

# CANCER IN KING COUNTY

A special report prepared by the  
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## EXECUTIVE SUMMARY

Cancer, after heart disease, is the second leading cause of death in King County. In 1994 a total of 2,778 King County residents died from cancer, accounting for 25% of all deaths. Also, 6,831 new cases of cancer were diagnosed in the county in 1994. The top five causes of cancer deaths in King County are lung cancer, colorectal cancer, breast cancer, prostate cancer, and cancer of the pancreas.

Between 1980 and 1994 in King County, the death rate<sup>1</sup> of all cancers combined in King County was virtually unchanged. During the same period, the death rates of prostate cancer, melanoma of the skin, ovarian cancer, and non-Hodgkin's lymphoma increased. The death rate of lung cancer increased among women but declined among men. The death rates of colorectal cancer and bladder cancer declined. The death rates of breast cancer, cervical cancer, and pancreatic cancer were unchanged during the 15 year period. In general, the time trends in the incidence rates were similar to those in the death rates.

For many types of cancer, the incidence rate and the death rate in King County varied among racial/ethnic groups, geographic areas, and populations with different socioeconomic levels. The total cancer death rate for African Americans was significantly higher than the rate for whites, while the white rate was significantly higher than the rate for Asians and Hispanics<sup>2</sup>. The total cancer death rates in Central Seattle and Southeast Seattle were significantly higher, while the rates in North Central Seattle, Bellevue, Federal Way, Eastgate/Issaquah, and Mercer Island were significantly lower than the county average rate. The total cancer death rate in high poverty areas was higher than the rate in low poverty areas.

Many cancers can be prevented by reducing the risk factors or cured by early detection. For example, cigarette smoking is a major risk factor for lung cancer and many other types of cancer. It is estimated that 87% of lung cancer and 30% of all cancer deaths are attributable to cigarette smoking (Brownson, Remington, and Davis, 1993). The smoking prevalence rate in King County had declined from 24% in 1987 to 17% in 1994.

Other risk factors for cancer that are amenable to prevention programs include poor diet, high risk sexual behavior, alcohol abuse, excessive exposure to sunlight, obesity, and probably physical inactivity. Local data indicate that many improvements can be made towards the reduction or modification of these risk factors.

Another important aspect in cancer prevention and control is early detection. Breast, cervical, and colorectal cancer screening can help to detect these cancers at an early stage when they are more easily curable. However, the 1990-94 incidence data for King County indicated that 33% of the breast cancer, 30% of the cervical cancer, and 72% of the colorectal cancer cases were diagnosed at a late stage. Based on the 1994 Washington State Behavioral Risk Factor Survey (BRFS), 73% of women age 50 and older in King County had received a clinical breast examination and a mammogram within the previous two years. Of women 18 and older, 86% had received a Pap test within the previous three years. For colorectal cancer screening, the 1995 BRFS data showed that, of persons age 50 and older, 39% had received a proctoscopic exam within the previous five years.

To reduce cancer morbidity and mortality in King County, we should continue our efforts in the following key areas:

- reduce the prevalence of smoking
- increase the rate of screening for breast cancer, cervical cancer, and colorectal cancer
- reduce fat intake and increase daily consumption of vegetables, fruits, and grain products
- avoid excessive sun exposure
- increase physical activity
- enhance targeted prevention and screening efforts for high risk populations, especially for African Americans and low income persons

<sup>1</sup> In this report, the death and incidence rates for all ages are age-adjusted to the 1970 US population.

<sup>2</sup> The death rate for Hispanics may be unreliable because of underreporting.

We hope that the data presented in this report can help public health professionals, health care providers, community based organizations, and especially community members develop effective programs for cancer control and prevention. We also hope that the information provided in this report can motivate the practice of healthy behaviors among King County residents to reduce their cancer risk.

The following tables summarizes the cancer statistics and prevention strategies presented in this report. Lung cancer, breast cancer, colorectal cancer, cervical cancer, melanoma of the skin, and bladder cancer are most amenable to primary prevention and early detection. In 1994, these cancers accounted for 51% of the total cancer deaths.

**Statistics for Selected Cancer Sites in King County<sup>1</sup>**

| Site        | 1994 New Cases | 1994 Deaths | 1980-94 Trend* in Incid. Rate | King Co. vs. U.S. in Incid. Rate | 5 Year Survival Rate (%) | % Late Stage at Diagnosis | Low SES vs. High SES in Incid. Rate | African Am. Vs. White in Incid. Rate |
|-------------|----------------|-------------|-------------------------------|----------------------------------|--------------------------|---------------------------|-------------------------------------|--------------------------------------|
| Lung        | 922            | 770         | female↑                       | similar                          | 13%                      | 82%                       | higher                              | higher                               |
| Colorectal  | 741            | 274         | ↓                             | similar                          | 49%                      | 72%                       | higher                              | higher                               |
| Breast      | 1,149          | 215         | ↑                             | higher                           | 77%                      | 33%                       | lower                               | lower                                |
| Prostate    | 833            | 199         | ↑                             | lower                            | 71%                      | 32%                       | similar                             | higher                               |
| Pancreas    | 159            | 137         | ≈                             | similar                          | 4%                       | 94%                       | higher                              | higher                               |
| Lymphoma    | 334            | 123         | ↑                             | higher                           | 45%                      | -                         | higher                              | lower                                |
| Leukemia    | 161            | 113         | ≈                             | similar                          | 37%                      | -                         | similar                             | similar                              |
| Ovarian     | 145            | 90          | ↑                             | similar                          | 43%                      | 51%                       | similar                             | lower                                |
| Bladder**   | 280            | 65          | ↓                             | similar                          | 63%                      | 12%                       | similar                             | lower                                |
| Cervical    | 193            | 47          | ≈                             | lower                            | 72%                      | 30%                       | higher                              | higher                               |
| Hodgkin's   | 172            | 42          | ↑                             | similar                          | 81%                      | -                         | -                                   | -                                    |
| Melanoma    | 302            | 31          | ↑                             | higher                           | 80%                      | 7%                        | lower                               | lower                                |
| Endometrial | 219            | 15          | ↓                             | higher                           | 76%                      | 18%                       | similar                             | lower                                |

\* The symbol “ ≈ “ denotes there was no significant change in the incidence rate during 1980-1994.

\*\*There was an declining trend in the incidence rate of invasive bladder cancer but an increasing trend in the incidence rate of in situ bladder cancer.

**Prevention/Early Detection Strategies for Cancers that are Most Preventable or Curable**

| Site       | Preventable Risk Factors                             | Effective Prevention/Early Detection Strategies |
|------------|--|---|
| Lung       | cigarette smoking                                    | tobacco avoidance and cessation                 |
| Breast     | high-fat diet, alcohol, physical inactivity, obesity | mammography and CBE screening                   |
| Colorectal | high-fat diet, alcohol, physical inactivity, obesity | fecal occult blood test/sigmoidoscopy screening |
| Cervical   | unprotected sexual intercourse, smoking              | Pap smear screening                             |
| Melanoma   | over exposure to sunlight                            | clothing/sunscreen, screening high risk persons |
| Bladder    | smoking, certain occupational exposure               | tobacco avoidance and cessation                 |

<sup>1</sup> Except for bladder cancer, the statistics are for invasive cancers only. The rates comparisons are based on age-adjusted rate (adjusted to 1970 US population). Social Economic Status (SES) comparisons are based on census tract poverty level groupings.

## INTRODUCTION

Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells, caused by a complex interaction of genetic factors and environmental exposures. In King County cancer is the second leading cause of death, after heart disease. In 1994 a total of 2,778 King County residents died from cancer, accounting for 25% of all deaths. In recent years, about 7,000 new cases of invasive cancer have been diagnosed in the county annually. Although cancers tend to have high rates of fatality, research has shown that through primary prevention and early detection, many cancers can be prevented or cured.

In this report, we present the epidemiology of cancer in King County, including the population distribution, time trend, and geographic occurrence for thirteen different types of cancer as well as for all cancers combined. The thirteen types include cancer of the lung, breast, prostate, colon and rectum, uterine cervix, uterine corpus, ovary, bladder, and pancreas, as well as melanoma of the skin, Hodgkin's disease, non-Hodgkin's lymphoma, and leukemia.

Data sources for this report include death certificates, the SEER<sup>1</sup> database of cancer incidence from the Fred Hutchinson Cancer Research Center, the Washington State Cancer Registry, and the Washington State Behavioral Risk Factor Survey.

## TERMS FOR DATA PRESENTATION

**Crude Rate; Age-Specific Rate; Age-Adjusted Rate:** A rate is the total number of events (such as cancer deaths) occurring in a population during a specified time period, divided by the size of the population, and then multiplied by 100,000. When this is applied to the total population (all ages), the rate is called a crude rate. When the rate is applied to a specific age group, the rate is called an age-specific rate. The crude and age-specific rates represent the actual magnitude of an event in the total population or the age group.

When comparing rates between two or more populations, such as between racial groups or between geographic areas, it is useful to calculate a rate that is not affected by the differences in their age distributions. The age-adjusted rate is a rate that mathematically removes the effect of age. In this report, rates are adjusted to the age distribution of the 1970 US population. Due to increased random variation associated with small numbers, an age-adjusted rate is not calculated if the total number of events is less than 25.

**Incidence Rate:** Incidence rate refers to the number of new cases diagnosed per 100,000 population per year.

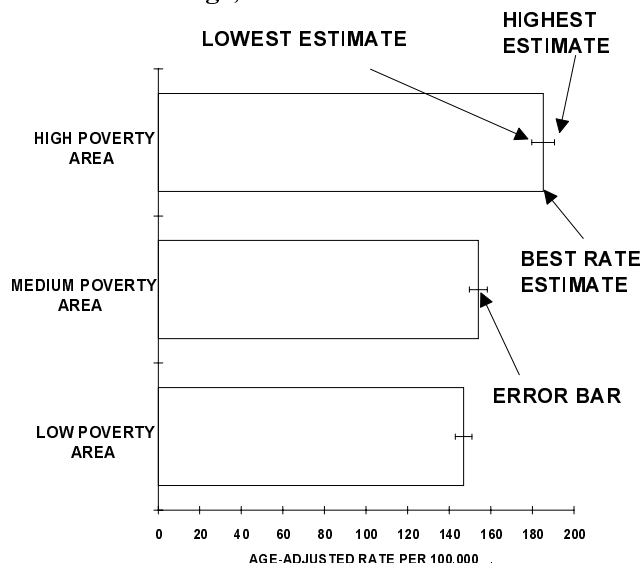
**Rolling Averages:** For populations of small size, small changes in the number of events will cause the rate to fluctuate significantly. To help stabilize the rate and observe the time trend, the rates are sometimes aggregated into "rolled" averages. For example, the breast cancer death rates between 1990 and 1994 can be reported as three year rolling averages: 1990-1992, 1991-1993, and 1992-1994. Each aggregate of three year averages successively advances by one year.

**Confidence Interval:** When comparing rates from year to year, from one area to another, or by other demographic characteristics, such as gender, race, and geographic area, the "95% confidence interval" or margin of error can be calculated for each rate to assess how much the rate is likely to vary due to random variation. For each estimated rate, one would expect the "true" rate to fall within the confidence interval 95% of the time. The larger the population size and the larger the event number, the smaller the confidence interval, and thus the more precise the rate.

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<sup>1</sup> The Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute collects cancer data on a routine basis from 13 designated population-based cancer registries in the United States.

**All Cancer Age-Adjusted Death Rates  
by Poverty Level in King County  
Five Year Average, 1990-1994**



The graph on the left is given as an example to show how to read bar charts in the report. The 95% confidence interval is shown as an error bar for each rate. Because the best rate estimate for high poverty area is higher than those for medium and low poverty areas and its error bar does not overlap with those for the other two areas, we are confident that the rate for high poverty area was higher than the rates for medium and low poverty areas. On the other hand, because of overlapping error bars, the rate difference between medium and low poverty areas does not reach statistical significance and we cannot conclude that a true difference exists between the two rates.

**Time Trends:** To assess the statistical significance of the trends between 1980 and 1994, we performed a chi-square test with rates adjusted to the 1990 (rather than the 1970) US population. When the test produces a significant result, we stated there was an increase or decline in the cancer rates.

**Stage at Diagnosis:** The earliest stage for most cancer types is called carcinoma in situ. In situ cancers are *noninvasive* cancer cells confined to the site of origin, such as the very top surface of the uterine cervix. In situ cancers do not necessarily progress into invasive cancers and when they are treated at this stage, they can be cured completely. However, when a cancer advances from “in situ” into “invasive”, it becomes much more serious and potentially life-threatening because it spreads into and damages other tissues and organs both near to and distant from the original site.

Cancers at the *invasive* stages included localized, regional, and distant cancers. A localized cancer is an invasive cancer confined entirely to the organ of origin. A regional cancer has extended beyond the limits of the organ of origin directly into surrounding organs and tissues, or lymph nodes, or both. A distant cancer is one that has spread to parts of the body remote from the primary tumor either by direct extension or by discontinuous metastasis. A cancer of unknown stage is an invasive cancer for which information is not sufficient to assign a stage. For most cancer sites, in situ cancers are usually not reported in cancer statistics.

**Observed Survival Rate:** Observed survival rate represents the proportion of cancer patients surviving for a specified length of time after diagnosis. Note that in the calculation of the observed survival rate, deaths from causes other than the specified cancer are also included. For example, the five year observed survival rate for colorectal cancer in King County was 50%, indicating that half of the patients died within five years after diagnosis from either colorectal cancer or other causes.

In interpretation of the survival rate and the incidence rate for a specific cancer, the “lead-time” bias due to screening has to be considered. Lead-time is defined as the interval between the diagnosis of the cancer by screening and when it would have been detected in the absence of screening, usually due to development of symptoms. Since screening is applied to persons without symptoms, in essence every case detected by screening will have had its diagnosis advanced by some amount of time. Lead-time results in an artificial increase in the survival rate as well as the incidence rate but not necessarily the mortality rate. Screening for breast cancer has

been shown to reduce breast cancer mortality, therefore, the increased survival rate is not merely due to lead-time.

**Race/Ethnicity:** In this report, we compared the cancer rates between the racial/ethnic groups in King County. The differences in cancer rates between racial/ethnic groups may be explained by a variety of factors such as socioeconomic status, the living environment, limited access to health care, cultural differences, and genetic factors. For the minority populations, because of their relative small population size, especially for Native Americans, we were unable to calculate a reliable rate for many of the cancer types. For Hispanics, the incidence data were not available and the death data may be problematic because of underreporting.

**Residence Poverty Level:** To examine the relationship between poverty level and cancer rate, the census tracts in King County are ranked by the percentage of population living below the Federal Poverty Level in 1989. We then divided them into three groups with equal number of census tracts (terciles). The one third of census tracts with the highest percentage of population living below poverty are labeled as “high poverty areas” and the remaining two groups are labeled as “medium poverty areas” and “low poverty areas” accordingly.

**Health Planning Area:** To examine the geographic variation in cancer incidence and death, we divided King County into 21 health planning areas. The areas are shown below.





## ALL CANCERS

All Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates

|                               | Incidence          |        | Death |        |
|-------------------------------|--------------------|--------|-------|--------|
|                               | Rate               | Number | Rate  | Number |
| King County 1994              | 399.3              | 6,831  | 160.7 | 2,778  |
| Seattle 1994                  | 393.7 <sup>3</sup> | 2,992  | 171.3 | 1,174  |
| WA State 1993/94 <sup>2</sup> | 388.3              | 24,041 | 164.0 | 9,803  |
| U.S. 1993                     | 407.4              |        | 172.0 |        |

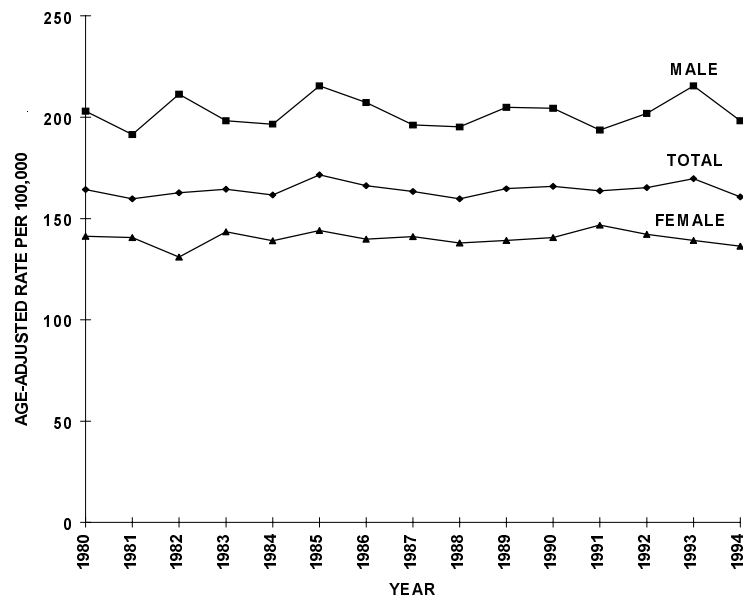
Cancer is the second leading cause of death. In 1994, a total of 2,778 King County residents died from cancer, include 793 persons (28.5%) under age 65. Also in 1994, 6,831 new cases of invasive cancer were diagnosed.

Number of New Diagnoses<sup>1</sup> and Deaths for the Ten Leading Types of Cancer in King County, 1994

| New Diagnoses <sup>4</sup> (Incidence) |       |              |       | Deaths      |       |              |       |
|--|-------|--------------|-------|-------------|-------|--------------|-------|
| Male                                   |       | Female       |       | Male        |       | Female       |       |
| Prostate:                              | 833   | Breast:      | 1,149 | Lung:       | 420   | Lung:        | 350   |
| Lung:                                  | 497   | Lung:        | 425   | Prostate:   | 199   | Breast:      | 215   |
| Colorectal:                            | 376   | Colorectal:  | 365   | Colorectal: | 141   | Colorectal:  | 133   |
| Bladder:                               | 203   | Uterus:      | 219   | Pancreas:   | 69    | Ovary:       | 90    |
| Lymphoma                               | 202   | Ovary:       | 145   | Leukemia:   | 61    | Pancreas:    | 68    |
| Melanoma:                              | 157   | Melanoma:    | 142   | Lymphoma:   | 59    | Lymphoma:    | 64    |
| Oral/Pharynx:                          | 115   | Lymphoma:    | 132   | Esophagus:  | 50    | Leukemia:    | 53    |
| Leukemia:                              | 96    | Pancreas:    | 81    | Brain:      | 50    | Brain:       | 47    |
| Kidney:                                | 93    | Bladder:     | 77    | Bladder:    | 42    | Stomach:     | 27    |
| Pancreas:                              | 78    | Cervical:    | 74    | Liver:      | 41    | Bladder:     | 23    |
| All cancers:                           | 3,342 | All cancers: | 3,486 | All cancer: | 1,425 | All cancers: | 1,353 |

All Cancers Age-Adjusted Death Rates  
King County, 1980-1994

Between 1980 and 1994, the overall cancer death rate in King County was practically unchanged.



<sup>1</sup> In situ cases are not included.

