to Minnesota in 1876. Filipinos appeared in the 1920s, and their numbers were augmented after World War II. The nucleus of the Japanese community was formed by a small group that attended military language school in the state during World War II. Koreans began to live in St.

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[3] Credit for the information in this section is acknowledged to the Minnesota Historical Society. See They Chose Minnesota--A Survey of the State's Ethnic Groups. Jane D. Holmquist, Ed., Minnesota Historical Society Press, St. Paul, 1981.

Paul and Minneapolis after 1965, and in the second half of the 1970s Indochinese refugees from Southeast Asia streamed in by the thousands. In 1980 the Twin Cities had the largest single Hmong settlement in the United States.

Each minority population differs from the White population with respect to family characteristics, education, employment, housing, income, and age, yet each contributes in an important way to the cultural, civic, educational, occupational and religious mosaic of Minnesota.

DEMOGRAPHIC CHARACTERISTICS OF MINORITY POPULATIONS IN MINNESOTA

Table 1 below indicates the Black population was the largest in 1980 with 53,344 people, or 1.3 percent of Minnesota's total population. Next in size are Indian people who resided in Minnesota,

Table 1
Population of Minnesota by Race and Spanish Origin, 1980

Race/Origin	Number
White	3,935,770
Black	53,344
American Indian	34,831
Eskimo and Aleut	185
Asian	26,536
Korean	6,319
Vietnamese	5,866
Chinese	4,835
Asian Indian	3,670
Japanese	2,789
Filipino	2,677
Hawaiian, Guamanian, Samoan	380
Other Races	25,304
Spanish Origin (Also enumerated within the "White" and "Black" categories above)	32,123

numbering 34,831 people and 0.9 percent of the population. Asian and Pacific Islanders consisted of 26,536 people, or 0.7 percent of the population. Those of Spanish origin numbered 32,123 persons, or 0.8 percent of the population. With respect to the Indian, Hispanic and Black populations, it is likely that an undercount of each occurred in Minnesota during conduct of the 1980 Census. Unfortunately, the magnitude of this undercount is unknown.

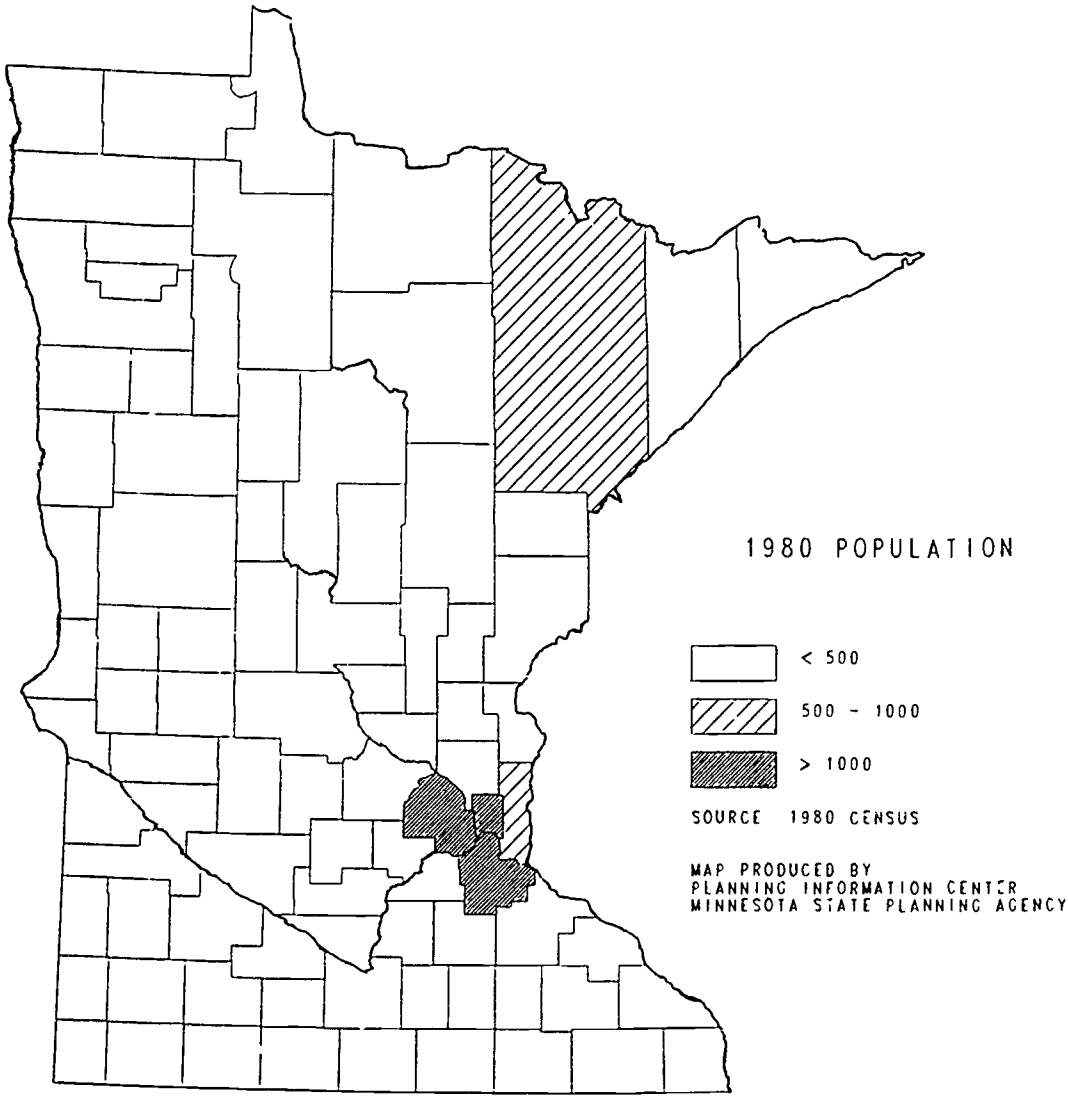
Geographic Distribution of Minnesota's Minorities

Although minority populations are found in every county (See Appendix A), Minnesota's minority populations (excepting Indian peoples) tend to be very concentrated in the large metropolitan areas of Hennepin, Ramsey, Anoka, Dakota and St. Louis counties. Figures 1 through 4 illustrate geographic distributions of the Black, Indian, Asian and Pacific Islander, and Spanish origin populations.

Figure 1 indicates that the Black population is the most

Figure 1

Black Population by County, 1980



geographically concentrated of the minority populations. Most Black Minnesotans live in Dakota, Hennepin, or Ramsey counties. There are also moderately sized Black populations in St. Louis and Washington counties. Fully 94 percent of all Black Minnesotans are located in the seven county metropolitan region of Minnesota. The highest concentrations reside in the inner cities of Minneapolis (33,163 people) and St. Paul (13,305 people).[4] Outside of the metropolitan area, there are several Minnesota counties with Black populations in excess of 100 people (See Appendix A). These include Olmsted, Blue Earth, Stearns, Clay, Pine, Sherburne, Rice and Winona counties.

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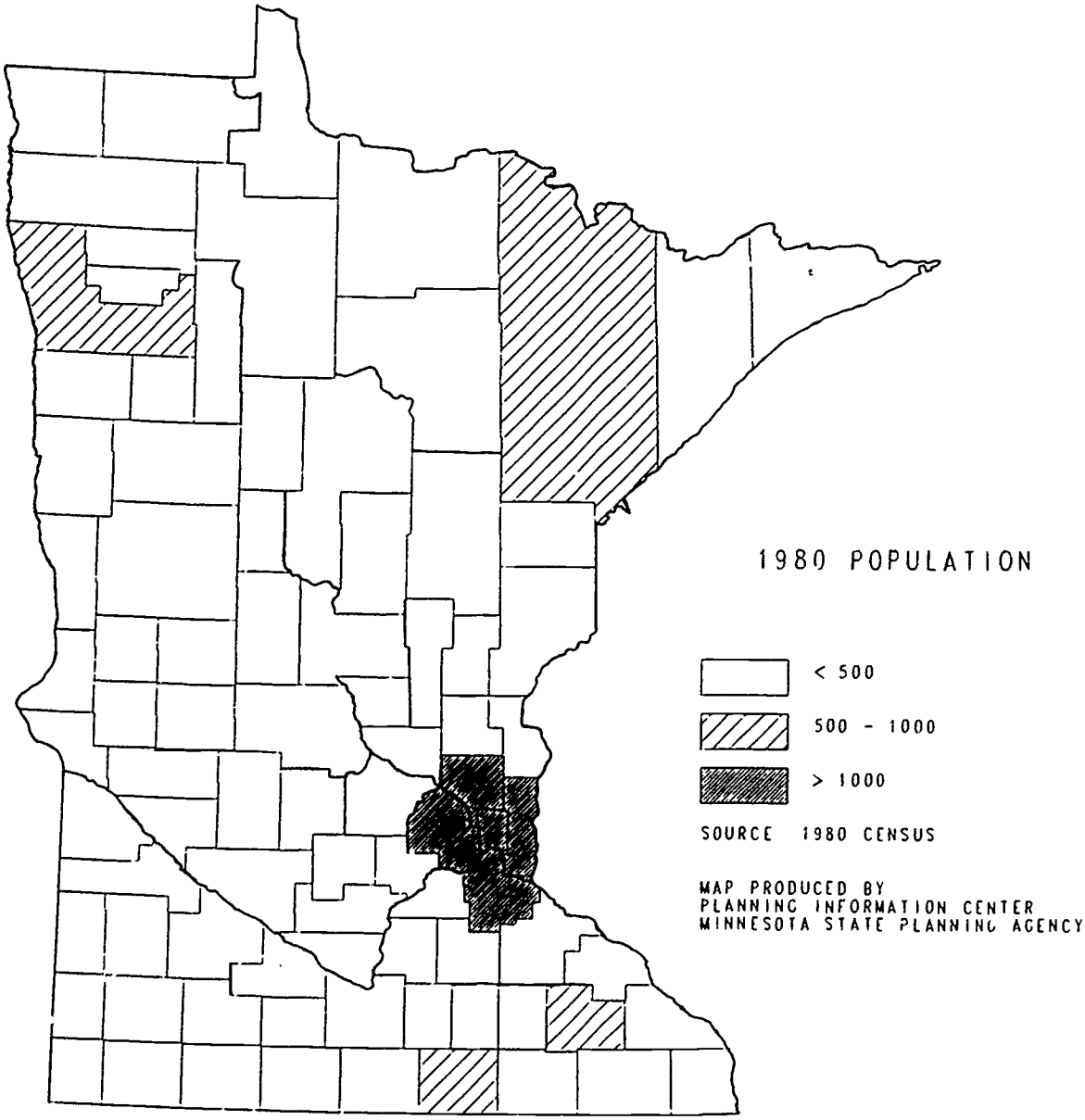
[4] Data Source: Minneapolis Urban League. 1984.

Figure 4

People of Spanish Origin by County, 1980



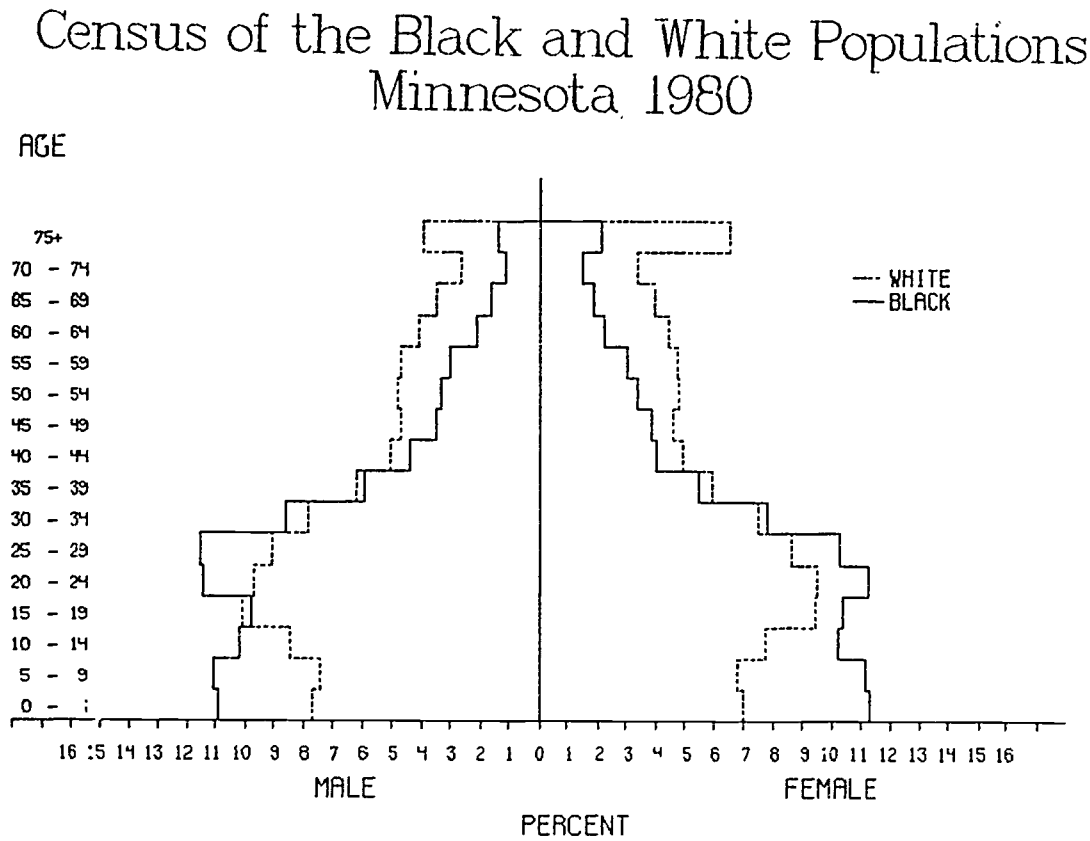
Age Characteristics of Minnesota's Minorities

Selected demographic characteristics are very important in any assessment of health status since these characteristics are related to disease frequency. Certain cancers, for example, occur more often in specific ethnic groups. Similarly, disease and mortality experiences vary with life cycle; adolescents experience a disproportionate share of all injury and those aged 45-64 encounter the first effects of risk taking behaviors such as smoking tobacco or imprudent use of alcoholic beverages. In the analysis which follows characteristics associated

with age are explored first, followed by family type, housing, education, employment, income and poverty.

Minnesota's minority populations are younger than its White population. Figures 5 through 8 contain population pyramids comparing the age distribution of each resident minority population to the White population.

Figure 5



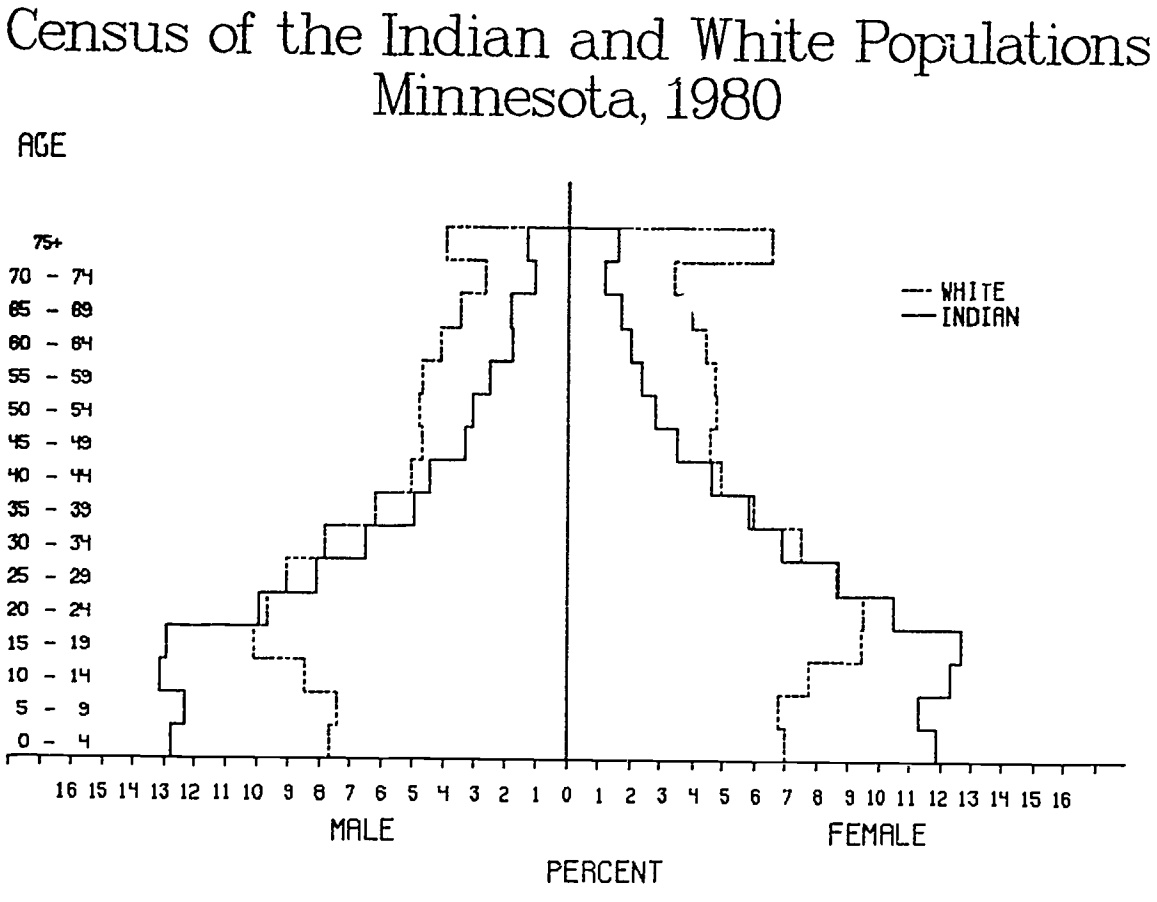
SOURCE: 1980 Census

Figure 5 compares the White and Black populations. The base of the population pyramid is wider for the Black population than the White population suggesting that the Black population has proportionately more young people and proportionately fewer elderly people than the White population. The larger base of the Black population pyramid is suggestive of a higher birth rate than the White population, which means that the Black population may experience higher population growth rates than the White population over the next few generations. Both populations show a bulge in the 15-29 year-old age cohorts. It should

be kept in mind that the pyramid suggests future trends based on the structural dimension of age, however other scenarios may emerge as these populations respond to other phenomena.

