

The Cancer Burden in Kentucky

Presented by

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Topics to be covered

- What is Cancer Control?
- How do we measure the cancer burden?
- What are the major sources of data that can be used to describe the burden of cancer?
- Some specific limitations associated with using central cancer registry data for cancer control.
- What are the major cancer control sites?
- What is the logic model for using these major sources of data to define the burden of cancer?
- Combining sources of data to give a better picture of the burden of cancer for the major cancer control sites in specific geographic areas?
- An example of how this process has worked.

What is “Cancer Control”?

The use of evidence based prevention, early detection, treatment, and continuing care intervention strategies to reduce cancer incidence, morbidity and mortality in defined populations.

Phases of Cancer Control



Data and Cancer Control

What is striking about the definition of cancer control are its implications for the use of **data** at all phases of the cancer control continuum. Muir, et al. have said that “**data are an essential part of any rational program of cancer control**”. In fact, it is difficult to imagine any effective cancer control efforts that do not rely on some type of **data** collection and analysis. In essence, **data** represent the eyes of our cancer control program. Without these eyes, it would not be possible to see our cancer control problems and it would not be possible to see the impact of our cancer control activities.

What are the common sources of data that can be used for defining the cancer burden?

- Demographic data (Census U.S)
- Risk factor data (BRFSS)
- Incidence data (KCR)
- Mortality data (State Vital Records)

Demographic (Census) data

- Covers the entire population
- Provides details on important factors that influence the burden of cancer in a population
- Is only done once every 10 years in the U.S.
- Is difficult to determine the number of people in a population by race and ethnicity.

Behavioral Risk Factor Surveillance System

- Largest telephone survey in the world
- Tracks many important health risks
- Complex sample design
- Difficult to generalize the information to small populations

Incidence Data

- Closer in time to causal events
- Represents both occurrence and risk of getting disease
- Difficult to get all of the cases
- Complex coding rules
- Screening effect

Mortality Data

- Very complete data
- Represents the ultimate negative health outcome
- Far away in time from causal factors
- Care must be taken to use consolidated death records

Difficulties Associated with Using Central Cancer Registry Data for Cancer Prevention and Control

- The screening effect
- Difficulties associated with the occurrence of cancer in very small populations

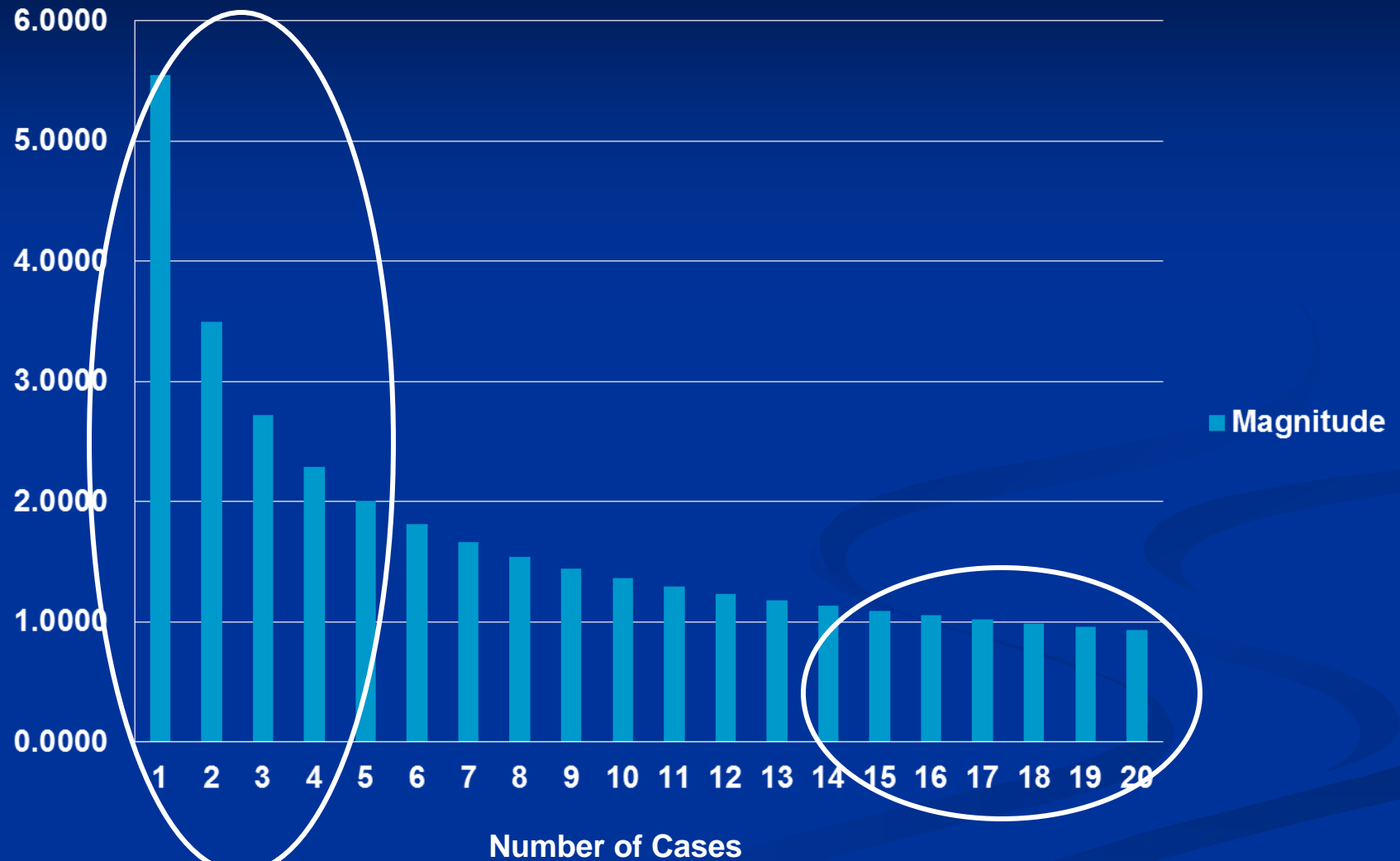
Difficulties associated with the occurrence of cancer in very small populations

- The difference between “**counts**” (frequency) and “**rates**” (Risk).
- **Community A:** Population 1 million, Count = 1000 cases
Crude Rate = $1000/1,000,000 \times 100,000 = 100$ per 100,000 Pop.
- **Community B:** Population 100,000, Count = 100 cases
Crude Rate = $100/100,000 \times 100,000 = 100$ per 100,000 Pop.
- **Community C:** Population 1000, Count = 2 cases
Crude Rate = $2/1000 \times 100,000 = 200$ per 100,000 Pop.

Difficulties associated with the occurrence of cancer in very small populations (Cont.)

- Sentinel surveillance techniques can be used when communities have small populations and low cases counts.
- Population scientists can help determine if the frequency of cancer is normal (endemic) or abnormal (epidemic).
- Cancer rates are considered to be unstable when case counts are less than 15.

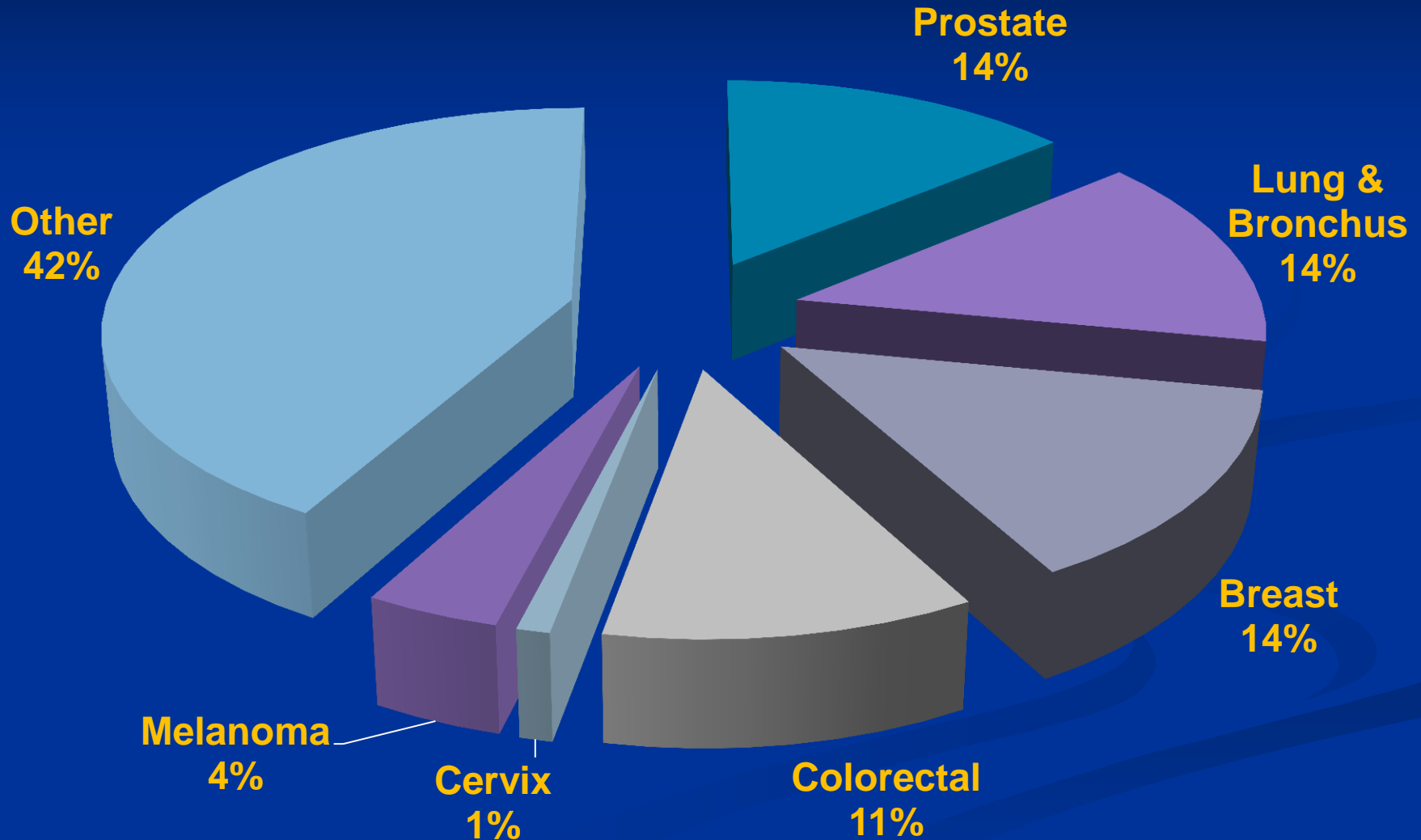
Change in Magnitude as Number of Cases Increase



What are the major cancer control sites?

Most Common Cancer Control Sites

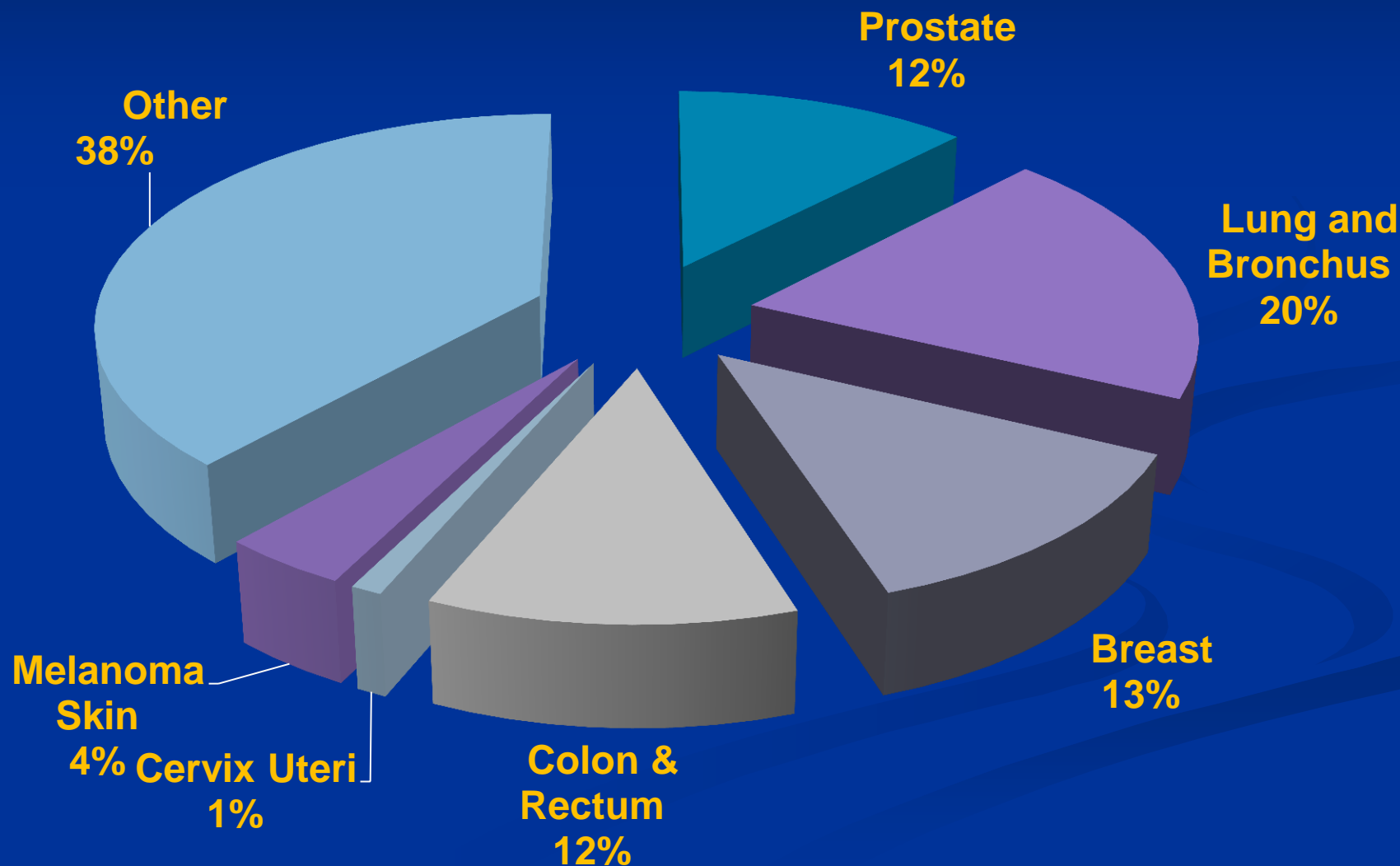
58 % of Total Cancer Cases in the U.S.