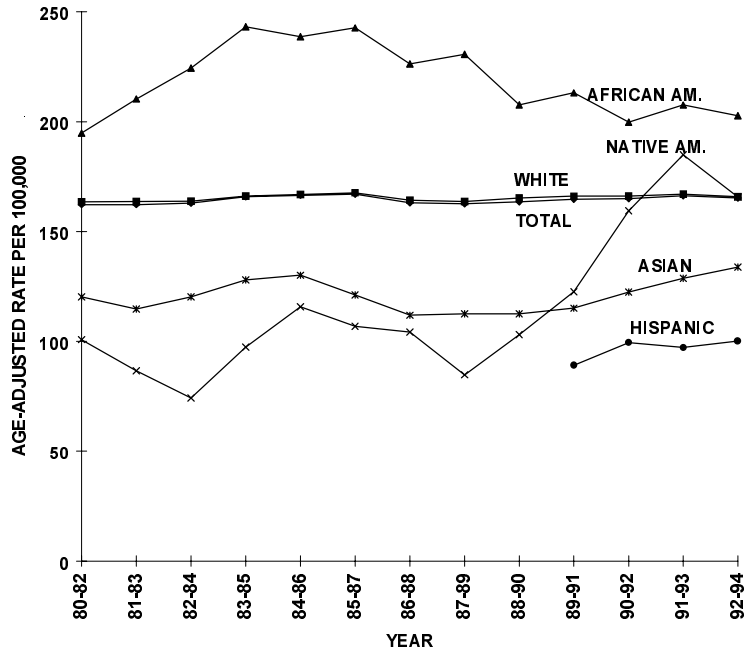
<sup>2</sup> For Washington State, the incidence rate and number were for 1993 and the death rate and number were for 1994.

<sup>3</sup> The incidence rate is for Seattle and North King County because geographic area is aggregated based on zip codes.

<sup>4</sup> Except bladder cancer, the incidence cases include invasive cancers only. In situ cancers are included in the bladder cases.

**All Cancer Age-Adjusted Death Rates By Race/Ethnicity, King County Three Year Rolling Averages, 1980-1994**

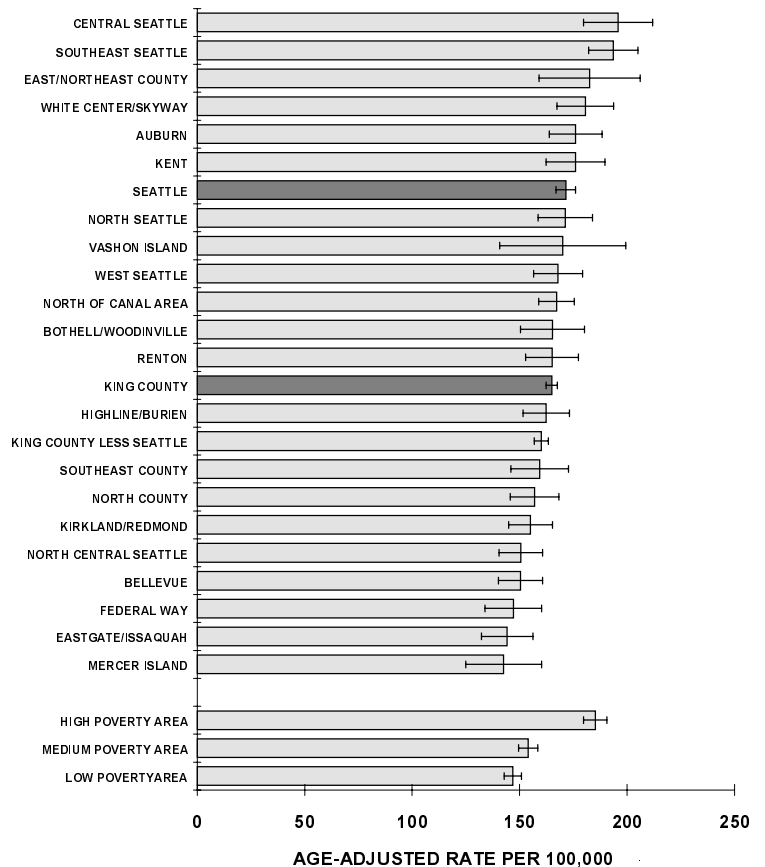
Between 1980 and 1994, the all cancer age-adjusted death rates for whites and Asians remained relatively stable. For Native Americans, the rate appeared to have increased but the trend was not statistically significant due to small numbers. For African Americans, the death rate was at about the same level as in the early 1980s after it peaked in the mid-1980s.



The all cancer death rate for African Americans was significantly higher than the rate for whites, while the white rate was significantly higher than the rates for Asians and Hispanics. Averaged over 1990-1994, the number of cancer deaths per year in King County was 2,479 for whites, 116 for African Americans, 15 for Native Americans, 135 for Asians, and 23 for Hispanics.

**All Cancer Age-Adjusted Death Rates By Poverty Level and Health Planning Area, King County Five Year Average, 1990-1994**

The all cancer age-adjusted death rates in Central Seattle and Southeast Seattle were significantly higher while the rates in North Central Seattle, Bellevue, Federal Way, Eastgate/Issaquah, and Mercer Island were significantly lower than the King County average rate. The death rate was also associated with residence poverty level. Persons living in high poverty areas had a higher all cancer death rate than persons living in low poverty areas.



## LUNG CANCER

Lung cancer is the leading cause of cancer death in both men and women in King County. In 1994, lung cancer accounted for 28% of all cancer deaths. The high death rate is the result of both a high incidence rate and a low survival rate. In 1994, 30% of the lung cancer deaths were among persons under age 65. Also, more women died from lung cancer (349) than from breast cancer (215).

### Lung Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates

|                    | Incidence |        | Death |        |
|--------------------|-----------|--------|-------|--------|
|                    | Rate      | Number | Rate  | Number |
| King Co. 1994      | 56.1      | 922    | 46.5  | 770    |
| Seattle 1994       | 61.8      | 390    | 48.5  | 315    |
| WA State 1993/1994 | 56.3      | 3,173  | 49.2  | 2,830  |
| US 1993            | 57.0      |        | 50.1  |        |

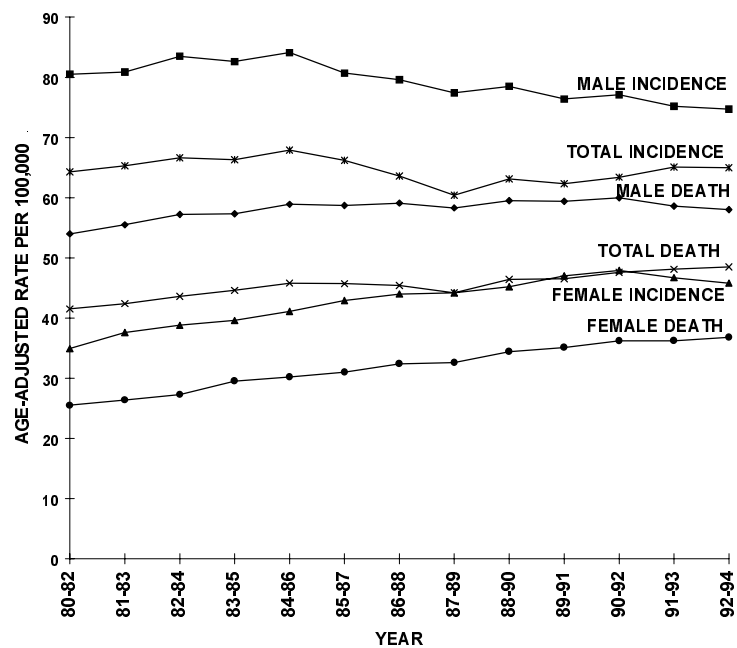
### Stage at Diagnosis (1990-1994) and Observed Survival Rate (1985-1994), King County

| Lung Cancer Stage | 1990-1994 Total |         | Survival Rate |         |
|-------------------|-----------------|---------|---------------|---------|
|                   | Number          | Percent | 1 Year        | 5 Years |
| Localized         | 663             | 14.2    | 84.0%         | 48.4%   |
| Regional          | 1,040           | 22.3    | 58.8%         | 18.3%   |
| Distant           | 2,072           | 44.4    | 19.2%         | 1.7%    |
| Unknown           | 888             | 19.0    | 34.0%         | 5.1%    |
| All Invasive      | 4,663           | 100.0   | 40.2%         | 12.9%   |

Of the lung cancer cases with known stages, 82% were diagnosed as late stages. Overall, only 13% of the patients survived five years or longer after they were diagnosed with lung cancer.

### Lung Cancer Age-Adjusted Incidence<sup>2</sup> and Death Rates, King County Three Year Rolling Averages, 1980-1994

Between 1980 and 1994, the incidence rate for lung cancer among men declined significantly while the death rate was practically unchanged. For women, both the incidence rate and the death rate increased significantly, reflecting the growing prevalence of smoking among women since World War II. Overall, however, the male rates remained substantially higher than the female rates.



<sup>1</sup> In situ cases of lung cancer are rare. Between 1990 and 1994 in King County, there was only one case of in situ lung cancer. In situ cases are not included in the analysis for lung cancer.

<sup>2</sup> In situ cases are not included.

**Lung Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates  
By Race/Ethnicity, King County, 1990-1994 (Five Years)**

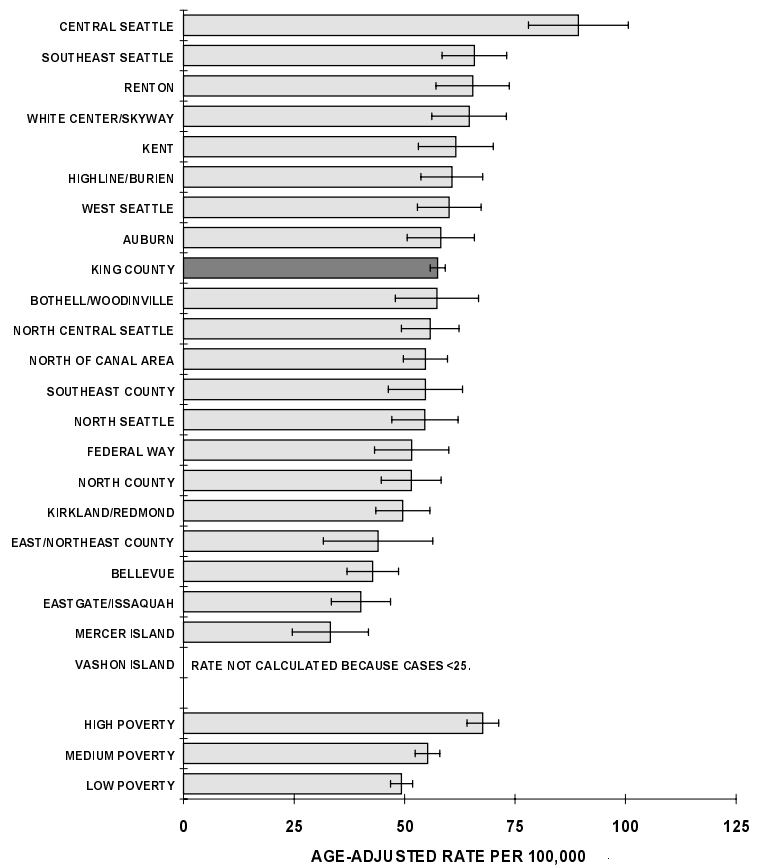
| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 59.0      | 4,186  | 49.3  | 3,529  |
| African American | 78.8      | 223    | 53.7  | 153    |
| Native American  | 36.4*     | 17     | 36.0* | 19     |
| Asian            | 36.7      | 191    | 28.3  | 147    |
| Hispanic         | -         | -      | 23.2  | 23     |

Among the racial groups, African Americans had the highest lung cancer incidence and death rates, while the rates among Native Americans, Asians, and Hispanics were relatively lower.

\*Because of small numbers, these rates were based on ten years (1985-1994) of data.

**Lung Cancer Age-Adjusted Incidence<sup>1</sup>  
Rate by Poverty Level and  
Health Planning Area, King County  
Five Year Average, 1990-1994**

The incidence rate in Central Seattle was significantly higher than other areas of King County, while the rates in Bellevue, Eastgate/Issaquah, and Mercer Island were significantly lower than the county rate. In general, Central/Southeast Seattle and south county had highest rates. High poverty areas also had a significantly higher rate than low poverty areas. These differences in the lung cancer incidence rate are most likely due to differences in the smoking prevalence rate.



**Risk Factors and Prevention**

The most important risk factor for lung cancer is cigarette smoking. It is estimated that 87% of the lung cancer can be attributed to cigarette smoking. The 1994 Behavioral Risk Factor Survey indicates that 17.0% of the King County adult residents were current smokers.

Symptoms of lung cancer often do not appear until it is at an advanced stage. Because of the difficulties in early detection, mass screening of individuals without symptoms is not recommended.

<sup>1</sup> In situ cases are not included.

## FEMALE BREAST CANCER

After lung cancer, breast cancer is the second leading cause of cancer deaths in women. In King County in 1994, breast cancer deaths accounted for 16% of all cancer deaths in females. Of all the women diagnosed with invasive breast cancer between 1990 and 1994, 25% were under age 50, 42% were age 50 to 69, and 33% were age 70 and older.

### Breast Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates

|                  | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| King County 1994 | 125.7     | 1,149  | 22.4  | 215    |
| Seattle 1994     | 127.4     | 426    | 21.3  | 76     |
| WA State 1993/94 | 112.2     | 3,980  | 22.8  | 745    |
| U.S. 1993        | 108.3     |        | 25.9  |        |

Compared to the state rate and the national rate, the incidence rate in King County was higher but the death rate was similar or lower.

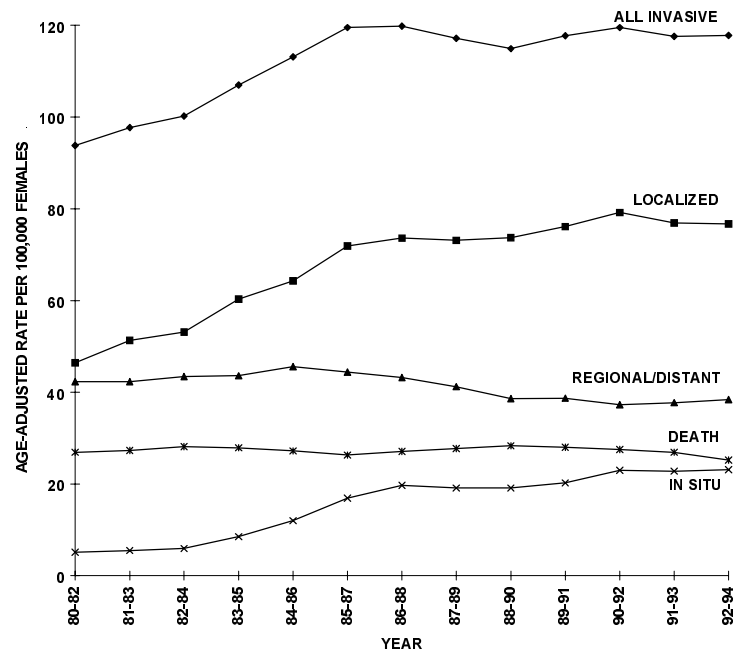
### Stage at Diagnosis (1990-1994) and Observed Survival Rate (1985-1994), King County

| Breast Cancer Stage | 1990-1994 Total |         | Survival Rate |         |
|---------------------|-----------------|---------|---------------|---------|
|                     | Number          | Percent | 1 Year        | 5 Years |
| In Situ             | 990             | 15.8    | 98.9%         | 92.2%   |
| Localized           | 3,455           | 55.0    | 98.0%         | 85.8%   |
| Regional            | 1,461           | 23.2    | 96.9%         | 71.2%   |
| Distant             | 220             | 3.5     | 60.7%         | 16.6%   |
| Unknown             | 157             | 2.5     | 69.1%         | 30.9%   |
| All Invasive        | 5,293           | 84.2    | 95.2%         | 76.7%   |

Of the known invasive breast cancer cases, 32.7% were diagnosed at regional or distant stages.

### Breast Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates, King County Three Year Rolling Averages, 1980-1994

Similar to the national trend, the age-adjusted incidence rate for invasive breast cancer in King County increased significantly between 1980 and 1987, and stabilized between 1988 and 1994. Because of increases in breast cancer screening, the rate of localized cancers rose during the fifteen year period while the rate of late stage cancers (regional and distant) declined since 1985. The rate for in situ breast cancer also increased. Meanwhile, the breast cancer death rate remained unchanged.



<sup>1</sup> In situ cases are not included.

**Breast Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates  
By Race/Ethnicity, King County, 1990-1994 (Five Years)**

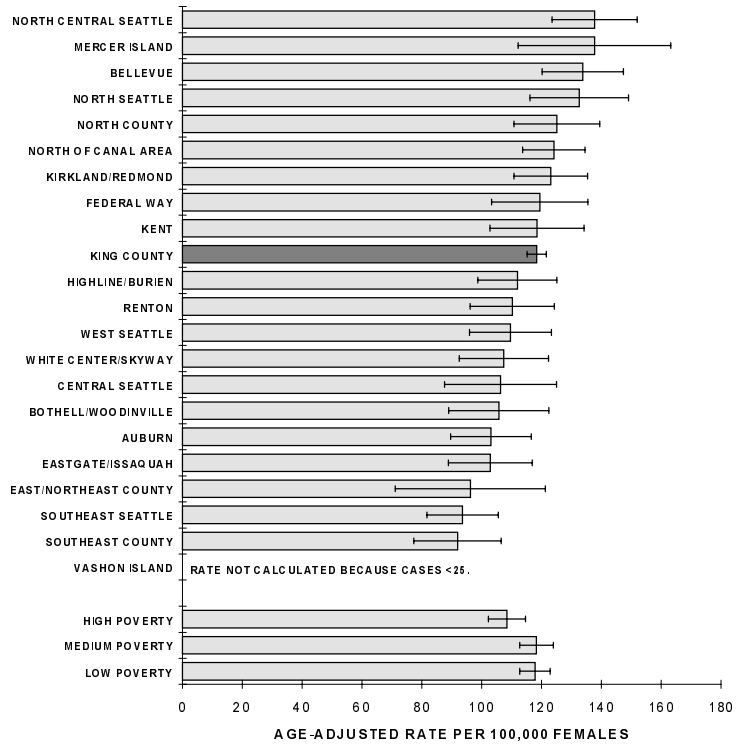
| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 120.7     | 4,736  | 27.5  | 1,137  |
| African American | 90.1      | 151    | 23.7  | 38     |
| Native American  | 61.9*     | 17     | -     | 7      |
| Asian            | 64.1      | 218    | 11.9  | 38     |
| Hispanic         | -         | -      | -     | 11     |

Among the racial groups, whites had the highest incidence and death rates for breast cancer.

\*Because of small numbers, these rates were based on ten years (1985-1994) of data.

**Breast Cancer Age-Adjusted Incidence<sup>1</sup>  
Rate by Poverty Level and  
Health Planning Area, King County  
Five Year Average, 1990-1994**

For breast cancer, the incidence rate in North Seattle, North Central Seattle and eastside communities were higher than those in Central and Southeast Seattle. The incidence rates in low and medium poverty areas were higher than the rates in high poverty areas, although the differences were not statistically significant. The breast cancer death rate in Mercer Island, averaged over ten years (1985-1994), was significantly higher than the county average rate.



**Risk Factors and Prevention**

Risk factors for breast cancer include family history (mother or sister had breast cancer), early menarche, late menopause, never having children, full-term pregnancy after age 30, obesity after menopause, and possibly alcohol, high-fat diet, and physical inactivity.

The only proven strategy for reducing breast cancer mortality is early detection, so that the cancer can be treated at an early stage when it is more curable. It is recommended by most medical organizations that women age 50 and older should have a clinical breast examination (CBE) and a mammogram every 1 to 2 years. Use of mammography screening for women age 40-49 remains controversial. Recently (March 1997), the National Cancer Institute and the American Cancer Society reached a consensus recommendation for women age 40 to 49 that they should be screened every one to two years with mammography and CBE. However, other groups, including the American College of Physicians and the U.S. Preventive Health Services, suggest that there is insufficient evidence to recommend for or against routine mammography or CBE for women age 40 to 49. Women in this age group should consult their physician in regards to breast cancer screening.

<sup>1</sup> In situ cases are not included.

## COLORECTAL CANCER

Cancer of the colon and rectum is the second leading cause of cancer deaths in the total population. In 1994, colorectal cancer accounted for 10% of all cancer deaths in King County. Of persons diagnosed for invasive colorectal cancer in King between 1990 and 1994, 28% were under age 65.

