Cancer Statistics, 1976
A Comparison of White and Black Populations

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Comparisons of cancer statistics in the white and black populations reveal large
differences between the two groups. Some of these differences may be due
to artifacts of case finding and some to true biologic variations, but the majority
must be attributed to environmental and socioeconomic factors. (There is a gene-
tic basis for the much greater incidence of non-melanoma skin cancer among
whites than blacks. However, these cancers are generally not life-threaten-
ing and, as is customary nowadays, they are not included in the data which
follow. Similarly excluded are all in situ carcinomas.)

The following article compares white and black populations in regard to:
- the probability of developing and
dying of cancer;
- trends in cancer incidence and mortal-
ity over the last several decades;
- stage of disease at diagnosis;
- survival following diagnosis.

Incidence rates are expressed per 100,000 population per year, stand-
ardized for age on the 1950 United States Census population. These figures
are based on the recent Third National Cancer Survey, conducted by the Na-
tional Cancer Institute, which recorded all new cases of cancer diagnosed in
seven major metropolitan areas and two states over a three-year period, 1969-
1971. Trends in cancer incidence are ex-
amined from 1947-1969, according to
data accumulated from geographic areas
common to both the Second (1947-
1948) and the Third Surveys.

Mortality data are also expressed per
100,000 population per year, stand-
ardized for age on the 1950 United States Census population, and are
derived from Vital Statistics of the
United States, published annually by the
National Center for Health Statistics of
the United States Public Health Service.
Comparisons of mortality data are given
for whites and "nonwhites," a category
so predominantly black as to be virtually
synonomous. Trends are given for the
period 1950-1973.

The probability of dying from cancer
has been determined by applying 1973
death rates, the latest year for which in-
formation is currently available, to 1973
United States Life Table populations.
Table 1.
Probability at Birth of Eventually Developing and Dying of Cancer of Major Sites, by Race and Sex, United States, 1973

| Site of Cancer | White Males | Black Males* | White Females | Black Females* |
|----------------|-------------|--------------|---------------|---------------|
|                |             |              |               |               |
| **Eventually Developing** |             |              |               |               |
| All Sites      | 29.4        | 26.6         | 30.8          | 23.8          |
| Esophagus      | 0.4         | 1.1          | 0.2           | 0.3           |
| Stomach        | 1.2         | 1.5          | 0.9           | 0.9           |
| Colon-rectum   | 4.4         | 2.9          | 5.2           | 3.6           |
| Pancreas       | 1.1         | 1.1          | 1.0           | 1.0           |
| Lung           | 6.1         | 6.0          | 1.5           | 1.3           |
| Breast         |             |              | 8.1           | 5.2           |
| Cervix Uteri   |             |              | 1.5           | 3.0           |
| Corpus Uteri   |             |              | 2.2           | 1.1           |
| Other Uterus   |             |              | 0.3           | 0.3           |
| Ovary          |             |              | 1.5           | 0.9           |
| Prostate       | 5.1         | 6.4          |               |               |
| Bladder        | 2.4         | 0.8          | 0.8           | 0.5           |
| Kidney         | 0.8         | 0.5          | 0.5           | 0.4           |
| **Eventually Dying** |             |              |               |               |
| All sites      | 17.6        | 16.4         | 16.2          | 14.1          |
| Esophagus      | 0.4         | 0.9          | 0.2           | 0.3           |
| Stomach        | 0.8         | 1.1          | 0.6           | 0.8           |
| Colon-rectum   | 2.2         | 1.5          | 2.8           | 2.0           |
| Pancreas       | 1.0         | 0.9          | 0.9           | 0.8           |
| Lung           | 5.4         | 4.7          | 1.5           | 1.2           |
| Breast         |             |              | 3.1           | 2.3           |
| Uterus         |             |              | 1.0           | 1.9           |
| Ovary          |             |              | 1.0           | 0.6           |
| Prostate       | 1.8         | 2.4          |               |               |
| Bladder        | 0.7         | 0.4          | 0.3           | 0.3           |
| Kidney         | 0.4         | 0.2          | 0.3           | 0.2           |

*Life Tables employed and data on eventually dying of cancer are for nonwhite males and females.