Most Common Cancer Control Sites

62 % of Total Cancer Cases in Kentucky

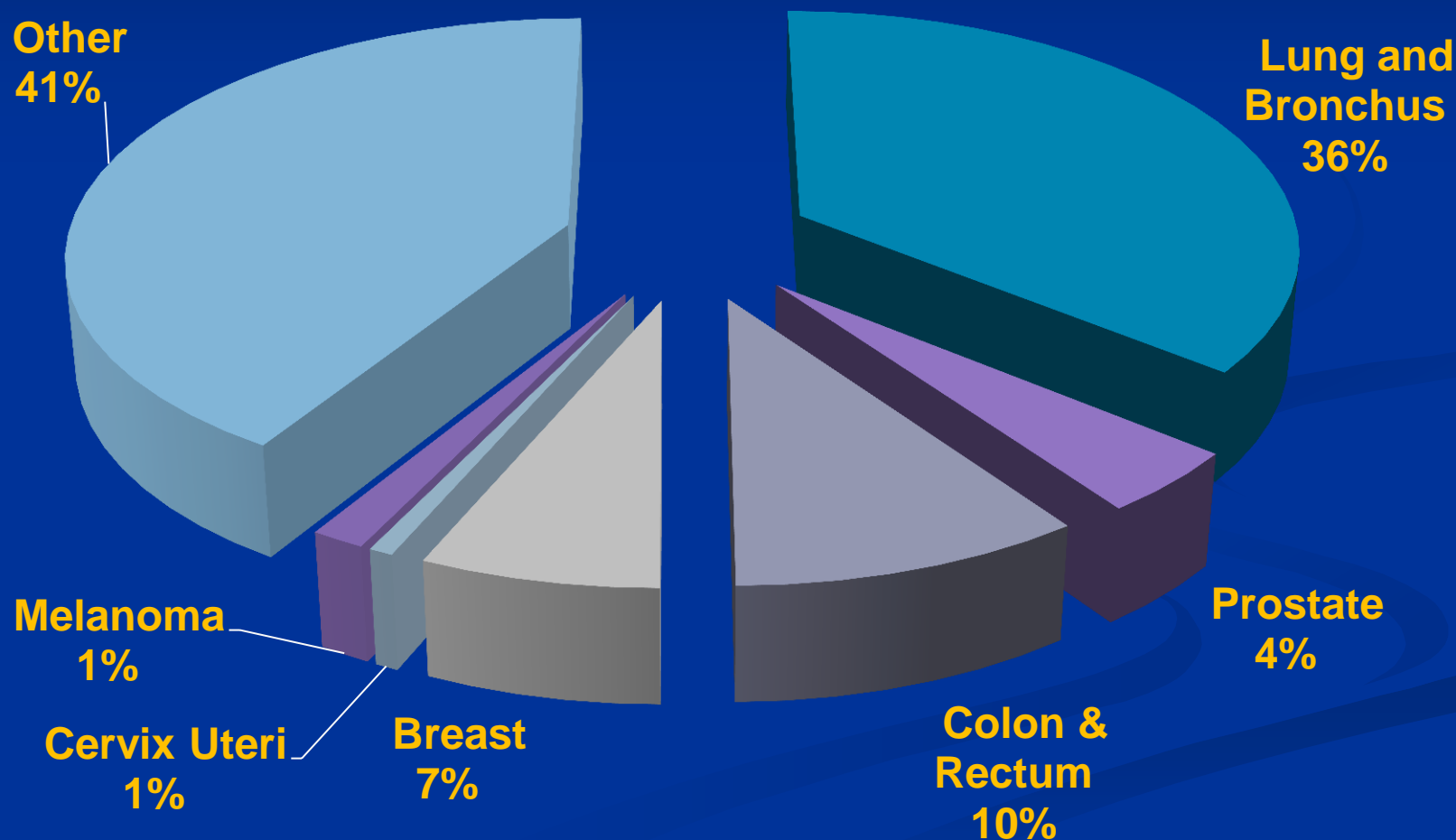
All genders, all races, 2001-2005



Most Common Cancer Control Sites

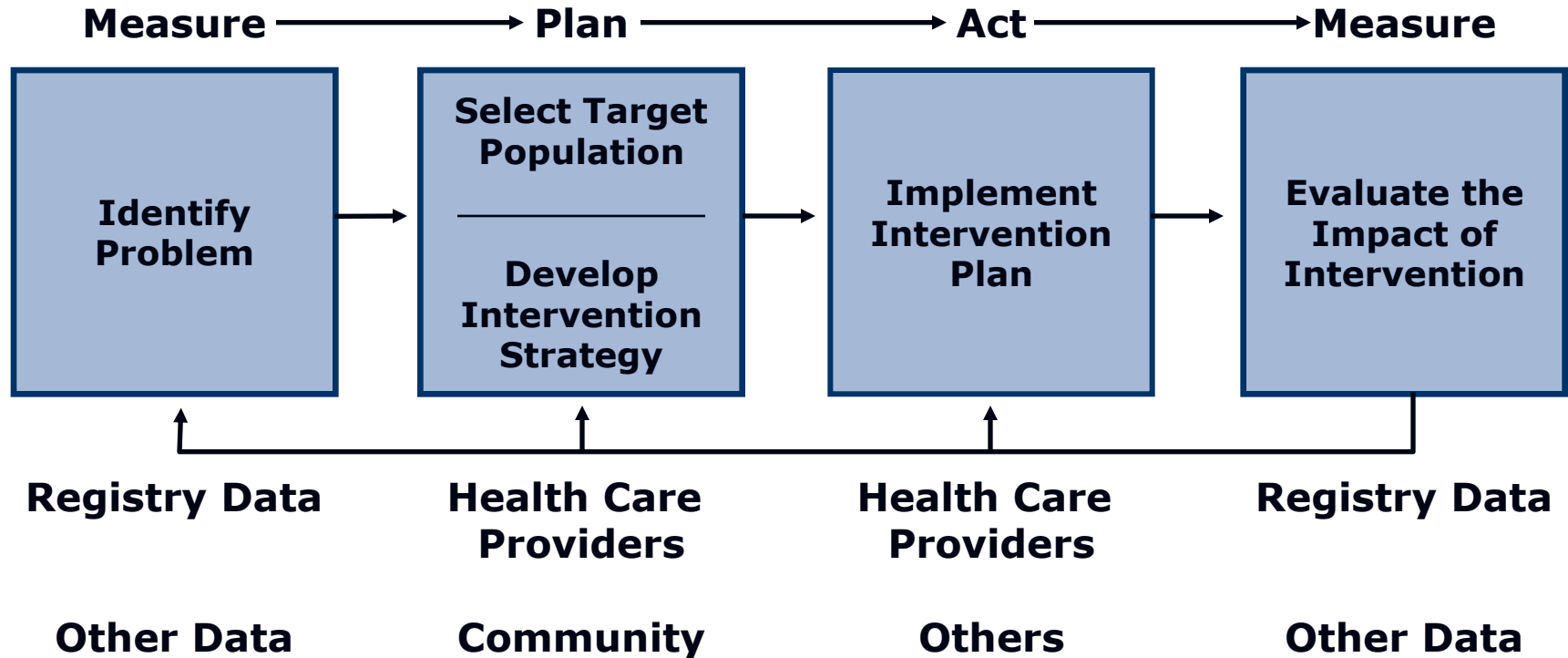
59 % of Total Cancers Deaths in Kentucky

All genders, all races, 2001-2005



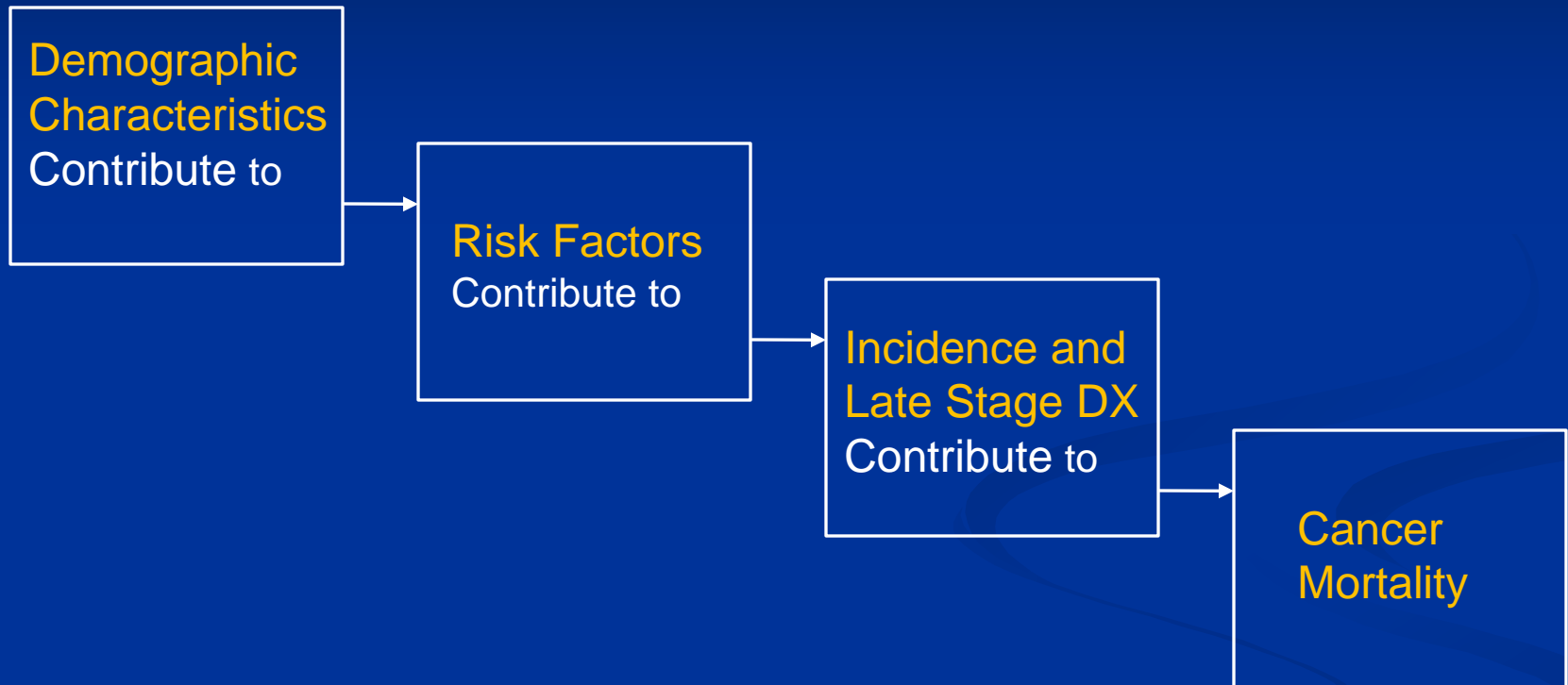
Model for Cancer Control

(Cancer control can be defined as "activities designed to reduce morbidity and mortality from cancer")



Kentucky Cancer Program

Combining Data from Multiple Sources



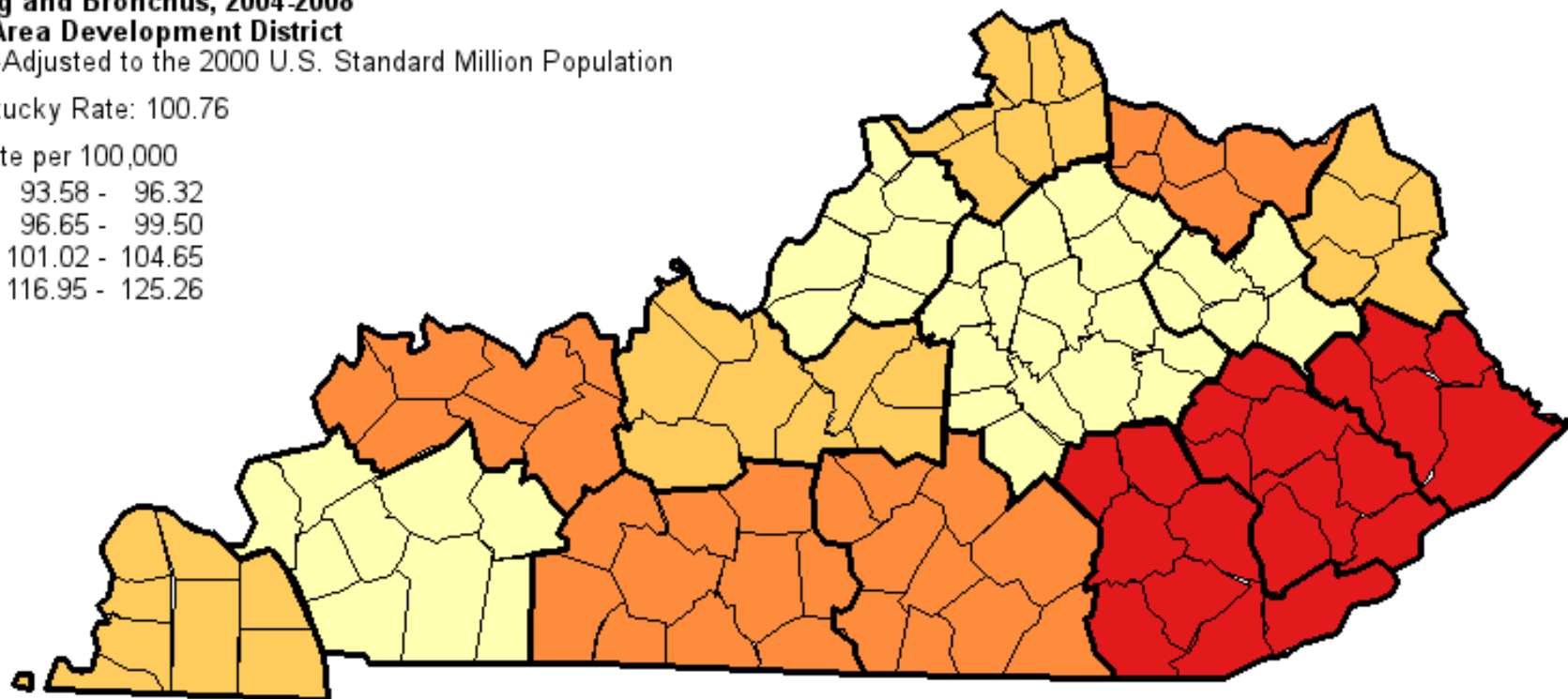
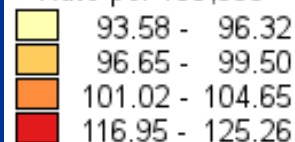
Logic Model

