
Highlights

The Surveillance Research Program of the National Cancer Institute is pleased to release this monograph on area socioeconomic variations in cancer in the United States from 1975 through 1999. Cancer is the second leading cause of death after heart disease and is responsible for more estimated years of life lost than any other cause of death in the United States. Cancer as a disease also exacts an enormous toll in terms of financial costs of cancer care and emotional and psychological distress among people affected by it. As shown in this monograph, the cancer burden varies greatly among various ethnic and socioeconomic groups in the United States, and the magnitude of socioeconomic inequalities for some cancers may be widening over time. This monograph focuses on six major cancers—lung, colorectum, breast, prostate, uterine cervix, and melanoma of the skin—the cancers for which cancer control interventions have been introduced into the general population. The analysis of cancer rates and trends by socioeconomic characteristics may shed important light on the potential contribution of major cancer control efforts such as smoking reduction and cancer screening on reducing the cancer burden among the various segments of the U.S. population. Some of the highlights from the monograph are listed herein:

Monograph Data

- Incidence, stage, treatment, and survival data are from the 11 population-based SEER cancer registries that cover 14% of the U.S. population.
- For incidence trend analysis, 2.4 million newly diagnosed invasive cancer cases between 1975 and 1999 were used. Stage of disease analyses included 1.8 million invasive cancer cases diagnosed between 1988 and 1999.
- The analysis of patient survival included 442,415 men and 398,147 women who were diagnosed with primary invasive cancers during 1988–1994 and were followed for vital status through December 31, 1999.
- Mortality data are presented both for the SEER areas and the entire U.S. population.
- For mortality trend analysis, 6.3 million male cancer deaths and 5.5 million female cancer deaths occurring between 1975 and 1999 were used.
- The poverty rate, the percentage of the population below the poverty level, was used as the area socioeconomic measure and was derived from the 1990 decennial census at either the county or census tract level.

Incidence and Mortality

All Cancers

- Area socioeconomic gradients in all-cancer mortality among U.S. men widened between 1975 and 1999. In 1975, total male cancer mortality was only 2% greater in high poverty areas (county poverty rate of 20% or higher) than in low poverty areas (county poverty rate less than 10%). But in 1999, total cancer mortality among men was 13% greater in high poverty areas than in low poverty areas.
- Area socioeconomic patterns in all-cancer mortality among U.S. women reversed between 1975 and 1999. Compared to the rate for women in low poverty counties, the total cancer mortality rate for U.S. women in high poverty counties was 3% lower in 1975 but was 3% greater in 1999.

Lung Cancer

- The higher the county poverty rate, the greater the lung cancer mortality rate among U.S. men. However, area socioeconomic gradients in lung cancer mortality among U.S. men widened between 1975 and 1999. Compared to the rate for men in low poverty counties, the lung cancer mortality rate for U.S. men in high poverty counties was 7% greater in 1975 and 25% greater in 1999.
- Lung cancer incidence during 1988–1992 increased with increasing census tract poverty rate for non-Hispanic white and black men and women and Asian/Pacific Islander (API) men. In contrast, for Hispanic men and women, lung

cancer incidence rates were higher in low poverty census tracts than in high poverty census tracts.

Colorectal Cancer

- Area socioeconomic patterns in colorectal cancer mortality among U.S. men and women reversed between 1975 and 1999. Compared to the rates in low poverty counties, the colorectal cancer mortality rates in high poverty counties were 12% lower in 1975 but at least 5% higher in 1999. Although colorectal cancer mortality showed a downward trend in all poverty groups, the reversal in patterns occurred largely as a result of a faster decline in mortality among men and women in low poverty counties.
- Colorectal cancer incidence was only weakly or inconsistently related to census tract poverty rate.

Prostate Cancer

- Prostate cancer mortality did not vary much by area poverty rates from 1975 through 1989. However, since 1990 there has been a widening of the area socioeconomic gradient, with men in high poverty counties in 1999 experiencing a 22% higher prostate cancer mortality rate than men in low poverty counties.
- The higher the census tract poverty rate, the lower the prostate cancer incidence during 1988–1992. Compared to the rates for their counterparts in high poverty census tracts, the prostate cancer incidence rates for non-Hispanic white, black, American Indian, API, and

Hispanic men were respectively 20%, 17%, 16%, 46%, and 48% higher in low poverty census tracts.

