

---

# Mortality Among Minority Populations: a Review of Recent Patterns and Trends

KYRIAKOS S. MARKIDES, PhD

Tearsheet requests to Kyriakos S. Markides, PhD, Associate Professor, Division of Sociomedical Sciences, Department of Preventive Medicine and Community Health, The University of Texas Medical Branch, Galveston, Tex. 77550.

## SYNOPSIS .....

*The mortality experiences of blacks, Native Americans, and Hispanics are reviewed. Evidence recently*

*made available shows the Hispanic experience to be only slightly less favorable than the Anglo (other white) experience, suggesting remarkable progress in recent years. Native Americans have also made remarkable progress in recent years, especially in reducing infant mortality. Blacks have shown less improvement than the other two groups. Reasons for these trends, for differences among the groups in mortality rates and life expectancy, and for patterns of mortality by cause are discussed.*

---

**I**N RECENT YEARS, WE HAVE SEEN increasing interest in study of the demographic behavior and experience of America's ethnic minority populations. Yet much of this interest has been in the areas of fertility and migration rather than in the area of mortality. The study of mortality among racial and ethnic minorities is important not only for its demographic relevance but also because mortality is a fundamental quality-of-life indicator (1).

Of America's three largest disadvantaged ethnic minority groups—blacks, Hispanics, and Native Americans (American Indians and Alaska Natives)—much more is known about the mortality situation of blacks than that of the other two groups because official life tables are routinely published only for the total U.S. population, for whites, and for blacks. The lack of official life tables for Hispanics is related, among other things, to the problem of determining and defining exactly what constitutes the Hispanic population or specific Hispanic subpopulations (2). In the case of Native Americans, the added problem of small numbers makes it difficult to provide stable life table estimates.

Relative lack of knowledge about mortality among minority populations often leads to misunderstandings. In the case of Hispanics, the lack of recent data—or their unavailability, until very recently, in a form accessible to scholars—has led to many misunderstandings about the mortality situation of this group. It is not uncommon, for example, to read in textbooks and even in scholarly publications statements that the life expectancy of Mexican Americans

is lower than the life expectancy of blacks—statements not warranted by 1970 statistics recently made available (3).

This paper discusses recent patterns and trends in the mortality condition of blacks, Hispanics, and Native Americans. In it I have examined mortality rates by age and sex, life expectancy values for the most recent years available, and cause-of-death data, in order to assess how the three minority groups compare with each other and with the majority white (non-Hispanic) population. Particular emphasis has been given to changes in the relative position of the minority groups vis-à-vis the non-Hispanic white population. The three groups are discussed separately, then compared.

### Black Americans

**Trends in life expectancy.** Recent official life table estimates show that nonwhites (95 percent of whom are black) were expected to live an average of 69.2 years in 1978, 4.8 years less than whites (4). This disadvantage was slightly less among women (4.2 years) than among men (5.2 years). The sex gap was somewhat greater among nonwhites than among whites. As was the case for whites, this gap was very small in 1900, an indication that improvements over the years have favored nonwhite women more than nonwhite men. Since the life expectancy of nonwhites in 1900 was very low (33.0 years), the 20th century has seen dramatic improvements in their life expectancy, leading to a gradual narrowing of the

racial gap from 14.6 years in 1900 to 8.3 in 1950 and to 4.8 in 1978. While this is remarkable progress (5), much of it has resulted from reductions in child and infant mortality rather than from reductions in mortality at higher ages. Despite improvements, however, infant mortality for blacks remains approximately twice as high as that for whites: in 1977, there were 23.6 deaths per 1,000 live births among blacks, versus 12.3 per 1,000 among whites (6a). This continued racial gap in infant mortality implies that much progress can be made to further reduce the racial gap in life expectancy at birth.