### Colorectal Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates

|                  | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| King County 1994 | 43.0      | 741    | 15.0  | 274    |
| Seattle 1994     | 43.6      | 323    | 16.0  | 125    |
| WA State 1993/94 | 39.8      | 2,507  | 16.4  | 1,007  |
| U.S. 1993        | 45.0      |        | 17.9  |        |

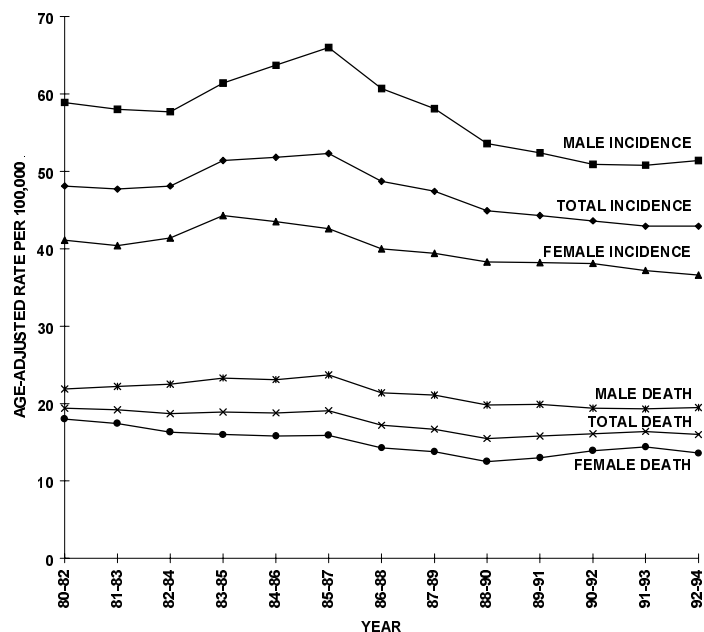
### Stage at Diagnosis (1990-1994) and Observed Survival Rate (1985-1994), King County

| Colorectal Cancer Stage | 1990-1994 Total |         | Survival Rate |         |
|-------------------------|-----------------|---------|---------------|---------|
|                         | Number          | Percent | 1 Year        | 5 Years |
| In Situ                 | 207             | 5.4     | 94.1%         | 74.6%   |
| Localized               | 960             | 25.2    | 93.2%         | 73.8%   |
| Regional                | 1,756           | 46.0    | 89.4%         | 56.0%   |
| Distant                 | 656             | 17.2    | 44.9%         | 6.3%    |
| Unknown                 | 235             | 6.2     | 48.3%         | 16.9%   |
| All Invasive            | 3,607           | 94.6    | 79.5%         | 49.4%   |

Of the invasive colorectal cancer cases with known stages, 71.5% were diagnosed at late stages (regional or distant).

### Colorectal Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates, King County Three Year Rolling Averages, 1980-1994

Between 1980 and 1994 in King County, the incidence rates and the death rates for colorectal cancer declined significantly in both males and females, similar to the national trend. It has been suggested that the declining trend "may have been due to increased sigmoidoscopic screening and polyp removal, preventing progression of polyps to invasive cancers" (American Cancer Society, 1997).



<sup>1</sup> In situ cases are not included.

**Colorectal Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates  
By Race/Ethnicity, King County, 1990-1994 (Five Years)**

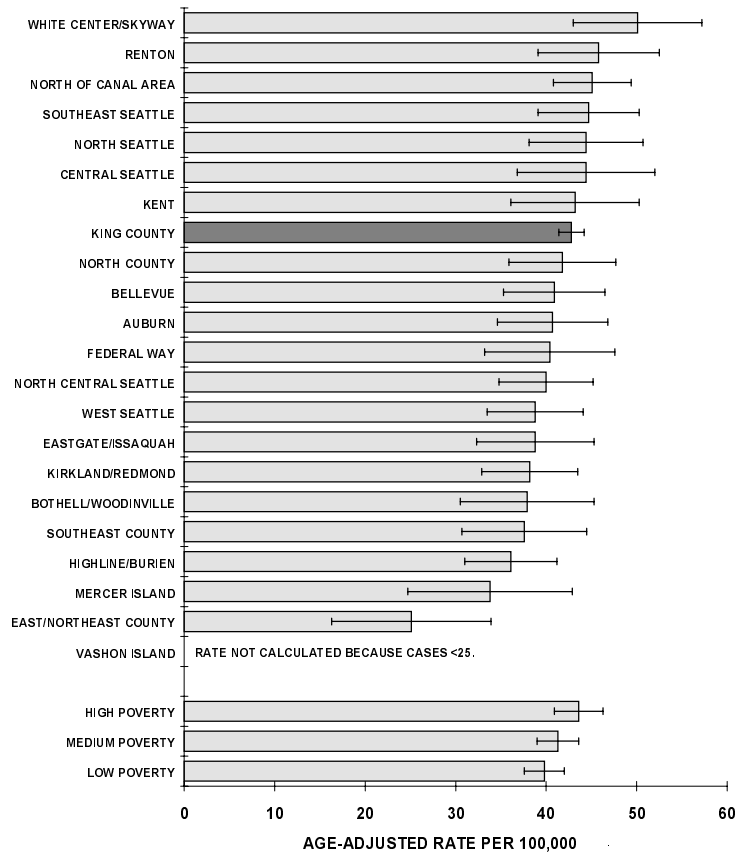
| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 42.1      | 3,163  | 15.6  | 1,218  |
| African American | 52.7      | 146    | 21.7  | 59     |
| Native American  | 30.0*     | 17     | -     | 12     |
| Asian            | 34.7      | 183    | 14.7  | 77     |
| Hispanic         | -         | -      | -     | 9      |

The incidence and death rates of colorectal cancer for African Americans were significantly higher than the rates for whites and Asians.

\*Because of small numbers, these rates were based on ten years (1985-1994) of data.

**Colorectal Cancer Age-Adjusted Incidence<sup>1</sup> Rate by Poverty Level and Health Planning Area, King County Five Year Average, 1990-1994**

Except East/Northeast County, none of the areas differed significantly from the county average in the incidence rate. The differences in the incidence rate between the three poverty area groupings were not statistically significant. The incidence rate in high poverty areas was higher than the rates in medium and low poverty areas.



**Risk Factors and Prevention**

Few modifiable risk factors for colorectal cancer have been firmly identified. Some possible risk factors include a high-fat and low-vegetable diet, alcohol, physical inactivity, and obesity. Persons with a family history of colorectal cancer also have an increased risk.

For early detection, it is recommended that all persons age 50 and older should have an annual fecal occult blood test (FOBT), or sigmoidoscopy (screening interval unspecified), or both. The American Cancer Society recommends sigmoidoscopy to be performed every 3 to 5 years. Other screening methods include digital rectal examination, barium enema, and colonoscopy. However, each of these screening tests has limitations.

<sup>1</sup> In situ cases are not included.



**PROSTATE CANCER**

Prostate cancer is the second leading cause of cancer deaths among males. In 1994 it accounted for 14% of all cancer deaths among King County men. Of men diagnosed for invasive prostate cancer between 1990 and 1994, 24% were under age 65.

**Prostate Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates**

|                  | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| King County 1994 | 118.7     | 833    | 28.2  | 199    |
| Seattle 1994     | 111.8     | 293    | 27.6  | 84     |
| WA State 1993/94 | 154.5     | 3,917  | 25.2  | 662    |
| U.S. 1993        | 168.6     |        | 26.5  |        |

The 1993 King County incidence rate was 142.2, lower than the state and the national rates. In 1994, the King County incidence rate dropped to 118.7, but the death rate was slightly higher than the 1994 state rate and the 1993 national rate.

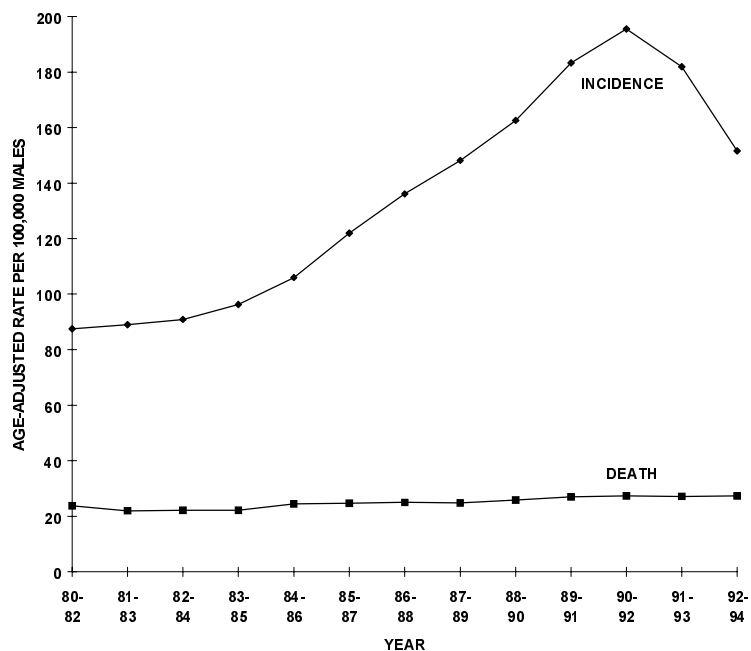
**Stage at Diagnosis (1990-1994) and Observed Survival Rate (1985-1994), King County**

| Prostate Cancer Stage | 1990-1994 Total |         | Survival Rate |         |
|-----------------------|-----------------|---------|---------------|---------|
|                       | Number          | Percent | 1 Year        | 5 Years |
| In Situ               | 10              | 0.2     | -             | -       |
| Localized             | 3,302           | 56.6    | 96.5%         | 79.4%   |
| Regional              | 1,167           | 20.0    | 97.4%         | 75.2%   |
| Distant               | 395             | 6.8     | 79.1%         | 25.5%   |
| Unknown               | 961             | 16.5    | 87.4%         | 58.6%   |
| All Invasive          | 5,825           | 99.8    | 93.8%         | 70.6%   |

In situ prostate cancers are rarely diagnosed. Of the invasive cases with known stages, 32% were either regional or distant. The 5 year survival rate for distant prostate cancers was substantially lower than those diagnosed at earlier stages.

**Prostate Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates, King County Three Year Rolling Averages, 1980-1994**

Between 1980 and 1994 in King County there was a sharp increase in the incidence rate of prostate cancer, probably due to the increase in the use of prostate-specific antigen (PSA) screening. The incidence rate peaked in 1991. During this 15 year period the prostate cancer death rate also increased slightly.



<sup>1</sup> In situ cases are not included.

**Prostate Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates  
By Race/Ethnicity, King County, 1990-1994 (Five Years)**

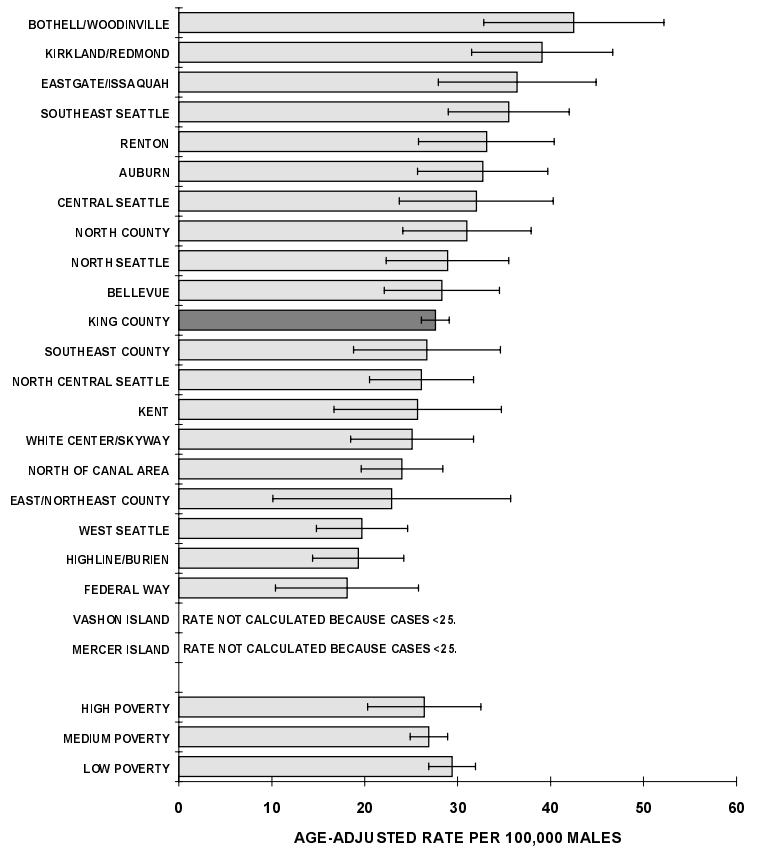
| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 167.1     | 5,104  | 27.7  | 843    |
| African American | 223.9     | 277    | 49.2  | 57     |
| Native American  | -         | 9      | -     | 6      |
| Asian            | 65.9      | 152    | 13.2  | 30     |
| Hispanic         | -         | -      | -     | 5      |

The incidence and death rates of prostate cancer for African Americans were significantly higher than the rates for whites, while the rates for whites were significantly higher than the rates for Asians.

**Prostate Cancer Age-Adjusted Death<sup>1</sup>  
Rate by Poverty Level and  
Health Planning Area, King County  
Five Year Average, 1990-1994**

Regarding the incidence rates, few of the health planning areas differed significantly from the county rate. Also, there was no significant differences in the incidence rates between areas of different poverty levels.

The geographic variation of the death rate was more significant. Compared to the county death rate, rates in Bothell/Woodinville and Kirkland/Redmond were significantly higher, while the rates in West Seattle and Highline/Burien were significantly lower. Residence poverty level did not seem to have a significant impact on the death rate.



**Risk Factors and Prevention**

The causes of prostate cancer are unknown. Some suggested risk factors for prostate cancer include high fat diet, a family history of prostate cancer in a first-degree relative, and certain occupational exposures. It has also been suggested that sex hormones may play a role.

Techniques for detecting prostate cancer include digital rectal examination, testing of serum tumor markers such as prostate-specific antigen, and transrectal ultrasound. However, the effectiveness of these techniques for routine screening remains controversial. There is no conclusive evidence that early detection and treatment reduces mortality.

<sup>1</sup> In situ cases are not included.

### CANCER OF THE UTERINE CERVIX

The overall five-year survival rate for invasive cervical cancer in King County was 72%, with the rate at 52% for those diagnosed at regional stage and 10% at distant stage. However, invasive cervical cancers are potentially preventable through screening. When detected at the in situ stage with the Pap test, the 5-year survival rate was 98%. Of the 304 women diagnosed for invasive cervical cancer between 1990 and 1994, 34% were under age 40 and 22% were age 40 to 49.

#### Cervical Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates

|                                  | Incidence |        | Death |        |
|----------------------------------|-----------|--------|-------|--------|
|                                  | Rate      | Number | Rate  | Number |
| King Co. 1992-94                 | 6.9       | 193    | 1.7   | 47     |
| Seattle 1992-94                  | 7.3       | 65     | 1.9   | 21     |
| WA State 1993/92-94 <sup>2</sup> | 6.5       | 210    | 2.0   | 190    |
| U.S. 1993                        | 8.2       | -      | 2.8   | -      |

The King County incidence and death rates were lower than the national 1993 rate.

#### Stage at Diagnosis (1990-1994) and Observed Survival Rate (1985-1994), King County

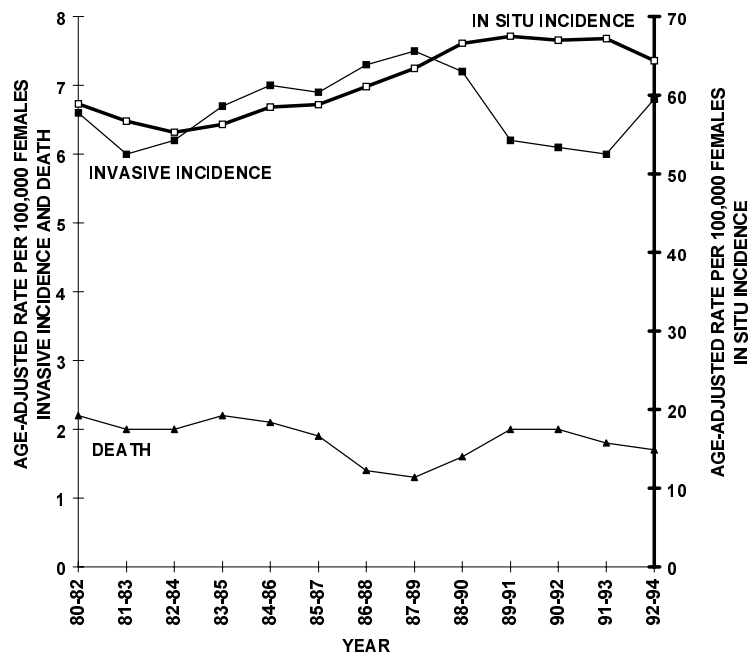
| Cervical Cancer Stage | 1990-1994 Total |         | Survival Rate |         |
|-----------------------|-----------------|---------|---------------|---------|
|                       | Number          | Percent | 1 Year        | 5 Years |
| In Situ               | 3,195           | 91.3    | 99.7%         | 98.4%   |
| Localized             | 177             | 5.1     | 99.1%         | 91.8%   |
| Regional              | 87              | 2.5     | 87.7%         | 52.5%   |
| Distant               | 27              | 0.8     | 51.2%         | 9.8%    |
| Unknown               | 13              | 0.4     | -             | -       |
| All Invasive          | 304             | 8.7     | 90.4%         | 71.5%   |

Of invasive cervical cancers with known stages, 30% were at the regional stage and 9% were at the distant stage.

#### Cervical Cancer Age-Adjusted Incidence and Death Rates, King County Three Year Rolling Averages, 1980-1994

Between 1980 and 1994, there were no significant changes in the incidence and death rates of invasive cervical cancer. The rate of in situ cervical cancer, however, increased significantly. This increase is likely the result of increased Pap test screening, and perhaps a real increase in the disease.

Note that the rates of in situ cervical cancer were substantially higher than the rates of invasive cervical cancer. We used a different scale for in situ cervical cancer in this graph.



<sup>1</sup> In situ cases are not included.

<sup>2</sup> The Washington State incidence rate and number were for 1993, the death rate and number were for 1992-1994.

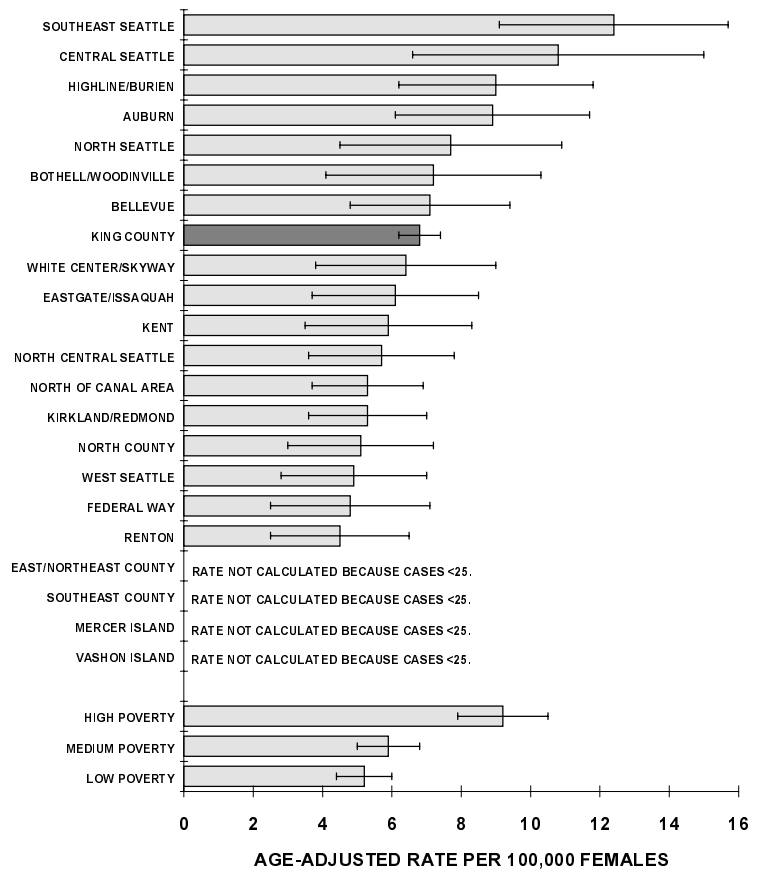
**Cervical Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates  
By Race/Ethnicity, King County, 1985-1994 (Ten Years)**

| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 6.1       | 485    | 1.4   | 118    |
| African American | 9.4       | 33     | -     | 16     |
| Native American  | -         | 5      | -     | 6      |
| Asian            | 10.3      | 59     | -     | 17     |
| Hispanic         | -         | -      | -     | -      |

The incidence rate of invasive cervical cancer for African American and Asian women were higher than the rate for whites. National data also indicate that the death rate of cervical cancer for African Americans was higher than the white rate.