Female Breast Cancer

- Socioeconomic differences in U.S. female breast cancer mortality have narrowed over time and appear to have reversed in the late 1990s. Compared to the rate for women in low poverty counties, breast cancer mortality for women in high poverty counties was 15% lower in 1976 but 4% greater in 1999.
- Time trends in SEER female breast cancer incidence from 1975 to 1999 indicate consistently higher rates among lower poverty groups, with incidence rates increasing more rapidly in low poverty counties than in high poverty counties.
- The higher the census tract poverty rate, the lower the breast cancer incidence during 1988–1992. Compared to the rates for their counterparts in high poverty areas, the breast cancer incidence rates for non-Hispanic white, black, API, and Hispanic women were respectively 10%, 16%, 49%, and 50% higher in low poverty areas.

Cervical Cancer

- Although cervical cancer mortality decreased consistently for all county poverty groups between 1975 and 1999, socioeconomic inequalities in U.S. cervical cancer mortality did not diminish during this time period. In the

1990s, U.S. women experienced at least 71% higher cervical cancer mortality in high poverty counties than in low poverty counties.

- U.S. cervical cancer mortality increased with increasing area poverty for women in all racial/ethnic groups. During 1995–1999, American Indian and Hispanic women in high poverty counties had almost twice the cervical cancer mortality of their counterparts in low poverty counties. The cervical cancer mortality rates were respectively 45% and 37% higher for non-Hispanic white women and black women in high poverty counties than in low poverty counties.
- The SEER cervical cancer incidence rates also showed a downward trend for all county poverty groups during 1975–1999. However, a substantial socioeconomic gradient in cervical cancer incidence remained, with women in high poverty counties having at least a one-third higher incidence rate than those in low poverty counties throughout the study period.
- The higher the census tract poverty rate, the greater the cervical cancer incidence during 1988–1992. Compared to the rates for their counterparts in low poverty census tracts, the cervical cancer incidence rates for non-Hispanic white, black, American Indian, API, and Hispanic women were respectively 97%, 30%, 292%, 44%, and 83% higher in high poverty census tracts.

Melanoma of the Skin

- The higher the county poverty rate, the lower the U.S. mortality from melanoma of the skin. While mortality from melanoma of the skin showed an increasing trend between 1975 and 1999 for men in all county poverty groups, the trend was relatively stable for women.

- Between 1975 and 1999, the SEER incidence rates for melanoma of the skin increased two- to three-fold for men and women in all county poverty groups, with low poverty counties maintaining substantially higher incidence rates than high poverty counties throughout the study period.

- The higher the census tract poverty rate, the lower the incidence for melanoma of the skin during 1988–1992. The rates were respectively 2.7 and 3 times higher for men and women in low poverty census tracts than in high poverty census tracts.

Stage of Disease at Diagnosis

- For each of the cancers considered, men and women in high poverty areas (census tracts with poverty rates 20% or higher) had a higher percentage of late-stage cancer diagnoses than those in low poverty areas (census tracts with poverty rates less than 10%). Conversely, patients in low poverty areas were generally more likely to be diagnosed with early-stage (localized) cancers. These patterns generally held for each racial/ethnic group.

- The largest socioeconomic gradients occurred for patients diagnosed with distant-stage melanoma of the skin, distant-stage prostate cancer, and distant-stage female breast cancer. Compared to their counterparts in low poverty areas, men and women in high poverty areas were respectively 2.5 and 2.2 times more likely to be diagnosed with distant-stage melanoma of the skin. Patients in high poverty areas were respectively 1.9 and 1.7 times more likely to be diagnosed with distant-stage cancers of the prostate and female breast.

- The percentage of prostate cancers diagnosed at local or regional stage increased from 1988 through 1999 in all socioeconomic groups. A socioeconomic gradient persisted over the time period, with the lowest poverty group having the largest percentage of local/regional-stage cancers. This pattern coincides with the rising utilization of the prostate-specific antigen (PSA) test for prostate cancer screening since the late 1980s.

- The stage distribution of female breast cancer cases remained stable from 1988 to 1999. A consistent socioeconomic gradient is also apparent over this time period.