**The racial mortality crossover.** Life expectancy for nonwhites (95 percent of whom are black) is lower than life expectancy for whites except at advanced ages, when a reversal is observed whereby nonwhites have a higher life expectancy than whites (table 1). This phenomenon has been called the racial mortality "crossover" (7-9). Early discussions of the phenomenon were characterized by skepticism regarding its validity. For example, it was thought to be due to enumeration errors and age misreporting. Yet adjustments for these factors have generally failed to eliminate the crossover (7,10,11). Most scholars today agree with Manton (8), who suggested that "The crossover is a result of differential early mortality which selects the least robust persons from the disadvantaged population at relatively earlier ages so that, at advanced ages, the disadvantaged population has proportionately more robust persons." The differential mortality affecting blacks and whites before reaching old age results largely from socioeconomic differences between the races as well as poor access to health care by

*'Like Hispanics, Native Americans also appear to be somewhat protected from the leading causes of death. Yet this "protection" may be due to very high mortality rates from accidents and other causes of death involving violence.'*

blacks, resulting from discrimination and other factors. Therefore, reductions in the overall racial socioeconomic inequalities and better access to quality health care by blacks, which might reduce higher early (before old age) mortality, can be expected to lead to a later mortality crossover, or to the elimination of it (12). Ironically, such reductions in inequalities in younger years can also lead to increasing socioeconomic and health inequalities between the races at advanced ages (13).

**Major causes of death.** Overall mortality rates vary by race or by other factors because of differences in mortality from specific causes of death. The black disadvantage is most evident in the number one cause of death: diseases of the heart. Statistics for 1977 (6b; table 2) show an overall age-adjusted heart disease death rate of 322 per 100,000 for black men, compared with a rate of 294 for white men. Similarly, black women had an age-adjusted rate of 204 per 100,000, compared with 137 for

Table 1. Life expectancy at various ages by race and sex: United States, 1978

Age (years)	Whites			Nonwhites		
	Both sexes	Males	Females	Both sexes	Males	Females
0	74.0	70.2	77.8	69.2	65.0	73.6
10	65.1	61.5	68.9	61.1	57.0	65.4
20	55.5	52.0	59.1	51.5	47.4	55.6
30	46.2	42.8	49.5	42.5	38.8	46.2
40	36.7	33.6	39.9	33.7	30.4	37.0
50	27.8	24.8	30.7	25.7	22.8	28.5
55	23.7	20.8	26.4	22.1	19.5	24.7
60	19.8	17.2	22.3	18.9	16.5	21.2
65	16.4	14.0	18.4	16.1	14.1	18.0
70	13.1	11.1	14.8	13.2	11.6	14.8
75	10.3	8.6	11.5	11.2	9.8	12.5
80	8.0	6.7	8.8	10.3	8.8	11.5
85	6.2	5.3	6.7	9.3	7.8	9.9

SOURCE: reference 4a.

Table 2. Death rates (per 100,000 population) due to diseases of the heart, by race, sex, and age: United States, 1950–77

Race and age (years)	1950		1960		1970		1977	
	Males	Females	Males	Females	Males	Females	Males	Females
<b>Whites</b>								
All ages, crude	434	291	455	307	438	314	392	302
All ages, age-adjusted	381	224	375	197	348	168	294	137
Under 25	4	4	2	2	2	1	3	2
25–29	14	10	10	6	7	4	6	3
30–34	29	17	25	10	19	8	12	5
35–39	68	30	66	19	55	15	30	11
40–44	160	56	152	39	131	32	71	25
45–49	313	104	300	73	266	63	138	49
50–54	544	184	540	138	474	122	249	96
55–59	879	331	842	263	784	227	405	180
60–64	1,324	614	1,312	519	1,210	419	679	349
65 and over	3,302	2,503	3,363	2,433	3,316	2,284	2,334	2,000
65–69	1,940	1,056	1,929	915	1,829	764	992	588
70–74	2,853	1,891	2,789	1,636	2,641	1,385	1,606	1,074
75–79	4,249	3,237	4,100	2,849	3,939	2,474	2,655	2,054
80–84	6,187	5,167	6,341	5,062	5,829	4,222	3,999	3,512
85 and over	9,960	9,086	10,136	9,281	8,818	7,840	7,096	6,922
<b>Blacks</b>								
All ages, crude	348	290	331	269	330	261	295	239
All ages, age-adjusted	416	350	381	293	376	252	322	204
Under 25	10	11	5	5	5	5	5	4
25–29	33	38	28	24	28	16	21	11
30–34	74	67	58	47	57	35	40	17
35–39	134	132	120	89	125	67	93	46
40–44	271	250	222	167	253	133	188	85
45–49	442	403	386	269	413	223	322	157
50–54	841	682	667	472	626	368	537	280
55–59	1,226	1,023	973	755	954	568	805	436
60–64	1,717	1,457	1,594	1,211	1,355	878	1,248	698
65 and over	2,681	2,173	2,798	2,235	2,837	2,199	2,491	1,957
65–69	1,895	1,379	2,030	1,431	1,935	1,292	1,405	838
70–74	2,570	2,188	2,661	2,055	2,695	1,948	2,458	1,860
75–79			3,146	2,545	3,505	2,626	3,735	3,061
80–84	4,108	3,499	4,410	3,743	4,305	3,537	3,804	2,874
85+			6,038	5,650	5,368	5,004	5,032	4,247