Sources of Data: U.S. National Center for Health Statistics: Vital Statistics of the United States, 1973. U.S. Government Printing Office, Washington, D.C., 1975.

Cutler, S.J. and Young J.L., Jr., eds: Third National Cancer Survey: Incidence Data. National Cancer Institute Monograph No. 41, DHEW Publication No. (NIH) 75-787. U.S. Government Printing Office, Washington, D.C., 1975.
The probability of developing cancer has been calculated by applying the Third National Cancer Survey incidence rates to these same Life Table population statistics.

Stage at diagnosis and survival statistics are provided by the End Results Section of the National Cancer Institute which, in a special analysis, has determined survival rates in blacks as well as whites for patients diagnosed from 1955 to 1964. The percentage of patients surviving five years after diagnosis of cancer is relative to the proportion of persons of the same age, sex and race in the general population who survive five years.

Cancer of All Sites

As may be seen in Table 1, the lifetime probability of developing cancer is about one in four, ranging from 24 percent in black females to 31 percent in white females with white and black males intermediate at 29 and 27 percent, respectively.

In males, the age-adjusted incidence of cancer per 100,000 population has increased between 1947 and 1969, rising only slightly in whites from 282 to 301, but very markedly in blacks from 248 to 337. (Table 2.) Perhaps some of the increase in blacks was spurious and due to under-reporting in the earlier period, but that the rates are now substantially higher in black males is indisputable. A site by site inspection of Table 2 reveals that the presumable reversal from lower to higher rates for black males was largely due to increases in the incidence of cancers of the lung, colon-rectum, prostate and esophagus.

Both white and black females showed decreases in age-adjusted cancer incidence per 100,000 population: the whites from 294 to 256 and the blacks from 287 to 243. These decreases were largely due to sizable reductions in the incidence of invasive cancer of the uterus and cancer of the stomach.

That cancer is diagnosed in a more favorable stage of disease in whites than in blacks is readily apparent. Thus, in males the percentage of cancers diagnosed in a localized stage was 38 percent in whites and 29 percent in blacks; similarly, in females it was 45 percent for whites compared with 32 percent for blacks. Adjustment for distribution by cancer site had no effect on these patterns. (Table 3, page 10.)

Not only were more whites than blacks diagnosed in a favorable stage of disease, but white survival rates tended to be higher within comparable stages. (Table 3.) In patients with localized cancer, the relative five-year survival rate for white males was 59 percent versus 49 percent for black males, and in white females, it was 74 percent compared with 69 percent in black females. Overall five-year survival rates in males

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*Cancers discussed in this article do not include non-melanoma skin cancer and all in situ carcinomas.
Table 2.
Comparison of Incidence Rates* for Common Areas in the N.C.I. Surveys of 1947 and 1969 for Selected Sites of Cancer, by Race and Sex