Figure 6 compares the age structure of the resident Indian population with the White population. The Indian population has a much

Figure 6



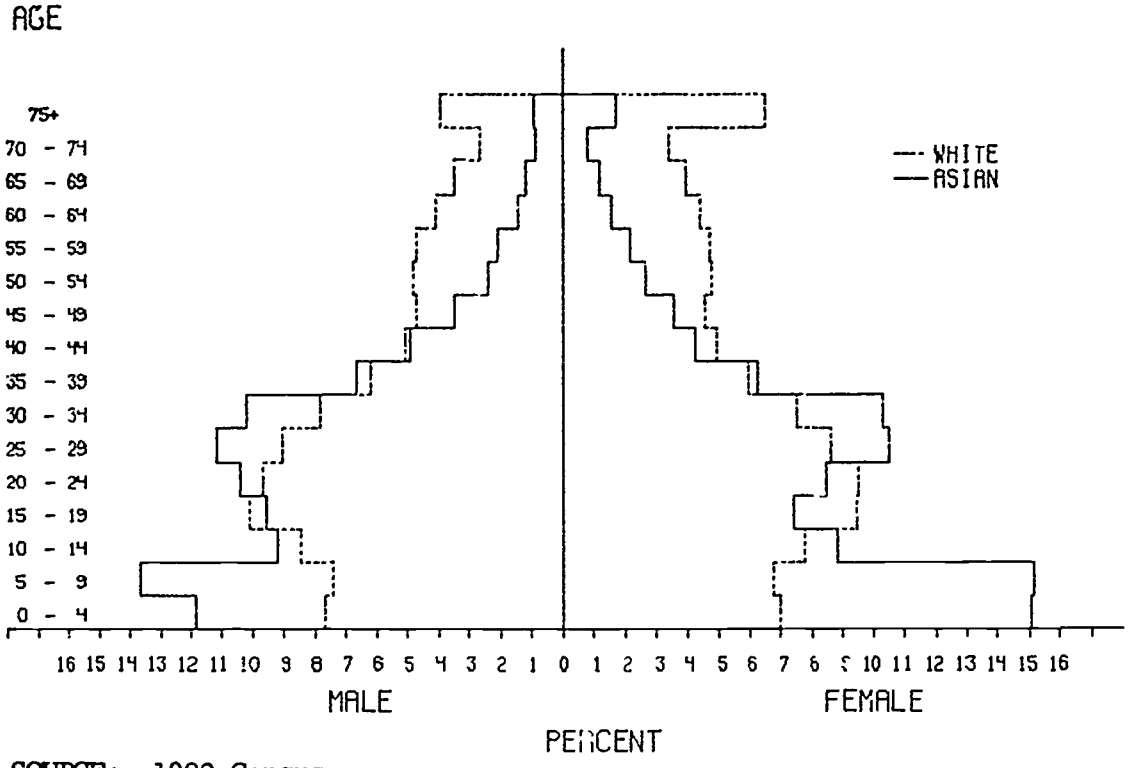
SOURCE: 1980 Census

larger proportion in the younger age groups and a much smaller proportion in the older age groups than the White population. The triangular shape of the Indian pyramid suggests a relatively high birth rate and potentially a high growth rate over the next few generations.

Figure 7 displays a comparison of the White and Asian and Pacific Islander age structures. The Asian and Pacific Islander population has a disproportionately sized young population and a smaller percentage of teenagers than other minority populations in Minnesota. They also have a small percentage in the older age groups. The shape of the base of the Asian and Pacific Islander pyramid results from a marked increase

Figure 7

Census of the Asian and White Populations Minnesota, 1980



SOURCE: 1980 Census

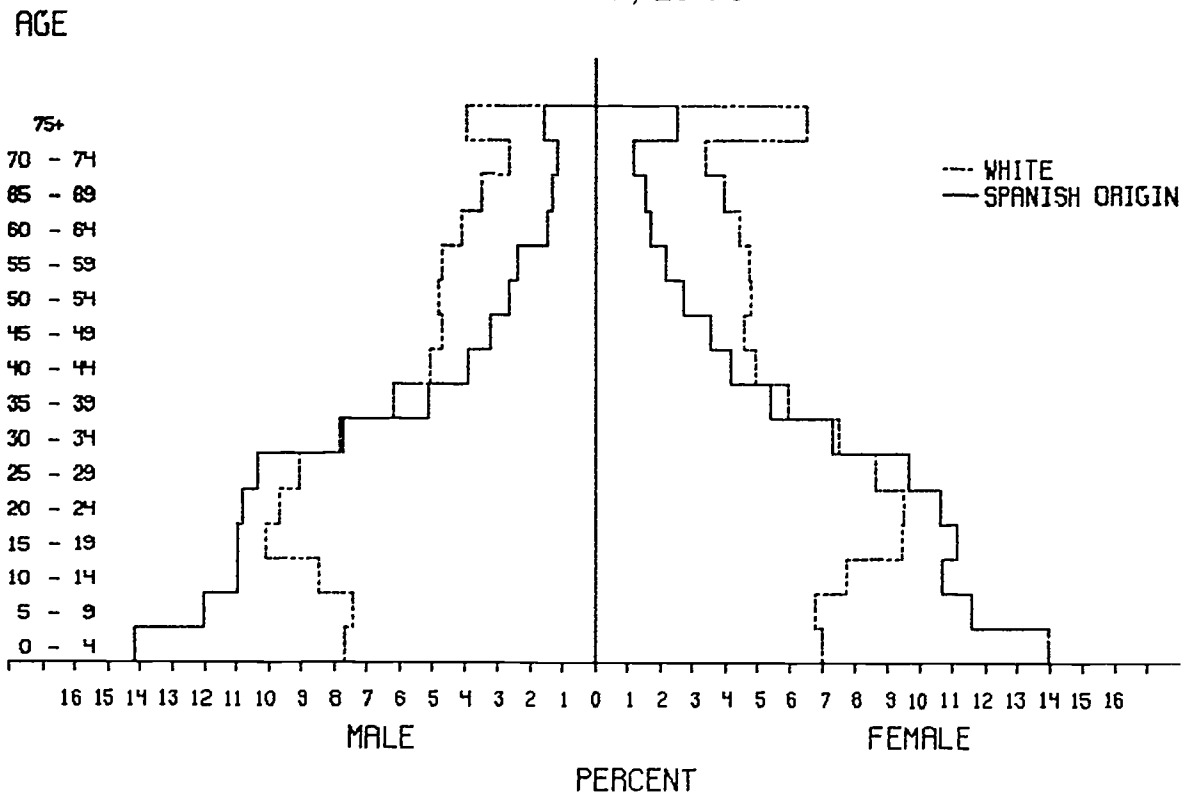
in the birth rate across time. If this birth rate pattern continues the Asian and Pacific Islander population should maintain high growth rates.

Figure 8 compares the age structure of the Spanish American population with that of the White population. The Spanish American population possesses an age structure almost identical to that of the Indian population, viz. much larger proportions of the total population with young age cohorts and much smaller proportions in cohorts above the age of 29 years.

Figures 5 through 8 suggest that the size of Minnesota's minority populations will likely increase. The populations are young, and even if birth rates decline in the future, the number of births will remain close to present levels because there will be more women of childbearing age. Correspondingly, maternal and child health care will continue to be one of the most important health-related concerns of Minnesota's minority populations.

Figure 8

Census of the Spanish American and White Populations Minnesota, 1980



SOURCE: 1980 Census

Table 2 below summarizes other salient age-related features of

Table 2
Selected Population Characteristics of Resident Minority Populations
Minnesota, 1980

	White	Black	Indian, Eskimo, and Aleut	Asian and Pacific Islander
Dependency Ratio of Children Under 15	34.4	51.7	63.7	64.8
Dependency Ratio of Elderly Over 65	18.6	7.6	7.5	5.2
Median Age of Males	28.6	23.6	19.1	21.7
Median Age of Females	30.5	23.1	20.2	22.4
Ratio of Males Per 1,000 Females	960.0	1053.0	942.0	883.0

SOURCE: 1980 Census

these populations. Young populations give rise to high dependency ratios of children. This dependency ratio measures the number of people under age 15 per 100 members of the population between 15-64 years of age, thus corresponding to the number of children each adult member of society has to support. This dependency ratio was highest among the Indian and Asian populations and was almost twice that of the White population in 1980. Median ages of both male and female cohorts of each minority population were lower in 1980 than that of the White population. The ratio of males to females was lowest among Asian and Pacific Islanders while the Black population actually had more men than women.

Family Characteristics of Minorities in Minnesota

Table 3 below indicates that Minnesota's minority populations had more persons per family in 1980 and were more likely to have children under the age of 18 than the White population. Minority women were also more likely to have had more children than White women, as indicated by the number of children ever born to women aged 15-44 years.

Table 3
Family Characteristics of Resident Minority Populations
Minnesota, 1980

	White	Black	Indian, Eskimo, and Aleut	Asian and Pacific Islander
Average Number of Persons per family	3.3	3.5	3.9	4.0
Percent of Families with Children under 6	23.9	35.5	38.5	42.4
Percent of Families with Children under 18	53.9	71.0	74.4	69.3
Children Ever Born to 1000 Women 15-44 Years Old	1258.0	1495.0	1900.0	1340.0
Percent of Families with a Female as Head	9.5	41.3	35.8	10.5

SOURCE: 1980 Census

On the other hand, only the Indian and Black populations exhibited high numbers of female-headed households. There were over three times as many female-headed households among the Black and Indian populations in 1980 as there were among the Asian and Pacific Islander and White populations.

Housing Characteristics of Minorities in Minnesota

The median value of housing units and median value of contract rent was higher for the Asian and Pacific Islander population than that of the White population in 1980. At the same time, this population had a much higher percentage of households with more than one-and one-half persons per room than the Indian, Black or White populations.

Table 4
Housing Characteristics of Resident Minority Populations
Minnesota, 1980

	White	Black	Indian, Eskimo, and Aleut	Asian and Pacific Islander
Occupied Housing Units				
Percent in Owner Occupied	80.2	44.1	48.3	57.9
Percent Lacks Some or All Plumbing	1.3	0.8	4.8	1.3
Median Number of Rooms per Occupied Housing Unit	5.4	4.8	4.6	4.4
Percent 1.51 or More Persons per Room	0.4	1.6	4.5	8.4
Median Value of Household Unit	58600.0	50000.0	33300.0	64000.0
Median Value of Contract Rent per Month	213.0	208.0	176.0	224.0

SOURCE: 1980 Census

The Indian population had the worst housing conditions. They were more likely to lack plumbing and have a lower median value per household unit than the other populations. The median value of Indian household units was also less than the other populations in 1980.

Educational Characteristics of Minorities in Minnesota

The median years of education for all of Minnesota's minorities was greater than 12 in 1980. However only a little over half of the Indian population graduates from high school and only five percent graduate from college. The Asian and Pacific Islander population was the best educated of all populations in Minnesota with over one-third of that population graduating from college.

Table 5
Educational Characteristics of Resident Minority Populations
Minnesota, 1980

	White	Black	Indian, Eskimo, and Aleuts	Asian and Pacific Islander
Median Years of School Completed (25 years +)	12.6	12.6	12.1	13.4
Percent 25 Years and over Who are High School Grads	73.2	70.6	54.6	73.9
Percent 25 Years and over Who have 4 or more Years of College	17.3	16.9	5.0	36.1

SOURCE: 1980 Census

Employment Status of Minorities in Minnesota

Employment is a significant factor in the provision of both preventive and primary health care since payment mechanisms associated with employment are gatekeepers to such care. Table 6 below indicates that both Indian males and females had the lowest percentage in the labor force, while Whites had the highest percentage among the male population and Blacks had the highest percentage among the female population in the labor force in 1980.

Table 6
Employment Status of Resident Minority Populations
Minnesota, 1980

	White	Black	Indian, Eskimo, and Aleut	Asian and Pacific Islander
Percent in Labor Force[1]				
Males 16 and over	77.4	69.5	65.2	70.5
Females 16 and over	54.0	58.1	49.1	53.5
Percent Civilians Unemployed				
Males 16 and over	6.2	10.8	21.6	5.3
Females 16 and over	4.0	7.9	15.7	4.8

[1] Labor Force = those employed as well as those actively looking for work.

SOURCE: 1980 Census

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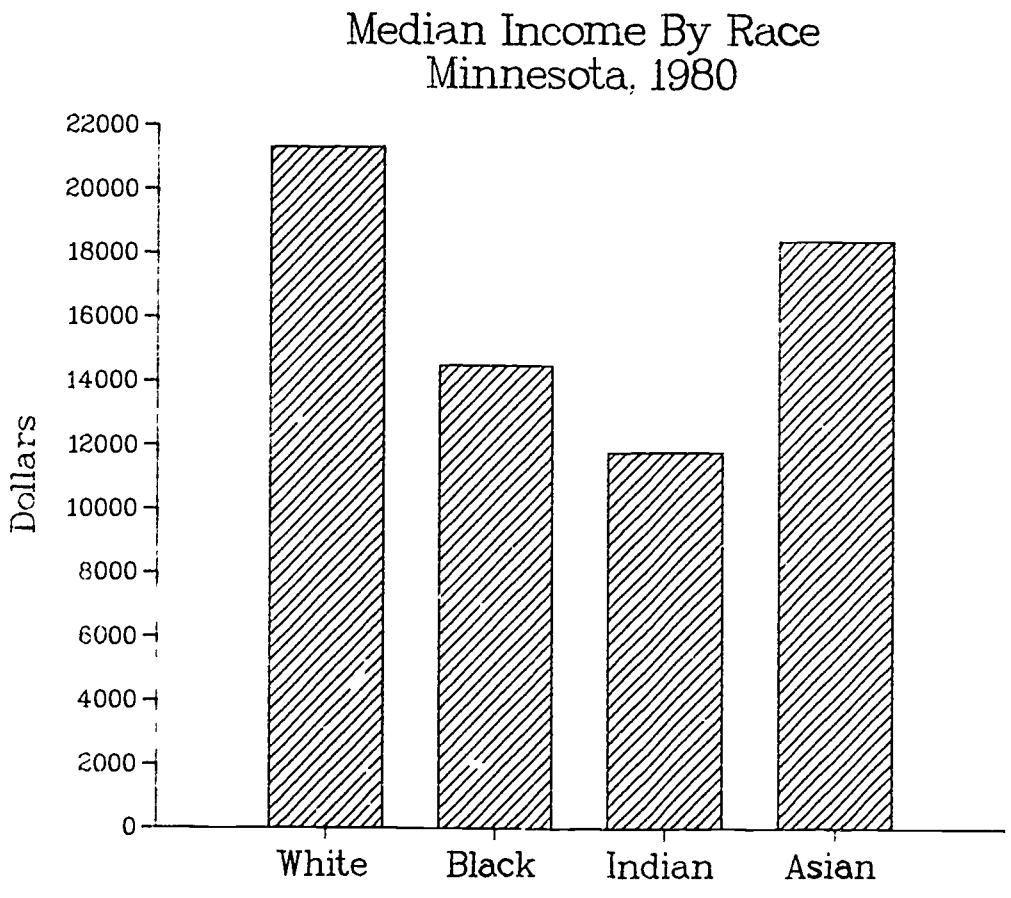
Both the Indian and Black male populations had higher unemployment rates than the White and Asian and Pacific Islander populations. The same pattern was associated with all female minority populations whose unemployment rates were above the White unemployment rate.

Income Characteristics of Minorities in Minnesota

Not surprisingly, given the employment data cited above, Minnesota's minority populations had lower median incomes in 1980 than the White population. Figure 9 illustrates the discrepancy in median incomes among the four population groups. The Indian population had the lowest median income, just over 55 percent of that of the White population.