1 Combined total, ages 75–85 and over.  
SOURCE: reference 6b.

white women. This racial gap in age-adjusted rates of death from diseases of the heart has been consistent since 1950 and is somewhat larger among women. Age-specific rates of death from heart disease are higher among blacks at every age except very advanced ages, when a reversal is observed. Here again is the familiar mortality crossover. That it takes place in heart disease mortality should come as no surprise, since heart disease is responsible for most deaths.

The racial mortality crossover in deaths from diseases of the heart deserves a bit more attention. As table 2 shows, in 1977, it took place at around ages 80–84 for both sexes; in 1970, it took place in the upper 70s for men and the low 80s for women; in

1960, it occurred in the low 70s for men and the upper 70s for women; in 1950, it occurred as early as the upper 60s for men and the upper 70s for women. Thus, in recent years there has been a definite tendency for the crossover to take place at more and more advanced ages, particularly among men. This is consistent with the earlier discussion, which suggested that crossovers occur later and later as the overall position of the disadvantaged population improves.

Although at very advanced ages mortality from diseases of the heart is lower among blacks than among whites, the black disadvantage is very high in middle age, as it is in earlier years. This black disadvantage in middle age is no doubt related to

greater prevalence of hypertensive disease, "which, if related to physical exertion, social position, or difference in medical care would probably be more manifest in middle age" (7a).

Blacks are also disadvantaged, in comparison with whites, with respect to the second most important cause of death: malignant neoplasms (cancer). In 1977 black males had an age-adjusted rate of death from malignant neoplasms of 222 per 100,000, compared with a rate of 133 deaths per 100,000 for white males. Black females had a rate of 130 deaths per 100,000 compared with 108 per 100,000 for white females (6c). While rates of death from malignancy for both black and white women have stayed virtually unchanged since 1950, the rates for men in both racial groups have shown a gradual increase over the past three decades. This increase is most notable among persons over 65. Thus we have, at least in the case of men, an opposite trend from that observed in mortality from diseases of the heart. The two trends, of course, may not be unrelated; it is possible that many of those who now survive heart disease die later from cancer.

As was the case with diseases of the heart, we have a racial crossover in mortality from malignant neoplasms (6c). In 1950, the crossover occurred among persons at ages in the upper 60s, but in 1977 it took place among persons in the low 80s. The change in timing of this crossover thus parallels the change in timing of the crossover in mortality from heart disease.

Among less important causes of death, blacks have death rates higher than whites for diabetes, accidents, and homicides, and lower than whites for suicides, though the racial gap with respect to suicides has been decreasing in recent years (14). Leaving accidents, homicides, and suicides aside for the moment, it is important to note that mortality from a given disease is not an adequate indicator of the prevalence of the disease. Given their socioeconomically and politically inferior position and their difficulties in obtaining quality medical care, blacks may be less prepared to cope with a given disease and, therefore, more likely to die from it.

## Native Americans

**Mortality trends.** The position of Native Americans in American society is also disadvantageous. Their isolation on reservations, where access to medical care has been poor and where infectious and parasitic diseases have been commonplace, has meant

Table 3. Mortality ratios<sup>1</sup> by age and race: United States, 1970

Age (years)	Black	American Indian
All ages, crude	1.06	0.76
All ages, age-adjusted	1.54	1.18
Under 5 years	2.00	1.67
5-14	1.42	1.60
15-24	1.83	2.69
25-34	2.94	3.48
35-44	2.72	2.79
45-54	2.08	1.67
55-64	1.63	1.00
65-74	1.35	0.81
75-84	0.98	0.70
85 and over	0.67	0.56

<sup>1</sup> Deaths to nonresidents of the United States excluded. Ratios are computed by dividing the age-specific death rate of a specified racial or ethnic group by the death rate of the white population in that age group.