**Cervical Cancer Age-Adjusted Incidence<sup>1</sup>  
Rate by Poverty Level and  
Health Planning Area, King County  
Ten Year Average, 1985-1994**

Averaged over 1985 to 1994, the incidence rate of invasive cervical cancer in Southeast Seattle was significantly higher than the county average rate. The rate in high poverty areas was significantly higher than the rate in low poverty areas.



**Risk Factors and Prevention**

The risk factors for cervical cancer include multiple sexual partners, early age at first intercourse, and possibly cigarette smoking. Routine use of barrier contraceptives (condom and diaphragm) reduces the risk. The cause of the disease has been linked to the human papilloma virus, which is transmitted by sexual intercourse.

Pap smear screening reduces cervical cancer mortality. An annual Pap test is recommended for women who have been sexually active or have reached age 18. After three or more normal tests, the test may be conducted less frequently, such as every three years, at the discretion of the physician.

<sup>1</sup> In situ cases are not included.

## MELANOMA OF THE SKIN

Most deaths from skin cancer are due to malignant melanoma of the skin, although it only accounts for a small fraction of the total skin cancer cases. Of the invasive melanoma cases diagnosed between 1990 and 1994 in King County, 37% were among persons under age 45 and 35% were between age 45 and 64.

### Skin Melanoma Age-Adjusted Incidence<sup>1</sup> and Death Rates

|                  | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| King County 1994 | 16.7      | 302    | 1.8   | 31     |
| Seattle 1994     | 15.8      | 102    | -     | 11     |
| WA State 1993    | 12.5      | 1069   | 2.2   | 127    |
| U.S. 1993        | 12.2      |        | 2.2   |        |

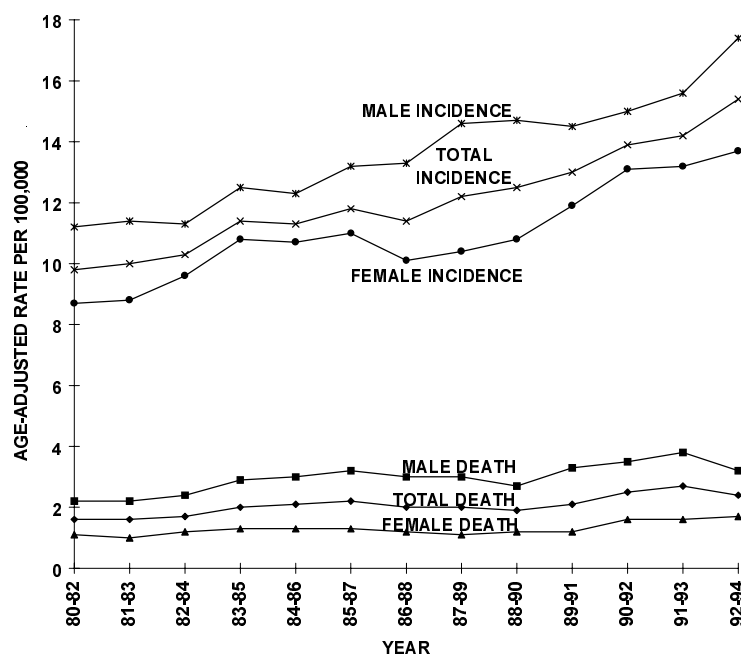
The King County incidence rate was higher than the state and national rates. The death rate in King County was slightly lower than the state and national rates. The higher incidence rate in King County was possibly due to better screening in our area.

### Stage at Diagnosis (1990-1994) and Observed Survival Rate (1985-1994), King County

| Skin Melanoma Stage | 1990-1994 Total |         | Survival Rate |         |
|---------------------|-----------------|---------|---------------|---------|
|                     | Number          | Percent | 1 Year        | 5 Years |
| In Situ             | 593             | 31.5    | 98.5%         | 91.0%   |
| Localized           | 1,153           | 61.3    | 98.7%         | 86.4%   |
| Regional            | 42              | 2.2     | 85.9%         | 31.2%   |
| Distant             | 51              | 2.7     | 39.5%         | 8.3%    |
| Unknown             | 42              | 2.2     | 88.0%         | 56.4%   |
| All Invasive        | 1,288           | 68.5    | 95.5%         | 80.0%   |

### Skin Melanoma Age-Adjusted Incidence<sup>1</sup> and Death Rates, King County Three Year Rolling Averages, 1980-1994

Between 1980 and 1994 in King County, the age-adjusted incidence rate of skin melanoma increased significantly in both males and females. The death rates also increased. These increasing trends are likely due to an increase in voluntary sun exposure.



<sup>1</sup> In situ cases are not included.

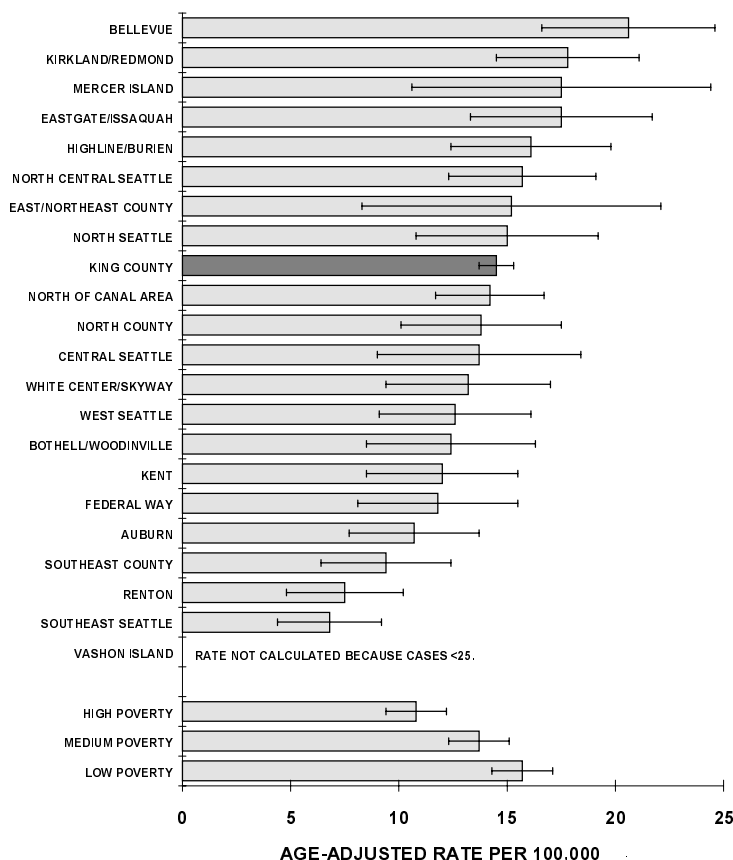
**Skin Melanoma Age-Adjusted Incidence<sup>1</sup> and Death Rates  
By Race/Ethnicity, King County, 1990-1994 (Five Years)**

| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 12.4      | 935    | 2.6   | 187    |
| African American | -         | 2      | -     | 1      |
| Native American  | -         | 2      | -     | 0      |
| Asian            | -         | 6      | -     | 3      |
| Hispanic         | -         | -      | -     | 2      |

Few of the melanoma cases occurred among people of color.

**Skin Melanoma Age-Adjusted Incidence<sup>1</sup>  
Rate by Poverty Level and  
Health Planning Area, King County  
Five Year Average, 1990-1994**

The incidence rate of melanoma in Bellevue was significantly higher than the county average rate and the rates in Kirkland/Redmond, Eastgate/Issaquah, and Mercer Island were also relatively high. Melanoma incidence is associated with higher socioeconomic status. The rate in low poverty areas was significantly higher than the rate in medium and high poverty areas.



**Risk Factors and Prevention**

The popularity of voluntary sun exposure, especially repeated blistering overdoses of strong sunlight over the years, may have caused the increase in the incidence of skin melanoma. Ozone depletion in the upper atmosphere may be a contributing factor as well. Fair-skinned people who sunburn easily have increased risk. Persons with a family history of melanoma as well as those who have moles with irregular pigmentation and borders also have increased risk.

For preventing skin melanoma, people should avoid exposure to strong sunlight, especially between 10 a.m. and 3 p.m. when the ultraviolet rays are strongest. During periods of exposure to strong sun, protective clothing and/or sunscreens should be used. People with increased risk should receive routine screening by health professionals.

<sup>1</sup> In situ cases are not included.

## CANCER OF THE PANCREAS

Cancer of the pancreas is one of the most lethal cancers. It is often diagnosed at an advanced stage, and most patients die within a short time after diagnosis. It is the fourth leading cause of cancer death in men and the fifth in women. Of persons diagnosed for pancreatic cancer between 1990 and 1994, 27% were younger than age 65.

### Pancreatic Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates

|                  | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| King County 1994 | 9.3       | 159    | 7.9   | 137    |
| Seattle 1994     | 10.4      | 71     | 9.9   | 64     |
| WA State 1993    | 7.3       | 431    | 8.5   | 502    |
| U.S. 1993        | 8.6       | -      | 8.5   | -      |

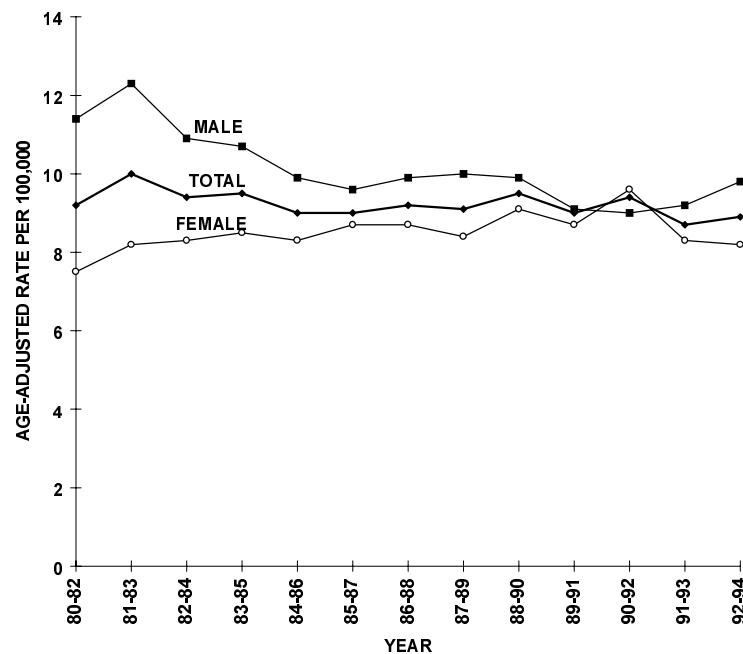
### Stage at Diagnosis (1990-1994) and Observed Survival Rate (1985-1994), King County

| Pancreatic Cancer Stage | 1990-1994 Total |         | Survival Rate |         |
|-------------------------|-----------------|---------|---------------|---------|
|                         | Number          | Percent | 1 Year        | 5 Years |
| In Situ                 | 1               | 0.1     | -             | -       |
| Localized               | 33              | 4.4     | 44.3%         | 23.7%   |
| Regional                | 180             | 23.9    | 36.8%         | 7.3%    |
| Distant                 | 325             | 43.2    | 11.7%         | 1.8%    |
| Unknown                 | 213             | 28.3    | 16.0%         | 2.8%    |
| All Invasive            | 751             | 99.9    | 19.7%         | 4.3%    |

Most cases of pancreas cancer were diagnosed at late stages. The overall observed 5-year survival rate was only 4.3%.

### Pancreatic Cancer Age-Adjusted Incidence<sup>1</sup> Rates, King County Three Year Rolling Averages, 1980-1994

Between 1980 and 1994, the male incidence rate declined while the overall rate and the female rate were relatively stable. The trend curves of the death rate were nearly identical to those for the incidence rate, consistent with the high fatality rate.



<sup>1</sup> In situ cases are not included.

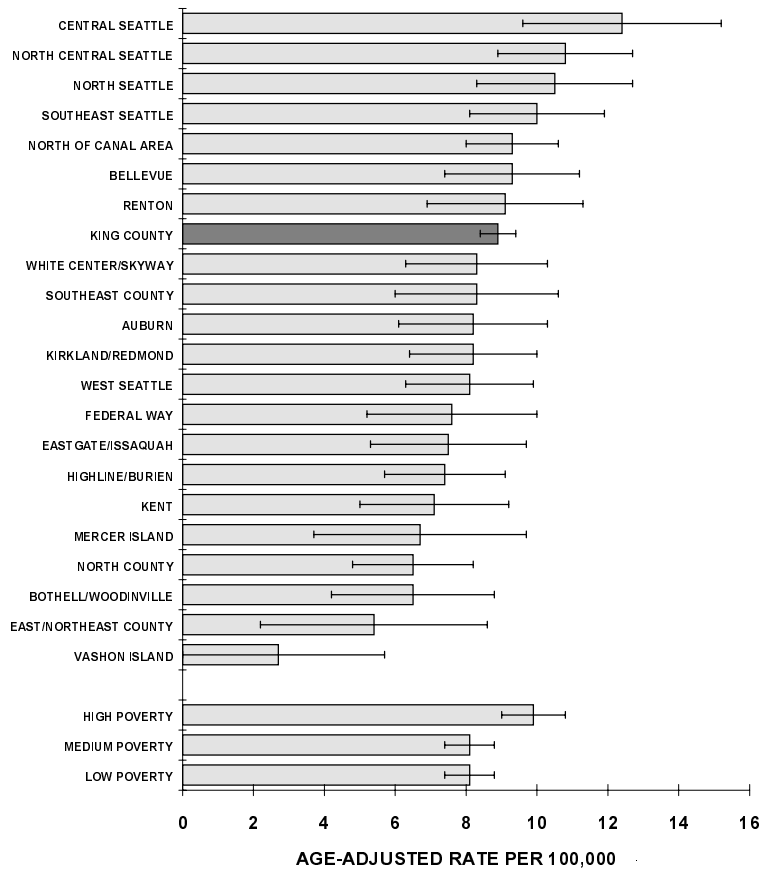
**Pancreatic Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates  
By Race/Ethnicity, King County, 1990-1994 (Five Years)**

| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 8.8       | 662    | 8.3   | 631    |
| African American | 13.0      | 38     | 12.4  | 35     |
| Native American  | -         | 3      | -     | 3      |
| Asian            | 8.6       | 43     | 8.4   | 43     |
| Hispanic         | -         | -      | -     | 7      |

African Americans had higher incidence and death rates of pancreas cancer than whites and Asians.

**Pancreatic Cancer Age-Adjusted Incidence<sup>1</sup> Rate by Poverty Level and Health Planning Area, King County Ten Year Average, 1985-1994**

Compared to the county average incidence rate, the rate in Central Seattle was significantly higher. The rate in high poverty areas was significantly higher than the rate in medium and low poverty areas.



**Risk Factors and Prevention**

Smoking is a risk factor for cancer of the pancreas. The incidence rate in smokers is more than twice the rate in nonsmokers. High dietary fat consumption has also been suggested as a risk factor.

No effective screening method is available at this time.

<sup>1</sup> In situ cases are not included.



## OVARIAN CANCER

Ovarian cancer is the fourth leading cause of cancer death in women. It is often diagnosed at an advanced stage, and therefore has relatively low survival rate. Ovarian cancer is also relatively common among women of younger age. Of those diagnosed between 1990 and 1994 in King County, 23% were younger than age 45 and 33% were between age 45 and 64.

### Ovarian Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates

|                  | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| King County 1994 | 15.3      | 145    | 9.9   | 90     |
| Seattle 1994     | 15.5      | 53     | 9.3   | 32     |
| WA State 1993    | 15.5      | 481    | 8.6   | 278    |
| U.S. 1993        | 14.8      |        | 7.5   |        |

The incidence rate in King County was similar to the state and national rates. The death rate, however, was slightly higher.

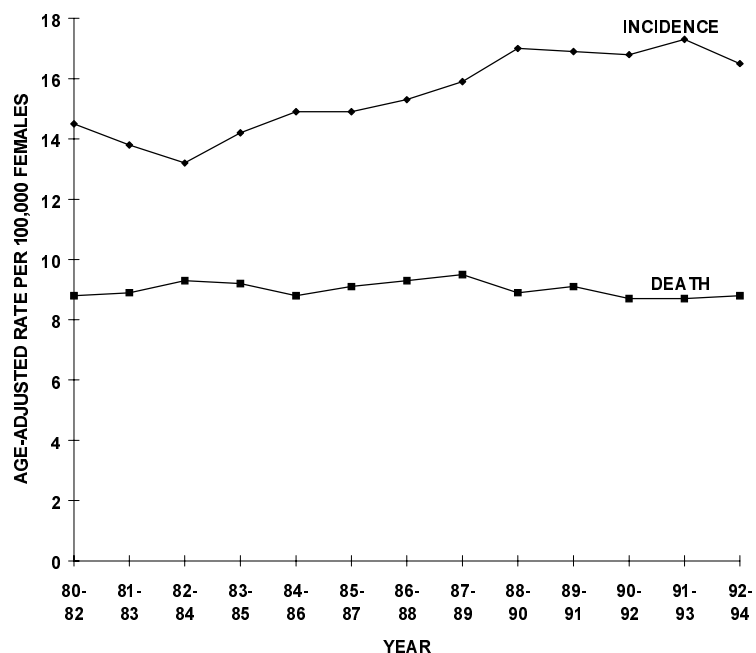
### Stage at Diagnosis (1990-1994) and Observed Survival Rate (1985-1994), King County

| Ovarian Cancer Stage | 1990-1994 Total |         | Survival Rate |         |
|----------------------|-----------------|---------|---------------|---------|
|                      | Number          | Percent | 1 Year        | 5 Years |
| In Situ              | 2               | .3      | -             | -       |
| Localized            | 260             | 34.2    | 97.2%         | 84.2%   |
| Regional             | 74              | 9.7     | 89.4%         | 70.8%   |
| Distant              | 386             | 50.7    | 67.1%         | 22.9%   |
| Unknown              | 39              | 5.1     | -             | -       |
| All Invasive         | 759             | 100.0   | 75.8%         | 43.0%   |

Of the invasive ovarian cancers diagnosed between 1990 and 1994, 51% were at the distant stage, for which the five-year observed survival rate was only 23%.

### Ovarian Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates, King County Three Year Rolling Averages, 1980-1994

Between 1980 and 1994, there was an increasing trend in the rate of ovarian cancer incidence in King County. The death rate was flat during the same period.



<sup>1</sup> In situ cases are not included.