Figure 9



SOURCE: 1980 Census

Table 7 indicates the minority populations had a larger proportion of families earning less than 5,000 dollars a year than the White population, and a smaller proportion earning more than 10,000 dollars a year. Median incomes for White males were higher than the other populations, while Asian and Pacific Islander and Black females secured larger median incomes than White and Indian females.

Table 7
Income Characteristics of Resident Minority Populations
Minnesota, 1980

	White	Black	Indian Eskimo, and Aleut	Asian and Pacific Islander
Percent of Families with less than $5,000 Income	5.3	17.0	17.1	16.4
Percent of families with greater than $10,000 Income	83.3	64.1	57.0	69.6
Median Male (Age 15 and over) Income, with Income*	12837.0	9421.0	6610.0	9404.0
Median Female (age 15 and over) Income, with Income*	4999.0	5843.0	4554.0	6076.0

*With Income = those employed only and does not include the unemployed

SOURCE: 1980 Census

Poverty Status of Minorities in Minnesota

Table 8 below indicates that one out of five minority families lives in poverty. Almost eight out of ten Black families under the poverty level are headed by a female as contrasted with two out of ten if Asian and living under poverty. Overall, over one-fourth of all minority persons in Minnesota live under the poverty level.

Table 8
Poverty Status of Resident Minority Populations
Minnesota, 1980

	White	Black	Indian, Eskimo, and Aleut	Asian and Pacific Islander
Percent of all Families under the Poverty Level	6.6	23.5	27.9	23.2
Percent of those Families under the Poverty Level Headed by Females	29.8	79.1	66.3	15.2
Percent of all Persons under the Poverty Level	8.9	26.6	29.9	25.6

SOURCE: 1980 Census

Summary

The minority populations in Minnesota are younger and more likely to have lower incomes, substandard housing and less education than the White population (the Asian and Pacific Islander population is an exception). These circumstances are compounded by the fact that minority populations are more likely to live in female-headed households and are more likely to have greater numbers of dependents per household.

Differences of demographic characteristics between Minnesota's populations directly contribute to different health status outcomes. In the sections which follow se outcomes will be explored in some detail.

PREGNANCY AND CHILDBIRTH

In the analyses which follow selected maternal and newborn characteristics of Minnesota's minority populations are explored. These characteristics have been selected for analysis because of their known relationship with birth outcomes and the bearing they possess relative to interpretation of factors associated with infant mortality.

Population Fertility

Table 9 below depicts the fertility and birth rates of Minnesota's

Table 9
Average Fertility and Birth Rates by Race
Minnesota Residents, 1978-1982

	White	Black	Indian, Eskimo, and Aleut	Asian and Pacific Islander
Fertility Rate[1]	66.9	119.0	136.2	134.4[4]
Birth Rate[2]	15.7	28.7	34.1	33.4[5]
Rate of Natural Increase[3]	7.4	22.7	28.3	31.6
% of Women with 3 or More Previous Children Prior to Latest Birth	8.4	11.1	16.9	20.7

[1] The number of live births per 1,000 women in the population who are of age 15 through 44 years.

[2] The number of live births per 1,000 population during a specific measurement period.

[3] The difference between the crude birth rate and the crude death rate.

[4] The Asian and Pacific Islander fertility (continued on page 20)

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

[4] (continued from page 19) rate is based on the five year average (1978-1982).

[5] The Asian and Pacific Islander birth rate is based on the three year average (1980-1982).

dominant minority populations. The Black fertility rate is almost double that of the White rate while the Indian and Asian fertility rates are over double that of the White rate. The birth rate is much lower by definition, however the same proportions hold for each race/ethnicity within Minnesota's population.

The rate of natural increase for the Black and Indian populations is significantly higher than the White population. This is a result of high fertility rates for the Black and Indian populations and the relative youth of these populations. The Asian and Pacific Islanders' rate of natural increase was calculated using the 1980-1982 average and is over four times greater than the White population and is also due to high fertility rates and youthfulness of the population at risk of pregnancy.

In addition, the proportion of mothers having three or more previous children is higher among some minority populations. One in five Asian mothers and one in six Indian mothers had given birth to three or more children prior to the birth occurring in the surveillance period. By comparison one in nine Black mothers and one in 12 White mothers had given birth to three or more children prior to the birth occurring in the surveillance period.

The number of births in each population group has increased over the five year period under study (See Table 10 below). The largest, a fivefold increase occurred among the Asian and Pacific Islander population.

Table 10
Number of Births by Race
Minnesota Residents, 1978-1982

	White	Black	Indian, Eskimo, and Aleut	Asian Pacific Islander
1978	58,329	1,378	1,097	289
1979	61,261	1,449	1,106	671
1980	63,067	1,514	1,223	1,145
1981	63,202	1,617	1,196	1,624
1982	62,700	1,691	1,344	1,650
Total	308,559	7,649	5,966	5,379
% Change 1978-1982	+7.5	+22.7	+22.5	+470.9

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Maternal Characteristics

Mother's age at time of birth, mother's legitimacy status, and the size of the family unit into which an infant is born are each significant due to their known association with birth outcome.

The White and Asian and Pacific Islander populations have similar proportions of births occurring to women under the age of 18 (See Table 11 below). Less than five percent of all births occur to women who are 17 years of age or younger. For both populations, most births occur to women between the ages of 25 and 39, but a large proportion of births also occur to women aged 18-24. The Asian and Pacific Islander population has a higher occurrence of births to women aged 40 and over than the White population.

The Black and Indian populations demonstrate a different maternal characteristic. Over ten percent of all births occur to women who are 17 years of age or less and the largest proportion of births occur to women between the ages of 18 and 24.

Table 11
Age Characteristics of Mother for All Births by Race
Minnesota Residents, 1978-1982

	White	Black	Indian, Eskimo, and Aleut	Asian and Pacific Islander
Under 15 years	.1	.8	.4	.3
15-17 years	2.6	9.5	10.4	3.3
18-24 years	39.4	47.4	52.5	34.0
25-39 years	57.2	41.8	36.1	59.8
40+ years	.6	.4	.5	2.6
Teenaged Mothers (Under 20)	9.5	22.6	26.2	10.5
Median Age	26.1	23.9	23.2	26.9

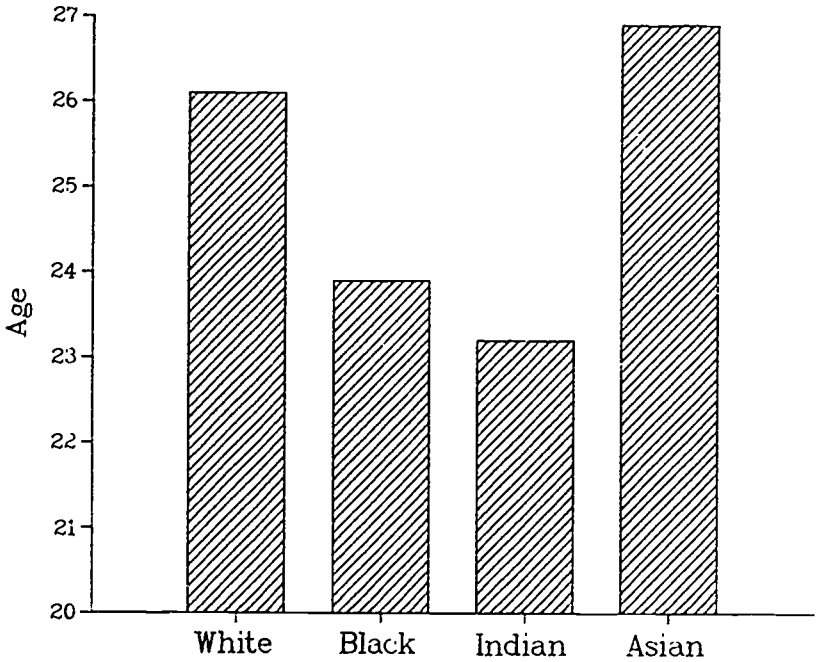
SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

The Indian population has the highest percentage of teenaged (≤19 years of age) births, with over 25 percent of mothers under 20 years of age at time of birth. The Black population has the next highest proportion of teenaged births, with over 20 percent occurring to teenaged women. The White and Asian and Pacific Islander populations have similar proportions of teenaged mothers; both of which reflect proportions less than half that of the Black and Indian populations. The data in Table 11 understate the proportion of women who had their first child while a teenager because these data are based on all births, not just first births.

Figure 10 indicates that Asian and Pacific Islander women have the highest median age (27 years of age) at the time of delivery, possibly

Figure 10

Median Age of Mother at Time of Giving Birth
By Race, Minnesota Residents, 1978–1982



SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

due to delayed childbearing resulting from inmigration to the United States. White women are next at 26 years of age followed by Black and Indian women at 24 and 23 years respectively.

Mother's age at her first birth indicates the age at which families are started.[5] Asians and Pacific Islanders give birth to their first-born at the oldest age, while Indians are the youngest at the time of their first birth (See Table 12 below). The median age of

Table 12
Median Age of Mother (for first births) by Race
Minnesota Residents, 1978-1982

	White	Black	Indian, Eskimo, and Aleut	Asian and Pacific Islander
Median Age	23.6	21.3	19.4	24.8

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

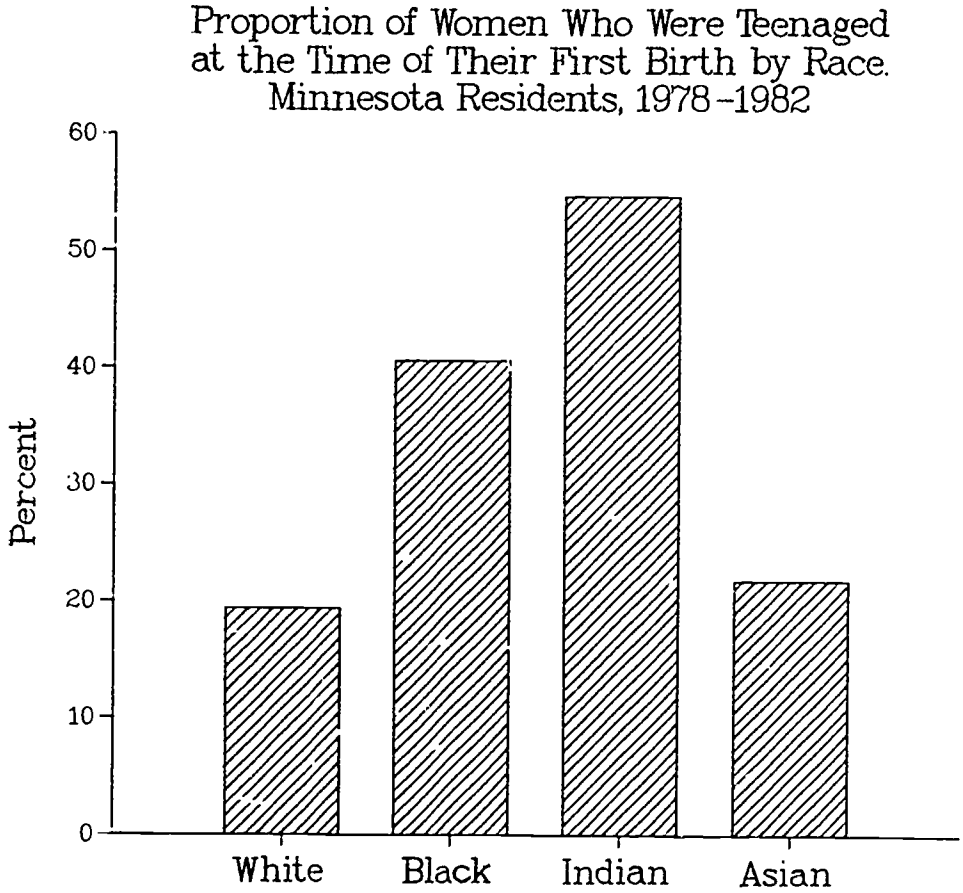
[5] Very few women give up their baby for adoption in Minnesota, even if teenaged. Therefore the first birth almost always constitutes the start of a new family unit.

Indian women upon their first birth is 19 which means that half of all Indian women are still teenagers at the time of their first birth.

Figure 11 below indicates that over one-half of Indian women starting families during the five year period under study were teenagers. This was over twice the proportion of White and Asian and Pacific Islander women who were teenagers when starting families, and considerably larger than the proportion of Black women who were teenaged at time of first birth.

The Asian and Pacific Islander population has the highest percentage of births occurring within wedlock for all age groups, with nearly 95 percent of their births occurring to married mothers (Table 13 below). Over 90 percent of White births occur in wedlock, but two-thirds of births to White women under 18 years of age occur out-of-wedlock. The overall legitimacy rate among the White population remains high because of the small percentage of White women under 18 who give birth. For the five year period under study, the majority of Black and Indian mothers under the age of 25 were unmarried, but after

Figure 11



SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

age 25 two-thirds of Black and Indian mothers were married. Overall, nine out of ten births occurring to both White and Asian and Pacific

Table 13
Percentage of Legitimate Births by Age by Race
Minnesota Residents, 1978-1982

Age	White	Black	Indian	Asian
Under 15	2.0	0.0	0.0	21.4
15-17	33.3	2.6	9.7	76.7
18-24	85.1	35.3	41.3	92.5
25-39	96.9	66.3	60.8	96.8
40+	96.2	67.7	73.3	95.0
Total	90.5	45.0	45.0	94.4

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Islander women happened within wedlock. Table 14 below indicates that although the out-of-wedlock proportion is modest, the number of affected births across the five year interval is quite large (30,900 events). On the other hand, the overall proportion of out-of-wedlock births for the Black and Indian populations is high (55 percent), however the number of affected births is much fewer (4,207 and 3,281 events respectively).

Table 14
Proportion and Number of Resident Births Occurring Out-of-Wedlock
in Minnesota by Race, 1978-1982

	Percent	Number of Affected Births
Black	55	4,207
Indian	55	3,281
Asian	6	323
White	10	30,900

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Characteristics of Pregnancy and Childbirth

Protecting the health status of infants and children involves preventing the loss of health in the first place. Research indicates that the extent of prenatal care, birth weight of the newborn, as well as medical conditions affecting Mother at time of fetal development and childbirth markedly affect birth outcome.

Table 15 below suggests that Minnesota's minority populations are less likely to have received prenatal care (the proportions are very small however), and are more likely to experience fewer than three

Table 15
Selected Birth-Related Characteristics of Resident Mothers by Race
Minnesota, 1978-1982

Characteristic	Percent of Total Births			
	White	Black	Indian, Eskimo, and Aleut	Asian and Pacific Islander
No Prenatal Care During Pregnancy	0.5	1.3	2.1	1.6
Less Than 3 Prenatal Visits During Pregnancy	1.3	3.5	7.7	4.4
Initiates Care in Third Trimester of Pregnancy	2.9	7.7	13.5	13.5
Birth Occurred at Home	0.5	0.6	0.6	3.9

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

prenatal visits. The largest difference is noted between mothers who wait until the seventh month of pregnancy to initiate prenatal care. One in seven Indian and Asian mothers initiate care in the seventh month or later, as contrasted with one in thirteen Black mothers and one in 34 White mothers.

Table 15 suggests that Asian mothers are most likely to use a home as the place of birth as opposed to a hospital. This may reflect cultural perceptions relative to the practice of Western medicine within a hospital setting.

Characteristics of the Newborn

For most Minnesotans the first year of life remains the most hazardous period until reaching the age of 50. Selected factors contributing to this state include weight at birth and gestational age.

Figure 12 below details the proportions of newborns weighing less than 2500 grams (5 lbs. 8 oz.). Babies weighing less than 2500 grams are considered at risk, although survivability has dramatically improved during the past decade. Proportionately, twice as many Black babies are low weight as White babies (one in nine Black babies is low weight vs. one in 20 White babies). Indian babies compare favorably with White babies on a weight basis; proportionately more Asian babies tend to be low weight.