SOURCE: National Center for Health Statistics—data computed by the Division of Analysis from data compiled by the Division of Vital Statistics. Adapted from reference 6g.

high child and infant mortality rates—and, consequently, low life expectancy at birth. Yet the situation of Native Americans has changed enormously in recent years, so that by 1970 they had an overall age-adjusted death rate lower than that of blacks (6d) and a life expectancy at birth of 65.1 years (both sexes), about the same as that for blacks for the same year (6e). Much of this change resulted from sharp reductions in infant mortality. While, for example, the infant mortality rate for blacks declined from 43.9 deaths per 1,000 live births in 1950 to 23.6 in 1977, the rate for Native Americans declined from 82.1 deaths per 1,000 in 1950 to just 15.7 in 1977 (only slightly above the 12.3 per 1,000 rate for whites), a change largely reflecting increased availability of maternal, infant, and other child health services to Native Americans (6f).

Data show that a mortality crossover also takes place between Native Americans and whites. American Indian to white mortality ratios for 1970, for example, show that the crossover takes place at an even earlier age (65-74) than it does between blacks and whites (6g; table 3). While the mortality crossover between Native Americans and whites has not been studied, it is consistent with the disadvantage of Native Americans relative to whites and with the higher mortality of Native Americans at younger ages.

**Mortality among Navajos.** A recent study by Carr and Lee (15) of Navajo mortality by cause of death provides an in-depth look at mortality conditions

*'In the case of Hispanics, the lack of recent data—or their unavailability, until very recently, in a form accessible to scholars—has led to many misunderstandings about the mortality situation of this group.'*

in the largest Indian tribe. Carr and Lee constructed separate life tables for Navajo men and women for 1973 and calculated a life expectancy at birth of 58.8 years for men and 71.8 years for women, a sex gap considerably larger than that observed in the general American population or in other minority populations. The combined life expectancy for both sexes was 64.9 years, a figure similar to that for the total American Indian population in 1970. The large difference in life expectancy between Navajo men and women is partly due to sex differences in causes of death. The leading cause of death for Navajo men in 1974 was accidents (principally motor vehicle accidents), followed by diseases of the heart, respiratory diseases, cirrhosis of the liver, and cerebrovascular diseases (see also data presented in references 16 and 17). The leading cause of death for the American population in general in the same year was diseases of the heart, followed by malignant neoplasms, cerebrovascular diseases, accidents, and respiratory diseases. The cause-of-death rankings for Navajo women were closer to those for the total U.S. population, except that accidents were second to diseases of the heart, while infectious and parasitic diseases were more important than in the total population (15a).

The high mortality from accidents, particularly motor vehicle accidents, is related to greater reliance on the automobile (because of the low population density of the Navajo reservation), poor road conditions, unsafe vehicles, and high levels of alcohol use (18). Carr and Lee estimated that the elimination of deaths from motor vehicle accidents alone would add 5.2 years to the life expectancy at birth of Navajo males. Elimination of deaths from all other accidents would add another 3.3 years. Elimination of deaths from motor vehicle accidents would add 2.7 years to the life expectancy of women, about half the gain for men, but still substantial when compared with the experience of other groups. For example, in 1970, as Carr and Lee note, elimination of deaths

from motor vehicle accidents would have added only 0.9 and 0.4 years to the life expectancy at birth of white men and white women (15b).

The Navajo pattern of mortality by cause can also be observed in other Native American groups. The death rate from accidents among all American Indians aged 25–54 is approximately five times the rate for the total U.S. population of the same age (6f). Bolesta (19a) showed that accidents are by far the leading cause of death among Alaska Natives—and not only among the young. In 1976, for example, accidents were the leading cause of death among Alaska Natives aged 45–64. Among persons 65 years old and above, however, accidents are not an important cause of death, and diseases of the heart have taken over first place (19b).

## Hispanics

**Mortality rates and life expectancy.** The mortality situation of the Hispanic population has been studied little, despite the fact that Hispanics comprise the nation's second largest minority. (For a comprehensive review of pertinent literature through the mid-1970s, see reference 20.) In their analysis of mortality rates, 1969–71, among persons in Texas with Spanish surnames, Bradshaw and Fonner (21) showed that age-adjusted death rates for Spanish-surnamed white males were very similar to the rates for other white males. Spanish-surnamed white females, on the other hand, had death rates approximately 19 percent higher than those for other white females. This means that the sex gap in mortality was smaller among Spanish-surnamed persons than among other whites, a situation that may have been related, in part, to higher fertility rates among Spanish-surnamed persons and to earlier childbearing, both of which may increase maternal mortality.