| Site          | Race | Rate in 1947 | Rate in 1969 | Change in Rate | % Change in Rate | Rate in 1947 | Rate in 1969 | Change in Rate | % Change in Rate |
|--------------|------|-------------|-------------|----------------|------------------|-------------|-------------|----------------|------------------|
|              |      | MALES       | FEMALES     | %              | %                | MALES       | FEMALES     | %              | %                |
| All Sites    | White| 282.0       | 300.8       | 18.8           | 6.7              | 294.0       | 255.5       | -38.5          | -13.1            |
|              | Black| 248.0       | 337.2       | 89.2           | 36.0             | 287.0       | 242.9       | -44.1          | -15.4            |
| Esophagus    | White| 6.1         | 4.4         | -1.7           | -27.9            | 1.7         | 1.4         | -0.3           | -17.6            |
|              | Black| 7.5         | 15.1        | 7.6            | 101.3            | 1.8         | 3.4         | 1.6            | 88.9             |
| Stomach      | White| 31.4        | 12.9        | -18.5          | -58.9            | 17.3        | 5.8         | -11.5          | -66.5            |
|              | Black| 34.4        | 17.8        | -16.6          | -48.3            | 18.0        | 7.9         | -10.1          | -56.1            |
| Colon-rectum | White| 43.2        | 48.1        | 4.9            | 4.3              | 39.5        | 34.4        | -4.1           | -10.6            |
|              | Black| 25.8        | 38.6        | 12.8           | 49.6             | 23.2        | 35.5        | 12.3           | 53.0             |
| Pancreas     | White| 8.8         | 10.7        | 1.9            | 21.6             | 5.6         | 6.8         | 1.2            | 21.4             |
|              | Black| 10.8        | 14.0        | 3.2            | 29.6             | 3.4         | 7.7         | 4.3            | 126.5            |
| Lung         | White| 28.7        | 67.0        | 38.3           | 133.4            | 6.5         | 13.5        | 7.0            | 107.7            |
|              | Black| 22.3        | 74.4        | 52.1           | 233.6            | 3.8         | 11.9        | 8.1            | 213.2            |
| Female       | White| —           | —           | —              | —                | 70.0        | 72.5        | 2.5            | 3.6              |
| Breast       | Black| —           | —           | —              | —                | 47.8        | 60.1        | 12.3           | 25.7             |
| Cervix       | White| —           | —           | —              | —                | 38.4        | 15.3        | -23.1          | -60.2            |
| Uteri        | Black| —           | —           | —              | —                | 74.6        | 34.2        | -40.4          | -54.2            |
| Corpus       | White| —           | —           | —              | —                | 22.4        | 21.5        | -0.9           | -4.0             |
| Uteri        | Black| —           | —           | —              | —                | 15.6        | 11.3        | -4.3           | -27.5            |
| Ovary        | White| —           | —           | —              | —                | 14.7        | 13.3        | -1.4           | -9.5             |
|              | Black| —           | —           | —              | —                | 9.0         | 10.4        | 1.4            | 15.6             |
| Prostate     | White| 36.4        | 44.7        | 8.3            | 22.8             | —           | —           | —              | —                |
|              | Black| 50.7        | 78.8        | 28.1           | 55.4             | —           | —           | —              | —                |
| Kidney**     | White| 5.6         | 7.8         | 2.2            | 39.3             | 3.1         | 3.7         | 0.6            | 19.4             |
|              | Black| 4.3         | 7.1         | 2.8            | 65.1             | 3.0         | 3.6         | 0.6            | 20.0             |
| Bladder      | White| 16.3        | 19.7        | 3.4            | 20.9             | 7.0         | 5.2         | -1.8           | -25.7            |
|              | Black| 4.4         | 9.6         | 5.2            | 118.2            | 5.6         | 3.2         | -2.4           | -42.9            |

*Per 100,000 population standardized for age on 1950 U.S. Census Population.

**Estimated by the authors of this article.

Sources: Cutler, S. J., and Daves, S. S.: Trends in Cancer Incidence and Mortality in the U.S.A. In: Doll, R. and Vodopija, I.: Host Environment Interactions in the Etiology of Cancer in Man. International Agency for Research on Cancer, Lyon, 1970. Cramer, D. W. and Cutler, S. J.: Incidence and histopathology of malignancies of the female genital organs in the United States, Amer. J. Obstet. Gynec. 118: 443-460, 1974.
were 31 percent in whites and 21 percent in blacks, while in females, the rates were 47 percent in whites and 37 percent in blacks. Here too, adjustment for distribution by cancer site did not alter the patterns.

Not surprisingly, the net result of these incidence and survival patterns was that age-adjusted cancer death rates per 100,000 population were higher in non-whites than in whites: death rates in males, 217 and 173, respectively, and in females, 136 and 116. (Table 4, page 12.)

Cancer of the Esophagus

In the past, cancer of the esophagus was considered a disease predominantly of males. However, the incidence has declined in whites, while rapidly rising in blacks, so that rates in black females are approaching those in white males. (Table 2.)

Cancer of the esophagus has a strong socioeconomic gradient, with a higher incidence in low socioeconomic groups. Alcohol consumption and cigarette smoking are also important risk factors for this disease. However, they do not sufficiently explain the large and continuing increase in black incidence.

There is but one word to describe the survival for cancer of the esophagus, dismal.

Cancer of the Stomach

The incidence of stomach cancer has substantially declined in all segments of the population, whites and blacks, males and females. However, there was a growing disparity between the white and black incidence rates, consequent to the sharper drop in the rate for whites. (Table 2.)