Figure 12

Percentage of Newborns Weighing Less Than 2500 Grams
By Race, Minnesota Residents, 1978-1982

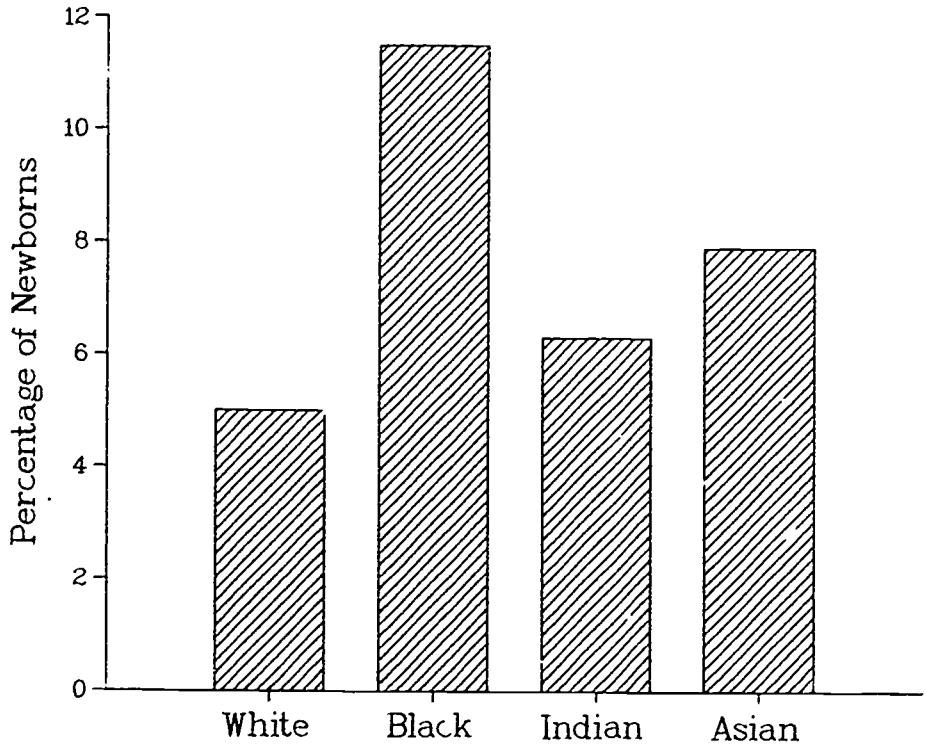


Table 16 below indicates the median[6] weight of resident newborns during the surveillance period. All minority populations have lower median birth weights than White populations. The low median birth

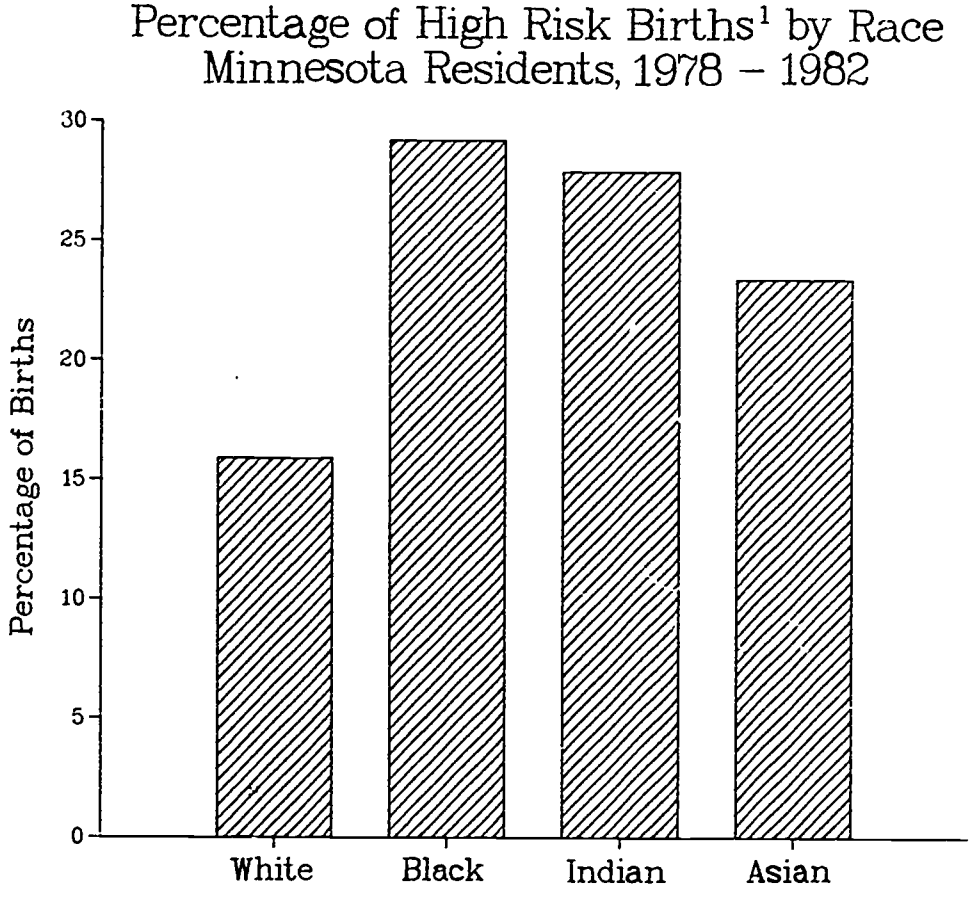
Table 16
Median Weight of Newborns by Race
Minnesota Residents, 1978-1982

White	Black	Indian, Eskimo, and Aleut	Asian and Pacific Islander
3470.8	3213.1	3434.2	3212.4

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

[6] P_{50} = half of all babies weighed less, half weighed more than cited statistic.

Figure 13



[1] A high risk birth is an event in which any of the following conditions exist: Mother's age = <17 years or >39 years; prenatal care = <3 visits; presence of a medical condition such as Hydramnios or toxemia or urinary tract infection, etc.; prolonged labor; infant weight <2500 grams; birth injury; other related birth condition; or congenital anomaly.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

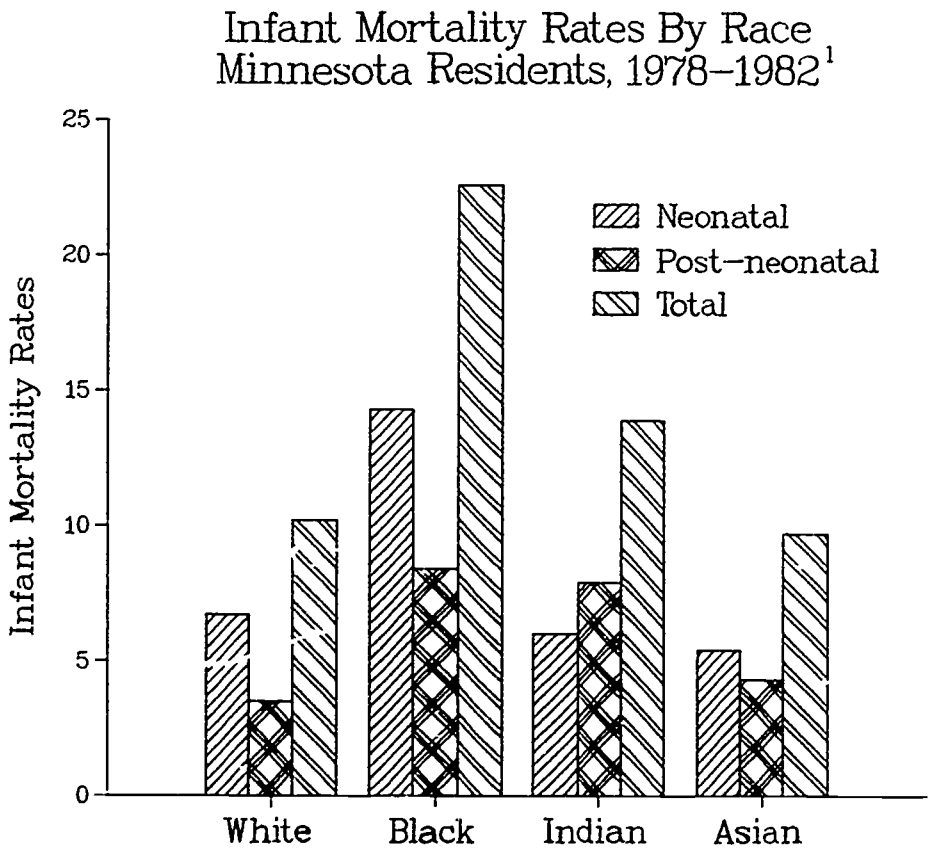
INFANT MORTALITY

The death of an infant during the first year of life has been viewed with utmost concern by society for many decades. Translating this concern into policy options necessitates study of both the reasons why these deaths occur as well as the interval of life in which they occur.

Infant Mortality Rates

Figure 14 below compares the infant death rate of Minnesota's resident populations, and also depicts the constituent portions

Figure 14



[1] Each rate is calculated using as the denominator total births by race which occurred during the surveillance period.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

(neonatal and post-neonatal) of these death rates. Deaths that occur in the first 28 days of life are known as neonatal deaths. Deaths that occur between the 29th and the 365th day are known as post-neonatal deaths.

The population with the lowest infant mortality rate was the Asian and Pacific Islander population. The White population's infant mortality rate was quite similar to that of the Asian and Pacific Islander's rate. The Black population had the highest infant mortality rate, over double that of the Asian and Pacific Islander and White populations.

The Indian population had a different infant mortality pattern than the other comparison populations. A majority of Indian infant deaths occurred after the first 28 days of life, while the majority of infant deaths among the other populations occurred in the neonatal period. This finding is partially explained by examining perinatal mortality rates (See Table 19 below). This statistic includes fetal deaths occurring from the 20th week of conception and on as well as infant deaths occurring within the first 28 days of life. There were more neonatal deaths than fetal deaths for the White and Black populations. The opposite was true for the Indian population. Therefore, the low neonatal mortality rate for Indians may be related, in part, to a higher number of fetal deaths.

The Asian and Pacific Islander population had the lowest neonatal and perinatal mortality rates, while the Black population had the highest mortality rates. The White population had the lowest post-neonatal rate, while the Black population had the highest.

Table 19
Infant Mortality Rates by Race
Minnesota Residents, 1978-1982[1]

	White		Black		Indian, Eskimo, and Aleut		Asian and Pacific Islander	
Characteristic[2]	#	Rate	#	Rate	#	Rate	#	Rate
Perinatal Mortality Rate	4031	13.1	193	25.3	87	14.6	65	12.1
Neonatal Mortality Rate	2072	6.7	109	14.3	36	6.0	29	5.4
Post-Neonatal Mortality Rate	1076	3.5	64	8.4	47	7.9	23	4.3
Total Infant Mortality Rate	3148	10.2	173	22 6	83	13.9	52	9.7

[1] See Appendix C for formulae used to construct each rate.

[2] Fetal deaths are not included due to the small frequencies.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Causes of Infant Deaths

The leading causes of neonatal mortality exhibit similar patterns among all populations, although they do vary in magnitude between populations. Table 20 below indicates the Black population had higher mortality rates for three of the four leading causes of neonatal

mortality during the surveillance period than other resident populations. A Note of Caution: Statistics reflecting fewer than 25 events in Minnesota need to be interpreted with extreme caution.

Table 20
Leading Causes of Neonatal Death by Race
Minnesota Residents, 1978-1982

Mortality Characteristic	White		Black		Indian, Eskimo, and Aleut		Asian and Pacific Islander	
	#	M.R.[5]	#	M.R.	#	M.R.	#	M.R
Certain causes of perinatal morbidity[1]	1356	4.4	74	9.7	25	4.2	11	2.0
Congenital anomalies[2]	524	1.7	25	3.3	8	1.4	17	3.2
Ill-defined causes[3]	51	0.2	1	**	2	**	0	0.0
Infective-parasitic[4]	34	0.1	5	0.7	0	0.0	0	0.0

[1] Includes the following causes: Short gestation and low birth weight, respiratory distress syndrome, maternal conditions such as infections, injury, or ectopic pregnancy, some respiratory conditions of fetus and newborn, intrauterine hypoxia and birth asphyxia, fetal and neonatal hemorrhage, and birth trauma.

[2] Includes anomalies of the heart, respiratory system and urinary system as well as chromosomal and anencephalus anomalies.

[3] Includes Sudden Infant Death Syndrome.

[4] Includes congenital syphilis, septicemia, intestinal infections, food poisoning, etc.

[5] M.R. = Mortality Rate.

**Rate not calculated due to small frequency.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Table 21 depicts the leading causes of infant death during the interval spanning the 29th day of life through the 365th day of life. The Black population had higher post-neonatal death rates for all

Table 21
Leading Causes of Post-Neonatal Death by Race
Minnesota Residents, 1978-1982

Mortality Characteristic	White		Black				Indian, Eskimo, and Aleut				Asian and Pacific Islander			
	# Observed	M.R.[5]	# Observed	M.R.	Expected[6] Deaths	Excess[7] Death	# Observed	M.R.	Expected[6] Deaths	Excess[7] Death	# Observed	M.R.	Expected[6] Deaths	Excess[7] Death
Ill-Defined Causes[1]	488	1.6	32	4.2	12	20	25	4.2	10	15	5	0.9	9	(4)[8]
Congenital Anomalies[2]	211	0.7	9	1.2	5	4	5	0.8	4	1	4	0.8	4	0
Respiratory Diseases[3]	76	0.3	5	0.7	2	3	4	0.7	2	2	2	0.4	2	0
Deaths Due to Injury[4]	50	0.2	5	0.7	2	3	1	0.2	1	0	3	0.6	1	2
Total	825		51		21	30	35		17	18	14		16	(2)[8]

[1] Includes the following causes: Short gestation and low birth weight, respiratory distress syndrome, maternal conditions such as infections, injury, or ectopic pregnancy, some respiratory conditions of fetus and newborn, intrauterine hypoxia and birth asphyxia, fetal and neonatal hemorrhage, and birth trauma.

[2] Includes anomalies of the heart, respiratory system and urinary system as well as chromosomal and anencephalus anomalies.

[3] Includes pneumonia and influenza.

[4] Includes all forms of violent death inflicted upon infants.

[5] M.R. = Mortality Rate.

[6] Expected deaths are calculated using the mortality rates of White infants (See Appendix C).

[7] Excess death is calculated by subtracting expected deaths from observed deaths.

[8] A number in ( ) indicates a higher expected death frequency than that observed.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

causes than other resident populations, although the small frequencies in most cells pertaining to each minority race make interpretation very difficult. Indian infants experienced higher death rates for three of the four causes of death than White infants.

Using White post-neonatal mortality as the norm, excess death was

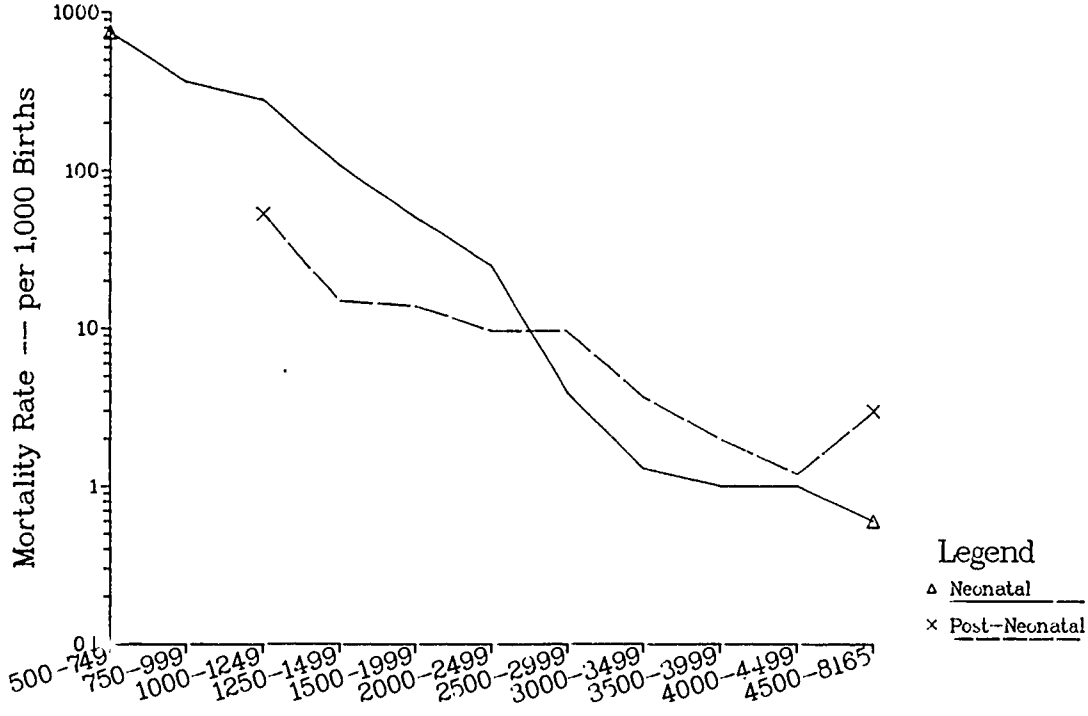
calculated. As an indicator, excess death may suggest areas of focus for program intervention. The number of excess deaths for the Black infant population during the Surveillance period was 30 events, for the Indian population 18 events.

Infant Death by Weight at Birth

Birth weight is a crucial intervening variable that quantitatively reflects the many complex maternal and environmental factors influencing the growth of the fetus. While it is universally agreed among experts that a variety of complex maternal factors may result in either a preterm delivery or in fetal growth retardation (or both), it is also believed that timely and skillful prenatal care can partially compensate for these conditions and increase the likelihood of normal fetal development.

Figure 15

Resident Birth Weight
Specific Neonatal and Post-Neonatal Death Rates of Singletons
All Races, Minnesota, 1980



[1] Inadequate number of events for computation of rate.