Similar findings are reflected in 1970 life expectancy values for Texas, published recently (3a; table 4). These data show that the life expectancy of Spanish-surnamed persons was only slightly lower than that of other whites but was considerably higher than that of blacks. When Spanish-surnamed men were compared with other white males, the deficit at birth was negligible. By age 20 it was virtually nonexistent, and it became reversed at age 65, when Spanish-surnamed men had slightly higher life expectancies than other white males. Spanish-surnamed women, on the other hand, had deficits of 3.1 years at birth, 2.3 years at age 20, and 1.5 years at age 65, when compared with other white females.

Table 4. Life expectancy at birth, at age 20, and at age 65 for Spanish-surnamed persons, non-Spanish-surnamed whites, blacks, California, 1969–71

Age (years)	Spanish surname			Non-Spanish surname			Blacks and other races <sup>1</sup>		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
0	70.2	67.2	73.4	72.2	68.1	76.5	65.5	61.7	69.5
20	53.2	50.4	56.0	54.3	50.5	58.3	48.7	45.2	52.3
65	15.3	14.1	16.4	15.8	13.5	17.9	14.9	13.3	16.5

<sup>1</sup> 1969–71.  
SOURCE: reference 3a.

The mortality rates and life expectancy values for the Hispanic population of Texas were more favorable than would have been expected in light of their generally lower socioeconomic status, and this raises questions about the accuracy of the data. However, since death registration data were probably more complete than population enumeration data, the death rates may have been slightly biased upwards (21). On the other hand, the fact that mortality rates for Spanish-surnamed persons were lower than would have been expected, considering their relatively disadvantaged socioeconomic status, leads to speculation that perhaps the Hispanic population of Texas was not greatly underenumerated (3b).

Lower than expected death rates during infancy have also been noted among Hispanics. Most recent evidence suggests that they have infant death rates comparable to those of other whites (21–23), but there is some evidence that Spanish-surnamed infants have lower neonatal (first 27 days of life) death rates than other white infants, as a result of favorable birth-weight distributions (22).

Evidence of similarity in the mortality situations of Hispanics and Anglos (other whites) is added by recently published statistics from California. Schoen and Nelson (24; table 5) showed that life expectancy at birth for Spanish-surnamed males in California during the period 1969–71 was 68.3 years,

only 0.4 years less than that for other white males. Unlike their counterparts in Texas, Spanish-surnamed females in California had a life expectancy at birth closer to that of other white females (75.2 years for Spanish-surnamed females, compared with 76.0 years for other white females). In California as in Texas, blacks of both sexes fared much worse in life expectancy than did Hispanics and other whites.

Schoen and Nelson (24) also noted that mortality rates for Spanish-surnamed men and for other white males showed a kind of crossover, in that the rates for Spanish-surnamed men were somewhat higher at younger ages than those for other white males, and somewhat lower after age 45. This should not lead one to the conclusion that a crossover similar to that found between blacks and whites was observed here. The crossover between Spanish-surnamed men and other white males was small in magnitude, and exactly why it occurred is not clear. Crossovers usually occur when one population has substantially higher early mortality than another (8). The crossover observed in California is difficult to explain, since differences in mortality rates between the two groups at younger ages were minimal. In the case of females, Schoen and Nelson noted that a “double crossover” took place: Spanish-surnamed females had higher mortality rates than other white females

Table 5. Life expectancy at birth, at age 15, at age 40, and at age 65 for Spanish-surnamed persons, other whites, and blacks, California, 1969–71

Age (years)	Spanish surname		Other whites		Blacks	
	Males	Females	Males	Females	Males	Females
0	68.3	75.2	68.7	76.0	63.5	71.5
15	55.4	62.1	55.5	62.4	51.3	58.9
40	33.4	38.3	32.5	38.6	30.5	36.3
65	14.1	17.4	13.6	17.7	14.5	17.7

SOURCE: Adapted from reference 24, p. 267.