Decreases in incidence rates are gratifying, if puzzling, and presumably relate to the ingestion of food or other substances, though convincing data are
lacking. One current speculation is that improved refrigeration has led to a reduction in the amount of carcinogenic nitrosamines present in food.

Overall, survival prospects are none too bright for stomach cancer patients. For the small proportion of patients diagnosed in a localized stage of disease, the prognosis was much more favorable. (Table 3.)

**Cancer of the Colon-Rectum**

Colon and rectum cancer incidence rates have changed little in whites, but appreciably in blacks. (Table 2.) Whereas rates in whites were formerly much higher than in blacks, similar incidence rates are now found in black and white females, while the incidence rate in black males is approaching the rate of white males.

Recently, the relationship of diet and colon-rectum cancer has been studied, either as diet influences intestinal bacterial flora, or for its effect on bile acids and cholesterol metabolism. Various suspected are simple sugars and a low bulk refined diet, higher animal protein and high fat and cholesterol content. Basic to these investigations is the difference between the "Western" diet, typical in countries with high colon and rectum cancer rates, and the vegetarian diet typical in Japan where the colon-rectum cancer rates are very low. It appears that in the United States, the "Western" diet is widely prevalent in both whites and blacks.

Strenuous efforts are being made to control cancer of the colon-rectum through early diagnosis and prompt treatment. Still, only about two out of five white patients and one out of three blacks were diagnosed while the disease was in a localized stage. Five-year relative survival rates for localized disease tended to be higher for whites than blacks, at a general level of about two...
The survival prospects for patients with cancer of the pancreas are bleak. (Table 3.) Moreover, unfortunately, the incidence of this cancer seems to be increasing. Pancreatic cancer is difficult to detect and diagnose, and much of the large increase in incidence for black females, evident in Table 2, may have been an artifact of better case finding.

Cancer of the Lung

The lung is the principal site of cancer in males. According to incidence rates from 1969-1971, about six percent of American males develop lung cancer sometime during their lives. (Table 1.) However, lung cancer rates are rising rapidly (Table 2.), and a computation extrapolating the trends would obviously show a substantially higher probability of developing the disease.

While lung cancer incidence rates rose sharply in white males, they increased even more dramatically in black males, so that rates in black males now exceed those in white males. (Table 2.) Cigarette smoking is responsible for the large majority of lung cancers. It is also well known that the incidence of lung cancer is enhanced by the synergisms of cigarette smoking, such as those with occupational exposure to asbestos dust and radioactive substances. In white males (and white females) especially high lung cancer rates have been documented in cigarette smokers, formerly residents of rural farm areas, who have migrated to urban centers. This has provocative implications for blacks,
large numbers of whom have left rural areas for large cities.

Reflecting the growing popularity of cigarette smoking among females, are the rapidly rising lung cancer rates in this group. Today, rates in black females are lower than in white females; however, in view of the trends, this situation will not last long. (Table 2.)

As measured by relative five-year survival rates, a certain modicum of success was achieved when lung cancer was treated in a localized stage of disease; unfortunately, only one in five patients (or fewer) was so diagnosed. (Table 3.)

Prevention of lung cancer by abatement of cigarette smoking or by development of a safe cigarette remains an elusive goal of prime priority.

**Female Breast Cancer**

Cancer of the breast is the most common site of cancer in women. This disease has been characterized by unchanging death rates for many years. Though the data in Table 2 show little change over the years in the incidence rates for white females, information from cancer registries implies a recent increase in older women.

Breast cancer is one of the few cancers in which incidence rates tend to be higher in higher socioeconomic groups. Consistent with this, the incidence rates were higher in white than in black females, though the gap is narrowing fast. (Table 2.)

Cancer of the breast was treated with considerable success when diagnosed in a localized stage: five-year survival rates were 84 percent for whites and 77 percent for blacks. Clearly, efforts to promote early detection of the disease have been more successful in whites than in blacks: 45 percent of white patients had localized disease, versus 31 percent of blacks. Overall, the survival rate was 62 percent for whites and 47 percent for blacks. (Table 3.)