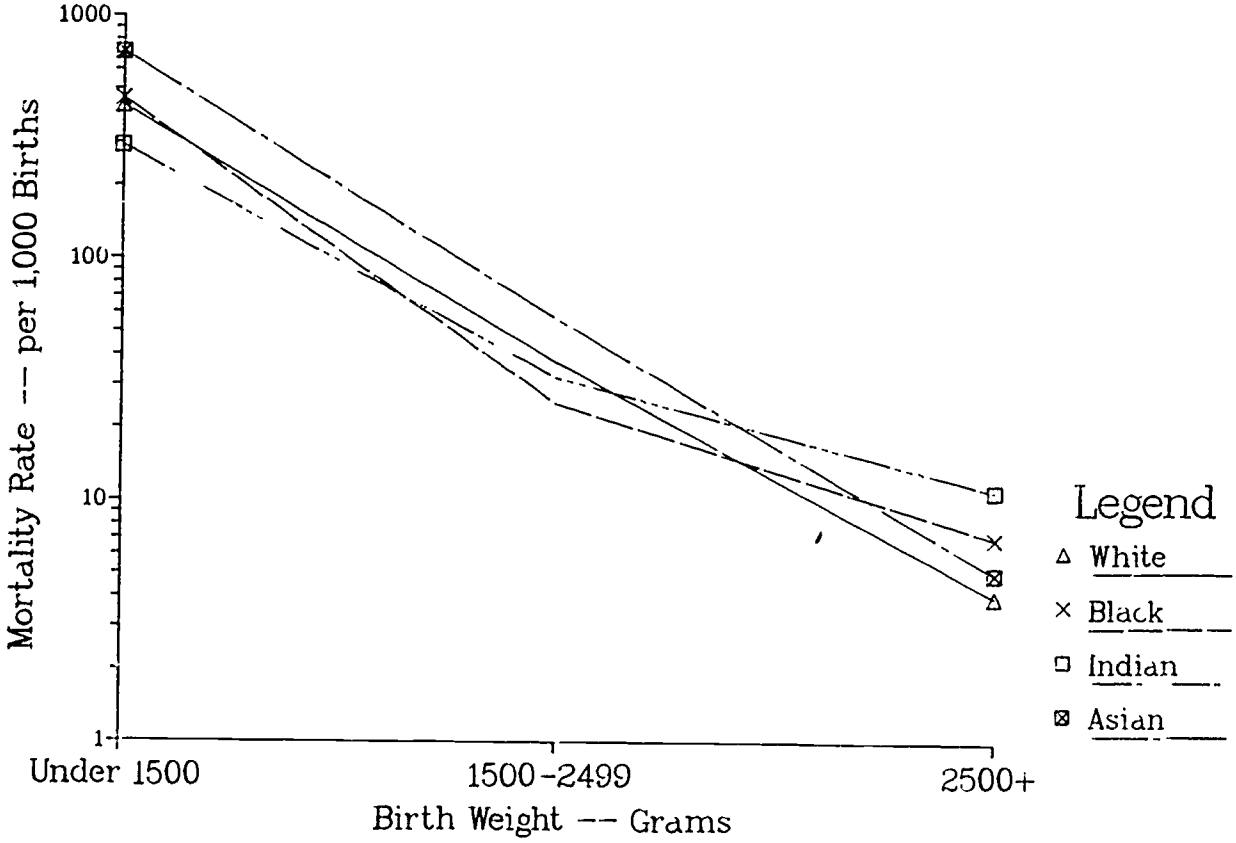
SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Birth weight is by far the single most significant variable associated with birth outcome, with the probability of infant death varying from seven out of ten births weighing 500-750 grams to fewer than 15 out of each 1000 weighing 2500-2999 grams (See Figure 15). Because of this close relationship between birth weight and mortality during the first year of an infant's life, it is possible to use birth weight to structure an analysis of infant mortality. However, adjustment for an additional factor needs to be completed since it affects infant mortality independently of birth weight: viz. birth multiplicity. Figure 15 indicates that such adjustment has occurred since only singletons are included in the analysis.

Figure 16 below compares the singleton infant mortality rates of Minnesota's populations during the Surveillance period. The rate of death for all populations was high when the infant weighed less than 1500 grams. The Indian infant was at proportionately less risk of death, the Asian infant at greatest risk of death. For infants whose weight at birth spanned the continuum from 1500-2499 grams, the risk of death was lowest if Black and highest if Asian. At birth weights

Figure 16

Resident Birth Weight
Specific Infant Death Rates of Singletons by Race
Minnesota. 1978 – 1982



SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

greater than 2500 grams the risk of death in the first year of life was lowest for White infants, and highest for Indian infants. Overall, the risk of death for singleton infants was lowest during the first year of life for White infants, and highest for Black infants. The risk of infant death for Indian and Asian infants who were single born was almost identical.

Summary

Black and Indian infants experienced infant mortality rates above that of the White and Asian population. A majority of Indian infant deaths occurred in the post-neonatal period, while most White, Black, and Asian infant deaths occurred in the neonatal period.

During the first 28 days of life Black infants died of parasitic and infective disease at a rate seven times that of White infants; Black infants also experienced twice the rate of death associated with birth defects and perinatal morbidity. In addition, Asian infants died of birth defects at twice the rate of White infants. The Indian infants' exposure to death nearly paralleled that of White infants. However, Indian infants were at less risk of death due to perinatal morbidity or birth defects than White infants during the Surveillance period.

Overall infant mortality during the post-neonatal period was very low, giving rise to significant interpretive issues. However, there were differences in death outcome between Minnesota's racial groups. The Black infant population experienced higher mortality resulting in at least 30 excess deaths; the Indian infant population experienced 18 excess deaths, also due to higher infant mortality. Overall, the risk of death was lowest for White singleton infants and highest for Black singleton infants.

When analyzing infant death by birth weight cohort, the unexpected emerges. Indian infants, single born, who weigh less than 1500 grams at birth are at least risk of death, while singleton Asian infants weighing less than 2500 grams at birth were at greatest risk of death.

MORTALITY

The elevated death rates of Minnesota's Black and Indian populations during infancy continue into later years of life. For example, both populations experienced higher mortality rates due to violent deaths (defined here as deaths due to injury, suicide and homicide) than the White population. In addition, the mortality rate due to chronic liver disease and cirrhosis of the liver was higher among both Indian and Black resident populations than the White population.

There were so few deaths among the Asian and Pacific Islander population that only a few inferences can be made, although they appeared to have very low mortality rates for all causes of death. Because of the small number of deaths in the Asian and Pacific Islander

population during the five year surveillance period, their leading causes of death will be analyzed separately.

Proportions of Death by Age

As noted earlier in the demographic section, Minnesota's minority populations are much younger than the White population. Death afflicts younger populations differently than older populations, therefore the minority populations will have a different death experience than the White population. This is clearly illustrated by Table 22 below.

Table 22
Average Mortality Rates[1] by Race
Minnesota Residents, 1978-1982

White	Black	Indian, Eskimo, and Aleut	Asian and Pacific Islander[2]
821.5	590.1	566.0	150.2

[1] Per 100,000 population.

[2] The Asian and Pacific Islander mortality rate was calculated using the 1980-1982 three year average.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

The White population had the highest mortality rate because it is the oldest population. However, in each age cohort, except that 65 years of age and older, the White population had a lower mortality rate than Black and Indian populations. The Asian and Pacific Islander population had lower mortality rates for all age cohorts than all other population groups.

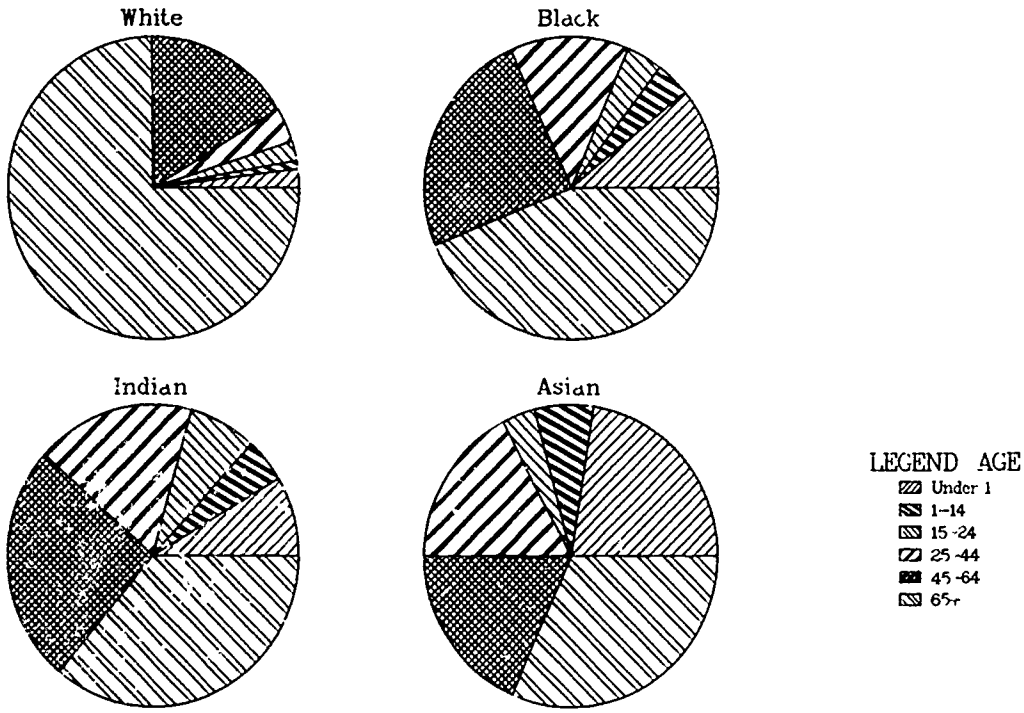
There are substantial proportional differences between races relative to the age at which death occurs. Figure 17 illustrates these differences which are particularly great for infants who are Black or Asian as well as children who are Indian and Asian, and teenagers who are Indian. Similarly, adults aged 25-44 who are Black, Indian, and Asian experience higher death rates than White adults of corresponding age.

Mortality Among the Very Young

The leading cause of death for children aged 1-4, whether Black or White, was injury. This cause accounts for more than one third of all deaths in this age category. Motor vehicle crashes accounted for 33 percent of all injury-related death among young White children, 27 percent of all injury-related death among young Black children, and 38 percent of all injury-related death among young Indian children.

Figure 17

Proportion of Deaths by Age Cohort, All Races Minnesota Residents, 1978 - 1982



SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

The second leading cause of death for Black and White children was congenital anomalies (no Indian children aged 1-4 years died of that cause over the five year period under study). Homicide was a leading cause of death for both Indian and Black children in this age group, while malignant neoplasms was the third leading cause of death for White children.

Table 23
Leading Causes of Death Among 1-4 Year Olds by Race
Minnesota Residents, 1978-1982

	White		Black		Indian, Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Deaths due to injury	221	19.6	15	64.7	13	78.5
Motor vehicle only	72	6.4	4	17.2	5	30.2

(Table continued on next page)

(Table continued from previous page)

	White		Black		Indian, Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Congenital anomalies	91	8.1	8	37.8	0	0.0
Malignant neoplasms	60	5.3	2	**	0	0.0
Homicide	9	0.8	4	17.2	5	30.2
Infective diseases	24	2.1	0	0.0	2	**
Diseases of the central nervous system	27	2.4	1	**	2	**
Questionable deaths	6	0.5	2	**	1	**
Endocrine, metabolic, and nutritional problems	9	0.8	1	**	2	**
Total mortality	577	51.2	36	169.9	27	163.0

[1] Rates per 100,000 population.

**Rate not calculated due to small frequency.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

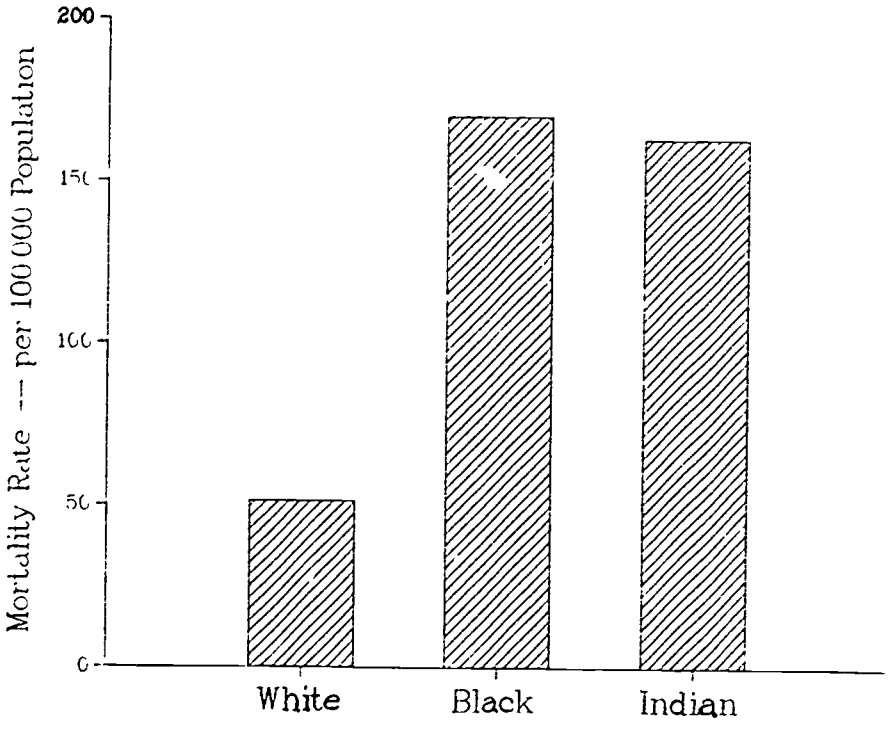
Figure 18 below indicates that the overall mortality rates for Black and Indian children in this age group were very similar, yet over three times greater than that of White children. This obvious disparity begs for policy intervention.

Mortality Among Children Aged 5-14

Again, the leading cause of death for Indian, Black and White children was injury. In this age group, death due to injury accounted for over half of all deaths. Minority children had higher mortality rates than White children, but the difference in mortality rates between the populations was smaller than the difference observed among children aged 1-4 (See Figure 19 below). Indian children appeared to be at special risk of death during the surveillance period with a rate of death almost double that of the White population.

Figure 18

Overall Mortality Rate for Children Aged 1-4 by Race
Minnesota Residents, 1978 – 1982



SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Table 24
Leading Causes of Death Among 5-14 Year Olds by Race
Minnesota Residents, 1978-1982

	White		Black		Indian, Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Deaths due to injury	412	13.8	13	22.9	14	32.6
Motor vehicle only	214	7.2	4	7.0	2	**
Malignant neoplasms	127	4.3	2	**	2	**
Congenital anomalies	78	2.6	3	**	0	0.0

(Table continued on next page)

(Table continued from previous page)

	White		Black		Indian, Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Diseases of the central nervous system	42	1.4	1	**	1	**
Homicide	28	0.9	1	**	1	**
Heart disease	28	0.9	0	0.0	0	0.0
Suicide	13	0.4	1	**	1	**
Total mortality	810	27.1	22	38.7	21	48.9

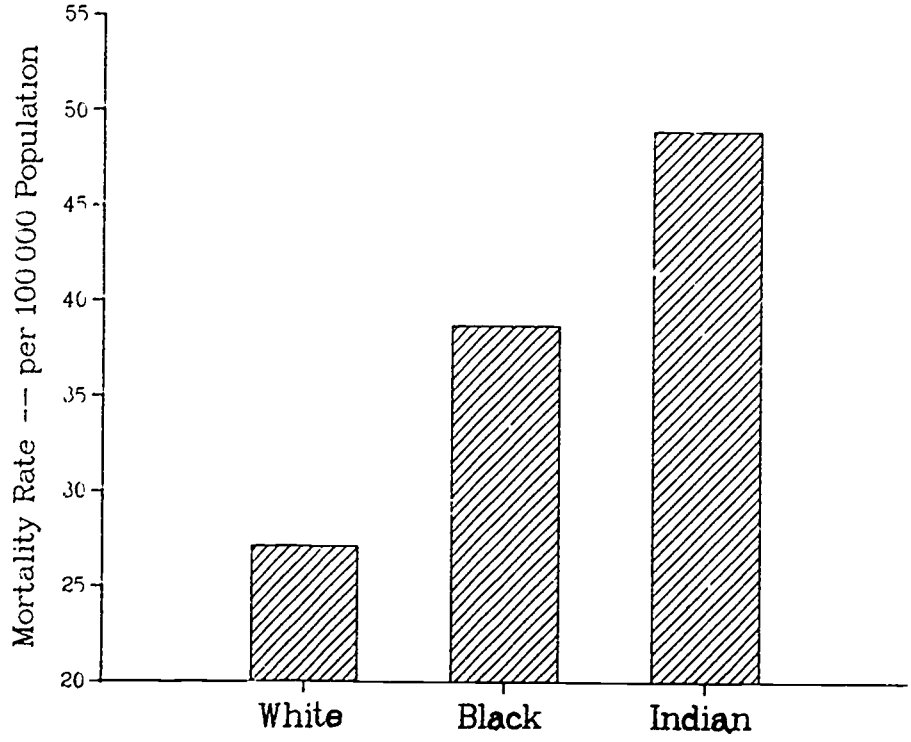
[1] Rates per 100,000 population.