*'... the situation of Native Americans has changed enormously in recent years, so that by 1970 they had an age-adjusted death rate lower than that of blacks and a life expectancy at birth... about the same as that for blacks for the same year.'*

at ages under 30, lower rates than other white females at ages 34–54, and higher rates again at age 60 and above.

**Major causes of death.** For the period 1969–71, the number one cause of death among Spanish-surnamed persons in Texas, as well as among other whites, was diseases of the heart (21). However, the age-adjusted death rate from this cause was notably lower among Spanish-surnamed males than among other white males, whereas in the case of females a slightly higher rate for other white women was noted (see also reference 25). Spanish-surnamed males also had a lower age-adjusted death rate from malignant neoplasms than other white males, while Spanish-surnamed women had a slightly higher rate than other white women (see also references 26 and 27). On the other hand, Spanish-surnamed men had higher death rates from accidents and other causes involving violence than other white men, while Spanish-surnamed women had somewhat lower death rates from these causes than other white women.

Blacks of both sexes had considerably higher rates of death involving violence, as well as higher rates of death due to heart disease and cancer, than both Spanish-surnamed and other white persons. However, Spanish-surnamed persons had higher rates of death from infectious and parasitic diseases and from diabetes mellitus than both blacks and other whites.

For the same period in California, Shoen and Nelson (24) also found lower mortality from neoplasms and cardiovascular diseases among Spanish-surnamed persons than among other whites. In California as in Texas, however, Spanish-surnamed persons had notably higher mortality from infectious and parasitic diseases.

This discussion of the mortality experience of Hispanics is limited to data on Spanish-surnamed persons in Texas and California, most of whom were Mexican Americans. Data on Hispanics elsewhere

are either not available or not available in an appropriate form. For example, mortality statistics for Puerto Rican Americans in New York City are available only for those persons who were born in Puerto Rico. These data (28) show that the mortality experience of Puerto Rican Americans is similar to that of other Hispanics with respect to levels and causes of death. Thus, in 1970 Puerto Ricans in New York had age-adjusted rates of death from diseases of the heart and cerebrovascular diseases lower than rates for the total population of the city. Like other Hispanics, Puerto Ricans in New York had high mortality from accidents and homicides. Unlike other Hispanics, however, they had an age-adjusted rate of death from diabetes lower than that for the total New York City population.

## Discussion

This review of recent evidence about the mortality experience of ethnic minority groups raises many questions, perhaps the most important of which relate to the continuing disadvantage of black Americans. While progress has been made by blacks, improvements in the mortality condition of the white population have meant that the relative position of blacks has improved little. Although blacks have experienced reductions in rates of infant death, these rates are still almost twice as high as infant death rates for whites. But the continuing high rates of infant death for blacks are only part of the reason for their continuing disadvantage in life expectancy. A major factor is their high mortality from cardiovascular diseases and cancer, particularly in middle age.

For Hispanic Americans, infant mortality rates are low—perhaps lower than would be expected, considering their disadvantaged socioeconomic status. And Native American populations have experienced especially large improvements in life expectancy as a result of better infant and child care. Reductions in infant mortality rates for Native Americans have been so great that these rates are now only slightly higher than infant mortality rates for whites.

If the Navajo experience is indicative of the overall experience of Native American groups, much progress can be made in increasing life expectancy among Native American males by reducing accident mortality. While Native American women have a high rate of death from accidents, the rate for males is exceptionally high and is related, perhaps, to high rates of alcohol consumption as well as other

*'This review of recent evidence about the mortality experience of ethnic minority groups raises many questions, perhaps the most important of which relate to the continuing disadvantage of black Americans.'*

factors. Blacks and Hispanics also have high rates of death from accidents, but not nearly as high as those of Native Americans. Hispanics have higher mortality from infectious and parasitic diseases and diabetes than blacks, but fare much better than blacks in mortality from cardiovascular diseases and cancer.

Overall, the mortality experience of Hispanics is much closer to the Anglo experience than it is to that of blacks. Why Hispanics fare so much better than blacks is not known. Schoen and Nelson (24) alluded to possible cultural factors that might give Hispanics some protection from the leading causes of death but did not specify what these factors might be. In trying to explain the relatively low infant death rates for Hispanics in Houston, Gee and associates (22a) suggested that "certain socio-cultural factors associated with the Mexican American family system . . . might encourage better care of mothers and children." Again, these authors did not specify what these factors might be.