Age-Adjusted Invasive Cancer Incidence Rates in Kentucky
Lung and Bronchus, 2004-2008
By Area Development District

Age-Adjusted to the 2000 U.S. Standard Million Population

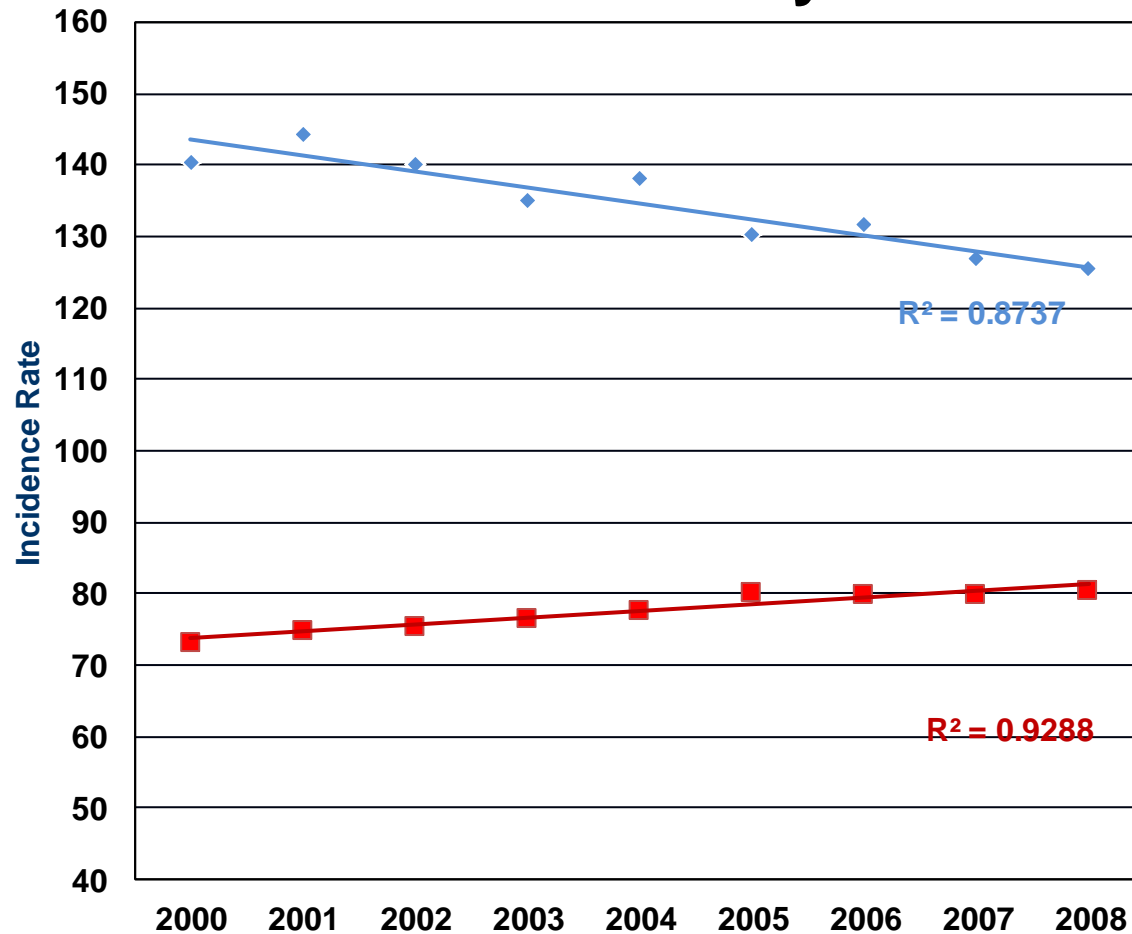
Kentucky Rate: 100.76

Rate per 100,000



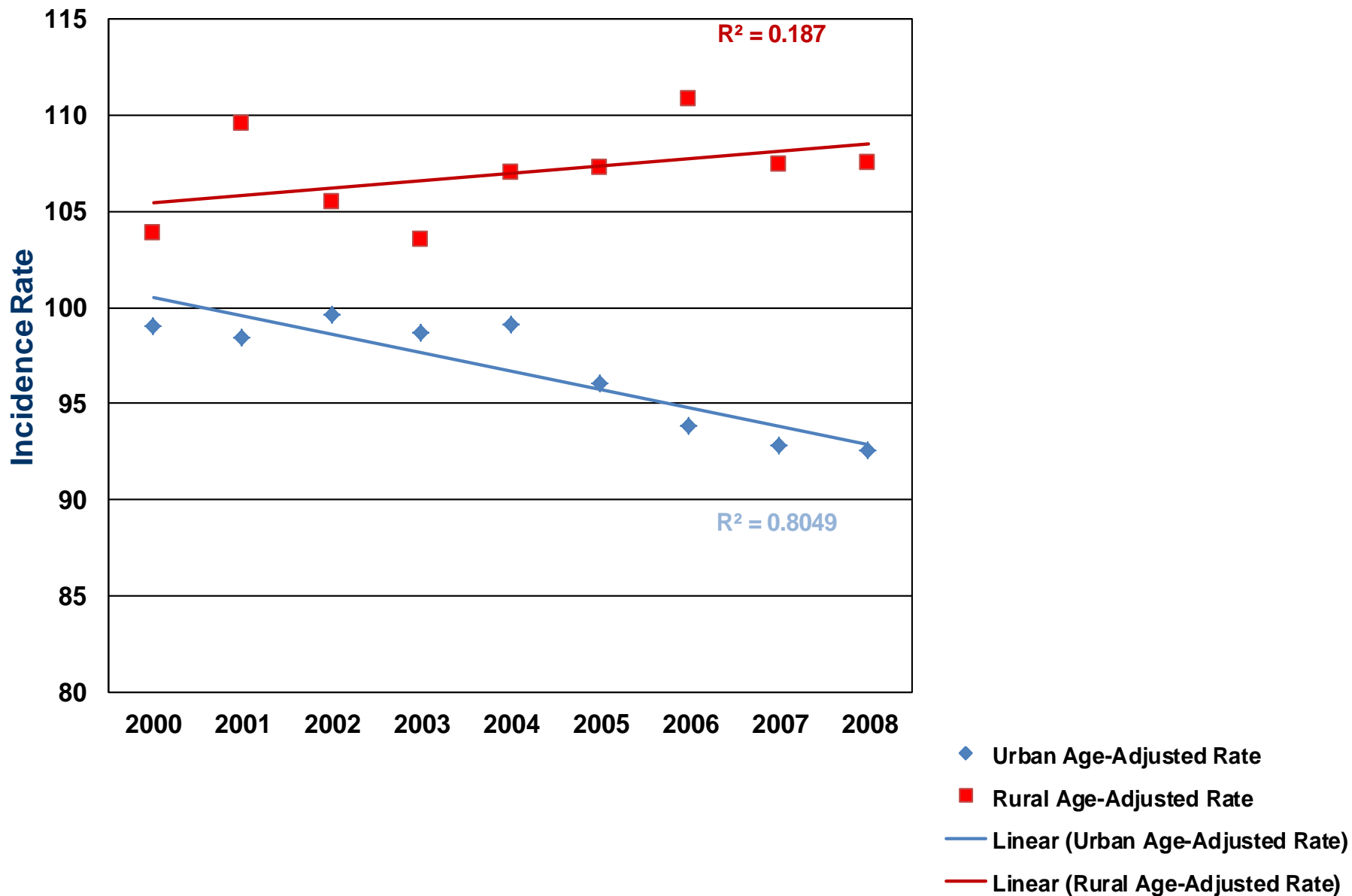
Data accessed February 6, 2012.
Based on data released November 1, 2010.
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Male/Female Lung Cancer Incidence Rate In Kentucky 2000-08

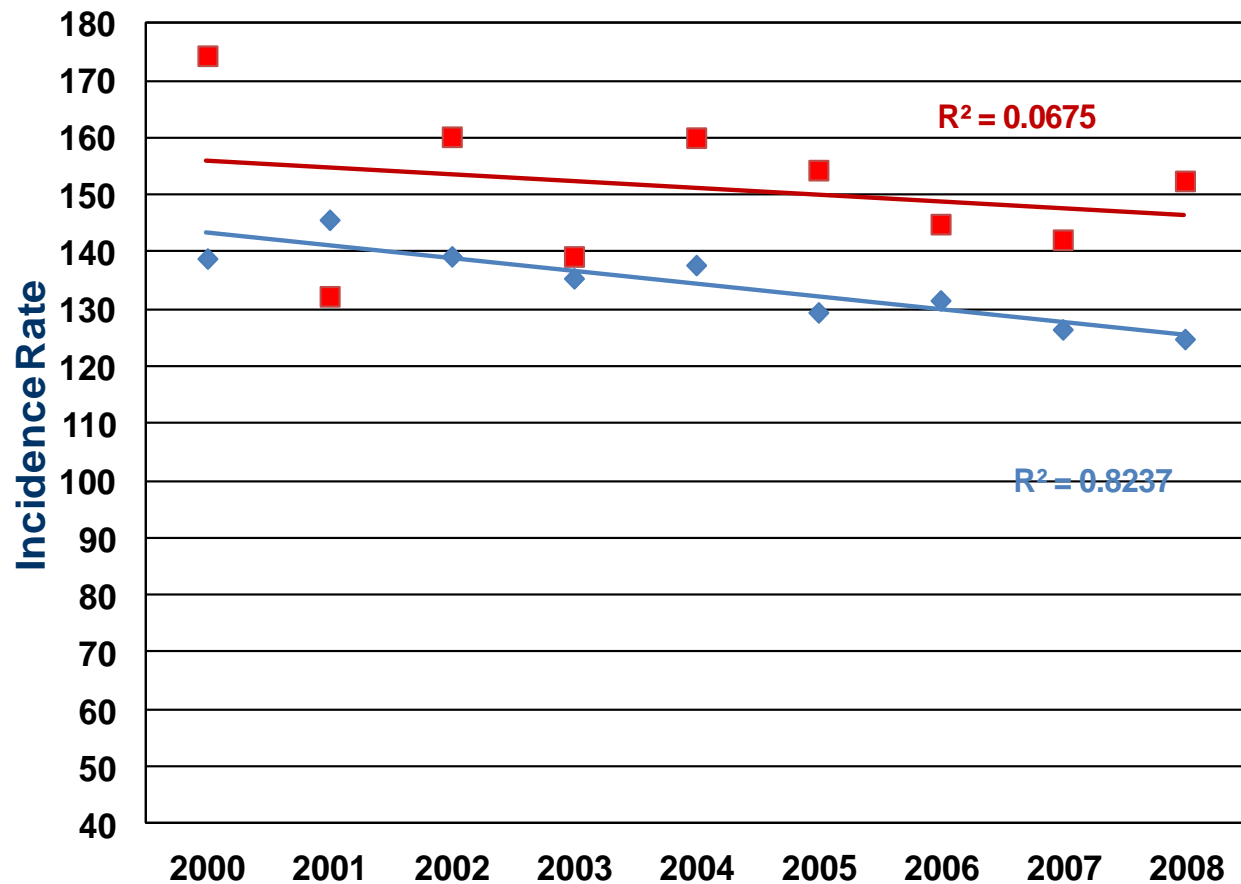


- ◆ Male Age-Adjusted Rate
- Female Age-Adjusted Rate
- Linear (Male Age-Adjusted Rate)
- Linear (Female Age-Adjusted Rate)

Urban / Rural Overall Lung Cancer Incidence Rate in Kentucky 2000-08

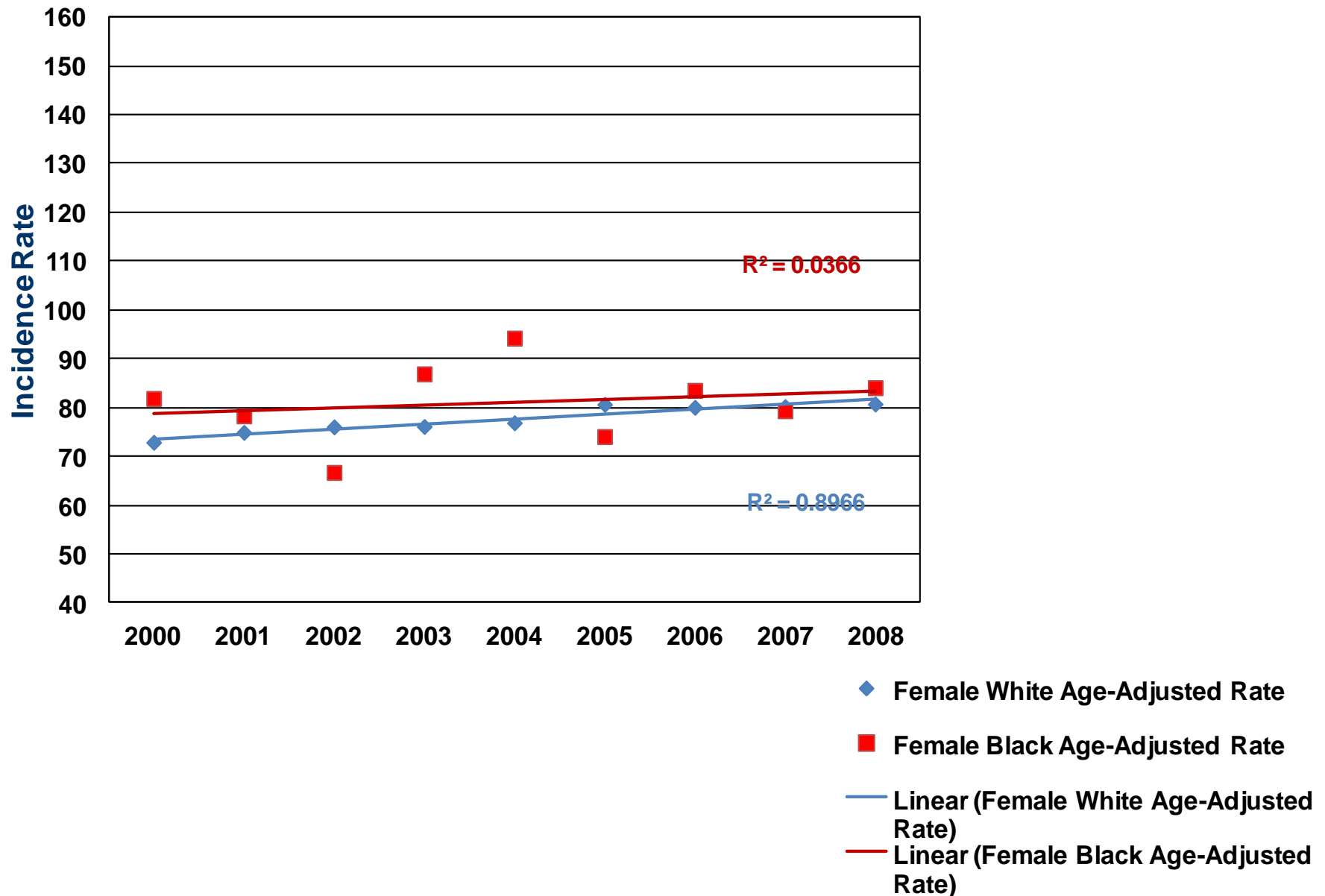


White/Black Male Lung Cancer Incidence Rate In Kentucky 2000-2008



- ◆ White Age-Adjusted Rate
- Black Age-Adjusted Rate
- Linear (White Age-Adjusted Rate)
- Linear (Black Age-Adjusted Rate)