**Rate not calculated due to small observed frequency.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Figure 19

Overall Mortality Rate for Children Aged 5–14 by Race
Minnesota Residents, 1978 – 1982



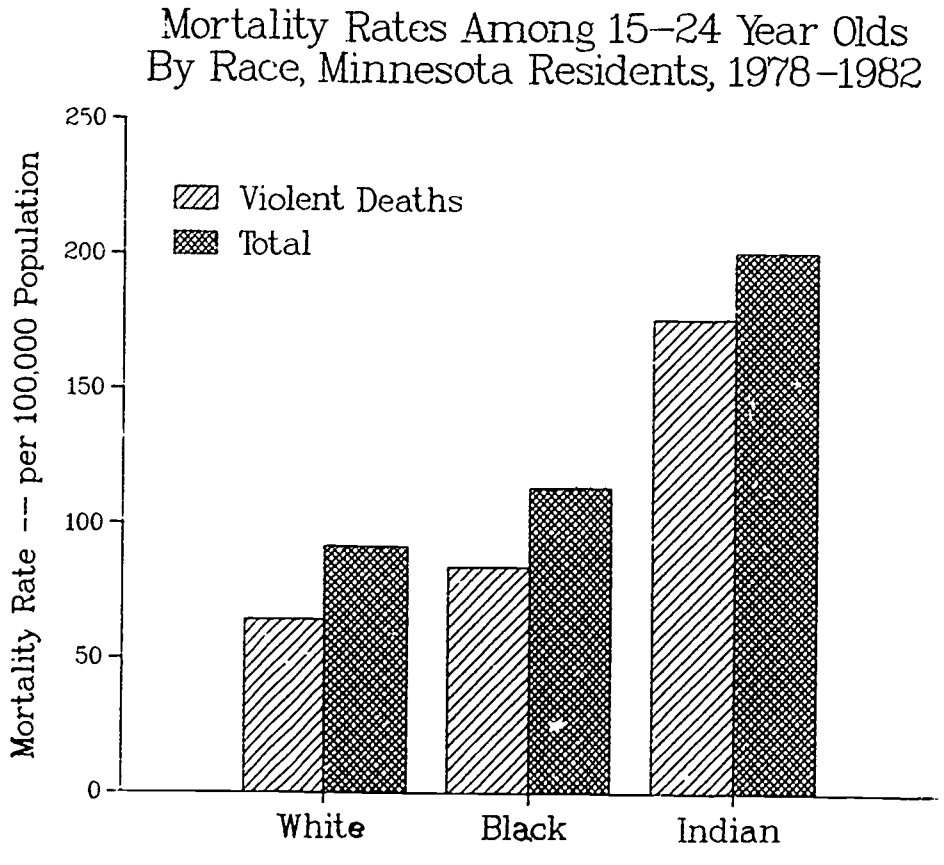
SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Mortality Among Adolescents Aged 15-24

Deaths due to injury were the leading cause of death for Indian and White adolescents and the second leading cause of death for Black adolescents. The leading cause of death for Black adolescents was homicide. Figure 20 indicates that deaths occurring as a result of violence comprised over 70 percent of the total adolescent death experience for each race during the surveillance period.

White adolescents had the lowest overall mortality rate, however Black adolescents were not far above White adolescents. Indian adolescents experienced much higher mortality rates than either Black or White adolescents.

Figure 20



SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Table 25 below indicates both Black and Indian adolescents had much higher mortality rates due to homicides than White adolescents. In addition, Indian adolescents had much higher mortality rates due to suicide and injury than either White or Black adolescents. Another characteristic of this surveillance period is the low mortality rate resulting from motor vehicle crashes among the Black population. This

Table 25
Leading Causes of Death Among 15-24 Year Olds by Race
Minnesota Residents, 1978-1982

	White		Black		Indian, Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Deaths due to injury	2201	57.7	20	35.0	45	111.5
Motor vehicle only	1659	43.5	5	8.7	30	74.3
Homicide	107	2.8	22	38.5	9	22.3
Suicide	487	12.8	6	10.5	13	32.2
Malignant neoplasms	227	6.0	6	10.5	1	**
Heart disease	79	2.1	**	1.8	2	**
Total mortality	3497	91.6	65	113.7	81	200.7

[1] Rates per 100,000 population.

**Rate not calculated due to small observed frequency.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

low mortality rate can be observed in all age groups, and is probably due, in part, to the fact that fewer Black adolescents have access to automobiles than Indian and White adolescents.

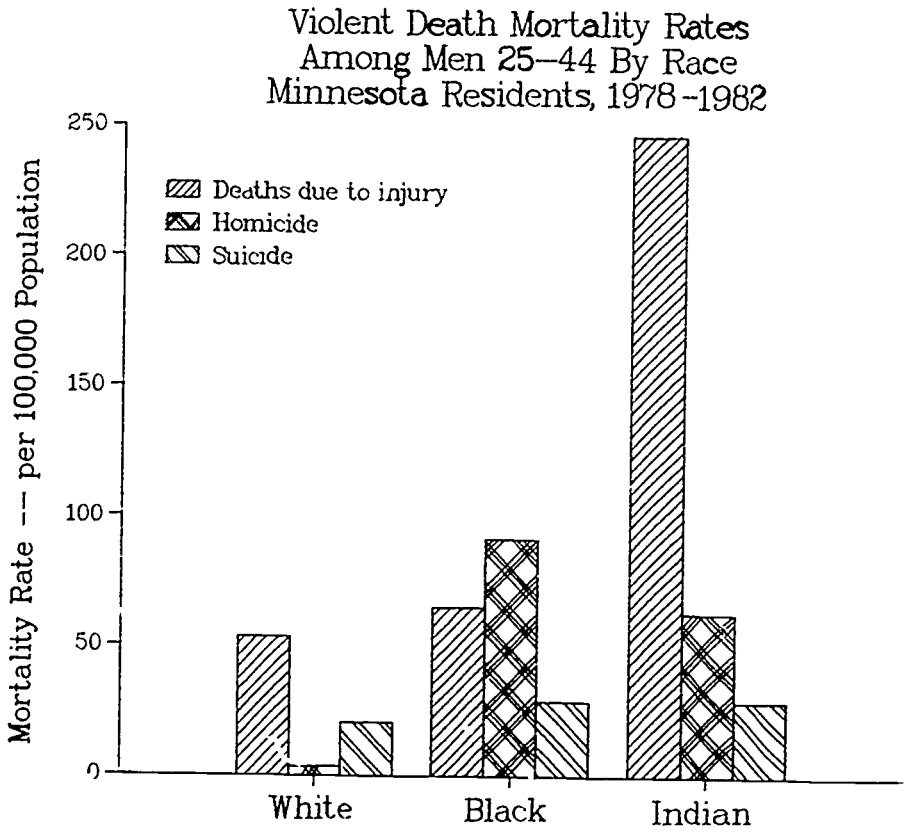
Mortality Among Adults

The mortality experience among adults residing within Minnesota is quite varied, in large part due to differences between races and sexes. Accordingly, the statistics which follow are sex specific in order to permit more thorough analysis.

Males, Aged 25-44

Injury was the leading cause of death for White and Indian males, and the third leading cause of death for Black males during the surveillance period. Homicide was the leading cause of death among Black males within this age group. In fact, violent deaths (resulting from all forms of injury) which were experienced by males of this age accounted for over 50 percent of all deaths (See Figure 21). The homicide mortality rate for both Black and Indian men was much higher than that of White men. The suicide mortality rate among all

Figure 21



SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

three groups was very similar, but rates of death due to injury were much higher for Indian men than for either White or Black men.

Table 26 indicates heart disease was the second leading cause of death for all three male populations of this age, but the mortality rate was lower for White males than for either Black or Indian males. Malignant neoplasms were one of the five leading causes of death for both White and Black males of this age, however the mortality rate due to cancer among Indian males was much lower than that for White and Black males (Indians tend to have a lower mortality rate due to cancer for all age groups).

The difference in overall mortality rates for the three races was quite pronounced. Black males of this age had a mortality rate over twice that of White males, while the mortality rate for Indian men was over three times as great as White men. Although part of this difference was due to the greater mortality resulting from violent deaths among Indian and Black men, the mortality rates for illness such as heart disease and cirrhosis of the liver, were also greater for Indian and Black men.

Table 26
Leading Causes of Death Among Males Aged 25-44 by Race
Minnesota Residents, 1978-1982

	White		Black		Indian, Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Deaths due to injury	1449	53.4	27	65.0	51	246.7
Motor vehicle only	885	32.6	10	24.1	28	135.4
Heart disease	669	24.6	28	67.4	16	77.4
Homicide	94	3.5	38	91.4	13	62.9
Suicide	560	20.6	12	28.9	6	29.0
Malignant neoplasms	531	19.6	14	33.7	2	**
Chronic liver disease and cirrhosis of the liver	97	3.6	6	14.4	3	**
Total mortality	4085	150.5	147	353.7	111	536.9

[1] Rates per 100,000 population.

**Rate not calculated due to small frequency.

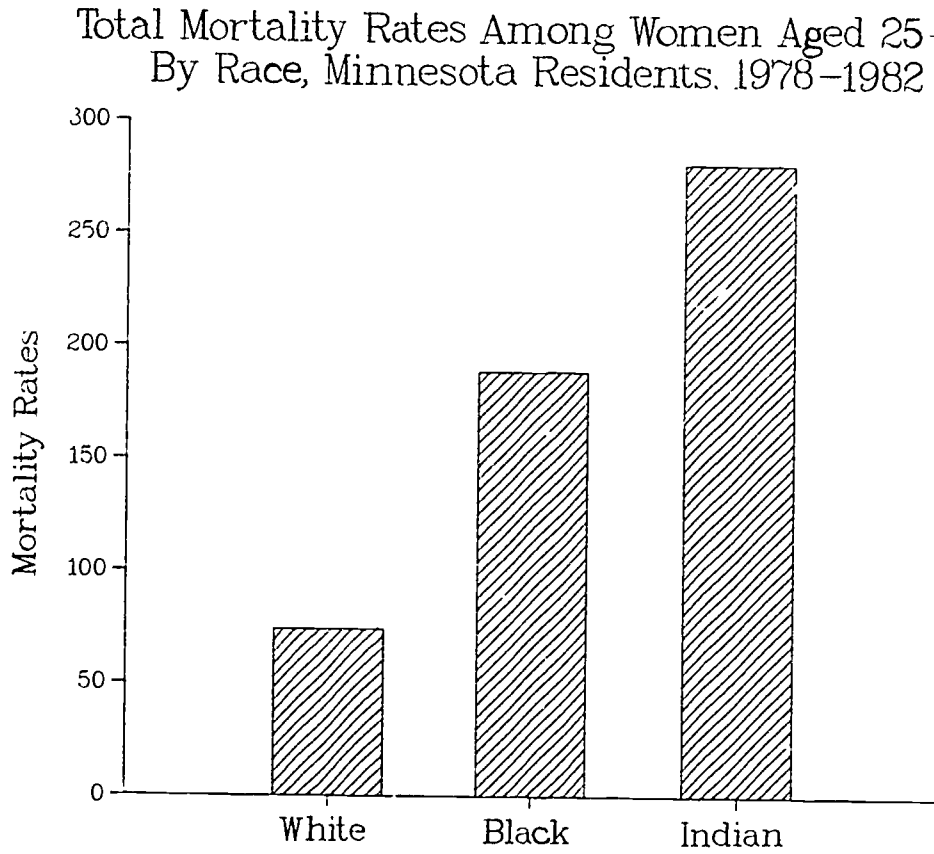
SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Females, Aged 25-44

The overall mortality rate among females of this age group follows a pattern similar to that observed for males. As Figure 22 shows, White females have a lower overall mortality rate than either Black or Indian females.

For females between the ages of 25 and 44 during the surveillance period the leading causes of death included malignant neoplasms and deaths due to injury (See Table 27). The leading cause of death for Black and White females of this age was malignant neoplasms; it was the third leading cause of death for Indian females aged 25 to 44. Over one-half of cancer deaths among Black females in this age group were due to breast cancer, while breast cancer was responsible for one-third of cancer deaths among White females and one-fourth of cancer deaths among Indian females.

Figure 22



SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Indian females had a higher mortality rate for violent deaths than either Black or White females. A large part of this is due to a high mortality rate resulting from deaths due to injury. Indian females in this age group also had a higher mortality rate for suicide than either Black or White females. In addition, Black and Indian females had higher mortality rates during the surveillance period for homicide than White females.

Table 27
Leading Causes of Death for Females Aged 25-44 by Race
Minnesota Residents, 1978-1982

	White		Black		Indian, Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Malignant neoplasms	631	23.2	22	32.3	4	17.3

(Table continued on next page)

(Table continued from previous page)

	White		Black		Indian, Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Deaths due to injury	352	13.0	7	19.4	20	86.4
Motor vehicle only	233	8.6	3	**	15	64.8
Suicide	207	7.6	3	**	4	17.3
Heart disease	186	6.8	10	27.7	2	**
Cerebrovascular disease	91	3.4	2	**	4	17.3
Chronic liver disease and cirrhosis of the liver	52	1.9	1	**	14	60.5
Pneumonia	22	0.8	3	**	2	**
Homicide	38	1.4	5	13.9	3	**
Total mortality	2009	74.0	68	188.7	65	280.9

[1] Rates per 100,000 population.

**Rate not calculated due to small frequency.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Another striking characteristic emerging out of this surveillance is the high Indian female mortality resulting from chronic liver disease and cirrhosis of the liver. It has often been noted that Indians are at greater risk of death due to cirrhosis of the liver than White or Black populations, but this appears more characteristic of female Indians residing in Minnesota than male Indians, at least within this age cohort. Cirrhosis of the liver was the second leading cause of death among Indian females during the Surveillance period.

Table 27 also indicates Black females had a higher mortality rate due to heart disease than either Indian or White females, while Indian females had a higher mortality rate resulting from cerebrovascular disease than either White or Black females.

Males, Aged 45-64

The three leading causes of death for males aged 45-64 years were heart disease, deaths due to injury, and malignant neoplasms (See Table

28). Suicides and homicides were less prominent in this age group, although homicide was the fifth leading cause of death among Black males. The White population had the lowest overall mortality rate, however the difference in death rates was not as great in this age group as it was in the 25-44 year old age group.

Table 28
Leading Causes of Death Among Males Aged 45-64 by Race
Minnesota Residents, 1978-1982

	White		Black		Indian Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Heart disease	7574	428.1	76	465.8	60	654.3
Malignant neoplasms	4958	280.3	81	496.5	23	250.8
Deaths due to injury	922	52.1	12	73.6	31	338.1
Motor vehicle only	374	21.1	2	**	10	109.1
Cerebrovascular disease	607	34.3	5	30.6	4	43.6
Chronic liver disease and Cirrhosis of the liver	575	32.5	5	30.6	12	120.9
Homicide	42	2.4	7	42.9	2	**
Other causes	219	12.4	11	67.4	5	54.5
Total mortality	17690	999.9	240	1471.0	159	1733.9

[1] Rates per 100,000 population.

**Rate not calculated due to small frequency.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

The Black male population aged 45-64 had a higher mortality rate for malignant neoplasms than either Indian or White males, and a higher mortality rate resulting from heart disease than White males. Black males were also more likely to be a victim of homicide than either White or Indian males.

Indian males had a higher mortality rate than either Black or White males in almost all leading causes of death. Differences in mortality rates were the greatest for deaths resulting from heart disease, injury and cirrhosis of the liver.

Females, Aged 45-64

Heart disease, malignant neoplasms and cerebrovascular disease were the three leading causes of death among females 45-64 years of age during the surveillance period.

Table 29
Leading Causes of Death Among Females Aged 45-64 by Race
Minnesota Residents, 1978-1982

	White		Black		Indian, Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Heart disease	2152	115.7	44	268.9	25	261.9
Malignant neoplasms	4326	232.6	44	268.9	21	220.0
Cerebrovascular disease	551	29.6	15	91.7	3	**
Deaths due to injury	372	20.0	4	24.4	8	83.8
Motor vehicle only	204	11.0	2	**	3	**
Chronic liver disease and cirrhosis of the liver	220	11.8	6	36.7	12	125.7
Other causes	104	5.6	6	36.7	3	**
Total mortality	9508	512.3	147	898.5	95	995.3

[1] Rates per 100,000 population.

**Rate not calculated due to small frequency.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Table 29 indicates Black and Indian females aged 45-64 experienced higher mortality rates for heart disease than White females. Black females also had a higher mortality rate for cerebrovascular disease than White females.

Indian females aged 45-64 had higher mortality rates for deaths due to injury and cirrhosis of the liver than either Black or White females. Unlike those of younger age, Indian females experienced a mortality rate resulting from chronic liver disease and cirrhosis of the liver which was similar to Indian males.

The overall mortality rate was lower for White females than for Black and Indian females. The difference in overall mortality rate between Indians and Blacks was modest (explained primarily by the higher mortality among Indian females resulting from deaths due to injury and cirrhosis of the liver).