More recently, Markides and Hazuda (29) raised the possibility that low neonatal death rates among Hispanics in Texas might be partly accounted for by a migration selection effect. After noting that mothers born in Mexico (and other foreign-born mothers) had a smaller percentage of babies of low birth weight than native-born mothers had, they suggested that migration may be selective of women who are healthier and more reproductively efficient (as indicated by favorable birth-weight distributions). If so, the result, since many Hispanic women are foreign-born, may be an overall Hispanic advantage in the neonatal period, when favorable birth weight is most critical. This observation is consistent with data from the United Kingdom, where "women who migrate from depressed to affluent areas . . . tend to be taller, healthier and more able, and to have lower perinatal mortality rates than those in the same social classes who do not migrate . . ." (30).

Markides and Hazuda also noted that during the postneonatal period (28 to 364 days of life), when environmental and socioeconomic factors become more important than physiological factors, Hispanics have notably higher infant death rates than other whites do.

Deducing that lower mortality at higher ages than might be expected from the disadvantaged socioeconomic status of Hispanics is related to favorable birth-weight distributions may not be warranted. However, these observations at least suggest that immigrants from Mexico (and elsewhere) may be a more select group than might be expected from commonly held stereotypes about this population. This should in no way lead one to conclude that Hispanic immigrants or Hispanics in general have adequate access to health care.

Like Hispanics, Native Americans also appear to be somewhat protected from the leading causes of death. Yet this "protection" may be due to very high mortality rates from accidents and other causes of death involving violence. Thus, any reductions in mortality from such causes will likely lead to increases in mortality from cardiovascular diseases and cancer, if only because more Native Americans will survive to middle and old age when these diseases are more common.

Research is needed to examine whether recent improvements in the mortality situation of Native Americans are uniformly shared by the various tribes and reservations as well as by Native Americans in urban areas. Similarly, there is a need to investigate whether the apparently favorable mortality situation of Hispanics is shared equally by the various Hispanic groups—Mexican Americans, Puerto Rican Americans, Cuban Americans, and other Hispanics.

Mortality advantages or disadvantages of given populations vis-à-vis others are, of course, reflected in mortality rates by causes of death. The recent declines in mortality from cardiovascular diseases must be watched closely to determine the extent to which minority populations are benefiting from them. Trends in this area are likely to have notable effects on mortality patterns of minority populations.

Finally, the mortality crossover phenomenon is worthy of more inquiry. Since the phenomenon appears to exist between Native Americans and whites as well as between blacks and whites, investigation of its nature, timing, and trends over time with respect to native Americans must be undertaken.