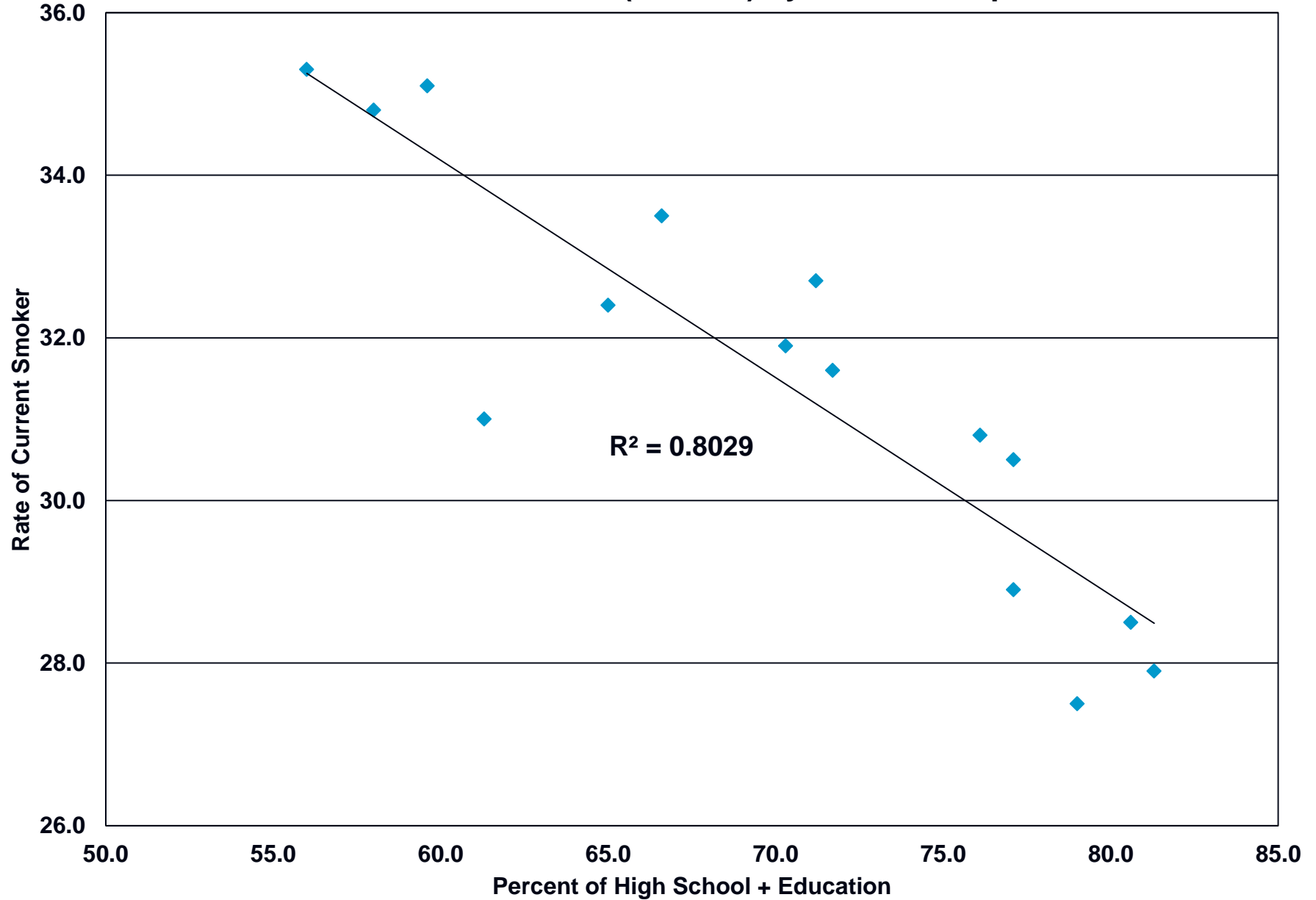
White/Black Female Lung Cancer Incidence Rate In Kentucky 2000-08



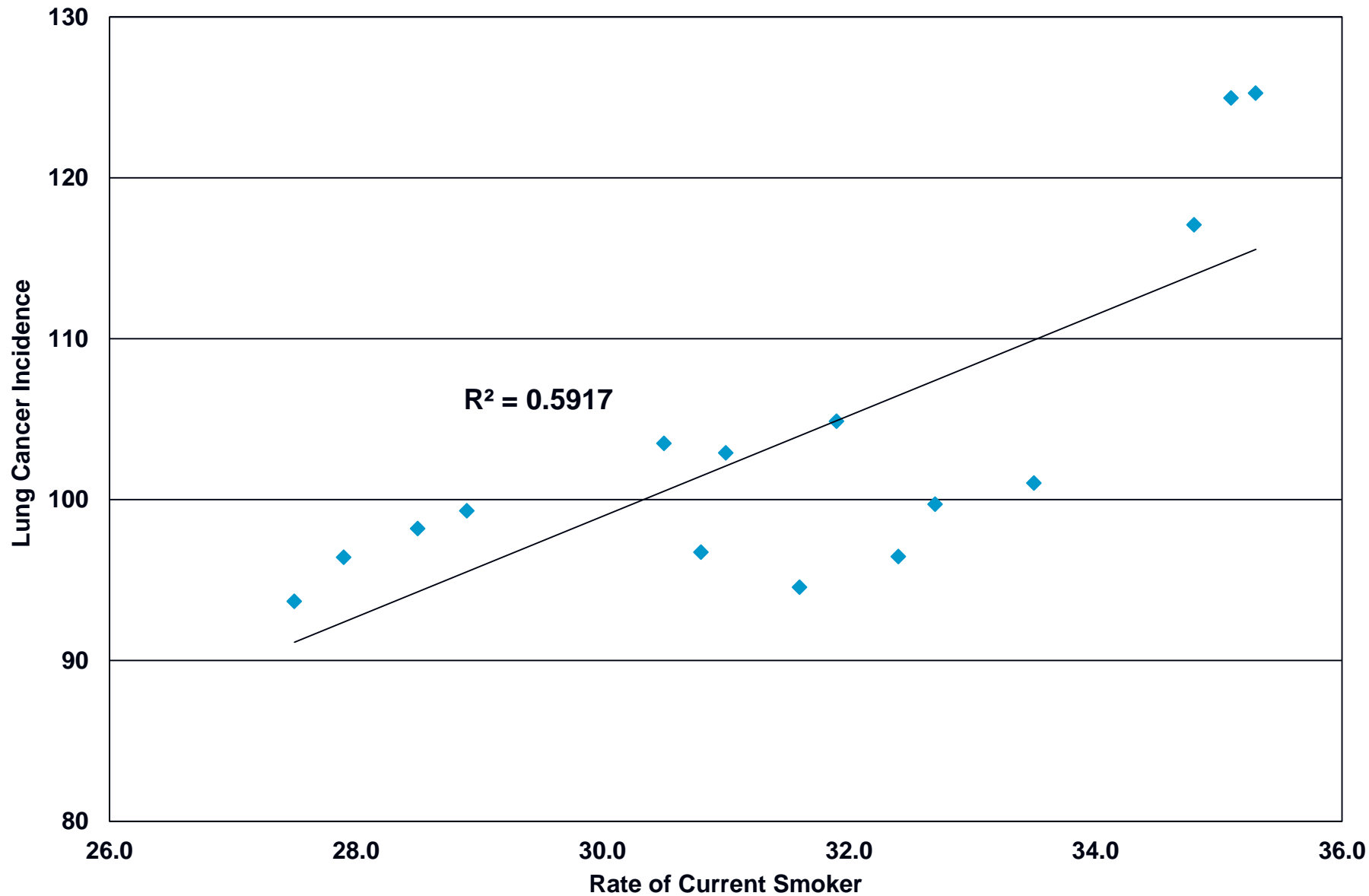
Lung Cancer By Area Development District in KY 2004-08

| Area Development District | High School Education (%) | Under Poverty Level (%) | Current Smoker (%) | Age-Adjusted Incidence | | Late Stage Incidence (%) | Age-Adjusted Mortality | |
|---------------------------|---------------------------|-------------------------|--------------------|------------------------|-----------|--------------------------|------------------------|-----------|
| | | | | N | Adj. Rate | | N | Adj. Rate |
| US | 80.4 | 12.4 | 19.96 | 292,495 | 62 | 79.73% | 229,103* | 52.5* |
| KENTUCKY | 74.1 | 15.8 | 27.6 | 22692 | 100.84 | 80.7% | 16766 | 75.06 |
| BARREN RIVER | 70.3 | 16.7 | 30.9 | 1525 | 104.86 | 82.8% | 1125 | 77.8 |
| BIG SANDY | 59.6 | 27.9 | 31.4 | 1083 | 124.96 | 82.6% | 823 | 96.15 |
| BLUEGRASS | 79.0 | 13.1 | 24.9 | 3391 | 93.67 | 80.8% | 2545 | 71.17 |
| BUFFALO TRACE | 66.6 | 19.6 | 33.5 | 331 | 101.02 | 79.4% | 247 | 76.3 |
| CUMBERLAND VALLEY | 58.0 | 29.1 | 30.4 | 1552 | 117.08 | 81.3% | 1143 | 87.37 |
| FIVECO | 71.2 | 18.8 | 30.9 | 846 | 99.71 | 79.4% | 629 | 74.54 |
| GATEWAY | 65.0 | 21.2 | 29.5 | 411 | 96.45 | 81.8% | 338 | 80.32 |
| GREEN RIVER | 77.1 | 13.7 | 27.2 | 1246 | 103.49 | 79.8% | 924 | 76.82 |
| KENTUCKY RIVER | 56.0 | 31.0 | 33.3 | 827 | 125.26 | 85.1% | 633 | 97.43 |
| KIPDA | 81.3 | 11.5 | 24.8 | 4593 | 96.4 | 78.7% | 3308 | 69.79 |
| LAKE CUMBERLAND | 61.3 | 23.0 | 28.8 | 1289 | 102.89 | 78.6% | 981 | 78.5 |
| LINCOLN TRAIL | 76.1 | 12.9 | 30.2 | 1267 | 96.73 | 79.5% | 846 | 65.96 |
| NORTHERN KENTUCKY | 80.6 | 9.0 | 27.0 | 1926 | 98.19 | 82.1% | 1464 | 75.4 |
| PENNYRILE | 71.7 | 15.9 | 30.3 | 1169 | 94.54 | 82.7% | 860 | 70.02 |
| PURCHASE | 77.1 | 15.0 | 27.0 | 1236 | 99.29 | 81.4% | 900 | 71.6 |