Males, Aged 65 Years and Older

The three leading causes of death for males of this age during the surveillance period were heart disease, malignant neoplasms, and cerebrovascular disease. Upon reaching the age of 65 changes occur in the overall mortality rate (See Table 30 below). One of the most profound of these changes involves race. Indian males over 65 years of age had the lowest mortality rate, while White males had the highest mortality rate. One characteristic remained constant . . . Indian males in this age group, as in others, had a higher mortality rate resulting from deaths due to injury than either White or Black males.

The mortality rates for heart disease, malignant neoplasms and pneumonia were similar between the three populations, although Indian males had a lower mortality rate for malignant neoplasms than either Black or White males. White males had a higher mortality rate due to cerebrovascular disease than Black and Indian males.

Table 30
Leading Causes of Death Among Males 65 Years Old or Older by Race
Minnesota Residents, 1978-1982

	White		Black		Indian, Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Heart disease	25579	2628.7	122	2168.9	75	2060.4
Malignant neoplasms	12638	1298.8	97	1724.4	32	879.1
Cerebrovascular disease	5986	615.2	21	373.3	15	412.1
Pneumonia	2462	253.0	11	195.6	8	219.8
Deaths due to injury	1292	132.8	6	106.7	13	357.1
Motor vehicle only	324	33.3	0	0.0	6	164.8
Other causes	890	91.5	15	266.7	5	137.4
Total mortality	61088	6277.8	337	5991.7	193	5302.2

[1] Rates per 100,000 population.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Females, Aged 65 Years and Older

Like males of this age, the three leading causes of death during the surveillance period were heart disease, malignant neoplasms and cerebrovascular disease (See Table 31). Indian females 65 years old and older had lower mortality rates for heart disease and malignant neoplasms than either Black or White females of this age group. Indian females of this age also had the lowest overall mortality rate of the three populations, reversing their ranking in mortality rates among women under the age of 65. Indian females, however, had a mortality rate for diabetes mellitus which was higher than that observed for either Black or White females.

Table 31
Leading Causes of Death Among Females 65 Years Old or Older by Race
Minnesota Residents, 1978-1982

	White		Black		Indian, Eskimo, and Aleut	
	#	M.R.[1]	#	M.R.	#	M.R.
Heart disease	23477	1680.7	127	1771.3	58	1432.1
Malignant neoplasms	10712	766.9	70	976.3	19	469.1
Cerbrovascular disease	8751	626.5	46	641.6	24	592.6
Pneumonia	2524	180.7	11	383.5	9	222.2
Accidental deaths	1157	82.8	9	125.5	1	**
Diabetes mellitus	1139	81.5	9	125.5	7	**
Other causes	941	67.4	10	139.5	3	**
Total mortality	59243	4241.1	339	4728.0	156	3851.9

[1] Rates per 100,000 population.

**Rate not calculated due to small frequency.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

For the most part, mortality rates observed for Black females were similar to those observed for Indian and White females, with the exception of pneumonia. Black females of this age had a mortality rate resulting from pneumonia which was over twice as high as that for White females.

Summary

Indian and Black populations under age 65 experienced higher mortality rates than did the White population. Much of the difference in these mortality rates can be linked to violent deaths, either accidental deaths, suicide or homicide, as observed during the surveillance period. The Black population, regardless of sex, had a high mortality rate due to homicide through age 64. The Indian mortality rate was due, in part, to the large number of deaths due to injury. But, the higher mortality rates were not caused by violent death alone. Minnesota's Indian and Black populations also had higher mortality rates resulting from heart disease, malignant neoplasms, cirrhosis of the liver, pneumonia and cerebrovascular disease.

Minnesota's Black and Indian populations who were aged 65 during the Surveillance period experienced a reverse trend, especially among males. Indians aged 65 and above had lower mortality rates for most causes of death and had a lower overall mortality rate than either Black or White resident populations. Minnesota's Black population had mortality rates very similar to the White population.

Mortality Among Minnesota's Asian Population[7]

The Asian population in Minnesota is young and, on balance, evenly apportioned between male and female. The Southeast Asian population however is disproportionately male, placing it at greater risk of death due to the propensity of males to engage in risk-taking behavior.

Mortality Among Children and Teenagers

There were only 25 deaths for the five year surveillance period. The leading cause of death was injury, accounting for 44 percent of all deaths. Motor vehicle crashes caused 73 percent of all injuries which were fatal.

Mortality Among Adults 25-44 Years of Age

Table 32 below indicates that malignant neoplasms were the leading cause of death among Asian and Pacific Islanders aged 25-44 for the five year period under study. The pattern of mortality is similar to that observed for White females of this age. The overall mortality rate was lower than that experienced by Minnesota's White, Black and Indian populations.

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[7] The reader is encouraged to review pages 2-4 of this publication for technical detail related to development of death rate measurement for this population. In addition, other details for data years outside the Surveillance period associated with this study may be of interest. Please contact the Minnesota Center for Health Statistics for information.

Table 32
Leading Causes of Death Among Asian and Pacific Islanders Aged 25-44
Minnesota Residents, 1978-1982

	#	M.R.[1]
Malignant neoplasms	13	24.9
Deaths due to injury	9	17.2
Motor vehicle only	7	13.4
Heart disease	7	13.4
Other causes	4	5.7
Total mortality	41	78.5

[1] Mortality rates were calculated using the five year average within the Surveillance period and use a base population of 100,000 people.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Mortality Among Adults 45-64 Years of Age

Table 33 indicates malignant neoplasms were the leading cause of

Table 33
Leading Causes of Death Among Asian and Pacific Islanders Aged 45-64
Minnesota Residents, 1978-1982

	#	M.R.[1]
Malignant neoplasms	19	128.4
Heart disease	9	60.8
Cerebrovascular disease	6	40.6
Suicide	3	**
Diabetes mellitus	2	**
Total mortality	44	297.4

[1] Mortality rates were calculated using the five year average within the Surveillance period and use a base population of 100,000 people.

**Race not calculated due to small frequency.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

death among Asian and Pacific Islanders between the ages of 45 and 64. This pattern of mortality is similar to that observed for other populations of this age. The overall mortality rate and mortality rates for individual causes of death are much lower than those observed for other Minnesota populations.

Mortality to Those Aged 65 and Above

For Asian and Pacific Islanders aged 65 and over during the Surveillance period, the leading cause of death was heart disease, a pattern of mortality similar to that observed for Minnesota's other populations. However, Table 34 indicates the death rates are much lower than those of Minnesota's White, Black and Indian populations. In fact, the overall mortality rates are more than three times smaller than those of the other populations.

Table 34
Leading Causes of Death Among Asian and Pacific Islanders
65 Years Old or Older
Minnesota Residents, 1978-1982

	#	M.R.[1]
Heart disease	30	604.8
Malignant neoplasms	15	302.4
Cerebrovascular disease	7	141.1
Pneumonia	5	100.8
Other causes	4	80.6
Total mortality	80	1612.9

[1] Mortality rates were calculated using the five year average within the Surveillance period and use a base of 100,000 people.

SOURCE: Minnesota Department of Health
Minnesota Center for Health Statistics

Summary

In summary, Minnesota's Black and American Indian minority populations experienced high infant mortality rates and high mortality rates due to violent deaths during the surveillance period. The Asian and Pacific Islander population had infant mortality rates similar to that of the White population and overall mortality rates lower than the White population.

RECOMMENDATIONS

It is openly acknowledged that factors responsible for the depicted gaps in health status among Minnesota's populations are complex, occasionally elusive, and go well beyond the scope of clinical medicine and public health practice. Nevertheless, given our knowledge of today, it is possible to deploy interventions which offer the potential to positively impact on the health status of Minnesota's minority populations.

The key policy recommendations that emerge from this analyses are detailed below. The first set involves preventing disease, disability, injury and untimely death among our minority populations by addressing key determinants associated with health status:

- o Since one-fourth of Minnesota's minority population lives below the poverty level, poverty as a significant risk to health status must be eliminated. Income remains a significant gatekeeper, controlling both aspirational levels for viable economic futures as well as access to medical care for many of Minnesota's poor and minority populations. Of necessity, unemployment levels must be drastically reduced.

- o Concomitantly, current levels of access to health care must be maintained through efficient use of local public health and medical agencies where preventative health services are available. While Minnesota's Black and Asian populations are principally concentrated in metropolitan areas, its Indian and Hispanic populations are found in both urban and rural areas, necessitating provision for access across all of Minnesota.

- o Because of the significance of injury among Minnesota's Black and American Indian populations, community self-help programs need to be developed which empower citizens from minority communities with the skills necessary to design and implement comprehensive prevention programs.

- o Because of the known relationship between housing (or its lack of) and risk of disease and injury, housing which meets basic human needs for safe shelter and warmth in northern climates must be accessible to all members of Minnesota's minority communities.

- o Because food diets have a profound influence on health and wellbeing, eating right is one of the most important steps in prevention of chronic disease. Accordingly, both state and local agencies should stimulate development, implementation, and evaluation of local community nutrition programs which serve Minnesota's minority children, adolescents, adults and parents.

The next set of recommendations focuses on preventing health loss during the first year of life. These recommendations follow those above, and acknowledge that Minnesota's minority populations are three to six times more likely to receive little or no prenatal care, to demonstrate increased risk of low birthweight, and for Black infants to die of parasitic and infectious disease, and birth defects and perinatal morbidity at rates above Minnesota's other populations.

- o Purchasing power in the form of prepaid insurance, public assistance and/or other in-kind forms, must be instituted early in the first pregnancy so that access to quality prenatal medical care is preserved.

- o Preventative health services, including outreach and early identification of mothers or mothers-to-be, prenatal counseling, and effective case management must be available in local settings where Minnesota's minority populations reside. These services must be provided in a setting which is culturally sensitive to the client and any language barrier.

- o When pregnancy occurs in adolescence, in-school health and prenatal education programs must be available in order to lower the incidence of late entry into prenatal care.

- o Since children at risk at pregnancy or who are parents already may not remain formally enrolled in school, local minority communities must be provided with resources which enable them to develop and implement preventative and care giving programs which are community based and culturally relevant.

- o Strategies need to be identified which aid parents in responding to an infant's need for human love, comfort and nutritional intake.

Overall mortality rates for minority children are two to four times that of the white population, in large measure due to risk of death associated with injury. The statements which follow are directed specifically at this problem and include recommendations for:

- o Provision of quality housing which barricades children from risk of injury associated with burns, poisonings, falls from windows, and electrocutions.

- o Consistent use of child restraint devices in motor vehicles since risk of death resulting from injury to young minority children is three to four times that of white children.

- o Provision of safe and supervised "play spaces" for children.

- o Continued support of minority family structures so that children are reared in supportive environments.

The adolescent years offer unique opportunities for intervention since many behaviors ultimately contributing to the burden of chronic disease originate in this period. These behaviors originate within all human populations, regardless of race or ethnicity. Included must be attention toward:

- o Educational interventions which are focused upon teenaged populations of <u>both</u> sexes who are at risk of premature sexual activity so that the incidence of pregnancy among children aged 17 and younger is lowered and ultimately eliminated.

- o Promotion of responsible use patterns for chemical substances such as alcoholic beverages, tobacco products, and prescription drugs so that the incidence of death associated with unintentional injury is reduced.

- o Development of early intervention and identification of adolescents who are at risk of chronic disease resulting from exposure to high risk environments or early adoption of risk-taking behaviors.

- c Greater incorporation of physical exercise into daily routines since exercise can positively affect emotional wellbeing of adolescents who are depressed or anxious.

- o Development of programs which assist in habitation skill development and which are targeted toward high-risk families and households. These programs must be culturally relevant, feature appropriate role models, and clearly communicate the message that violence is an unacceptable behavior.

Indian and Black adults who reside in Minnesota evidence rates of mortality resulting from heart disease, cancer, injury, and cirrhosis of the liver which exceed Asian and White rates. Accordingly, it is recommended that:

- o Strategies which address culturally relevant dietary and screening and detection services be developed and strengthened at the community level. Such strategies can prevent deaths resulting from heart disease, cerebrovascular disease and cancer among both men and women who are Black.

- o Strategies focused on injury prevention and control be developed for both Black and Indian males and females since injury contributes in such a substantial way to overall mortality.

- o Strategies aimed at reducing and eliminating chemical dependency be developed or strengthened by those agencies who are providing medical care, employment help and other intervention services to both Minnesota's Black and American Indian populations. Four of the eight leading causes of death among American Indians are related to alcohol: unintentional injury, suicide, homicide, and cirrhosis of the liver.

These efforts will require the commitment and coordination of numerous agencies across Minnesota. Many disciplines, some of which are outside of public health, must blend efforts so that Minnesota's minority populations progress toward states of wellness which nurture life at its fullest. Numerous public and private agencies can share in this effort and help ensure progress towards health for all.

APPENDICES

APPENDIX A

1980 Census Population by Race by County
Minnesota Residents

County	Total	White	Black	Indian	Japanese	Chinese	Filipino	Korean	Race: Indian	Vietnamese	Hawaiian	Guamanian	Samoan	Other
Aitkin	13,404	13,223	12	127	2	5	2	5	2	3	1	0	0	22
Anoka	195,998	192,299	382	1,112	130	233	203	526	149	230	11	9	5	709
Becker	29,336	27,487	10	1,720	6	0	1	21	7	10	0	0	0	74
Beltrami	30,982	26,838	37	3,917	7	7	5	14	9	8	1	0	0	139
Benton	25,187	24,976	35	55	13	4	7	17	3	16	0	0	0	61
Big Stone	7,716	7,646	0	17	0	1	23	5	0	0	0	0	0	24
Blue Earth	52,314	51,466	207	87	41	110	6	55	42	37	1	2	0	260
Brown	28,645	28,502	3	27	3	0	15	32	2	40	0	0	0	21
Carlton	29,936	29,020	29	818	3	5	7	22	1	9	0	0	0	22
Carver	37,046	36,782	44	66	7	6	14	61	5	12	1	0	0	48
Cass	21,050	19,055	14	1895	5	0	2	24	7	3	1	0	0	44
Chippewa	14,941	14,772	3	25	1	5	6	21	2	35	3	0	0	68
Chisago	25,717	25,501	28	76	5	7	2	21	5	17	0	1	1	53
Clay	49,327	48,453	148	202	14	40	10	41	20	42	2	1	1	353
Clearwater	8,761	8,117	2	627	2	0	1	4	0	0	0	0	0	8
Cook	4,092	3,780	11	278	3	0	3	3	0	0	0	0	0	14
Cottonwood	14,854	14,785	8	12	0	0	5	17	3	7	3	0	0	14
Crow Wing	41,722	41,298	50	191	12	12	35	34	9	37	3	0	0	41
Dakota	194,279	190,054	1,160	451	203	193	182	436	200	312	17	8	2	1,061
Dodge	14,773	14,686	10	22	3	11	2	17	2	0	0	0	0	20
Douglas	27,839	27,652	4	45	2	3	13	46	9	17	1	0	0	47
Faribault	19,714	19,468	4	8	1	2	5	13	11	29	0	0	0	173
Fillmore	21,930	21,798	10	27	6	0	6	12	8	11	0	0	1	51
Freeborn	36,329	35,816	2	35	8	5	18	11	13	21	0	0	0	400
Goodhue	38,749	38,313	44	185	10	3	2	79	7	45	5	0	0	56
Grant	7,171	7,144	0	8	1	2	2	9	1	1	0	0	0	3
Hennepin	941,411	880,391	32,986	10,479	1,202	2,073	864	2,107	1,448	2,016	90	19	20	7,716
Houston	18,382	18,284	8	26	2	0	2	14	4	6	0	0	0	36
Hubbard	14,098	13,781	8	248	2	16	2	15	0	12	3	0	1	10
Isanti	23,600	23,382	45	76	5	4	6	24	8	13	0	0	0	37