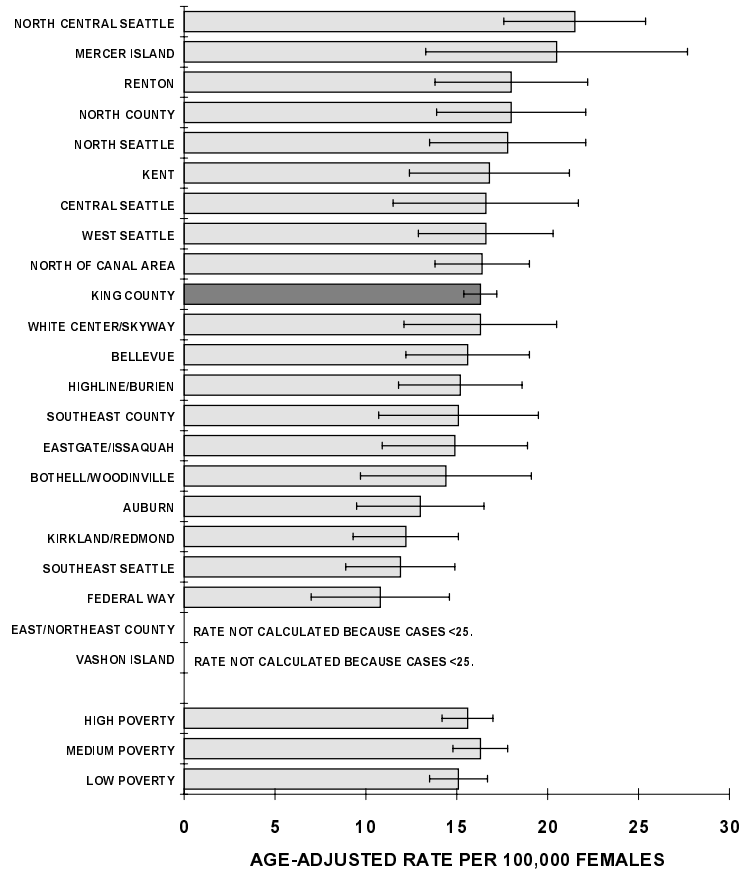
**Ovarian Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates  
By Race/Ethnicity, King County, 1990-1994 (Five Years)**

| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 17.0      | 679    | 9.3   | 384    |
| African American | 11.7      | 23     | -     | 9      |
| Native American  | -         | 5      | -     | 1      |
| Asian            | 10.3      | 36     | -     | 15     |
| Hispanic         | -         | -      | -     | 4      |

The incidence rate of ovarian cancer among whites was relatively higher than the rates among African Americans and Asians.

**Ovarian Cancer Age-Adjusted Incidence<sup>1</sup>  
Rate by Poverty Level and  
Health Planning Area, King County  
Ten Year Average, 1985-1994**

The incidence rate in North Central Seattle was significantly higher, while the incidence rates in Kirkland/Redmond, Southeast Seattle, and Federal Way were significantly lower than the county average rate. The incidence rate was not significantly associated with residence poverty level.



**Risk Factors and Prevention**

Women have increased risk for ovarian cancer if they never have children, have had breast cancer, have a family history of ovarian cancer, or have never used oral contraceptives.

Diagnostic techniques for ovarian cancer include pelvic examination, ultrasound, and the measurement of serum tumor markers. None of these have been shown to be effective tools for screening for ovarian cancer or for reducing mortality. As a result, routine screening is not recommended.

<sup>1</sup> In situ cases are not included.

## CANCER OF THE UTERINE CORPUS (ENDOMETRIAL)

Cancer of the uterine corpus is the fifth leading cause of cancer death among King County women. It has the fourth highest incidence among all cancers in females. Of the 987 women of endometrial cancer diagnosed in King County between 1990 and 1994, 44% were under age 65.

### Uterine Corpus Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates

|                  | Incidence |        | Death* |         |
|------------------|-----------|--------|--------|---------|
|                  | Rate      | Number | Rate   | No./Yr. |
| King County 1994 | 25.1      | 219    | 1.5    | 15      |
| Seattle 1994     | 24.0      | 79     | 1.5    | 7       |
| WA State 1993    | 21.8      | 690    | 2.0    | 64      |
| U.S. 1993        | 21.0      |        | 3.4    |         |

Compared to Washington State and the U.S., King County had a higher incidence rate but a lower death rate.

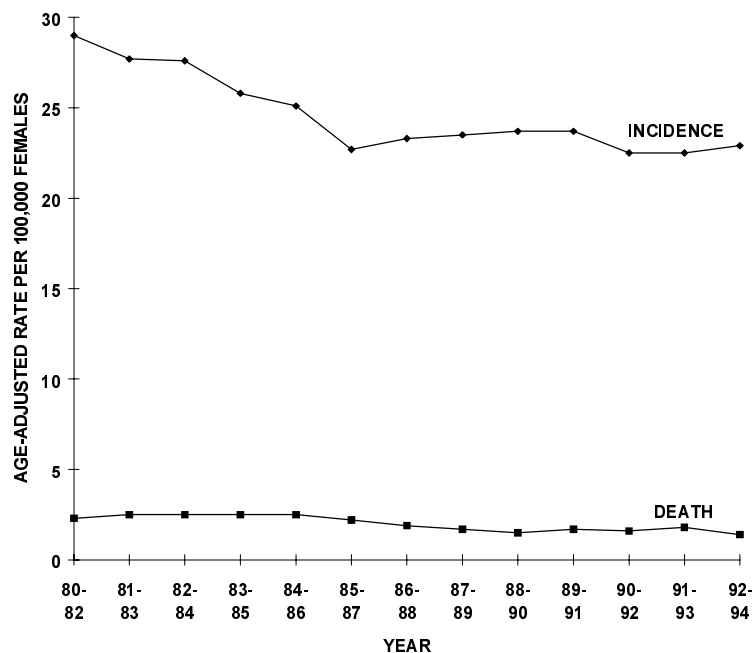
\*Death rate and number for King County and Seattle were 1990-1994 averages.

### Stage at Diagnosis (1990-1994) and Observed Survival Rate (1985-1994), King County

| Uterus Cancer Stage | 1990-1994 Total |         | Survival Rate |         |
|---------------------|-----------------|---------|---------------|---------|
|                     | Number          | Percent | 1 Year        | 5 Years |
| In Situ             | 24              | 2.4     | -             | -       |
| Localized           | 776             | 76.8    | 97.3%         | 86.6%   |
| Regional            | 115             | 11.4    | 92.1%         | 60.8%   |
| Distant             | 60              | 5.9     | 53.9%         | 24.3%   |
| Unknown             | 36              | 3.6     | -             | -       |
| All Invasive        | 987             | 97.62   | 92.1%         | 76.4%   |

### Uterine Corpus Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates, King County Three Year Rolling Averages, 1980-1994

Between 1980 and 1994 in King County, both the incidence rate and the death rate of endometrial cancer declined. This may reflect a decline in the rate of estrogen-induced cancers following a change in prescribing practices of estrogen replacement therapy. Estrogen replacement therapy is often given for preventing osteoporosis and heart disease among postmenopausal women.



<sup>1</sup> In situ cases are not included.

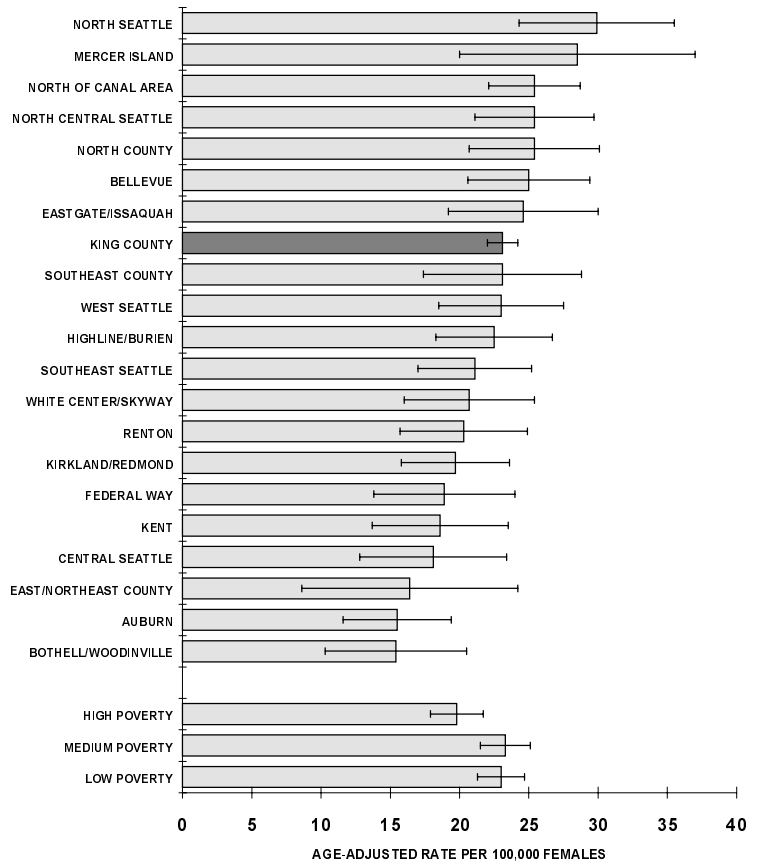
**Uterine Corpus Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates  
By Race/Ethnicity, King County, 1985-1994 (Ten Years)**

| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 24.1      | 1785   | 1.0   | 152    |
| African American | 14.4      | 39     | -     | 9      |
| Native American  | -         | 3      | -     | 0      |
| Asian            | 9.1       | 48     | -     | 3      |
| Hispanic         | -         | -      | -     | -      |

The incidence rate among whites was substantially higher than the rates for African Americans and Asians.

**Uterine Corpus Cancer Age-Adjusted Incidence<sup>1</sup> Rate by Poverty Level and Health Planning Area, King County  
Ten Year Average, 1985-1994**

The incidence rate in North Seattle was significantly higher than the county average rate, while the rates in Auburn and Bothell/Woodinville were significantly lower. The incidence rate was lower in high poverty areas than in medium and low poverty areas.



**Risk Factors and Prevention**

The predominant risk factor for cancer of the uterine corpus is the use of estrogen replacement therapy. Other potential risk factors for this cancer include early menarche, late menopause, history of infertility, failure to ovulate, non-use of oral contraceptives, and obesity.

<sup>1</sup> In situ cases are not included.

## BLADDER CANCER

In 1994, bladder cancer accounted for 65 deaths and 280 new cases in King County. Bladder cancer is much more common among men than among women. The male incidence rate was 3.5 times the female incidence rate. Of persons diagnosed for bladder cancer in King County between 1990 and 1994, 32% were under age 65.

### Bladder Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates

|                  | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| King County 1994 | 16.8      | 280    | 3.3   | 65     |
| Seattle 1994     | 13.2      | 90     | 3.1   | 27     |
| WA State 1993    | -         | -      | 3.3   | 207    |
| U.S. 1993        | 17.1      | -      | 3.3   | -      |

The death and incidence rates of bladder cancer in King County were similar to the rates in the United States.

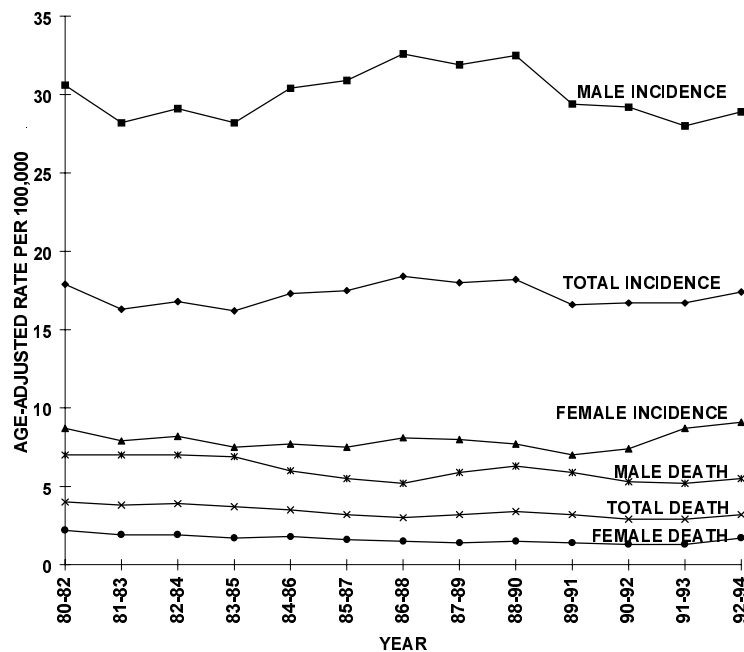
### Stage at Diagnosis (1990-1994) and Observed Survival Rate (1985-1994), King County

| Bladder Cancer Stage     | 1990-1994 Total |         | Survival Rate |         |
|--------------------------|-----------------|---------|---------------|---------|
|                          | Number          | Percent | 1 Year        | 5 Years |
| In Situ                  | 834             | 59.5    | 95.6%         | 77.4%   |
| Localized                | 361             | 25.8    | 85.9%         | 53.9%   |
| Regional                 | 111             | 7.9     | 66.1%         | 29.0%   |
| Distant                  | 44              | 3.1     | 31.0%         | 5.9%    |
| Unknown                  | 51              | 3.6     | 55.6%         | 34.3%   |
| Total (in situ+invasive) | 1,401           | 100.0   | 86.9%         | 62.7%   |

Of the total cases of bladder cancer between 1990 and 1994 with known stages, including those at the in situ stage, 11.5% were diagnosed at late stages.

### Bladder Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates, King County Three Year Rolling Averages, 1980-1994

Between 1980 and 1994 in King County, the overall age-adjusted incidence rate for bladder cancer remained level. By stage at diagnosis, however, the incidence rate of invasive bladder cancer declined sharply while the rate of bladder cancer in situ increased. During the same period, the death rate declined significantly in both males and females.



<sup>1</sup> Both invasive and in situ cases are included.

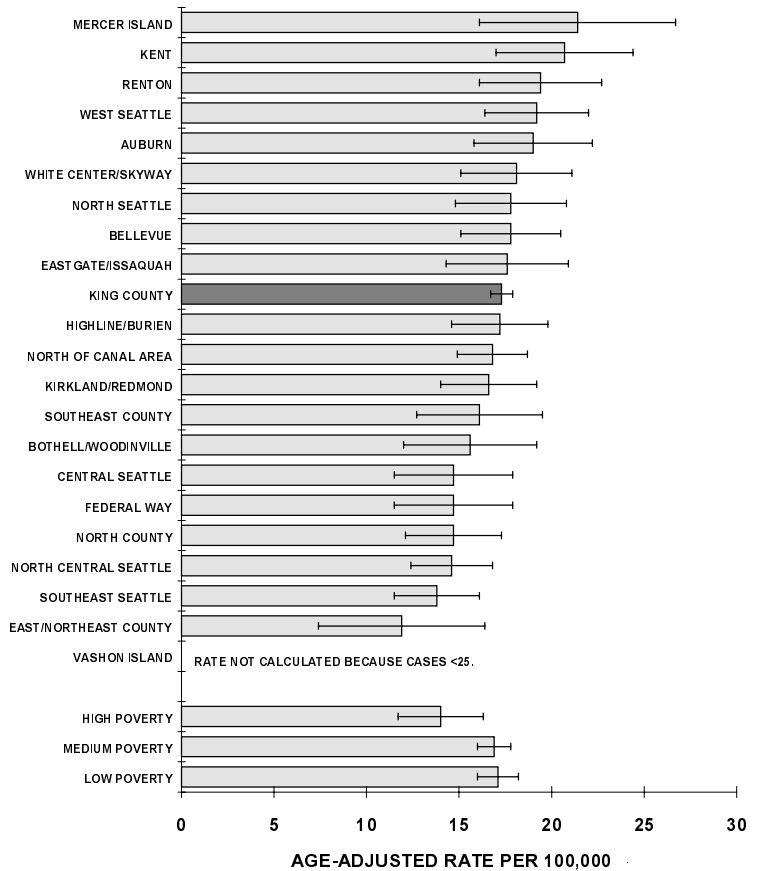
**Bladder Cancer Age-Adjusted Incidence<sup>1</sup> and Death Rates  
By Race/Ethnicity, King County, 1990-1994 (Five Years)**

| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 17.3      | 1,264  | 3.2   | 258    |
| African American | 11.7      | 33     | -     | 5      |
| Native American  | 0         | 0      | -     | 0      |
| Asian            | 6.0       | 30     | -     | 8      |
| Hispanic         | -         | -      | -     | 1      |

The incidence rate of bladder cancer for whites was significantly higher than the rates for African Americans and Asians. National data indicate that although African Americans had a lower incidence rate, their death rate was similar to the white rate.

**Bladder Cancer Age-Adjusted Incidence<sup>1</sup>  
Rate by Poverty Level and  
Health Planning Area, King County  
Ten Year Average, 1985-1994**

Averaged over 1985-1994, the incidence rate of bladder cancer showed no statistically significant differences between the health planning areas.



**Risk Factors and Prevention**

Cigarette smoking is a highly significant risk factor for bladder cancer, accounting for 40% of the bladder cancers in men and 29% in women. The risk of bladder cancer is also associated with certain occupational exposures.

Diagnostic methods for bladder cancer include urine dipsticks (which detect blood in the urine), microscopic urinalysis, and urine cytology. However, routine screening with these techniques in asymptomatic persons is not recommended.

<sup>1</sup> Both invasive and in situ cases are included.

### LEUKEMIA

Leukemia consists of a variety of cancers of the blood and bone marrow cells. The four main types of leukemia are acute lymphocytic leukemia, acute myelocytic leukemia, chronic lymphocytic leukemia, and chronic myelocytic leukemia. Leukemia is the most common cancer among children under age 15. Nevertheless, most of the leukemia cases are among middle-aged and older adults.

**Leukemia Age-Adjusted Incidence and Death Rates**

|                  | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| King County 1994 | 9.3       | 161    | 6.4   | 113    |
| Seattle 1994     | 9.4       | 61     | 8.6   | 58     |
| WA State 1993    | 9.2       | 528    | 6.8   | 403    |
| U.S. 1993        | 9.7       | -      | 6.3   | -      |

**Leukemia Incidence Age Distribution, King Co.**

| Age Group | 5 Yr. Number (1990-1994) | Percent |
|-----------|--------------------------|---------|
| 0-14      | 65                       | 7.8     |
| 15-24     | 18                       | 2.2     |
| 25-44     | 94                       | 11.2    |
| 45-64     | 201                      | 24.0    |
| 65+       | 459                      | 54.8    |

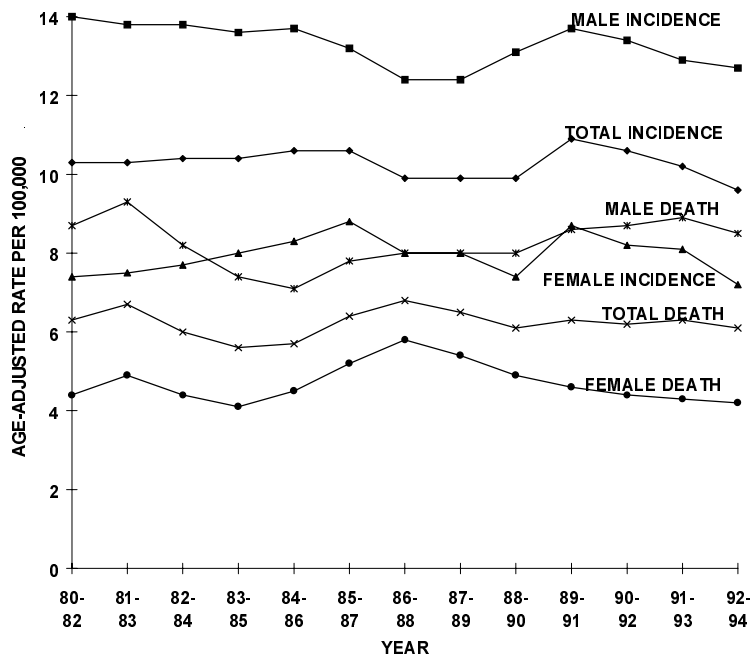
**Leukemia Type (1990-1994) and Observed Survival Rate (1985-1994), King County**

| Leukemia Type       | 1990-1994 Total |         | Survival Rate |         |
|---------------------|-----------------|---------|---------------|---------|
|                     | Number          | Percent | 1 Year        | 5 Years |
| Acute Lymphocytic   | 94              | 11.2    | 81.9%         | 65.2%   |
| Chronic Lymphocytic | 277             | 33.1    | 86.7%         | 63.8%   |
| Acute Myelocytic    | 221             | 26.4    | 29.5%         | 7.9%    |
| Chronic Myelocytic  | 127             | 15.2    | 64.3%         | 27.8%   |
| All other           | 118             | 14.1    | 35.3%         | 20.2%   |
| Total               | 837             | 100.0   | 59.6%         | 37.4%   |

Among the four major types, acute myelocytic leukemia was the most lethal with a five-year observed survival rate of 7.9%. For children under age 15, 87% were acute lymphocytic leukemia.