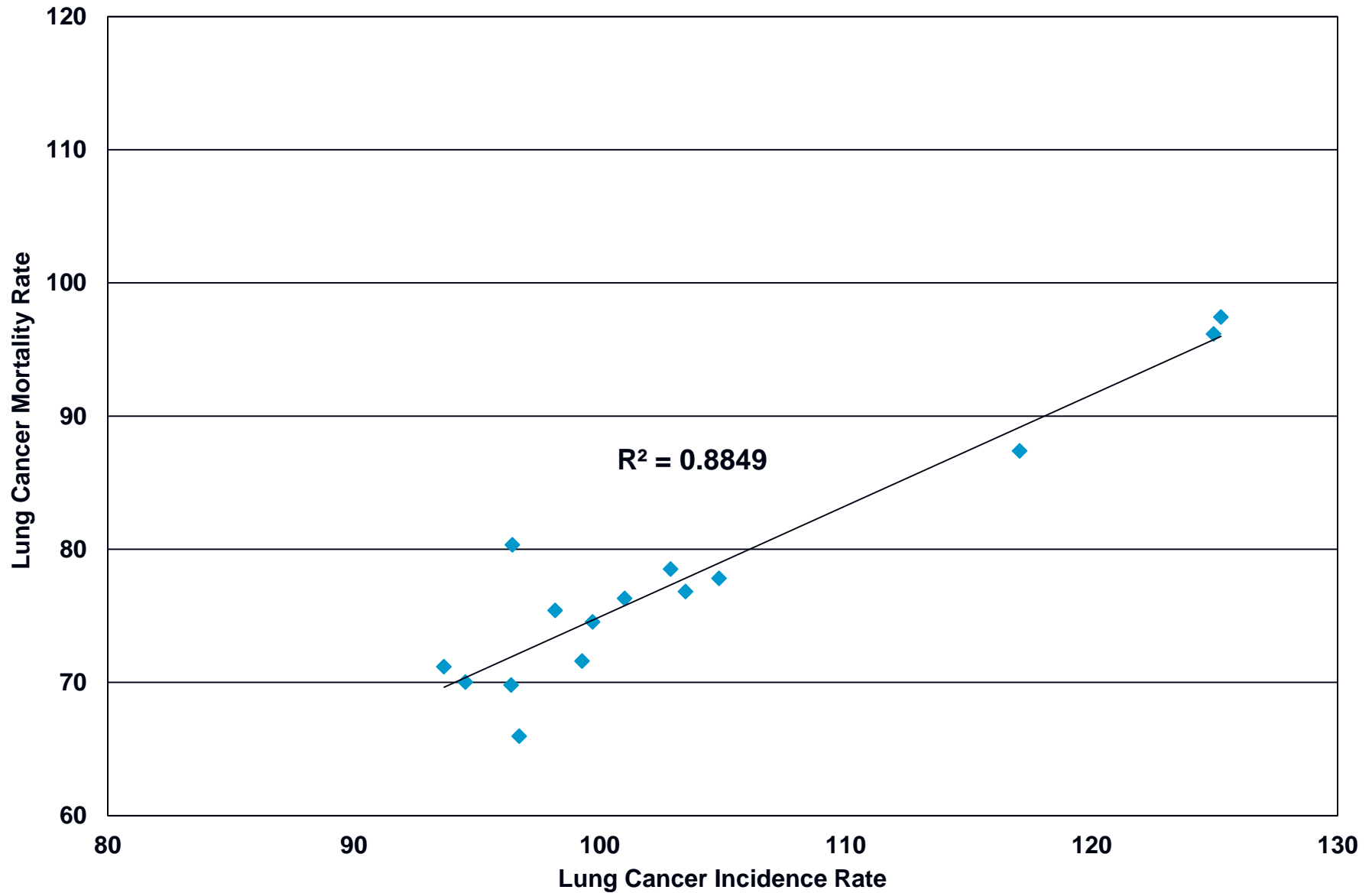
Education vs. Current Smoker (2001-05) by Area Development Districts



Current Smoker (2001-05) vs. Lung Cancer Incidence by Area Development Districts



Lung Cancer Incidence vs. Mortality by Area Development Districts



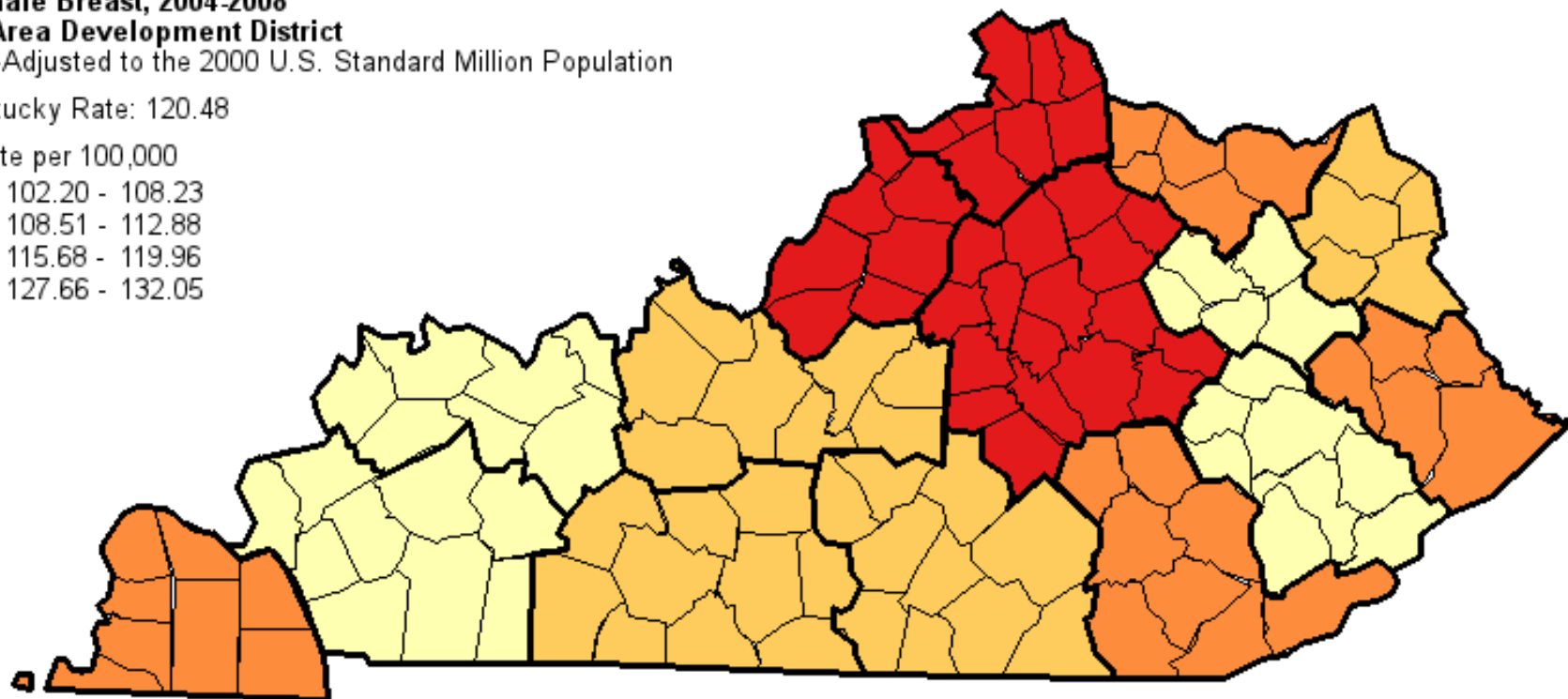
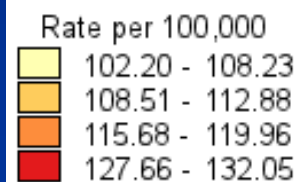
Lung Cancer Rank for Area Development District in KY 2004-08

| Area Development District | High School Ed. + | | Current Smoker (2001-05) | | Age-Adjusted Incidence | | Age Adjusted Mortality | | Overall Rank |
|---------------------------|-------------------|------|--------------------------|------|------------------------|------|------------------------|------|--------------|
| | % | Rank | % | Rank | Rate | Rank | Rate | Rank | |
| KENTUCKY RIVER | 56.0 | 1 | 35.3 | 1 | 125.26 | 1 | 97.43 | 1 | 4 |
| BIG SANDY | 59.6 | 3 | 35.1 | 2 | 124.96 | 2 | 96.15 | 2 | 9 |
| CUMBERLAND VALLEY | 58.0 | 2 | 34.8 | 3 | 117.08 | 3 | 87.37 | 3 | 11 |
| BARREN RIVER | 70.3 | 7 | 31.9 | 7 | 104.86 | 4 | 77.8 | 6 | 24 |
| LAKE CUMBERLAND | 61.3 | 4 | 31.0 | 9 | 102.89 | 6 | 78.5 | 5 | 24 |
| BUFFALO TRACE | 66.6 | 6 | 33.5 | 4 | 101.02 | 7 | 76.3 | 8 | 25 |
| GATEWAY | 65.0 | 5 | 32.4 | 6 | 96.45 | 12 | 80.32 | 4 | 27 |
| FIVECO | 71.2 | 8 | 32.7 | 5 | 99.71 | 8 | 74.54 | 10 | 31 |
| GREEN RIVER | 77.1 | 11 | 30.5 | 11 | 103.49 | 5 | 76.82 | 7 | 34 |
| PENNYRILE | 71.7 | 9 | 31.6 | 8 | 94.54 | 14 | 70.02 | 13 | 44 |
| PURCHASE | 77.1 | 12 | 28.9 | 12 | 99.29 | 9 | 71.6 | 11 | 44 |
| LINCOLN TRAIL | 76.1 | 10 | 30.8 | 10 | 96.73 | 11 | 65.96 | 15 | 46 |
| NORTHERN KENTUCKY | 80.6 | 14 | 28.5 | 13 | 98.19 | 10 | 75.4 | 9 | 46 |
| BLUEGRASS | 79.0 | 13 | 27.5 | 15 | 93.67 | 15 | 71.17 | 12 | 55 |
| KIPDA | 81.3 | 15 | 27.9 | 14 | 96.4 | 13 | 69.79 | 14 | 56 |

Age-Adjusted Invasive Cancer Incidence Rates in Kentucky
Female Breast, 2004-2008
By Area Development District

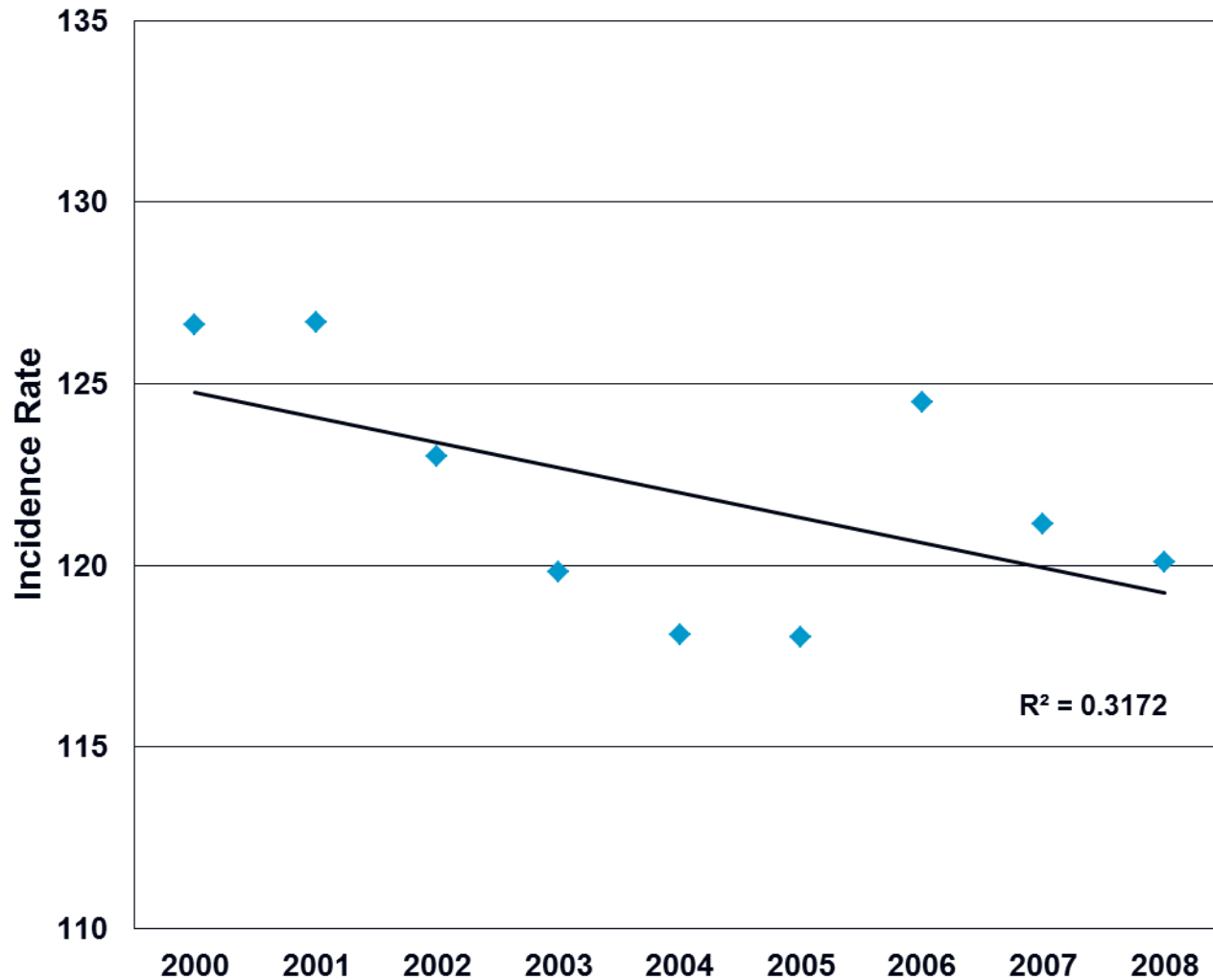
Age-Adjusted to the 2000 U.S. Standard Million Population

Kentucky Rate: 120.48



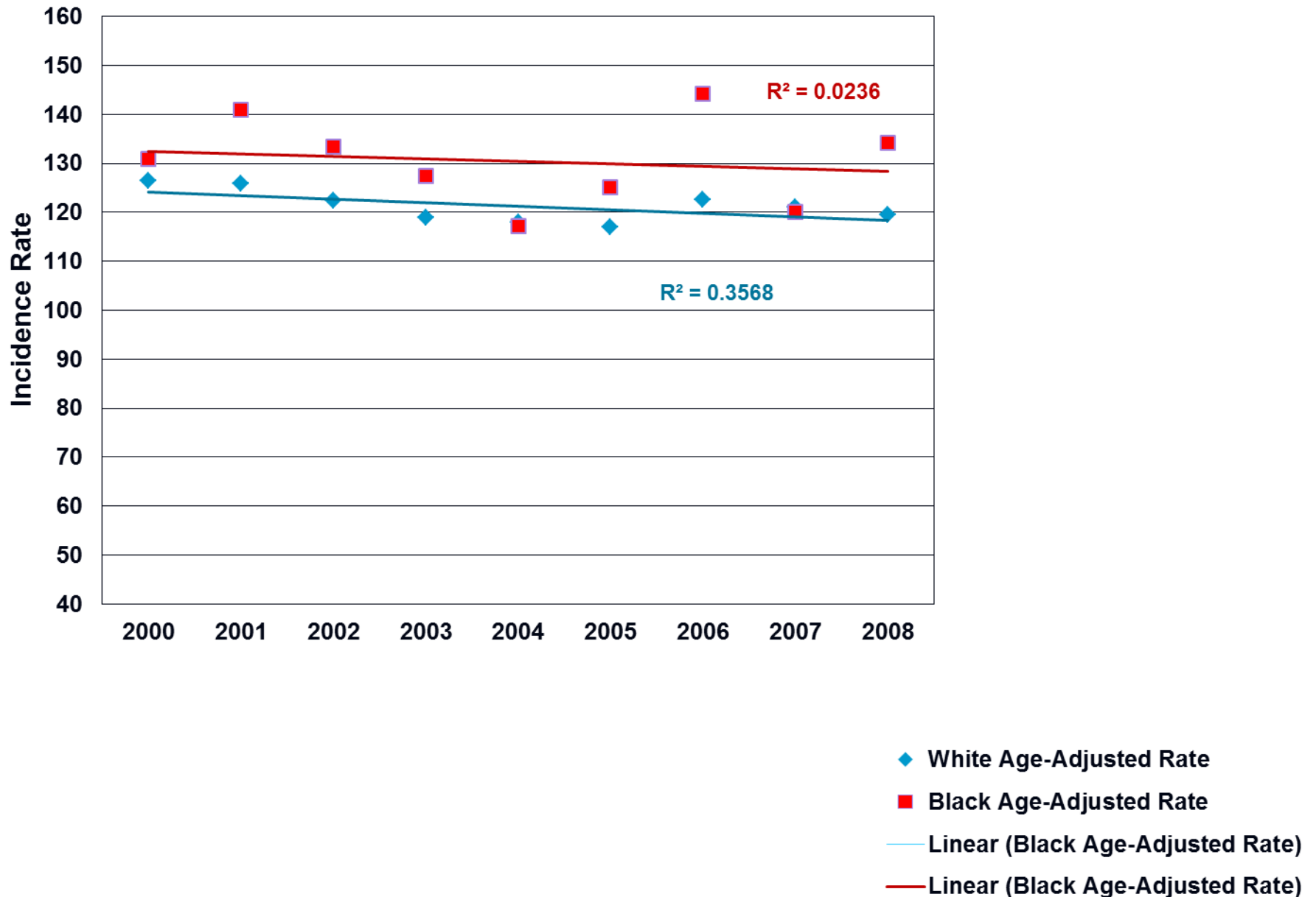
Data accessed February 6, 2012.
Based on data released November 1, 2010.
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Female Invasive Breast Cancer Incidence Rate in Kentucky 2000-2008