Cancer of the female breast is insidious in that the disease has frequently spread systemically even though the lesion appears to be localized. This situation has motivated an emphasis on earlier breast cancer detection; demonstration projects in 27 centers throughout the United States, supported by the American Cancer Society and the National Cancer Institute, have been developed, enlisting almost 300,000 women in a program designed to determine whether screening by mammography and clinical examination can successfully detect early cancers. As measured by a higher than usual proportion of breast cancer patients with negative histology of the axillary lymph nodes, the preliminary results appear to be quite encouraging.

**Cancer of the Uterus**

Incidence and survival statistics for cancer of the uterus may be considered in terms of its two principal subcate-

| Cancer of the Uterus | Cervix Uteri | Corpus Uteri |
|----------------------|-------------|-------------|
|                      | White Females | Nonwhite Females | White Females | Nonwhite Females |
| Estimated New Cases, 1976 | 15,000 | 5,000 | 25,000 | 2,000 |
| Percent of Total New Cases | 4.9 | 16.1 | 8.2 | 6.5 |
### Table 3.
Percent of Cancer Cases Diagnosed in a Localized Stage and Five-Year Survival Rates** by Race and Sex for all Stages and Localized Stage for Selected Sites, End Results Group, 1955 – 1964

| Site of Cancer | Race   | MALES | FEMALES |
|---------------|--------|-------|---------|
|               |        | Percent Diagnosed in Localized Stage | 5-Year Survival Rate | Percent Diagnosed in Localized Stage | 5-Year Survival Rate |
|               |        | All Stages | | All Stages | | |
| All Sites     | White  | 38     | 31     | 59     | 42     | 47     | 74     |
|               | Black  | 30     | 21     | 49     | 32     | 37     | 69     |
| All Sites     | White  | 38     | 31     | 59     | 42     | 47     | 74     |
|               | Black  | 30     | 21     | 49     | 32     | 37     | 69     |
| All Sites     | White  | 38     | 31     | 59     | 42     | 47     | 74     |
|               | Black  | 30     | 21     | 49     | 32     | 37     | 69     |
| Esophagus     | White  | 34     | 3      | 5      | 37     | 7      | 12     |
|               | Black  | 28     | 1      | 3      | 30     | 4      | 7*     |
| Stomach       | White  | 17     | 9      | 38     | 20     | 12     | 41     |
|               | Black  | 10     | 7      | 36*    | 11     | 11     | 53*    |
| Colon-Rectum  | White  | 43     | 41     | 67     | 42     | 46     | 72     |
|               | Black  | 34     | 31     | 59     | 31     | 36     | 67     |
| Pancreas      | White  | 14     | 1      | 4      | 15     | 2      | 5      |
|               | Black  | 11     | 1      | 3*     | 14     | 3      | 8*     |
| Lung          | White  | 18     | 8      | 20     | 19     | 11     | 34     |
|               | Black  | 17     | 6      | 16     | 13     | 6      | 10*    |
| Female Breast | White  | -      | -      | -      | 45     | 62     | 84     |
|               | Black  | -      | -      | -      | 31     | 47     | 77     |
| Cervix        | White  | -      | -      | -      | 52     | 60     | 79     |
| Uteri         | Black  | -      | -      | -      | 40     | 51     | 78     |
| Corpus Uteri  | White  | -      | -      | -      | 74     | 72     | 83     |
|               | Black  | -      | -      | -      | 51     | 40     | 63     |
| Ovary         | White  | -      | -      | -      | 28     | 32     | 72     |
|               | Black  | -      | -      | -      | 25     | 28     | 74*    |
| Prostate      | White  | 57     | 51     | 64     | -      | -      | -      |
|               | Black  | 48     | 41     | 58     | -      | -      | -      |
| Bladder       | White  | 76     | 56     | 68     | 72     | 56     | 71     |
|               | Black  | 53     | 29     | 46     | 47     | 27     | 48*    |
| Kidney        | White  | 43     | 35     | 63     | 48     | 38     | 60     |
|               | Black  | 43     | 39     | 67*    | 47     | 42     | 71*    |

* Rates have standard error between 5 and 10 percent.
** Adjusted for normal life expectancy.
*** White and black male figures are adjusted to the site distribution of the total male cancer cases. White and black female figures are adjusted to the site distribution of the total female cancer cases.