1980 Census Population by Race by County
Minnesota Residents

County	Total	White	Black	Indian	Japanese	Chinese	Filipino	Korean	Indian	Vietnamese	Hawaiian	Guamanian	Samoan	Other
						Race								
Itasca	43,069	41,771	29	1,087	11	19	9	21	7	25	0	0	0	90
Jackson	13,690	13,625	3	5	0	7	6	7	2	10	0	0	0	25
Kanabec	12,161	12,065	7	17	3	0	3	20	11	14	0	0	0	21
Kandiyohi	36,763	36,400	25	61	9	21	7	33	10	58	1	0	0	138
Kittson	6,672	6,640	0	6	1	0	1	1	0	4	0	0	0	19
Koochiching	17,571	17,123	13	357	3	1	10	5	1	15	3	0	0	40
Lac Qui Parle	10,592	10,539	4	17	7	1	2	11	4	6	0	0	0	1
Lake	13,043	12,928	19	44	5	6	8	15	3	2	0	0	0	13
Lake of the Woods	3,764	3,739	2	9	1	0	0	0	4	4	0	0	0	5
Le Sueur	23,434	23,304	[illegible]	34	8	8	2	24	5	13	0	1	0	29
Lincoln	8,207	8,173	1	19	0	0	3	2	2	4	0	0	0	3
Lyon	25,207	24,920	26	49	14	22	8	16	19	50	3	0	0	80
McLeod	29,657	29,425	17	36	13	18	4	26	14	30	1	1	0	72
Mahnomen	5,535	4,509	1	1,003	1	0	7	0	0	0	1	0	0	13
Marshall	13,027	12,975	3	24	0	0	3	5	3	1	0	0	0	13
Martin	24,687	24,526	9	15	6	11	11	27	17	30	0	1	0	34
Meeker	20,594	20,429	8	19	6	3	1	15	3	11	1	0	0	98
Mille Lacs	18,430	17,832	20	495	4	7	1	16	6	9	1	0	0	39
Morrison	29,311	29,177	5	54	1	0	14	16	6	5	0	0	0	33
Mower	40,390	40,097	36	26	14	8	12	24	19	40	3	0	0	111
Murray	11,507	11,456	2	3	3	9	6	5	2	4	0	0	0	17
Nicollet	26,929	26,637	52	51	14	23	9	37	10	24	1	0	0	71
Nobles	21,840	21,583	30	52	1	9	1	16	13	58	0	0	1	76
Norman	9,379	9,285	0	47	0	0	0	11	0	20	0	1	0	15
Olmsted	92,006	90,180	411	130	138	280	123	99	132	208	3	0	0	302
Otter Tail	51,937	51,572	25	121	17	16	39	28	17	13	3	1	0	85
Pennington	15,258	15,117	12	61	3	3	8	21	1	6	0	0	0	26
Pine	19,871	19,300	146	273	7	10	9	30	1	45	0	3	0	47
Pipestone	11,690	11,562	5	80	1	0	4	3	4	11	0	0	0	20
Polk	34,844	34,070	64	268	6	6	13	37	9	11	2	0	0	358
Pope	11,657	11,628	1	6	1	0	0	10	6	0	0	0	0	5
Ramsey	459,784	427,153	14,720	2,993	474	1,036	504	988	1,017	1,314	42	22	5	9,516
Red Lake	5,471	5,454	0	7	0	0	4	3	1	0	0	0	0	2
Redwood	19,341	19,115	2	140	0	1	0	7	1	39	0	0	0	36
Renville	20,401	20,274	4	52	1	1	0	23	2	0	0	4	0	40

1980 Census Population by Race by County
Minnesota Residents

County	Total	White	Black	Indian	Japanese	Chinese	Filipino	Korean	Indian	Vietnamese	Hawaiian	Guamanian	Samoan	Other
					Race									
Rice	46,087	45,529	118	62	29	52	10	65	16	41	1	5	0	159
Rock	10,703	10,652	6	13	0	7	0	4	3	11	0	0	0	7
Roseau	12,574	12,451	1	86	0	4	6	5	3	0	0	0	0	18
St. Louis	222,229	217,231	961	2815	72	132	107	162	75	231	14	7	2	420
Scott	43,784	43,262	63	194	21	5	6	86	13	27	1	0	0	106
Sherburne	29,908	29,383	141	134	18	17	14	49	14	18	1	0	0	119
Sibley	15,448	15,364	3	22	3	7	0	8	7	0	0	0	0	34
Stearns	108,161	107,082	159	198	34	93	32	76	43	164	7	5	1	267
Steele	30,328	30,077	13	26	12	1	4	30	19	51	0	0	0	95
Stevens	11,322	11,162	52	14	4	12	1	18	15	9	0	0	0	35
Swift	12,920	12,847	2	19	1	1	8	10	4	12	0	0	0	16
Todd	24,991	24,862	7	36	3	0	4	24	6	19	2	0	0	28
Traverse	5,542	5,436	4	78	0	0	5	4	7	0	0	0	0	8
Wabasha	19,335	19,252	5	24	2	1	[illegible]	15	3	9	0	1	0	16
Wadena	14,192	14,070	2[illegible]	57	0	2	[illegible]	12	6	2	0	0	0	16
Waseca	18,448	18,346	22	7	2	2	0	20	11	10	0	0	0	28
Washington	113,571	111,284	615	371	75	185	167	266	53	82	7	2	0	464
Watonwan	12,361	12,185	1	12	3	0	2	6	2	19	0	1	0	130
Wilkin	8,454	8,384	2	33	1	1	5	4	1	14	0	0	0	9
Winona	46,256	45,771	105	73	24	19	6	34	19	59	0	2	0	144
Wright	58,681	58,289	28	123	11	14	7	101	17	10	2	0	0	79
Yellow Medicine	13,653	13,499	0	96	2	7	0	12	4	5	0	0	0	28
State Total	4,075,970	3,935,770	53,344	35,016	2,789	4,835	2,677	6,319	3,670	5,866	243	97	40	25,304

SOURCE: 1980 Census
Minnesota Population and Housing Characteristics

Minnesota Department of Health
Minnesota Department for Health Statistics
August 1985

APPENDIX B

INFANT BIRTH AND DEATH STATISTICS

BY BIRTHWEIGHT AND RACE BY PLURALITY OF BIRTH,

MINNESOTA RESIDENTS, 1979-1982

INFANT MORTALITY RATES BY BIRTHWEIGHT AND RACE BY PLURALITY OF BIRTH
MINNESOTA RESIDENTS, 1979 - 1982

YEAR: 1979	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	438.8	460.4	369.9	438.5	461.9	368.8	441.2	483.9	0.0	416.7	300.0	1000.0	400.0	400.0	0.0
1500-2499	35.9	38.9	21.4	36.9	40.1	22.4	25.4	27.3	0.0	28.6	32.3	0.0	22.2	25.0	0.0
2500+	4.6	4.6	9.1	4.4	4.3	9.6	10.8	10.9	0.0	11.8	11.9	0.0	4.8	4.9	0.0
UNK	37.2	28.6	363.6	232.3	186.8	750.0	1000.0	1000.0	0.0	333.3	0.0	1000.0	0.0	0.0	0.0
TOTAL	10.4	9.4	60.3	10.0	9.0	60.6	22.8	23.1	0.0	19.0	15.7	166.7	8.9	9.1	0.0

YEAR: 1980	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	439.2	428.9	486.0	435.1	424.5	480.0	500.0	461.5	1000.0	454.5	500.0	0.0	384.6	400.0	333.3
1500-2499	35.2	38.2	20.6	33.9	37.9	15.3	21.1	23.3	0.0	57.8	54.5	250.0	89.6	70.2	200.0
2500+	4.2	4.2	1.6	4.0	4.1	1.7	4.5	4.5	0.0	10.4	10.5	0.0	3.8	3.8	0.0
UNK	21.0	19.3	95.2	115.4	107.4	222.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	9.5	8.7	52.9	9.1	8.3	50.0	19.8	18.1	130.4	17.2	16.5	90.9	13.1	10.7	150.0

YEAR: 1981	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	436.1	432.6	446.7	426.4	423.2	436.5	387.1	372.1	421.1	272.7	111.1	1000.0	1142.9	1272.7	666.7
1500-2499	33.6	36.7	17.9	32.4	36.1	14.9	46.2	42.4	83.3	20.0	25.6	0.0	49.6	45.5	111.1
2500+	4.6	4.6	4.4	4.4	4.4	4.6	5.6	5.7	0.0	12.4	12.5	0.0	6.1	6.2	0.0
UNK	26.3	22.8	173.9	151.5	130.4	428.6	333.3	333.3	0.0	0.0	0.0	0.0	500.0	500.0	0.0
TOTAL	10.0	9.0	61.1	9.3	8.4	54.1	24.1	19.0	214.3	15.1	13.7	80.0	20.9	19.3	166.7

YEAR: 1982	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	410.3	400.9	438.7	396.4	383.7	431.5	500.0	500.0	500.0	357.1	250.0	1000.0	684.2	750.0	333.3
1500-2499	31.6	34.9	15.4	31.8	35.3	14.6	7.0	7.8	0.0	27.8	16.4	90.9	68.0	81.4	0.0
2500+	4.1	4.1	6.4	3.9	3.9	6.8	5.9	6.0	0.0	8.0	8.1	0.0	5.9	5.9	0.0
UNK	30.6	29.3	87.0	295.8	296.9	285.7	0.0	0.0	0.0	333.3	500.0	0.0	0.0	0.0	0.0
TOTAL	9.3	8.2	58.1	8.7	7.7	58.6	16.0	15.2	50.0	13.4	11.4	107.1	17.6	17.3	34.5

Source: Minnesota Department of Health
Center for Health Statistics

INFANT DEATHS BY BIRTHWEIGHT AND RACE BY PLURALITY OF BIRTH
MINNESOTA RESIDENTS 1979 - 1982

YEAR: 1979	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	269	215	54	246	194	52	15	15	-	5	3	2	2	2	-
1500-2499	97	87	10	91	81	10	3	3	-	2	2	-	1	1	-
2500+	284	278	6	255	249	6	14	14	-	12	12	-	3	3	-
UNK	32	24	8	23	17	6	1	1	-	2	-	2	-	-	-
TOTAL	682	604	78	615	541	74	33	33	-	21	17	4	6	3	-

YEAR: 1980	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	260	208	52	228	180	48	21	18	3	5	5	-	5	4	1
1500-2499	100	90	10	87	80	7	3	3	-	4	3	1	6	4	2
2500+	265	264	1	242	241	1	6	6	-	12	12	-	4	4	-
UNK	19	17	2	15	13	2	-	-	-	-	-	-	-	-	-
TOTAL	644	579	65	572	514	58	30	27	3	21	20	1	15	12	3

YEAR: 1981	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	266	199	67	223	168	55	24	16	8	3	1	2	16	14	2
1500-2499	100	91	9	86	79	7	6	5	1	1	1	-	7	6	1
2500+	294	291	3	263	260	3	8	8	-	14	14	-	9	9	-
UNK	26	22	4	15	12	3	1	1	-	-	-	-	2	2	-
TOTAL	686	603	83	587	519	68	39	30	9	18	16	2	34	31	3

YEAR: 1982	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	254	186	68	218	155	63	17	15	2	5	3	2	13	12	1
1500-2499	86	79	7	76	70	6	1	1	-	2	1	1	7	7	-
2500+	262	257	5	233	228	5	9	9	-	10	10	-	9	9	-
UNK	32	30	2	21	19	2	-	-	-	1	1	-	-	-	-
TOTAL	634	552	82	548	472	76	27	25	2	18	15	3	29	28	1

Source: Minnesota Department of Health
Center for Health Statistics

October 1985

LIVE BIRTHS BY BIRTHWEIGHT AND RACE BY PLURALITY OF BIRTH
MINNESOTA RESIDENTS 1979 - 1982

YEAR: 1979	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	613	467	146	561	420	141	34	31	3	12	10	2	5	5	0
1500-2499	2705	2238	467	2167	2021	446	118	110	8	70	62	8	45	40	5
2500+	61146	60488	658	58134	57507	627	1296	1286	10	1018	1006	12	621	612	9
UNK	861	839	22	99	91	8	1	1	0	6	4	2	0	0	0
TOTAL	65325	64032	1293	61261	60039	1222	1449	1428	21	1106	1082	24	671	657	14

YEAR: 1980	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	592	485	107	524	424	100	42	39	3	11	10	1	13	10	3
1500-2499	2840	2354	486	2569	2110	459	142	129	13	59	55	4	63	57	6
2500+	63507	62893	614	59844	59252	592	1330	1323	7	1151	1145	6	1061	1056	5
UNK	904	883	21	130	121	9	0	0	0	2	2	0	2	2	0
TOTAL	67843	66615	1228	63067	61907	1160	1514	1491	23	1223	1212	11	1139	1125	14

YEAR: 1981	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	610	460	150	397	126	43	19	9	2	11	3				
1500-2499	2980	2478	502	2187	489	118	12	39	11	132	9				
2500+	64074	63390	684	59270	654	1411	11	1121	12	1459	6				
UNK	988	965	23	92	7	3	0	2	0	4	0				
TOTAL	68652	67293	1359	61946	1256	1575	42	1171	25	1606	18				

YEAR: 1982	TOTALS			WHITE			BLACK			INDIAN			ASIAN		
	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE	TOTAL	SINGLE	MULTIPLE
<1500	619	464	155	550	404	146	34	30	4	14	12	2	16	3	
1500-2499	2718	2263	455	2392	1981	411	143	129	14	72	61	11	86	17	
2500+	64129	63351	778	59687	58955	732	1513	1491	22	1254	1241	13	1516	9	
UNK	1046	1023	23	71	64	7	1	1	0	3	2	1	3	0	
TOTAL	68512	67101	1411	62700	61404	1296	1691	1651	40	1344	1316	28	1621	29	

Source: Minnesota Department of Health
Center for Health Statistics

October 1985

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APPENDIX C

Formulae Used to Construct Infant Mortality Rates

The total infant mortality rate was computed according to the following formula:

$$m_i = \frac{d_{-1}}{B} k$$

where:

m_i = infant mortality rate,

d_{-1} = deaths of infants under 1 year of age (exclusive of fetal deaths) during specified time period,

B = total number of live births occurring during the same time period,

k = 1,000.

The neonatal infant mortality rate was computed according to the following formula:

$$m_n = \frac{d_{-1mo}}{B} k$$

where:

m_n = neonatal mortality rate,

d_{-1mo} = deaths of infants under 29 days of age (excluding fetal deaths) during specified time period,

B = total number of live births occurring during same time period,

k = 1,000.

The perinatal infant mortality rate was computed according to the following formula:

$$m_p = \frac{d_{-20wk+mo}}{B} k$$

where:

m_p = perinatal mortality rate,

$d_{-20wk+mo}$ = fetal deaths (20 weeks gestation or longer) plus deaths of infants under 29 days of age during specified time period,

B = total number of live births occurring during same time period,

k = 1,000.

The expected number of infant deaths was computed according to the following formula:

$$E_d = r_{-i} \frac{B}{k}$$

where:

E_d = expected deaths,

r_{-i} = specific infant death rate, e.g. total infant death rate, perinatal death rate, neonatal death rate, or post-neonatal death rate during specified time period,

B = total number of live births occurring during specified time period,

k = 1,000.

APPENDIX D

Proportion of Deaths by Age Group by Race
Minnesota Residents, 1978-1982

Race	Sex	Age						
		Under 1	1-4	5-14	15-24	25-44	45-64	65 and Over
		%	%	%	%	%	%	%
White	Male	2.1	0.4	0.6	3.0	4.6	20.1	69.3
	Female	1.8	0.3	0.4	1.2	2.7	12.9	80.6
Black	Male	11.7	2.4	0.9	5.1	16.2	26.5	37.2
	Female	10.0	2.1	2.1	2.8	10.2	22.0	50.7
Indian, Eskimo, and Aleut	Male	8.3	2.5	2.6	10.2	18.3	26.2	31.8
	Female	8.6	3.1	1.3	4.9	16.9	24.7	40.5
Asian and Pacific Islander	Male	18.7	1.9	3.9	5.2	16.1	17.4	36.8
	Female	26.4	4.6	2.3	2.3	18.4	19.5	26.4

Proportion of the Population by Age Group by Race
Minnesota, 1980

Race	Sex	Age						
		Under 1	1-4	5-14	15-24	25-44	45-64	65 and Over
		%	%	%	%	%	%	%
White	Male	1.7	6.0	15.9	19.8	28.2	18.4	10.1
	Female	1.5	5.5	14.5	19.0	27.0	18.5	13.9
Black	Male	2.3	8.7	21.3	21.2	30.5	12.0	4.1
	Female	2.6	8.7	21.4	21.6	27.6	12.5	5.5
Indian, Eskimo, and Aleut	Male	2.9	9.9	25.5	22.9	24.0	10.6	4.2
	Female	2.8	9.0	23.6	23.2	26.0	10.7	4.6
Asian and Pacific Islander	Male	1.8	8.2	24.5	19.6	35.0	8.4	2.7
	Female	1.9	11.0	24.4	16.3	32.3	10.5	3.6

APPENDIX E

A Note on Data Pertaining to the Hispanic Population Residing Within Minnesota

Prior to 1980, little demographic information about Minnesota's Hispanic population is available. Additionally, health status information is almost nonexistent. The demographic void was partially filled by the 1980 Decennial Census. The health status void continues until 1988 when the Minnesota Department of Health initiates new data collection instruments within its Vital Statistics Registration System. Other surveillance systems operated by the MDH are expected to adopt similar changes relative to collection of ethnic status.

The MDH has consulted with Migrant Health Inc., and selected medical settings serving Hispanic populations in an effort to fill part of the informational void. In addition, data within the Women, Infant and Children Nutritional Supplement Program (WIC) was investigated for potential use within this report. Because none of these sources contained complete information about Hispanic populations at risk of disease, injury, or premature death, MDH reluctantly withdrew from use of these sources of data.

Investigation revealed that most encounter data was allocated to a family only, drastically limiting the utility of these data for use in the present analysis. In other instances the identification of Hispanic populations being served was characterized by staff within the care-giving facility or clinic as procedurally deficient. WIC summary data were made available to MDH by its data contractor so late that it could not be included in this report.

Obviously, improvement in this overall situation must occur. The MDH remains committed to exploring observable health statuses of all sectors of its resident population, and in support of this objective has initiated activity which will result in correction of present deficiencies.