**Leukemia Age-Adjusted Incidence and Death Rates, King County  
Three Year Rolling Averages, 1980-1994**

Between 1980 and 1994, the incidence and the death rates of leukemia remained level.

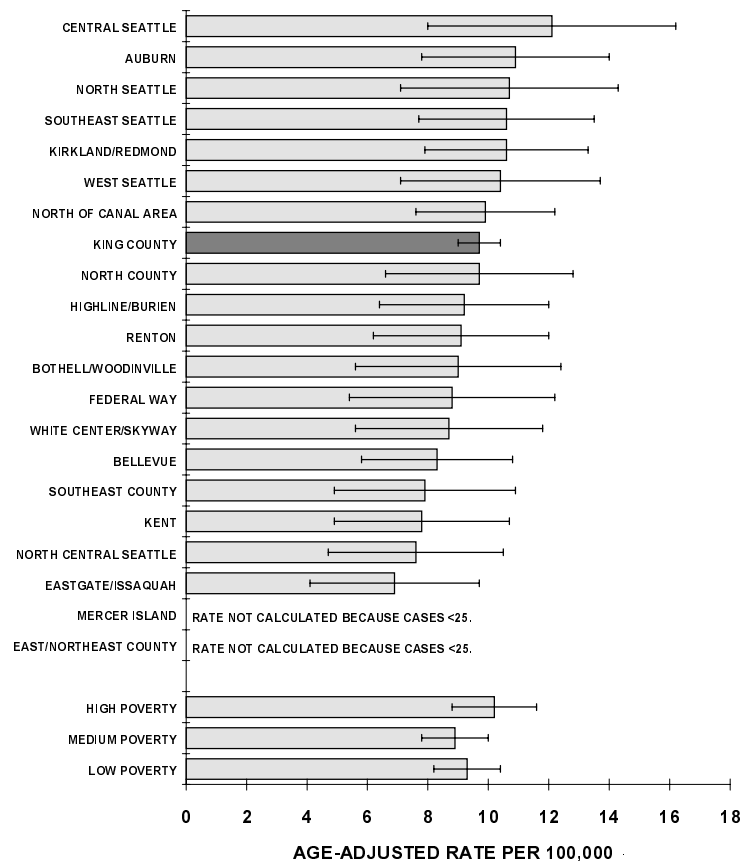


**Leukemia Age-Adjusted Incidence and Death Rates  
By Race/Ethnicity, King County, 1990-1994 (Five Years)**

| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 9.8       | 703    | 6.4   | 485    |
| African American | 8.1       | 25     | -     | 18     |
| Native American  | -         | 2      | -     | 3      |
| Asian            | 6.4       | 38     | 4.4   | 26     |
| Hispanic         | -         | -      | -     | 7      |

**Leukemia Age-Adjusted Incidence Rate  
By Poverty Level and by  
Health Planning Area, King County  
Five Year Average, 1990-1994**

The geographic variation of the leukemia incidence rate was not statistically significant.



**Risk Factors and Prevention**

The causes of leukemia are unknown. Risk factors for leukemia include exposure to ionizing radiation, occupational exposure to benzene, and perhaps cigarette smoking.

No routine screening test for leukemia exists.



### HODGKIN'S LYMPHOMA

Lymphomas are cancers that affect the white blood cells of the immune system, located in the lymph nodes and the spleen. Lymphomas are classified into two types: Hodgkin's disease and non-Hodgkin's lymphoma. Hodgkin's disease is one of the most common cancers in children and young adults.

**Hodgkin's Lymphoma  
Age-Adjusted Incidence and Death Rates**

|                  | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| King County 1994 | 3.4       | 172    | 0.5   | 42     |
| Seattle 1994     | 3.4       | 59     | 0.7   | 21     |
| WA State 1993    | 3.1       | 170    | 0.6   | 33     |
| U.S. 1993        | 2.7       | -      | 0.5   | -      |

**Hodgkin's Lymphoma  
Incidence Age Distribution, King County**

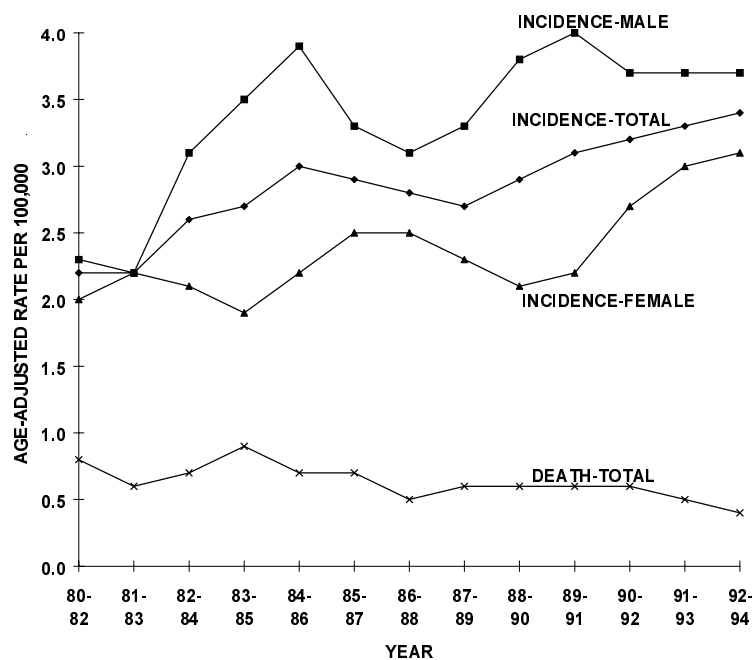
| Age Group | 5 Yr. Number<br>(1990-1994) | Percent<br>(5 Yr. Ave.) |
|-----------|-----------------------------|-------------------------|
| 0-14      | 12                          | 4.4                     |
| 15-24     | 53                          | 19.2                    |
| 25-44     | 126                         | 45.7                    |
| 45-64     | 46                          | 16.7                    |
| 65+       | 39                          | 14.1                    |

**Stage at Diagnosis (1990-1994) and  
Observed Survival Rate (1985-1994), King County**

| Hodgkin's Lymphoma Stage | 1990-1994 Total |         | Survival Rate |         |
|--------------------------|-----------------|---------|---------------|---------|
|                          | Number          | Percent | 1 Year        | 5 Years |
| Stage I                  | 39              | 14.1    | 97.5%         | 92.6%   |
| State II                 | 126             | 45.7    | 96.9%         | 87.6%   |
| Stage III                | 60              | 21.7    | 82.4%         | 73.4%   |
| Stage IV                 | 41              | 14.9    | 73.1%         | 59.9%   |
| Unknown                  | 10              | 3.6     | -             | -       |
| Total                    | 274             | 100.00  | 90.4%         | 81.1%   |

**Hodgkin's Lymphoma Age-Adjusted  
Incidence and Death Rates, King County  
Three Year Rolling Averages, 1980-1994**

Between 1980 and 1994, the age-adjusted incidence rate of Hodgkin's lymphoma increased. The death rate declined slightly.



**Hodgkin's Lymphoma Age-Adjusted Incidence and Death Rates  
By Race/Ethnicity, King County, 1990-1994 (Five Years)**

| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 3.4       | 247    | 0.5   | 38     |
| African American | -         | 15     | -     | 1      |
| Native American  | -         | 0      | -     | 0      |
| Asian            | -         | 5      | -     | 2      |
| Hispanic         | -         | -      | -     | 1      |

The number of Hodgkin's lymphoma in King County is too small to analyze its geographic variation.

**Risk Factors and Prevention**

Risk factors for Hodgkin's lymphoma are largely unknown and routine screening is not recommended.

### NON-HODGKIN'S LYMPHOMA

Non-Hodgkin lymphoma is the sixth leading cause of cancer deaths in King County. The incidence of non-Hodgkin's lymphoma has been increasing, partly because of its association with AIDS. Of persons diagnosed between 1990 and 1994, 25% were under age 45 and 30% were between age 45 and 64.

#### Non-Hodgkin's Lymphoma Age-Adjusted Incidence and Death Rates

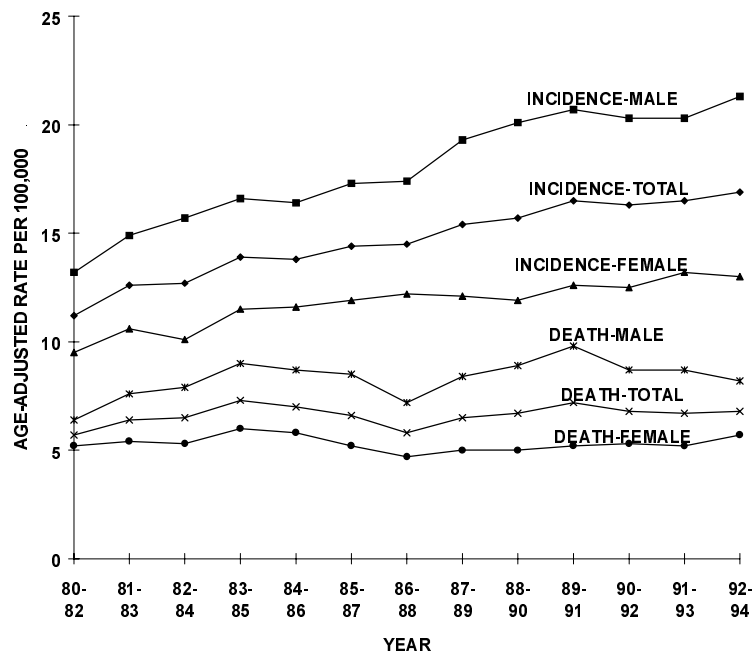
|                  | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| King County 1994 | 18.6      | 334    | 7.2   | 123    |
| Seattle 1994     | 22.5      | 147    | 7.2   | 48     |
| WA State 1993    | 14.6      | 862    | 6.2   | 370    |
| U.S. 1993        | 15.4      |        | 6.5   |        |

#### Stage at Diagnosis (1990-1994) and Observed Survival Rate (1985-1994), King County

| Non-Hodgkin's Lymphoma Stage | 1990-1994 Total |         | Survival Rate |         |
|------------------------------|-----------------|---------|---------------|---------|
|                              | Number          | Percent | 1 Year        | 5 Years |
| Stage I                      | 397             | 27.4    | 76.4%         | 56.8%   |
| Stage II                     | 188             | 13.0    | 76.5%         | 55.3%   |
| Stage III                    | 163             | 11.2    | 71.7%         | 41.6%   |
| Stage IV                     | 492             | 33.9    | 63.3%         | 35.9%   |
| Unknown                      | 211             | 14.5    | 60.0%         | 38.2%   |
| Total                        | 1451            | 100.0   | 69.1%         | 45.0%   |

#### Non-Hodgkin's Lymphoma Age-Adjusted Incidence and Death Rates, King County Three Year Rolling Averages, 1980-1994

Between 1980 and 1994, the age-adjusted incidence rate of non-Hodgkin's lymphoma rose significantly in both males and females. The death rate also increased.



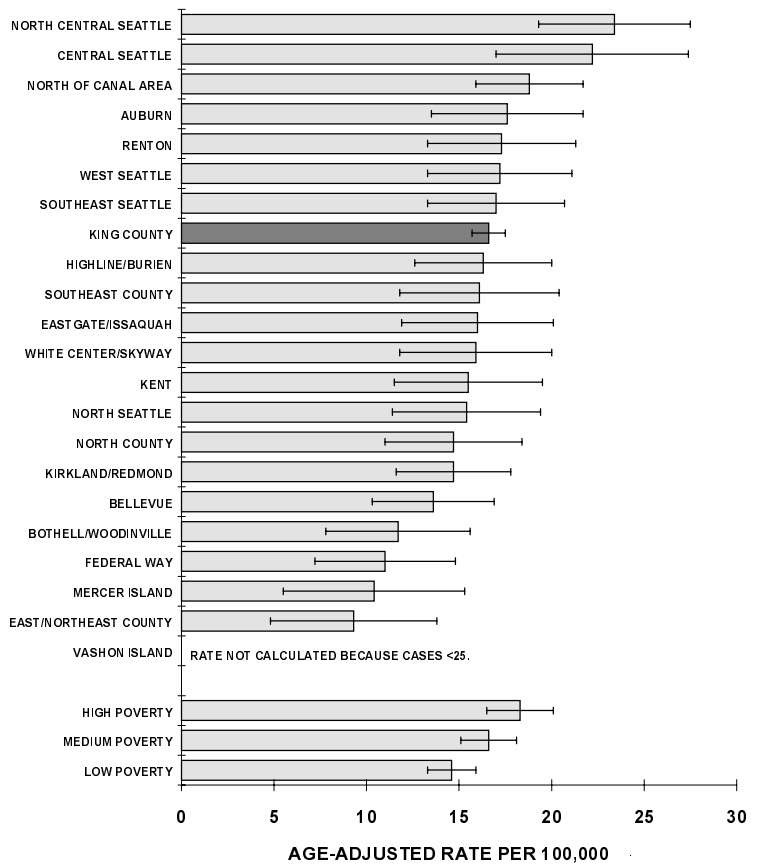
**Non-Hodgkin’s Lymphoma Age-Adjusted Incidence and Death Rates  
By Race/Ethnicity, King County, 1990-1994 (Five Years)**

| Race/Ethnicity   | Incidence |        | Death |        |
|------------------|-----------|--------|-------|--------|
|                  | Rate      | Number | Rate  | Number |
| White            | 16.9      | 1,286  | 7.0   | 530    |
| African American | 11.2      | 41     | -     | 11     |
| Native American  | -         | 3      | -     | 2      |
| Asian            | 11.1      | 64     | -     | 27     |
| Hispanic         | -         | -      | -     | 3      |

The incidence rate among whites was higher than the rates for African Americans and Asians.

**Non-Hodgkin’s Lymphoma Age-Adjusted Incidence Rate by Poverty Level and Health Planning Area, King County  
Five Year Average, 1990-1994**

Among the health planning areas, the incidence rate in North Central Seattle was significantly higher while the incidence rates in Mercer Island and East/Northeast County were significantly lower than the county average rate. The incidence rate in high poverty areas was significantly higher than the rate in low poverty areas.



**Risk Factors and Prevention**

Viral infections and impaired immune function are linked to the development of non-Hodgkin’s lymphoma. For example, it occurs at a higher rate among persons infected with the Human Immunodeficiency Virus (HIV) and among persons with inherited immunodeficiency syndromes. Other potential risk factors include exposures to agricultural chemicals and high-dose radiation.

Routine screening is not recommended.

## CANCER RISK DIFFERENCES BY RACE/ETHNICITY AND SOCIOECONOMIC STATUS

In this section, we summarize the differences on cancer incidence, mortality, and stage at diagnosis by race/ethnicity and socioeconomic status. In race/ethnicity comparisons, the rates of the minority groups are compared to those for whites. When local data are not available or the numbers are too small, national data are used for the comparisons. Note that the differences between racial/ethnic groups may be explained by a variety of factors such as socioeconomic status, the living environment, limited access to health care, personal habits and customs, cultural differences, and genetic factors. In interpretation of the results, race/ethnicity misclassification in cancer data and small numbers for the minority groups should also be considered.

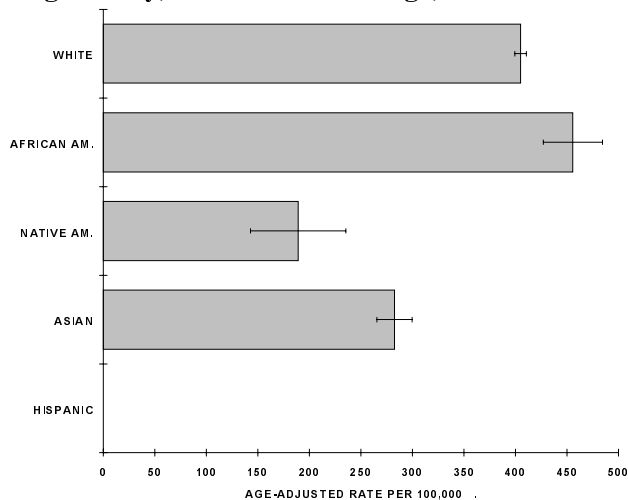
The residence poverty level is used as an indicator of socioeconomic status. In risk comparisons, we ranked the census tracts in King County by the percentage of population living below the Federal Poverty Level and divided them into three groups with equal number of census tracts (terciles) and labeled them as the high, medium, and low poverty areas.

### 1. RACE/ETHNICITY AND CANCER

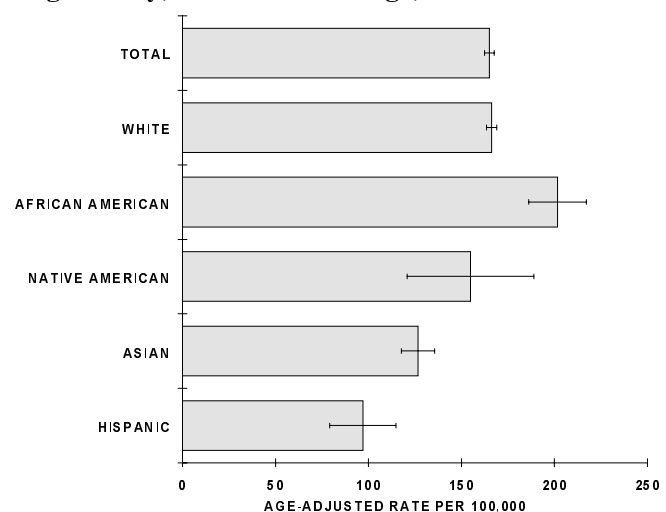
#### Incidence and Mortality

The all cancer incidence and death rates for African Americans were significantly higher, while the all cancer incidence rates for Native Americans and Asians were significantly lower than the rates for whites. The all cancer death rates for Asians and Hispanics were also significantly lower than the white rates. For Hispanics, the incidence rate was not available and the death rate may be problematic because of under-reporting.

**All Cancer Incidence Rate by Race  
King County, Three Year Average, 1992-1994**



**All Cancer Death Rate by Race/Ethnicity  
King County, Five Year Average, 1990-1994**



*Whites:* The five most common cancers among whites in King County were cancers of the breast, prostate, lung, colon and rectum, and lymphoma. Compared to the minority groups, whites had higher incidence rates of breast cancer, endometrial cancer, ovarian cancer, bladder cancer, and lymphoma. In addition, melanoma of the skin occurred predominantly among whites.

*African Americans:* In King County, the five most common cancers among African Americans include prostate cancer, lung cancer, colorectal cancer, breast cancer, and lymphoma. The total cancer incidence and death rates for African Americans were significantly higher than the rates for whites. Among the racial groups, African Americans had the highest incidence and death rates of lung cancer, colorectal cancer, prostate cancer, and

cancer of the pancreas. National data also indicate that the incidence and death rates of cervical cancer for African American women were substantially higher than the white rates.