- Socioeconomic differences in the stage distribution for cervical cancer cases were large and consistent throughout the 1990s.

- The percentage of regional- or distant-stage melanoma diagnoses appeared to have increased during 1995–1999 among men in high poverty areas.

Treatment (Cancer-Directed Surgery)

- Men with stage I or II non-small-cell lung cancer showed a consistent area socioeconomic gradient in surgery rates for each racial/ethnic group; those in the lowest census tract poverty group (the highest SES group) had the highest likelihood of undergoing surgery. Among women, the socioeconomic gradient was apparent only for non-Hispanic whites.
- The lack of a consensus on the therapeutic management of prostate cancer leads to variations in practice that may be linked to both clinical and nonclinical factors. There were clear socioeconomic gradients in the frequency of prostatectomy for non-Hispanic white and black men aged under 70 years, with the highest surgery frequency occurring in the lowest poverty group.
- The percentage of black patients receiving radical prostatectomy was the lowest among the four racial/ethnic groups within each area poverty group. There was no clear socioeconomic pattern in the frequency of surgery for Asian/Pacific Islander men.
- Among women diagnosed during 1995–1999 with stage I or II breast cancers, 2 cm or less in diameter, there was a consistent socioeconomic gradient in the percentage receiving breast-conserving surgery (BCS). BCS was most commonly performed in low poverty census tracts (high SES areas), and this relationship held for each racial/ethnic group.

- The percentage of women receiving BCS increased steadily in each socioeconomic group over the period 1988–1998, although women in the lowest poverty group consistently showed the highest levels of BCS.

Survival

- For all cancers combined as well as for the individual cancers considered, both men and women in high poverty areas (census tracts with poverty rates 20% or higher) generally had lower rates of cancer survival than those in low poverty areas (census tracts with poverty rates less than 10%).
- Among men diagnosed with cancer between 1988 and 1994, the five-year survival rate for all cancers combined was 61% in low poverty areas but only 49% in high poverty areas.
- Among women diagnosed with cancer between 1988 and 1994, the five-year survival rate for all cancers combined was 63% in low poverty areas and only 53% in high poverty areas.
- The pattern of lower cancer survival associated with higher poverty levels held for each racial/ethnic group except American Indians/Alaska natives. For example, for black men diagnosed with cancer between 1988 and 1994, the five-year survival rate for all cancers combined was 58% in low poverty areas and only 45% in high poverty areas.

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- Among women diagnosed with breast cancer between 1988 and 1994, five-year survival was 86% for those in low poverty areas and only 78% for those in high poverty areas. Large socioeconomic differentials in survival were also observed for melanoma of the skin and for colorectal, prostate, and cervical cancers.
 - For all cancers combined and for many types of cancer, significant racial/ethnic differences in cancer survival remained within each area poverty group. However, racial/ethnic differences in survival were substantially reduced after controlling for stage of disease at diagnosis. For example, for non-Hispanic white and black women diagnosed with breast cancer (all stages combined) between 1988 and 1994 in high poverty census tracts, the five-year survival rates were 82% and 72% respectively. However, among women diagnosed with localized-stage breast cancer in high poverty census tracts, the five-year survival rate was 94% for non-Hispanic white women and 90% for black women.
 - Socioeconomic gradients in cancer survival were generally most pronounced for regional-stage disease. For example, the five-year survival rates for women diagnosed with regional-stage breast cancer were 80% among those living in low poverty census tracts and 71% for those in high poverty census tracts. Socioeconomic differences in survival were also substantial for localized-stage lung cancer and distant-stage cervical cancer.
 - Five-year survival rates for all cancers combined improved between 1988 and 1994 for men in all area poverty groups, although substantial socioeconomic differences remained. Trends in overall cancer survival among women remained stable between 1988 and 1994, with women in higher poverty areas experiencing significantly lower cancer survival throughout the period.
 - Prostate cancer survival improved between 1988 and 1994 for men in all area poverty groups, with socioeconomic inequalities diminishing slightly because of somewhat larger gains in survival among men in high poverty areas.
 - Socioeconomic differentials in female breast cancer survival appear to be relatively unchanged between 1988 and 1994, with little or no improvement in survival among women in each area group.