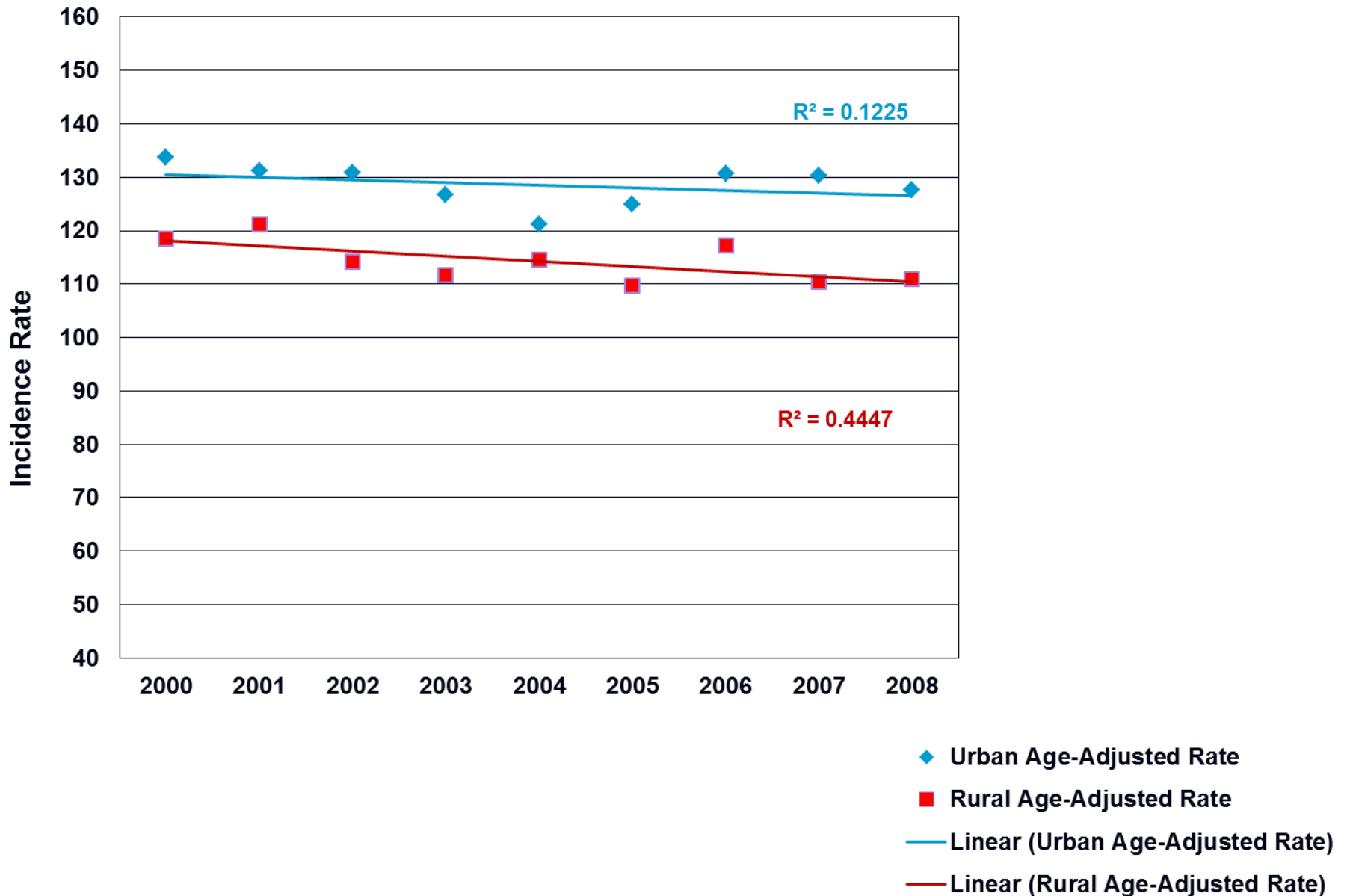


◆ Age-Adjusted Rate
— Linear (Age-Adjusted Rate)

White/Black Female Invasive Breast Cancer Incidence Rate in Kentucky 2000-2008



Urban / Rural Female Breast Cancer Incidence Rate in Kentucky 2000-2008

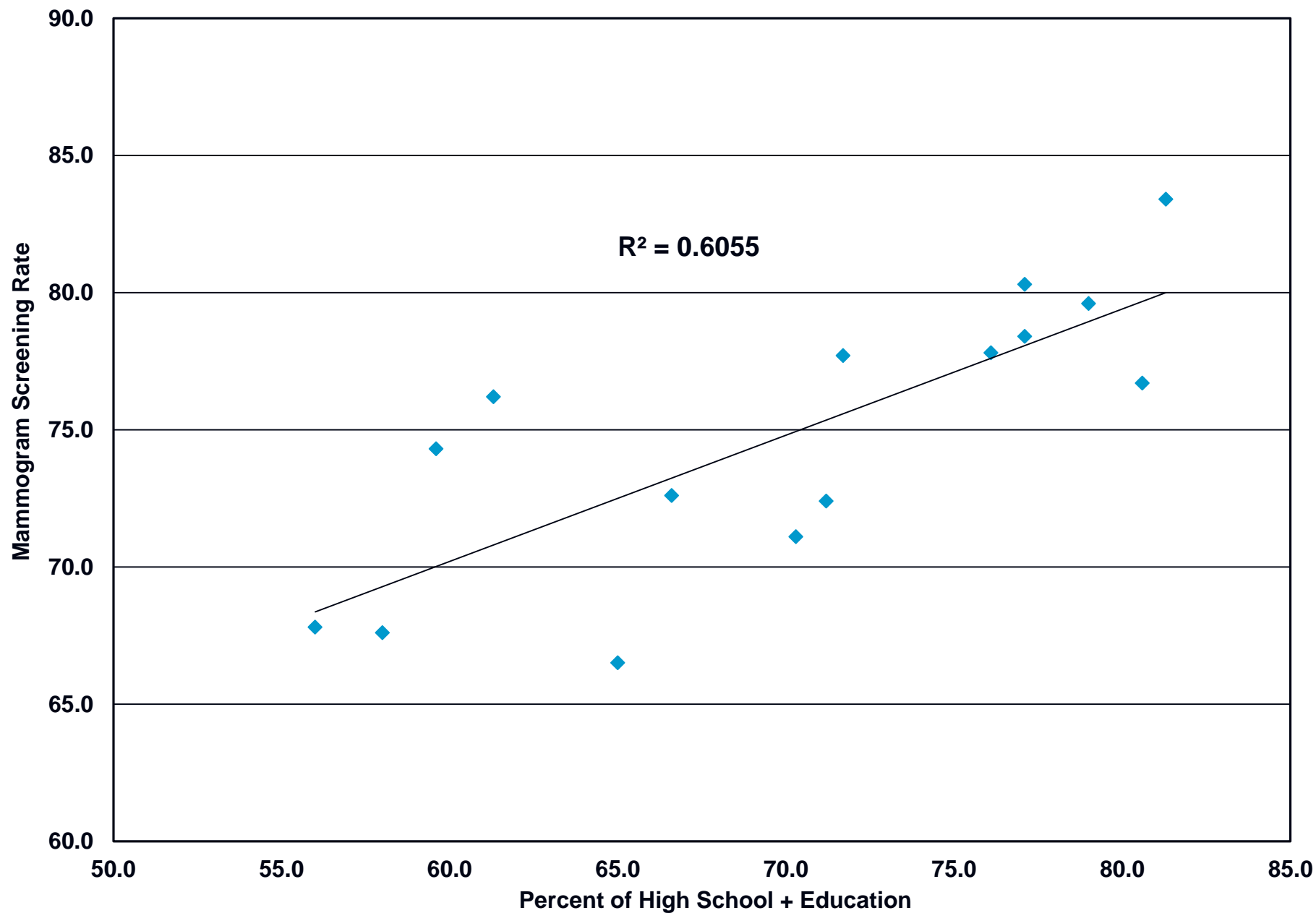


Breast Cancer by Area Development District in KY (2004-2008)

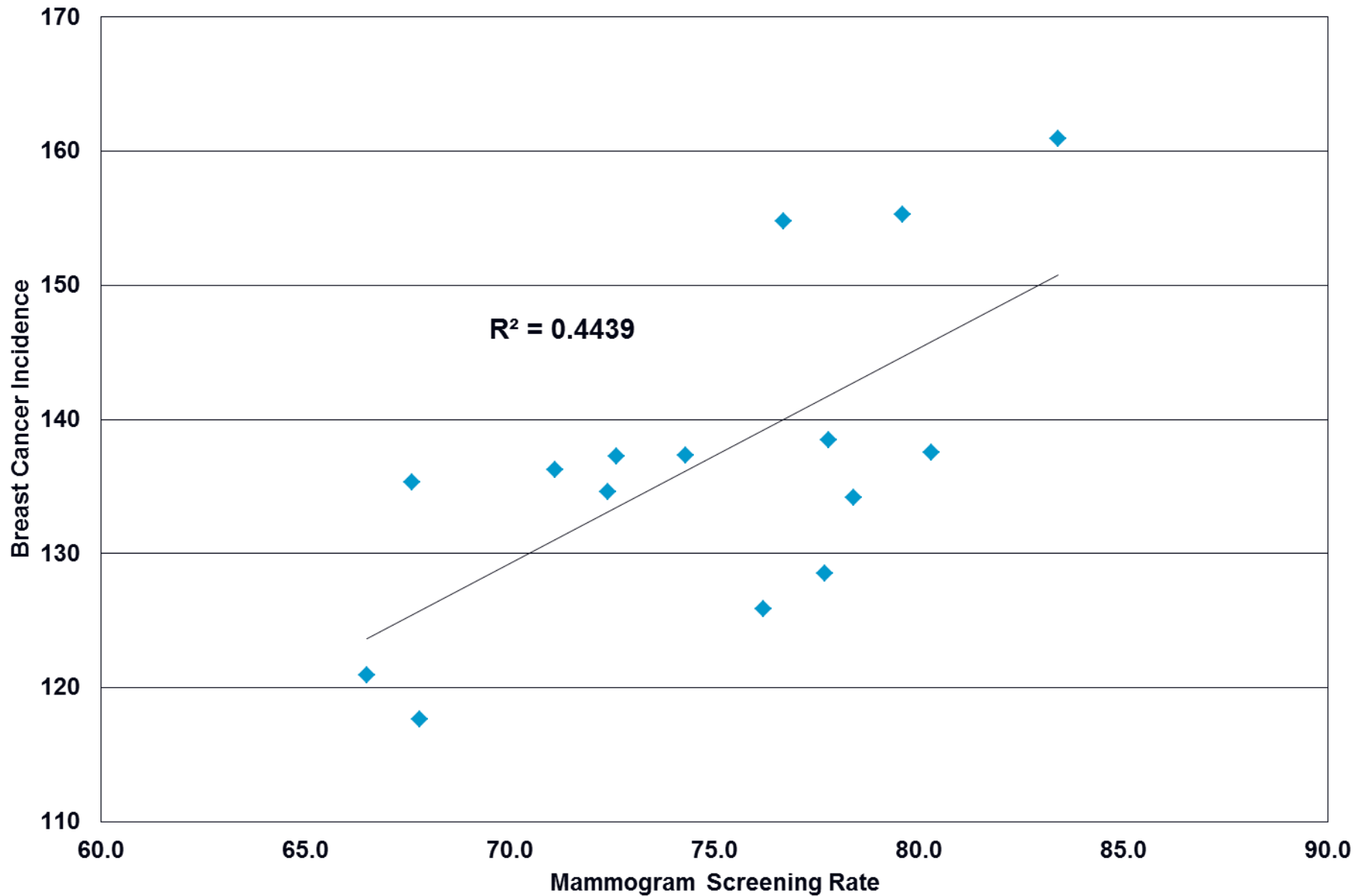
| Area Development District | High School Education (%) | Under Poverty Level (%) | Mammography Screening Rate (%) | Age-Adjusted Incidence | | Late Stage Incidence | Age-Adjusted Mortality | |
|---------------------------|---------------------------|-------------------------|--------------------------------|------------------------|---------------|----------------------|------------------------|--------------|
| | | | | N | Adj. Rate | | N | Adj. Rate |
| US | 80.4 | 12.4 | 79.2 | 317,856 | 154.9 | 29.45 | 205107* | 24* |
| KENTUCKY | 74.1 | 15.8 | 77.4 | 17611 | 144.68 | 30.7 | 2940 | 23.41 |
| BARREN RIVER | 70.3 | 16.7 | 71.1 | 1042 | 136.23 | 32 | 203 | 24.75 |
| BIG SANDY | 59.6 | 27.9 | 74.3 | 637 | 137.29 | 34 | 141 | 29.75 |
| BLUEGRASS | 79.0 | 13.1 | 79.6 | 3120 | 155.3 | 27.3 | 495 | 24.58 |
| BUFFALO TRACE | 66.6 | 19.6 | 72.6 | 232 | 137.27 | 35.3 | 42 | 23.41 |
| CUMBERLAND VALLEY | 58.0 | 29.1 | 67.6 | 957 | 135.35 | 34 | 171 | 23.93 |
| FIVECO | 71.2 | 18.8 | 72.4 | 586 | 134.62 | 39.6 | 107 | 23.81 |
| GATEWAY | 65.0 | 21.2 | 66.5 | 267 | 120.92 | 33.3 | 52 | 22.87 |
| GREEN RIVER | 77.1 | 13.7 | 78.4 | 855 | 134.2 | 29.4 | 153 | 22.76 |
| KENTUCKY RIVER | 56.0 | 31.0 | 67.8 | 417 | 117.64 | 40.2 | 66 | 18.21 |
| KIPDA | 81.3 | 11.5 | 83.4 | 4287 | 160.96 | 29.6 | 683 | 24.66 |
| LAKE CUMBERLAND | 61.3 | 23.0 | 76.2 | 792 | 125.9 | 35.7 | 144 | 21.25 |
| LINCOLN TRAIL | 76.1 | 12.9 | 77.8 | 980 | 138.44 | 30 | 160 | 22.66 |
| NORTHERN KENTUCKY | 80.6 | 9.0 | 76.7 | 1725 | 154.78 | 31 | 262 | 23.58 |
| PENNYRILE | 71.7 | 15.9 | 77.7 | 836 | 128.5 | 30.6 | 138 | 19.77 |
| PURCHASE | 77.1 | 15.0 | 80.3 | 878 | 137.57 | 31.2 | 123 | 17.96 |