*Asians:* The most common cancers among Asians were breast cancer, colorectal cancer, lung cancer, prostate cancer, and stomach cancer. Overall, the cancer incidence and death rates for Asians were lower or similar to the white rates. However, the incidence rate of cervical cancer for Asian women was significantly higher than the white rate. Note that Asians consist of a diverse population of different ethnic groups. National data show, for example, that among Asian women the incidence rate of cervical cancer for Vietnamese women were three to seven times higher than the rate for the other Asian ethnic groups (Chinese, Filipino, Japanese, and Korean).

*Native Americans:* Because of the small numbers at the local level (due to the relative small population size), cancer rates for Native Americans can only be calculated for cancers of the lung, colon and rectum, and breast. Both local and national data indicate that for Native Americans, the incidence and death rates for these cancers were lower than those for whites.

*Hispanic ethnicity:* Incidence data at the local level are not available for Hispanics. National data indicate that the incidence and death rates of cervical cancer for Hispanic women were substantially higher than the rates for white women.

#### **Late Stage Diagnosis (Regional or Distant)**

Using logistic regression analysis, we examined the effect of race on late stage diagnosis while controlling for age, gender, marital status, and residence poverty level for cancers for which early detection is meaningful (breast, cervical, colorectal and melanoma of the skin).

Of the four types of cancer, race was significantly associated only with late stage diagnosis for cervical cancer (1985-1994 data with in situ cases included), in which Native Americans were significantly more likely to be diagnosed at late stages than whites. The risk of being diagnosed at late stages for African Americans and Asians was not significantly different from that for whites.

## **2. SOCIOECONOMIC STATUS AND CANCER**

### **Incidence and Mortality**

In King County, high poverty areas had higher incidence rates of lung cancer, colorectal cancer, cervical cancer, pancreatic cancer, and lymphoma as well as higher death rates of lung cancer, colorectal cancer and cervical cancer. On the other hand, low poverty areas had higher incidence rates of breast cancer and skin melanoma.

#### **Late Stage Diagnosis (Regional or Distant)**

Using logistic regression analysis, we examined the association between residence poverty level and late stage diagnosis while controlling for age, gender, race, and marital status for breast cancer, cervical cancer, colorectal cancer, and melanoma of the skin. None of the associations, however, were statistically significant.

## CANCER RISK FACTORS AND CANCER SCREENING

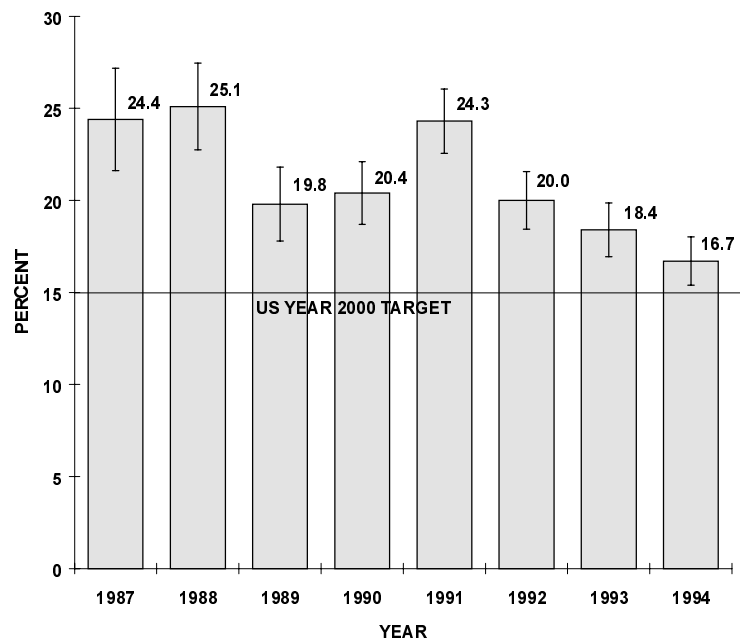
Epidemiological studies suggest that the most important risk factors for developing cancer are tobacco use, poor diet (low in fruit and vegetables, and high in fat), high risk sexual activity, alcohol abuse, excess sun exposure, and physical inactivity. The risk of cancer can be reduced by avoiding exposure to these risk factors. In addition, death from some cancers (breast, cervical, and colorectal cancer) can be prevented through screening. In this section, we present data on the major cancer risk factors as well as data pertaining to breast cancer, cervical cancer, and colorectal cancer screening. The results are primarily based on the Washington State Behavioral Risk Factor Survey (BRFS), a telephone interview survey of non-institutionalized adults age 18 and older<sup>1</sup>.

### Tobacco Use

Tobacco is a major risk factor for lung cancer, bladder cancer, oral cancer, and cancer of the larynx. It is also associated with the risk of cancers of the esophagus, the pancreas, the cervix uteri, and the kidney. It is estimated that 87% of lung cancer deaths and 30% of all cancer deaths are attributable to cigarette smoking.

### Percent of Adult Current Smokers King County 1987-1994

In 1994, 16.7% of King County adults age 18 and older were current smokers. This percentage was lower than the Washington State rate of 21.8% but higher than the U.S. 2000 target rate of 15%. In recent years, the prevalence of current smokers in King County has declined from 25.1% in 1988.



In King County, the smoking prevalence was higher among young and middle aged adult males, among African Americans and Hispanics, and among persons with lower income levels (see table on next page).

The 1993 Seattle School District Teen Health Survey reported that 23% of high school students and 20% of grade 8 students smoked cigarettes in the month prior to the survey. Also, tobacco use has been increasing among youth in recent years.

<sup>1</sup>The estimates in this report are weighted to adjust for household size and the age and sex distribution of King County. Following the guidelines for the Behavioral Risk Factor Surveillance System, the estimates for any group with a sample size less than 50 are not reported in this report. For example, to avoid unreliable rates due to small sample size, estimates for Native Americans are not reported.

**Percent of Adult Current Smokers by Demographic Factors  
King County, Five Year Average (1990-1994)**

|                        | Percent (Total Sample Size = 3,829) | 95% Confidence Interval |
|------------------------|-------------------------------------|-------------------------|
| Gender:                |                                     |                         |
| Male                   | 21.4                                | (19.3, 23.5)            |
| Female                 | 18.4                                | (16.6, 20.3)            |
| Age Group:             |                                     |                         |
| 18-24                  | 21.4                                | (16.9, 25.9)            |
| 25-44                  | 22.6                                | (20.6, 24.6)            |
| 45-64                  | 18.2                                | (15.4, 20.9)            |
| 65+                    | 12.1                                | (9.0, 15.1)             |
| Race/Ethnicity:        |                                     |                         |
| White                  | 20.2                                | (18.7, 21.7)            |
| African American       | 26.8                                | (18.8, 34.9)            |
| Asian                  | 12.1                                | (7.7, 16.6)             |
| Native American        | 16.7                                | (4.9, 28.5)             |
| Hispanic               | 25.3                                | (16.9, 33.8)            |
| Household Income/Year: |                                     |                         |
| Less Than \$10,000     | 27.2                                | (21.2, 33.3)            |
| \$10,000 - 14,999      | 26.4                                | (20.6, 32.2)            |
| \$15,000 - 19,999      | 23.2                                | (18.2, 28.1)            |
| \$20,000 - 24,999      | 24.3                                | (19.1, 29.4)            |
| \$25,000 - 34,999      | 24.2                                | (20.5, 28.0)            |
| \$35,000 - 49,999      | 19.6                                | (16.4, 22.8)            |
| \$50,000 or More       | 13.7                                | (11.4, 16.1)            |

**Poor Diet**

In addition to avoidance of smoking, a healthy diet has potential for cancer prevention. It is estimated that 35% of all cancer can be attributed to poor dietary practices. A diet that is high in vegetables, fruits, and grains while being low in fat may reduce the risk of cancers of the colon, breast, uterine corpus, and gallbladder. One of the US Year 2000 goals is to increase the amount of fiber-rich foods in the diet and to consume 5 or more servings (1/2 cup) of vegetables and fruits per day.

The 1994 Washington State Behavioral Risk Factor Survey (BRFS) asked questions regarding the consumption of fruit juice, fruits, green salad, potatoes (not including french fries), carrots, and other vegetables. The data indicated that 24% of King County adults had 5 or more servings of fruits and vegetables per day. More women (27%) than men (20%) met the “5-a-Day” recommendation.

**High Risk Sexual Behavior**

Studies suggest that women who begin sexual activity at age 14 or younger have three times the risk of developing cervical cancer than women who initiate sexual activity after age 20. The risk also increases for women with multiple sex partners. The use of barrier contraceptives, on the other hand, reduces the risk of cervical cancer.

The 1993 Teen Health Survey conducted by the Seattle School District among high school students collected information regarding their sexual activity. The survey showed that among female students in grade 9-12, 21.3% have had their first sexual intercourse by age 14. Native Americans female students (46%) were most likely to have had sex at an early age, followed by African American (41%), Latino (35%), multi-ethnic (34%), white (18%), and Asian (11%) female students.

Also among grade 9-12 female students, 7.3% have had 6 or more sex partners. Among the female students who have had sex, 47.8% reported that they did not use a condom the last time they had sex.



### Alcohol Abuse

Heavy drinking increases the risk of oral cancer as well as cancers of the esophagus, the stomach, the liver, the throat, and the larynx, especially when it is combined with the use of tobacco.

The 1991-1993 Washington State Behavioral Risk Factor Survey (BRFS) data indicated that 3% of King County adults were chronic alcohol drinkers, who on the average had two or more drinks per day and 60 or more drinks per month. Also, 15% of King County adults engaged in binge drinking, defined as having five or more drinks on at least one occasion during the month prior to the survey.

### Sun Exposure

Protection from extensive exposure to sunlight can reduce the risk of skin cancer. The 1987 Washington State Behavioral Risk Factor Survey (BRFS) asked a question on how often the respondents take measures to avoid getting suntanned. The results showed that 46.7% of the King County adults seldom or never took measures to avoid getting suntanned. The rate was higher among males (50.8%) than among females (42.5%). The rate for persons age 18 to 24 was 60.7%, higher than the rate for persons in the older age groups.

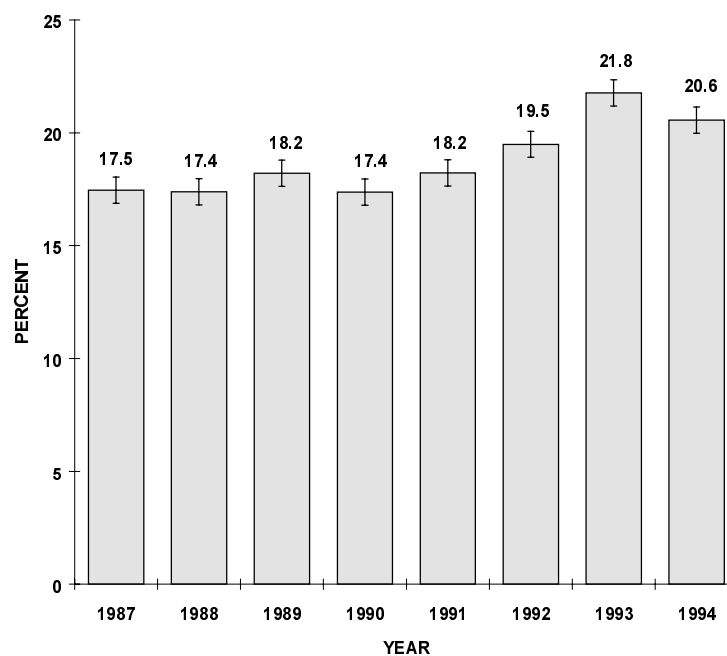
### Obesity and Physical Inactivity

Obesity increases the risk of colon, breast, prostate, gallbladder, ovary, and endometrial cancers. A suitable diet and adequate exercise can help to maintain an appropriate body weight and reduce the risk of these cancers.

#### Percent of Obese Adults in King County 1987-1994

Using the BMI (Body Mass Index) definition, 20.6% of the King County adults in 1994 were obese, compare to 26% in Washington State.

Similar to a national trend, the obesity rate in King County has increased since 1987.



The 1994 Washington State Behavioral Risk Factor Survey (BRFS) also showed that 44.7% of King County adults were “sedentary” with either no leisure time physical activity or “irregular activity”. Irregular activity is defined as having physical activity less than 20 minutes per time and less than three times per week.

BRFS data indicated that in general, males were slightly more likely to be obese and sedentary than females. The prevalence of obesity was higher among African Americans. There was no linear association between obesity and household income. However, persons with lower income levels were more likely to be sedentary than persons with higher income levels (see table on next page).

**Percent of Obese and Sedentary Adults by Demographic Factors  
King County, Five Year Average (1990-1994)**

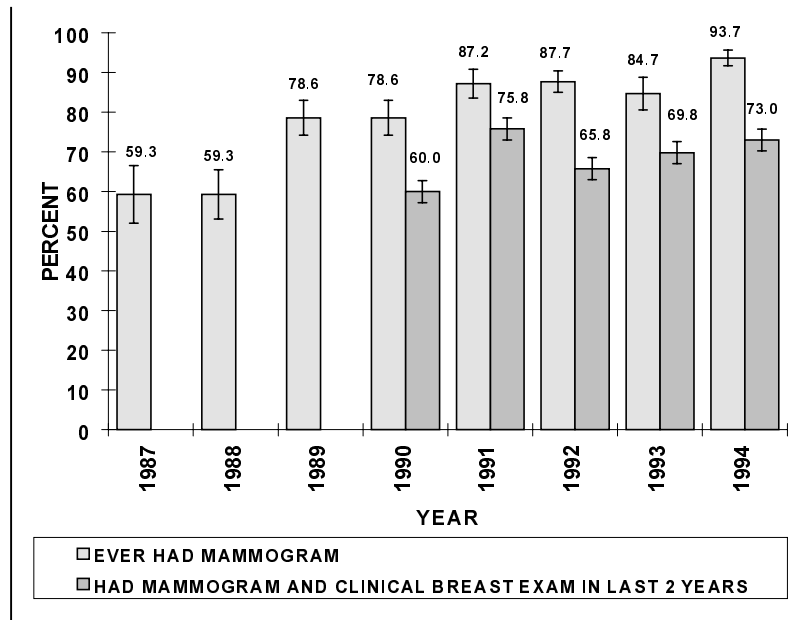
|                        | Percent Obese <sup>1</sup> | 95% Conf. Interval | Percent Sedentary <sup>2</sup> | 95% Conf. Interval |
|------------------------|----------------------------|--------------------|--------------------------------|--------------------|
| Gender:                |                            |                    |                                |                    |
| Male                   | 21.2                       | (19.1, 23.4)       | 49.2                           | (46.2, 52.1)       |
| Female                 | 17.8                       | (16.0, 19.6)       | 46.2                           | (43.6, 48.8)       |
| Age Group:             |                            |                    |                                |                    |
| 18-24                  | 9.2                        | (6.1, 12.4)        | 42.9                           | (36.6, 49.2)       |
| 25-44                  | 18.1                       | (16.2, 19.9)       | 48.6                           | (45.9, 51.3)       |
| 45-64                  | 26.0                       | (22.8, 29.1)       | 46.9                           | (42.9, 50.9)       |
| 65+                    | 22.6                       | (18.7, 26.6)       | 49.8                           | (44.7, 55.0)       |
| Race/Ethnicity:        |                            |                    |                                |                    |
| White                  | 20.0                       | (18.5, 21.5)       | 47.2                           | (45.1, 49.3)       |
| African American       | 27.3                       | (19.0, 35.7)       | 50.6                           | (40.2, 61.0)       |
| Asian                  | 9.2                        | (4.9, 13.5)        | 53.7                           | (45.4, 62.0)       |
| Hispanic               | 15.2                       | (8.6, 21.8)        | 62.2                           | (51.6, 72.8)       |
| Household Income/Year: |                            |                    |                                |                    |
| Less Than \$ 10,000    | 19.7                       | (14.2, 25.3)       | 57.8                           | (50.2, 65.4)       |
| \$10,000 - 14,999      | 19.9                       | (14.6, 25.2)       | 53.7                           | (46.5, 61.0)       |
| \$15,000 - 19,999      | 21.4                       | (16.3, 26.5)       | 52.5                           | (45.5, 59.4)       |
| \$20,000 - 24,999      | 18.5                       | (13.6, 23.3)       | 48.7                           | (41.6, 55.8)       |
| \$25,000 - 34,999      | 18.8                       | (15.2, 22.3)       | 49.4                           | (44.4, 54.4)       |
| \$35,000 - 49,999      | 22.5                       | (19.2, 25.8)       | 50.6                           | (46.0, 55.1)       |
| \$50,000 or More       | 19.6                       | (16.9, 22.3)       | 38.4                           | (34.7, 42.2)       |

**Breast Cancer Screening**

The consensus recommendation for breast cancer screening is that women age 50 and older should have annual or biennial mammogram with clinical breast examination. The National Cancer Institute and the American Cancer Society also recommend women age 40-49 to follow the same screening guideline.

**Percent of Breast Cancer Screening  
Among Women Age 50+, King County  
1987-1994**

Between 1987 and 1994, the breast cancer screening rate increased substantially in King County. Of women age 50 and older, the rate of women who have ever had a mammogram increased from 59.3% to 93.7%. The rate of having both a mammogram and a clinical breast exam within two years increased from 60.0% in 1990 to 73.0% in 1994.



<sup>1</sup> Obesity is calculated using the BMI method using 1990-1994 data.

<sup>2</sup> Results on sedentary lifestyle are based on 1991, 1992, and 1994 data.

Of King County women age 40 to 49 in 1994, 61.7% have had a clinical breast examination and a mammogram within two years. Of women age 50 and older, the rate was 73.0%. This is much higher than the U.S. Year 2000 target for women age 50 and older, which is 60%. Women of lower education or income levels had lower breast cancer screening rates than women of higher education or income levels.

**Percent Women Who Had Clinical Breast Examination and Mammogram Within Two Years  
Among Women Age 50+, By Demographic Factors  
King County, Six Year Average (1990-1995)**

|                        | Percent | 95% Confidence Interval |
|------------------------|---------|-------------------------|
| Level of Education:    |         |                         |
| Less than High School  | 53.0    | (39.6, 66.4)            |
| High School Grad.      | 67.0    | (59.6, 74.4)            |
| Some College           | 67.1    | (59.5, 74.7)            |
| College Graduate       | 79.2    | (73.0, 85.4)            |
| Household Income/Year: |         |                         |
| Less Than \$10,000     | 43.0    | (31.7, 54.4)            |
| \$10,000 - 24,999      | 65.2    | (57.4, 72.9)            |
| \$25,000 - 34,999      | 73.0    | (61.7, 84.3)            |
| \$35,000 - 49,999      | 72.3    | (61.2, 83.4)            |
| \$50,000 or More       | 80.3    | (69.3, 91.3)            |

### Cervical Cancer Screening

A routine pelvic examination with the Pap test can detect pre-cancerous cervical lesions, permitting treatment which cures most cases. It is estimated that between 37% and 60% of cervical cancer deaths could be prevented by the use of a Pap test at adequate intervals. The American Cancer Society, the National Cancer Institute, and the American College of Obstetricians and Gynecologists recommend that women have annual Pap tests starting at age 18 or at the age when sexual activity commences. After three or more Pap tests with normal findings, a Pap test may be performed less frequently, such as every three years, at the discretion of the physician.

In 1994, of King County women age 18 and older and with an intact cervix, 85.6% received a Pap test within 3 years. The corresponding U.S. Year 2000 target is 85%. Older women age 75+ had lower Pap test rate. Women of lower education or income levels had lower Pap test rates than women of higher education or income levels.