Source: Axtell, L.M.; Myers, M.H., and Shambaugh, E.M.: Treatment and Survival Patterns for Black and White Cancer Patients Diagnosed 1955 Through 1964. DHEW Publication No.(NIH) 75 – 712. Washington U.S. Printing Office, 1975.
Categories: cervix and corpus. These distinctions are not reported reliably for mortality data.

The incidence of cancer of the cervix uteri varies markedly with socioeconomic status. It is much higher in low socioeconomic groups, and therefore higher in blacks. A higher risk for cervical cancer is attendant upon early age at coitus, a large number of sexual partners, inadequate personal hygiene, poor medical attention following childbirth and infection with herpes virus type 2. Studies have shown similar cervical cancer incidence rates in white and black females of comparable socioeconomic standing, which negates the suggestion that these variations were due to biologic differences.

The substantial reduction in the incidence of invasive cancer of the cervix is one of the big success stories in cancer control. Perhaps some of this reduction is due to a general advance in living standards. However, most of it must be attributed to effective medical intervention at an earlier stage of disease among women at high risk for invasive cervical cancer.

Table 3 shows that equivalent results were achieved for both white and black patients with invasive cervical cancer when the disease was diagnosed in a localized stage. However, since fewer blacks received the benefit of such a diagnosis, overall survival was poorer in blacks than whites.

Increases in corpus cancer incidence in older women have recently been reported. Also, an enhanced risk has been linked to a growing use of exogenous estrogens. The data in Table 2 predate these reports and do not suggest an increase in incidence, in part because of fewer intact uteri at risk due to increases in hysterectomy not for cancer. We do see an excess for white compared with black incidence. The greater
use of estrogens in the more affluent will tend to augment this excess. However, large advantages to whites are evident in each item presented in Table 3. The five-year survival overall was 72 in whites and only 40 in blacks.

Cancer of the Ovary
Cancer of the ovary is similar to the breast as a site in which higher rates are seen in higher socioeconomic groups. Accordingly, higher incidence rates occurred in white than black females, as evidenced in Table 2.

Cancer of the Prostate
Cancer of the prostate is a major problem for black males. Not only is the incidence much higher for blacks than whites, but the margin keeps widening. (Table 2.) In addition, fewer black males were diagnosed in a localized stage and their survival rates were inferior to those of whites. (Table 3.)
Cancer of the Bladder

In cancer of the urinary bladder, rates for whites were in considerable excess of those for blacks. Cancer of the bladder was one of the first cancers for which an occupational basis was established. Even before 1900, aniline dye was suspected as an etiologic agent and beta-naphthylamine and benzidine have long been known as potent carcinogens for cancer of the bladder. Possibly, some differences between blacks and whites in the incidence of bladder cancer have their roots in the greater exposure of whites to occupational carcinogens.

Table 3 shows the much superior success in coping with cancer of the bladder in whites than in blacks: many more white patients than black were diagnosed while in a localized stage of disease, and the survival rates were decidedly better in whites.

Cancer of the Kidney

Incidence has increased with time for each of the four race-sex groups. (Table 2.) The kidney is the only cancer site in Table 3 which had lower survival rates in whites than blacks.

Summary

Recent articles have focused attention on the “alarming increase of cancer mortality in the U.S. black population.” This may be appropriate for black males, though it is certainly an exaggeration for black females where, overall, there has been little change. Clearly, however, for both males and females, controlling cancer is more difficult in blacks than in whites. Blacks are developing more cancers and their prospects for diagnosis in a localized stage are poorer. Survival rates are poorer, and death rates are higher.

| Cancer of the Bladder | White Males | Nonwhite Males | White Females | Nonwhite Females |
|-----------------------|-------------|----------------|---------------|------------------|
| Estimated New Cases, 1976 | 21,000 | 1,000 | 7,200 | 500 |
| Percent of Total New Cases | 7.0 | 2.6 | 2.4 | 1.6 |

| Cancer of the Kidney | White Males | Nonwhite Males | White Females | Nonwhite Females |
|-----------------------|-------------|----------------|---------------|------------------|
| Estimated New Cases, 1976 | 8,400 | 800 | 5,100 | 600 |
| Percent of Total New Cases | 2.8 | 2.1 | 1.7 | 1.9 |