* Mortality Rates for US is 2003-07

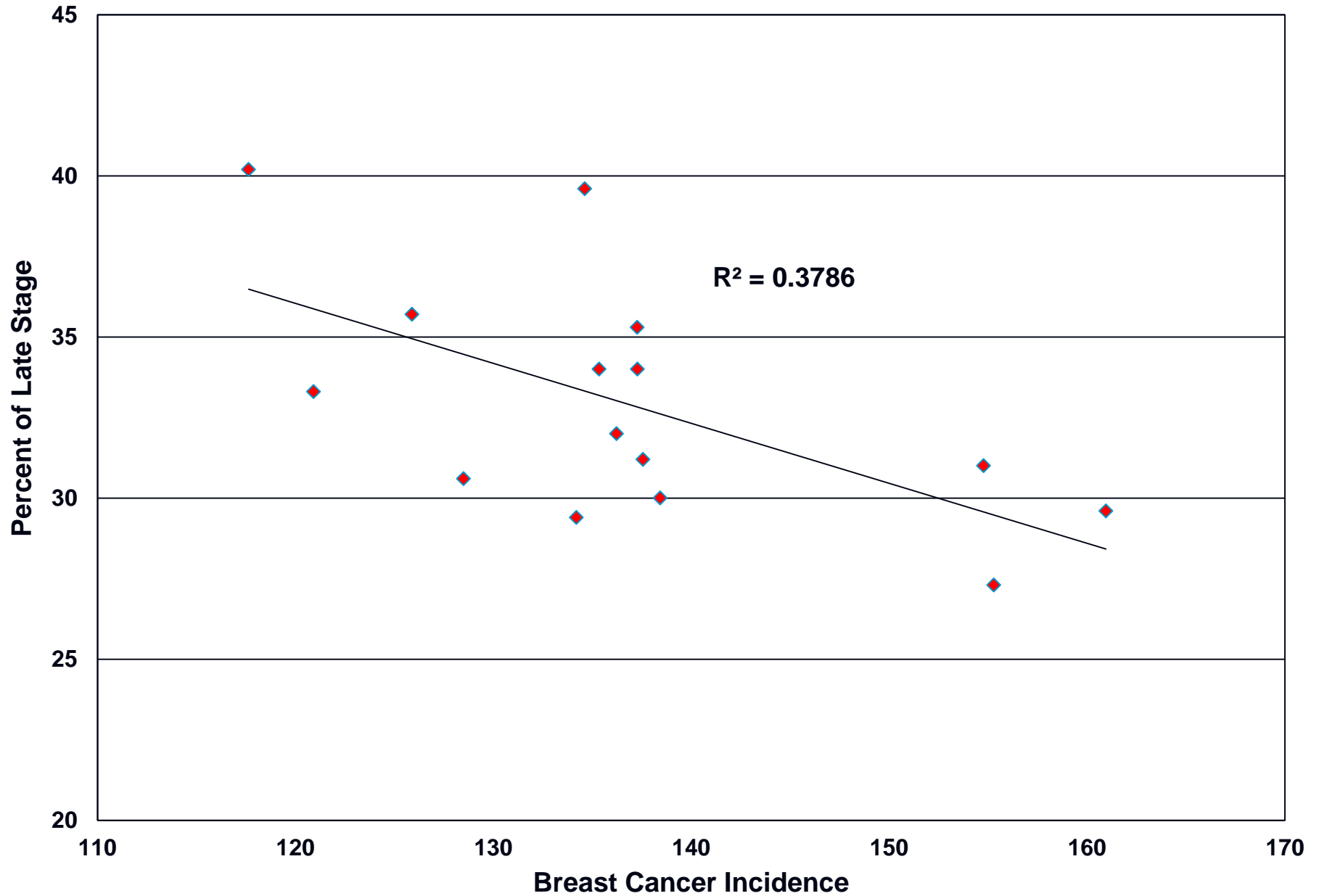
Education vs. Mammogram Screening by Area Development Districts



Mammogram Screening vs. Breast Cancer Incidence by Area Development Districts



Incidence vs. Late Stage by Area Development Districts



Breast Cancer Rank for Area Development District in KY 2004-08

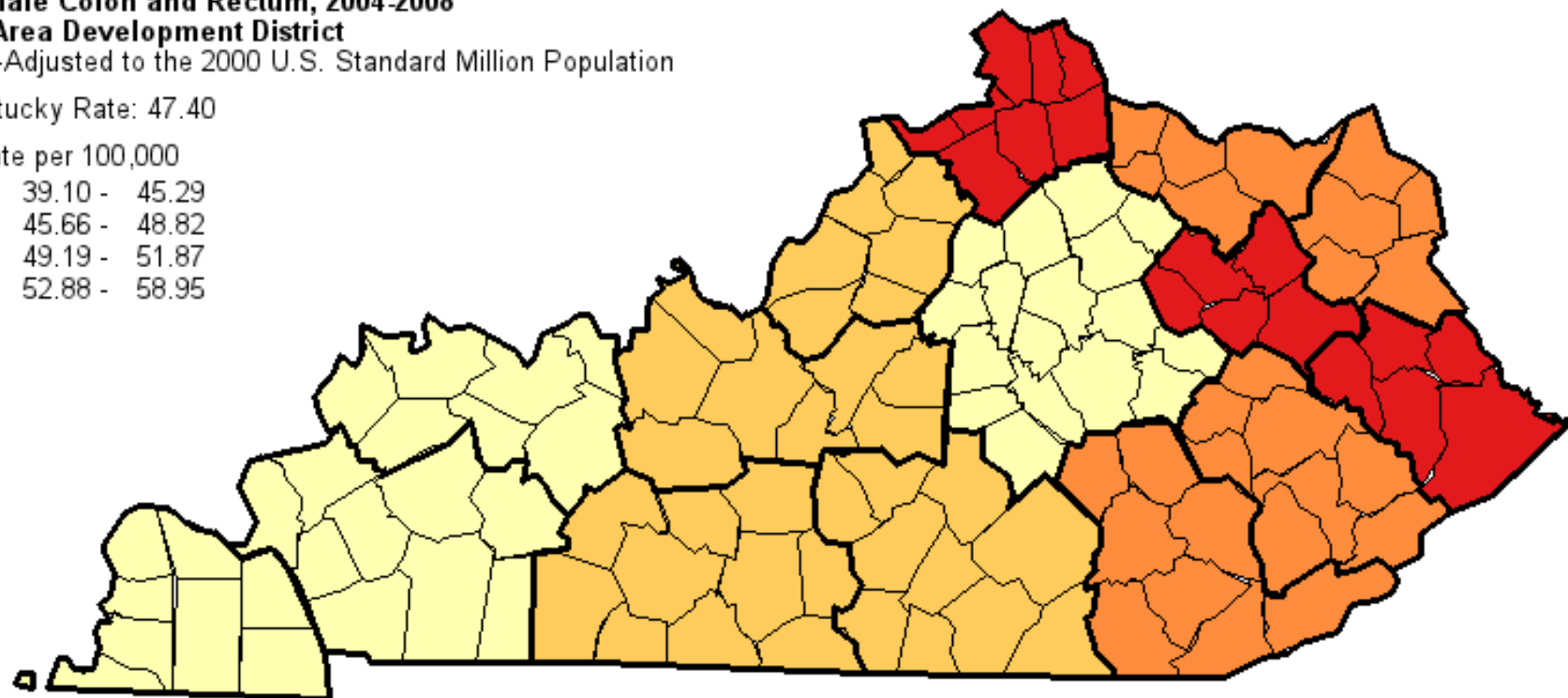
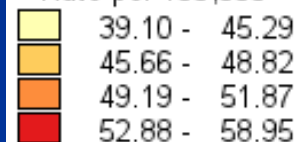
| Area Development District | High School Ed. + | | Mamogram Screening | | Age-Adjusted Incidence | | Late Stage Incidence | | Overall Rank |
|---------------------------|-------------------|------|--------------------|------|------------------------|------|----------------------|------|--------------|
| | % | Rank | % | Rank | Rate | Rank | % | Rank | |
| KENTUCKY RIVER | 56.0 | 1 | 67.8 | 3 | 117.64 | 1 | 40.1% | 1 | 6 |
| GATEWAY | 65.0 | 5 | 66.5 | 1 | 120.92 | 2 | 33.3% | 6 | 14 |
| CUMBERLAND VALLEY | 58.0 | 2 | 67.6 | 2 | 135.35 | 7 | 34.0% | 5 | 16 |
| LAKE CUMBERLAND | 61.3 | 4 | 76.2 | 8 | 125.9 | 3 | 35.7% | 2 | 17 |
| BIG SANDY | 59.6 | 3 | 74.3 | 7 | 137.29 | 10 | 34.0% | 4 | 24 |
| BUFFALO TRACE | 66.6 | 6 | 72.6 | 6 | 137.27 | 9 | 35.3% | 3 | 24 |
| BARREN RIVER | 70.3 | 7 | 71.1 | 4 | 136.23 | 8 | 32.0% | 7 | 26 |
| FIVECO | 71.2 | 8 | 72.4 | 5 | 134.62 | 6 | 29.6% | 13 | 32 |
| PENNYRILE | 71.7 | 9 | 77.7 | 10 | 128.5 | 4 | 30.6% | 10 | 33 |
| GREEN RIVER | 77.1 | 12 | 78.4 | 12 | 134.2 | 5 | 29.4% | 14 | 43 |
| LINCOLN TRAIL | 76.1 | 10 | 77.8 | 11 | 138.44 | 12 | 30.0% | 11 | 44 |
| PURCHASE | 77.1 | 11 | 80.3 | 14 | 137.57 | 11 | 31.2% | 8 | 44 |
| NORTHERN KENTUCKY | 80.6 | 14 | 76.7 | 9 | 154.78 | 13 | 31.0% | 9 | 45 |
| BLUEGRASS | 79.0 | 13 | 79.6 | 13 | 155.3 | 14 | 27.3% | 15 | 55 |
| KIPDA | 81.3 | 15 | 83.4 | 15 | 160.96 | 15 | 29.6% | 12 | 57 |

Age-Adjusted Invasive Cancer Incidence Rates in Kentucky
Female Colon and Rectum, 2004-2008
By Area Development District