**Percent of Women With An Intact Cervix Who Have Had A Pap Test Within Three Years  
By Demographic Factors, King County, Four Year Average (1991-1994)**

|                        | Percent | 95% Confidence Interval |
|------------------------|---------|-------------------------|
| Age Group:             |         |                         |
| 18-44                  | 90.2    | (88.1, 92.3)            |
| 45-64                  | 90.6    | (86.9, 94.3)            |
| 65-74                  | 91.7    | (86.2, 97.1)            |
| 75+                    | 74.4    | (62.2, 86.6)            |
| Level of Education:    |         |                         |
| Less than High School  | 78.5    | (67.6, 89.5)            |
| High School Grad.      | 88.9    | (85.0, 92.8)            |
| Some College           | 87.0    | (83.4, 90.6)            |
| College Graduate       | 93.5    | (91.5, 95.5)            |
| Household Income/Year: |         |                         |
| Less Than \$10,000     | 80.0    | (70.7, 89.4)            |
| \$10,000 - 24,999      | 84.8    | (80.6, 89.1)            |
| \$25,000 - 34,999      | 90.3    | (85.9, 94.7)            |
| \$35,000 - 49,999      | 93.1    | (89.5, 96.6)            |
| \$50,000 or More       | 95.7    | (93.4, 98.0)            |

**Colorectal Cancer Screening**

For early detection of colorectal cancer, it is recommended by the American Cancer Society that all persons age 50 and older should have a fecal occult blood test (FOBT) every year and a sigmoidoscopy every 3 to 5 years. This recommendation is also supported by the US Preventive Health Services (USPHS). Studies have shown that FOBT and sigmoidoscopy screening reduce the risk of death from colorectal cancer. The American Cancer Society also recommends an annual digital rectal exam (DRE) for persons age 40 and older. All these screening tests, however, have certain limitations. For example, the digital rectal exam has only limited access to the rectal area, the fecal occult blood test has relatively high rate of false positive and false negative results, and the sigmoidoscopy has low compliance rate and high cost. The sensitivity and diagnostic yield of sigmoidoscopy screening also depend on the type and length of the instrument.

The 1993 and 1995 Behavioral Risk Factor Survey asked questions regarding colorectal cancer screening, but only about digital rectal exam and proctoscopic exam. Since the proctoscope is shorter than the sigmoidoscope, its capability of detecting colorectal cancers is more limited. Also, the survey respondents may not be able to distinguish between a proctoscope and a sigmoidoscope. In spite of these limitations, the BRFS data should provide an indication of the use of colorectal cancer screening.

Of persons age 50 and older in King County in 1995, 39.0% had received a proctoscopic exam in the previous five years. Averaged for 1993 and 1995, females had lower screening rates than males. Persons age 65-74 had higher screening rates than persons in the other age groups. The screening rate was not associated with the level of education and income.

**Percent of Persons Age 50 and Older in King County  
Who Received A Proctoscopic Exam Within 5 Years  
Two Years of Data (1993, 1995)**

| Factors    | Had a proctoscopic exam within 5 years |            |
|------------|--|------------|
|            | Percent                                | 95% CI     |
| 1993       | 31.2                                   | 24.0, 38.4 |
| 1995       | 39.0                                   | 32.3, 45.6 |
| Male       | 42.1                                   | 34.3, 49.9 |
| Female     | 29.3                                   | 23.2, 35.5 |
| Age Group: |  |            |
| 50-64      | 29.9                                   | 23.6, 36.1 |
| 65-74      | 50.3                                   | 40.0, 60.6 |
| 75+        | 29.6                                   | 19.1, 40.0 |

## APPENDIX I

**Age-Adjusted Cancer Death Rates\* for All Cancer and Selected Cancer Sites  
King County, 1980-1994**

| YEAR | All Cancer | Lung | Colorectal | Breast (F) | Prostate | Pancreas | Lymphoma | Leukemia | Brain | Ovary | Stomach | Bladder | Esophagus | Liver | Kidney | Melanoma | Cervical | Endometrial |
|------|------------|------|------------|------------|----------|----------|----------|----------|-------|-------|---------|---------|-----------|-------|--------|----------|----------|-------------|
| 1980 | 164.3      | 42.0 | 18.9       | 27.2       | 24.3     | 8.4      | 4.9      | 5.2      | 4.2   | 9.6   | 5.5     | 4.5     | 4.0       | 2.3   | 2.4    | 1.7      | 3.0      | 1.8         |
| 1981 | 159.7      | 40.0 | 19.1       | 27.5       | 23.5     | 7.8      | 6.7      | 6.7      | 4.0   | 8.2   | 5.7     | 3.6     | 3.4       | 1.9   | 3.0    | 1.7      | 1.8      | 2.6         |
| 1982 | 162.8      | 42.5 | 20.0       | 25.9       | 23.7     | 9.1      | 5.6      | 6.8      | 5.1   | 8.7   | 5.0     | 3.9     | 2.9       | 2.5   | 3.1    | 1.3      | 1.8      | 2.5         |
| 1983 | 164.4      | 44.7 | 18.4       | 28.5       | 18.8     | 9.8      | 6.8      | 6.5      | 5.3   | 9.9   | 5.0     | 4.0     | 3.4       | 2.4   | 2.8    | 1.7      | 2.3      | 2.3         |
| 1984 | 161.8      | 43.5 | 17.8       | 29.8       | 24.1     | 8.2      | 7.1      | 4.9      | 3.3   | 9.2   | 4.6     | 3.7     | 2.9       | 1.7   | 3.3    | 2.1      | 1.8      | 2.6         |
| 1985 | 171.5      | 45.7 | 20.6       | 25.3       | 23.4     | 8.8      | 8.1      | 5.4      | 4.3   | 8.4   | 5.6     | 3.5     | 3.7       | 3.0   | 3.7    | 2.2      | 2.4      | 2.6         |
| 1986 | 166.2      | 48.1 | 18.0       | 26.2       | 25.7     | 7.8      | 6.0      | 6.8      | 3.8   | 8.7   | 4.9     | 3.3     | 3.5       | 3.0   | 2.7    | 1.9      | 2.2      | 2.5         |
| 1987 | 163.3      | 43.2 | 18.6       | 27.3       | 24.8     | 8.1      | 5.8      | 7.0      | 4.2   | 10.1  | 5.4     | 2.8     | 4.1       | 2.8   | 3.0    | 2.4      | 1.2      | 1.6         |
| 1988 | 159.7      | 44.7 | 15.2       | 27.9       | 24.4     | 9.9      | 5.5      | 6.6      | 4.9   | 9.1   | 3.5     | 3.1     | 2.9       | 2.5   | 3.9    | 1.7      | 1.0      | 1.6         |
| 1989 | 164.7      | 44.5 | 16.5       | 27.8       | 25.2     | 7.0      | 8.0      | 6.0      | 5.2   | 9.3   | 5.0     | 3.8     | 3.4       | 3.6   | 4.1    | 1.8      | 1.7      | 2.0         |
| 1990 | 165.8      | 49.7 | 15.0       | 29.0       | 28.0     | 8.9      | 6.7      | 5.9      | 5.1   | 8.4   | 4.4     | 3.3     | 3.2       | 3.4   | 2.4    | 2.0      | 2.0      | 1.0         |
| 1991 | 163.8      | 45.3 | 16.0       | 27.2       | 27.7     | 7.7      | 7.0      | 7.0      | 5.8   | 9.4   | 4.8     | 2.6     | 3.8       | 3.4   | 3.1    | 2.5      | 2.2      | 2.1         |
| 1992 | 165.1      | 47.7 | 17.3       | 26.4       | 26.5     | 9.0      | 6.6      | 5.6      | 6.2   | 8.3   | 4.1     | 2.9     | 3.5       | 3.7   | 3.5    | 2.9      | 1.8      | 1.8         |
| 1993 | 169.8      | 51.3 | 15.8       | 27.1       | 27.5     | 8.7      | 6.6      | 6.4      | 5.3   | 8.3   | 4.3     | 3.3     | 3.5       | 3.6   | 2.9    | 2.5      | 1.4      | 1.5         |
| 1994 | 160.7      | 46.5 | 15.0       | 22.4       | 28.2     | 7.9      | 7.2      | 6.4      | 5.8   | 9.9   | 3.5     | 3.3     | 3.6       | 3.4   | 2.9    | 1.8      | 1.9      | 1.1         |

\* Rates are age-adjusted to the 1970 U.S. population.

**Cancer Death Numbers for All Cancer and Selected Cancer Sites  
King County, 1980-1994**

| YEAR | All Cancer | Lung | Colorectal | Breast (F) | Prostate | Pancreas | Lymphoma | Leukemia | Brain | Ovary | Stomach | Bladder | Esophagus | Liver | Kidney | Melanoma | Cervical | Endometrial |
|------|------------|------|------------|------------|----------|----------|----------|----------|-------|-------|---------|---------|-----------|-------|--------|----------|----------|-------------|
| 1980 | 2,166      | 540  | 254        | 196        | 125      | 110      | 66       | 71       | 55    | 71    | 74      | 62      | 52        | 30    | 32     | 23       | 20       | 13          |
| 1981 | 2,148      | 526  | 263        | 200        | 121      | 106      | 91       | 90       | 53    | 61    | 78      | 52      | 45        | 26    | 40     | 24       | 14       | 21          |
| 1982 | 2,234      | 572  | 281        | 198        | 127      | 124      | 79       | 94       | 65    | 65    | 69      | 56      | 39        | 34    | 42     | 19       | 14       | 21          |
| 1983 | 2,277      | 605  | 265        | 216        | 102      | 137      | 95       | 90       | 71    | 74    | 72      | 58      | 46        | 34    | 37     | 23       | 17       | 19          |
| 1984 | 2,277      | 598  | 256        | 235        | 134      | 113      | 100      | 71       | 46    | 71    | 67      | 54      | 39        | 24    | 46     | 30       | 15       | 21          |
| 1985 | 2,464      | 642  | 300        | 202        | 133      | 128      | 118      | 76       | 57    | 66    | 82      | 52      | 52        | 43    | 52     | 33       | 20       | 21          |
| 1986 | 2,450      | 690  | 271        | 215        | 150      | 116      | 87       | 96       | 57    | 74    | 72      | 49      | 52        | 44    | 38     | 29       | 18       | 21          |
| 1987 | 2,461      | 633  | 289        | 226        | 152      | 126      | 88       | 103      | 64    | 87    | 83      | 44      | 59        | 42    | 46     | 35       | 10       | 16          |
| 1988 | 2,426      | 661  | 235        | 230        | 150      | 155      | 84       | 100      | 72    | 76    | 57      | 47      | 45        | 39    | 58     | 27       | 10       | 14          |
| 1989 | 2,588      | 674  | 271        | 241        | 159      | 113      | 124      | 97       | 79    | 80    | 79      | 62      | 52        | 56    | 67     | 30       | 15       | 19          |
| 1990 | 2,656      | 764  | 248        | 258        | 182      | 146      | 109      | 96       | 79    | 77    | 70      | 56      | 52        | 53    | 40     | 33       | 17       | 10          |
| 1991 | 2,669      | 712  | 271        | 245        | 185      | 129      | 115      | 115      | 88    | 85    | 81      | 43      | 60        | 54    | 47     | 41       | 20       | 21          |
| 1992 | 2,770      | 769  | 300        | 246        | 181      | 150      | 112      | 97       | 99    | 79    | 71      | 52      | 54        | 62    | 57     | 46       | 16       | 16          |
| 1993 | 2,866      | 836  | 275        | 256        | 190      | 150      | 114      | 111      | 89    | 78    | 70      | 57      | 57        | 59    | 50     | 42       | 14       | 15          |
| 1994 | 2,778      | 770  | 274        | 215        | 199      | 137      | 123      | 113      | 97    | 90    | 65      | 65      | 60        | 58    | 49     | 31       | 17       | 11          |

APPENDIX II

Age-Adjusted Cancer Incidence Rates\* for All Cancer and Selected Cancer Sites  
King County, 1980-1994 (Invasive Cancers only)

| YEAR | All Cancer | Breast (F) | Lung | Prostate | Colorectal | Lymphoma | Melanoma | Bladder** | Endometrial | Oral/Pharynx | Pancreas | Kidney | Leukemia | Ovary | Brain | Stomach | Thyroid | Esophagus | Esophagus | Cervical | Liver |  |
|------|------------|------------|------|----------|------------|----------|----------|-----------|-------------|--------------|----------|--------|----------|-------|-------|---------|---------|-----------|-----------|----------|-------|--|
| 1980 |            | 89.9       | 51.1 | 87.9     | 50.4       | 9.7      | 10.0     | 18.7      | 28.9        |              | 8.2      |        | 10.7     | 15.1  |       |         |         |           |           |          | 7.7   |  |
| 1981 |            | 94.9       | 54.5 | 85.3     | 48.3       | 12.5     | 9.8      | 16.1      | 30.0        |              | 10.0     |        | 9.9      | 14.2  |       |         |         |           |           |          | 6.9   |  |
| 1982 |            | 96.5       | 56.1 | 89.2     | 45.7       | 11.2     | 9.7      | 18.8      | 28.0        |              | 9.4      |        | 10.4     | 14.2  |       |         |         |           |           |          | 5.4   |  |
| 1983 |            | 101.6      | 55.9 | 92.3     | 49.0       | 14.0     | 10.5     | 14.1      | 25.2        |              | 10.5     |        | 10.5     | 13.0  |       |         |         |           |           |          | 5.9   |  |
| 1984 |            | 102.2      | 59.6 | 91.0     | 49.6       | 12.9     | 10.8     | 17.5      | 29.7        |              | 8.3      |        | 10.5     | 12.4  |       |         |         |           |           |          | 7.4   |  |
| 1985 |            | 116.8      | 56.5 | 105.4    | 55.6       | 14.8     | 12.9     | 16.8      | 22.3        |              | 9.7      |        | 10.5     | 17.2  |       |         |         |           |           |          | 6.7   |  |
| 1986 |            | 119.9      | 60.8 | 120.6    | 50.2       | 13.6     | 10.1     | 17.5      | 23.4        |              | 8.9      |        | 11.0     | 15.0  |       |         |         |           |           |          | 7.0   |  |
| 1987 |            | 121.7      | 58.6 | 139.1    | 51.3       | 14.8     | 12.4     | 17.9      | 22.3        |              | 8.4      |        | 10.4     | 12.6  |       |         |         |           |           |          | 7.1   |  |
| 1988 |            | 117.9      | 58.0 | 148.0    | 44.9       | 15.3     | 11.8     | 19.7      | 24.2        |              | 10.1     |        | 8.3      | 18.1  |       |         |         |           |           |          | 8.0   |  |
| 1989 |            | 112.0      | 58.6 | 157.3    | 46.2       | 16.1     | 12.4     | 16.6      | 24.1        |              | 8.8      |        | 11.0     | 17.0  |       |         |         |           |           |          | 7.4   |  |
| 1990 |            | 114.8      | 61.8 | 181.9    | 43.7       | 15.9     | 13.2     | 18.4      | 22.9        |              | 9.5      |        | 10.3     | 15.9  |       |         |         |           |           |          | 6.2   |  |
| 1991 |            | 126.0      | 57.7 | 209.8    | 43.2       | 17.4     | 13.3     | 14.8      | 24.2        |              | 8.6      |        | 11.3     | 17.9  |       |         |         |           |           |          | 5.1   |  |
| 1992 | 429.6      | 117.8      | 60.5 | 194.7    | 43.9       | 15.6     | 15.2     | 17.0      | 20.5        | 11.5         | 10.1     | 8.4    | 10.1     | 16.5  | 7.7   | 5.8     | 6.3     | 4.0       | 4.0       | 7.0      | 3.2   |  |
| 1993 | 379.3      | 109.4      | 57.6 | 142.2    | 41.9       | 16.6     | 14.1     | 18.3      | 22.8        | 10.7         | 7.4      | 6.8    | 9.4      | 17.7  | 6.5   | 5.0     | 3.9     | 3.2       | 3.2       | 5.9      | 3.9   |  |
| 1994 | 386.1      | 125.7      | 56.1 | 118.7    | 43.0       | 18.6     | 16.7     | 16.8      | 25.1        | 10.2         | 9.3      | 7.2    | 9.3      | 15.3  | 7.6   | 6.3     | 5.2     | 4.5       | 4.5       | 7.6      | 3.4   |  |

Cancer Incidence Numbers for All Cancer and Selected Cancer Sites  
King County, 1980-1994 (Invasive Cancers only)

| YEAR | All Cancer | Breast (F) | Lung | Prostate | Colorectal | Lymphoma | Melanoma | Bladder** | Endometrial | Oral/Pharynx | Pancreas | Kidney | Leukemia | Ovary | Brain | Stomach | Thyroid | Esophagus | Esophagus | Cervical | Liver |  |
|------|------------|------------|------|----------|------------|----------|----------|-----------|-------------|--------------|----------|--------|----------|-------|-------|---------|---------|-----------|-----------|----------|-------|--|
| 1980 |            | 633        | 654  | 464      | 665        | 129      | 138      | 247       | 200         |              | 107      |        | 134      | 108   |       |         |         |           |           |          | 57    |  |
| 1981 |            | 692        | 711  | 463      | 654        | 166      | 136      | 219       | 211         |              | 134      |        | 127      | 102   |       |         |         |           |           |          | 53    |  |
| 1982 |            | 714        | 751  | 497      | 634        | 153      | 139      | 257       | 202         |              | 128      |        | 141      | 107   |       |         |         |           |           |          | 42    |  |
| 1983 |            | 757        | 750  | 519      | 687        | 190      | 152      | 196       | 181         |              | 147      |        | 144      | 97    |       |         |         |           |           |          | 47    |  |
| 1984 |            | 779        | 815  | 523      | 697        | 180      | 158      | 246       | 221         |              | 117      |        | 145      | 93    |       |         |         |           |           |          | 60    |  |
| 1985 |            | 886        | 791  | 623      | 795        | 212      | 194      | 237       | 168         |              | 140      |        | 144      | 136   |       |         |         |           |           |          | 53    |  |
| 1986 |            | 938        | 861  | 735      | 747        | 200      | 156      | 258       | 184         |              | 133      |        | 156      | 117   |       |         |         |           |           |          | 57    |  |
| 1987 |            | 977        | 853  | 869      | 772        | 224      | 191      | 269       | 178         |              | 131      |        | 152      | 101   |       |         |         |           |           |          | 61    |  |
| 1988 |            | 962        | 848  | 938      | 687        | 232      | 186      | 297       | 195         |              | 159      |        | 126      | 148   |       |         |         |           |           |          | 70    |  |
| 1989 |            | 940        | 873  | 1,020    | 732        | 252      | 203      | 260       | 195         |              | 140      |        | 170      | 148   |       |         |         |           |           |          | 69    |  |
| 1990 |            | 977        | 942  | 1,207    | 705        | 260      | 226      | 287       | 187         |              | 154      |        | 154      | 139   |       |         |         |           |           |          | 58    |  |
| 1991 |            | 1,093      | 904  | 1,423    | 706        | 292      | 231      | 241       | 203         |              | 143      |        | 177      | 158   |       |         |         |           |           |          | 49    |  |
| 1992 | 7,156      | 1,047      | 965  | 1,336    | 735        | 264      | 267      | 276       | 176         | 188          | 169      | 161    | 166      | 152   | 124   | 100     | 112     | 63        | 63        | 66       | 56    |  |
| 1993 | 6,533      | 1,012      | 918  | 987      | 712        | 293      | 245      | 309       | 201         | 182          | 126      | 135    | 157      | 164   | 108   | 88      | 74      | 54        | 54        | 53       | 66    |  |
| 1994 | 6,831      | 1,149      | 922  | 833      | 741        | 334      | 302      | 280       | 219         | 173          | 159      | 145    | 161      | 145   | 134   | 112     | 98      | 83        | 83        | 74       | 58    |  |

\* Rates are age-adjusted to the 1970 U.S. population.

\*\* In situ cases included.

Note: The blank cells are because data are not available for this report.

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