## References .....

1. Frisbie, W. P., and Bean, F. D.: Some issues in the demographic study of racial and ethnic populations. *In* The demography of racial and ethnic groups, edited by F. D. Bean and W. P. Frisbie. Academic Press, New York, 1978, pp. 1-14.
2. Hernandez, J., Estrada, L., and Alvarez, D.: Census data on the problem of conceptually defining the Mexican American population. *Soc Sci Q* 53: 671-687 (1973).
3. U.S. Bureau of the Census: Coverage of the Hispanic population of the United States in the 1970 census. *Current Population Reports, Special Studies, Series P-23, No. 82.* U.S. Government Printing Office, Washington, D.C., 1979; (a) p. 24; (b) p. 21.
4. National Center for Health Statistics: Life tables: vital statistics of the United States, 1978. Vol. II, sec. 5. U.S. Government Printing Office, Washington, D.C., 1980; (a) p. 13.
5. Cooper, R., Steinhauer, M., Schatzkin, A., and Miller, W.: Improved mortality among U.S. blacks, 1968-1978: the role of antiracist struggle. *Int J Health Serv* 11: 511-522 (1981).
6. National Center for Health Statistics: Health, United States, 1979. U.S. Government Printing Office, Washington, D.C., 1980; (a) p. 91; (b) p. 96-99; (c) pp. 105-108; (d) p. 9 (e) p. 90; (f) p. 16; (g) p. 10.
7. Manton, K. G., Poss, S. S., and Wing, S.: The black/white mortality crossover: investigation from the perspective of the components of aging. *Gerontologist* 19: 291-300 (1979); (a) p. 299.
8. Manton, K. G.: Sex and race specific differentials in multiple cause of death data. *Gerontologist* 20: 480-493 (1980).
9. Nam, C. B., Weatherby, N. L., Okay, K. A.: Causes of death which contribute to the mortality crossover effect. *Soc Biol* 25: 306-314 (1978).
10. Kitagawa, E. M., and Hauser, P. M.: Differential mortality in the United States: a study in socioeconomic epidemiology. Harvard University Press, Cambridge, Mass., 1973.
11. Rives, N. W.: The effect of census errors in life table estimates of black mortality. *Pub Health Briefs* 67: 867-868 (1977).
12. Jackson, J. J.: Minorities and aging. Wadsworth, Belmont, Calif., 1980.
13. Markides, K. S.: Minority aging. *In* Aging in society: selected reviews of recent research, edited by M. W. Riley, B. B. Hess, and K. Bond. Lawrence Erlbaum Associates, Inc., Hillsdale, N.J., 1983, pp. 115-138.
14. Davis, R.: Black suicide in the seventies: current trends. *Suicide Life Threat Behav* 9: 203-214 (1979).
15. Carr, B. A., and Lee, E. S.: Navajo tribal mortality: a life table analysis of the leading causes of death. *Soc Biol* 24: 279-287 (1978); (a) p. 283; (b) p. 284.
16. Kunitz, S. J., and Temkin-Greener, H.: Changing patterns of mortality and hospitalized morbidity on the Navajo Indian reservation. Department of Preventive Medicine and Community Health, University of Rochester School of Medicine and Dentistry, Rochester, N.Y., 1980.
17. Kunitz, S. J., and Levy, J. F.: Navajos. *In* Ethnicity and medical care, edited by A. Harwood. Harvard University Press, Cambridge, Mass., 1981, pp. 337-396.
18. Gundlach, J. H.: The epidemiologic transition of American Indian mortality. Presented at the annual meeting of the Southwestern Social Science Association, 1981.
19. Bolesta, L. M.: The health status of Alaska's Native aging and aged population. *In* The Indian elder: a forgotten American. National Tribal Chairmen's Association, Washington, D.C., 1978; (a) pp. 355-368; (b) p. 365.
20. Roberts, R. E.: The study of mortality in the Mexican American population. *In* Cuantos somos: a demographic study of the Mexican American population, edited by C. H. Teller, et al. Center for Mexican Studies, University of Texas at Austin, 1977, pp. 261-282.
21. Bradshaw, B. S., and Fonner, E.: The mortality of Spanish-surnamed persons in Texas: 1969-1971. *In* The Demography of racial and ethnic groups, edited by F. D. Bean and W. P. Frisbie. Academic Press, New York, 1978, pp. 261-282.
22. Gee, S. C., Lee, E.S., and Forthofer, R. N.: Ethnic differentials in neonatal and postneonatal mortality: a birth cohort analysis by a binary variable multiple regression method. *Soc Biol* 23: 317-325 (1976); (a) p. 324.
23. Markides, K. S., and Barnes, D.: A methodological note on the relationship between infant mortality and socioeconomic status with evidence from San Antonio, Texas. *Soc Biol* 24: 38-44 (1977).
24. Schoen, R., and Nelson, V. F.: Mortality by cause among Spanish-surnamed Californians, 1969-1971. *Soc Sci Q* 62: 259-274 (1981).
25. Stern, M. P., and Gaskill, S. P.: Secular trends in ischemic heart disease mortality from 1970 to 1976 in Spanish-surnamed and other white individuals in Bexar County, Texas. *Circulation* 58: 537-543 (1978).
26. Lee, E. S. Roberts, R. E., and Labarth, D. R.: Excess and deficit lung cancer mortality in three ethnic groups in Texas counties. *Cancer* 38: 2551-2556 (1976).
27. Menck, H. R., et al.: Cancer incidence in the Mexican American. *J Natl Cancer Inst* 55: 531-536 (1975).
28. Alers, J. O.: Puerto Ricans and health: findings from New York City. The Hispanic Research Center, Fordham University, New York, 1978.
29. Markides, K. S., and Hazuda, H. P.: Ethnicity and infant mortality in Texas. *Soc Biol* 27: 261-271 (1980).
30. Baird, D.: Epidemiologic patterns over time. *In* The epidemiology of prematurity. Urban and Schwarzenberg, Baltimore, 1977, pp. 5-15.