Age-Adjusted to the 2000 U.S. Standard Million Population

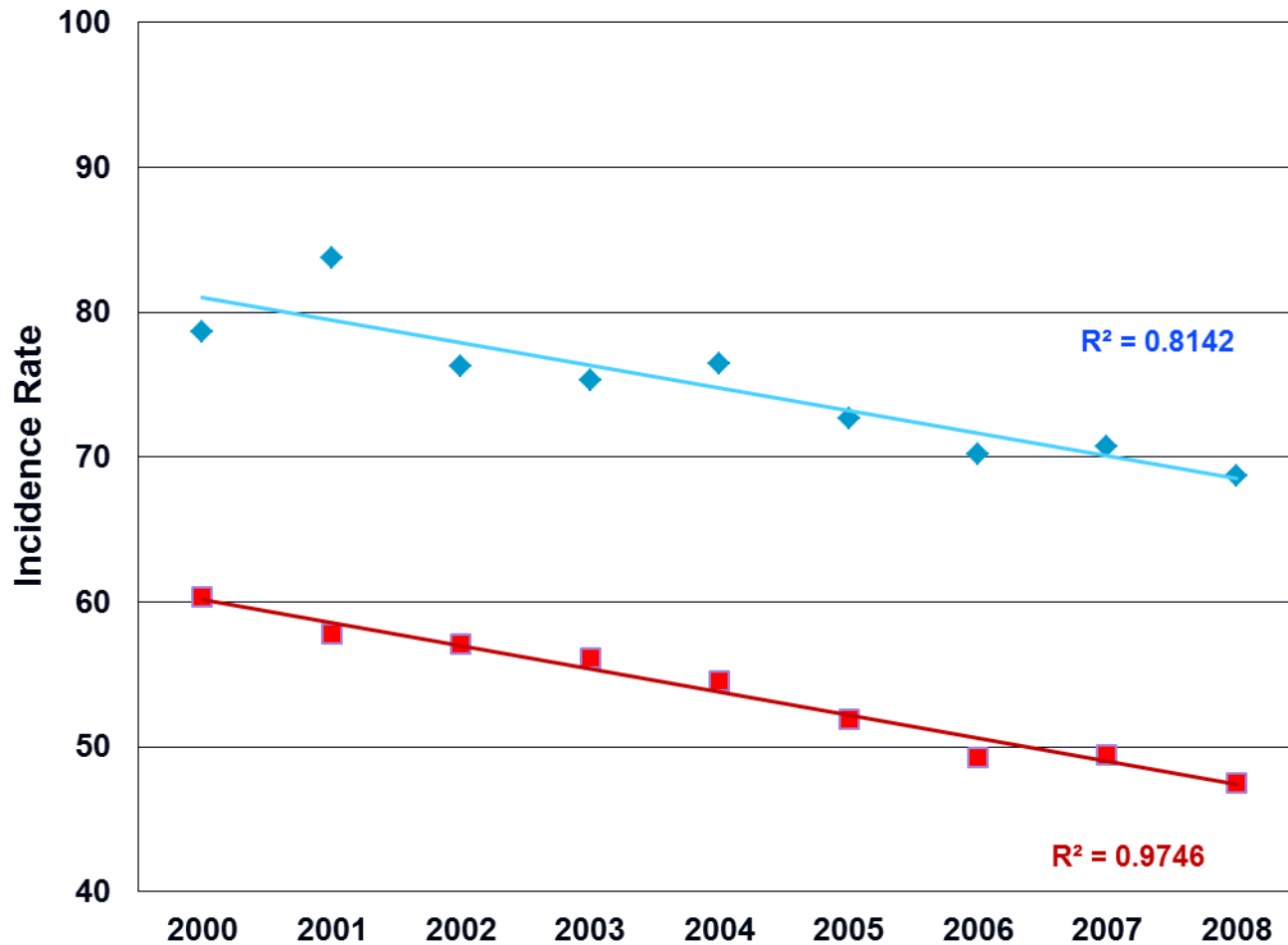
Kentucky Rate: 47.40

Rate per 100,000



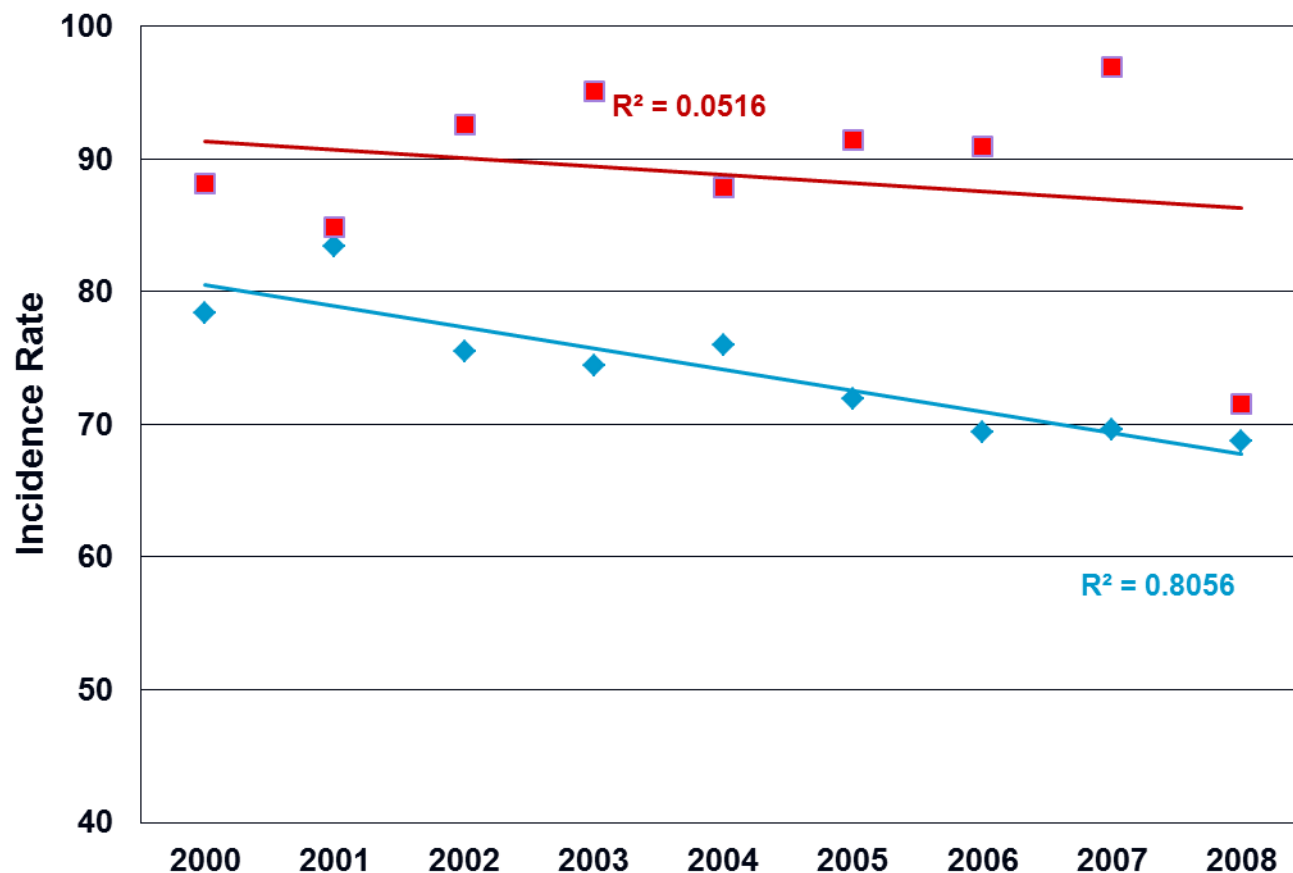
Data accessed February 6, 2012.
Based on data released November 1, 2010.
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Male/Female Colorectal Cancer Incidence Rate in Kentucky 2000-2008



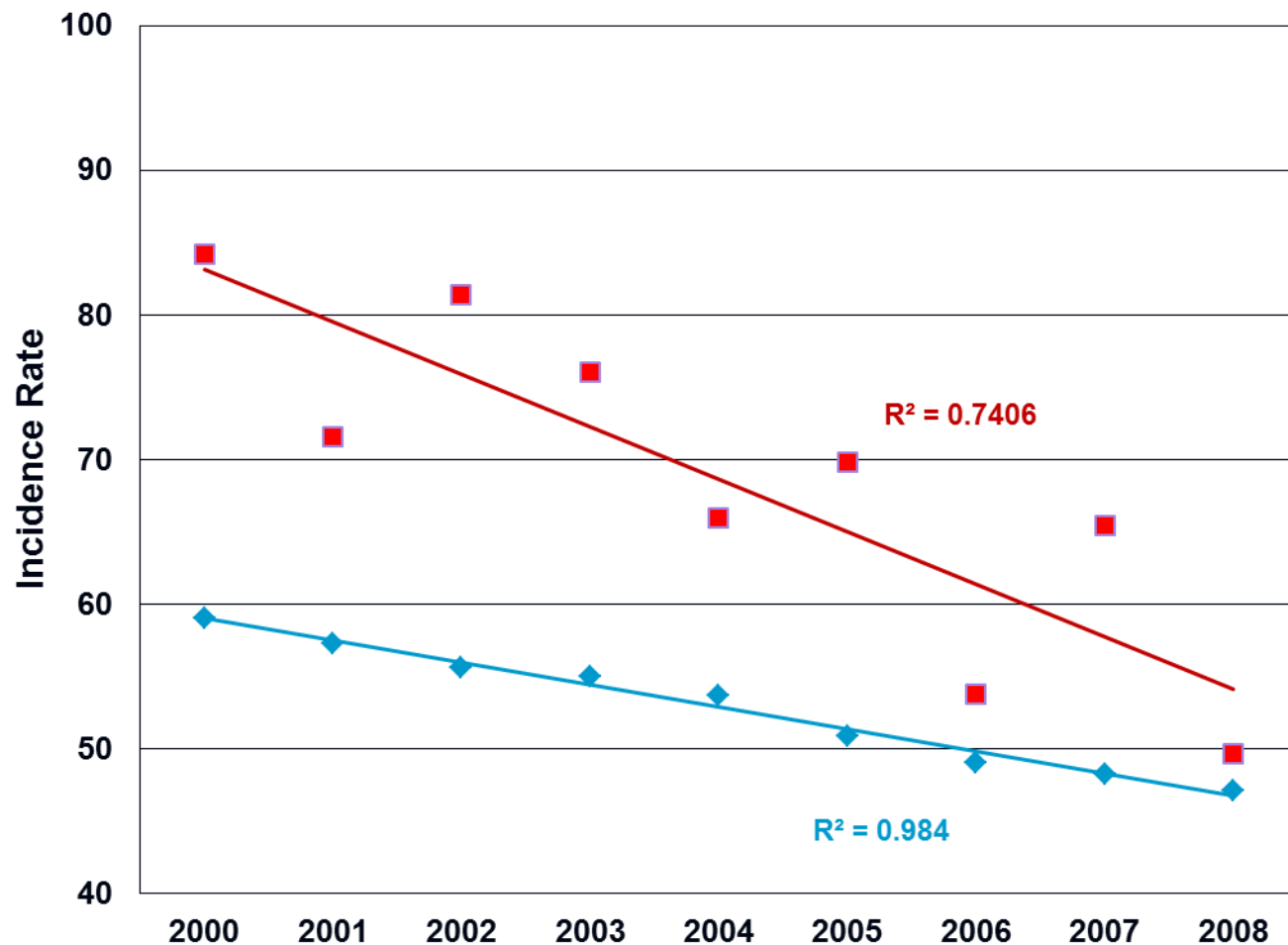
- ◆ Male Age-Adjusted Rate
- Female Age-Adjusted Rate
- Linear (Male Age-Adjusted Rate)
- Linear (Female Age-Adjusted Rate)

White/ Black Male Colorectal Cancer Incidence Rate In Kentucky 2000-08



- ◆ White Age-Adjusted Rate
- Black Age-Adjusted Rate
- Linear (White Age-Adjusted Rate)
- Linear (Black Age-Adjusted Rate)

White/Black Female Colorectal Cancer Incidence Rate In Kentucky 2000-08

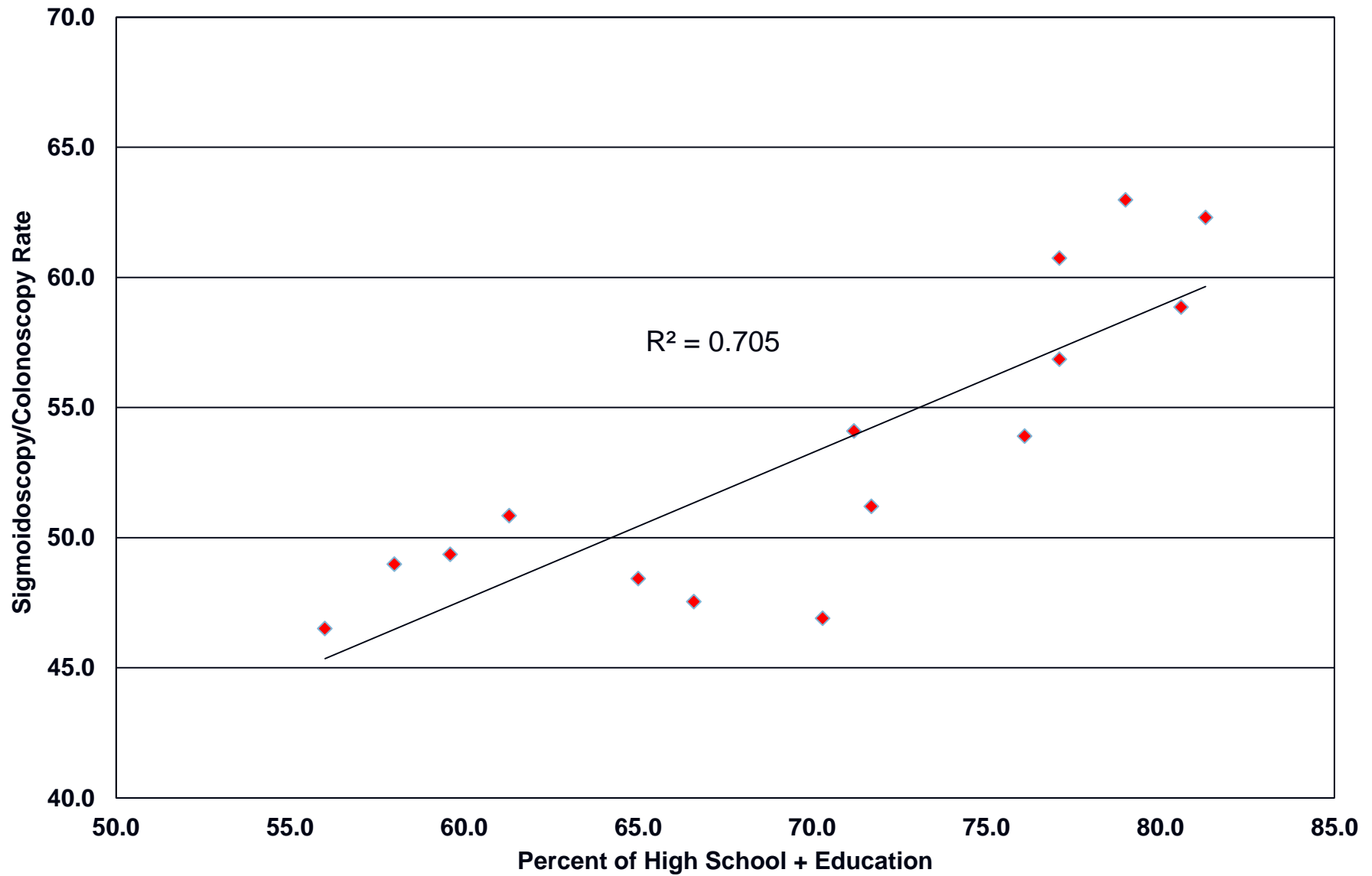


- ◆ White Age-Adjusted Rate
- Black Age-Adjusted Rate
- Linear (White Age-Adjusted Rate)
- Linear (Black Age-Adjusted Rate)

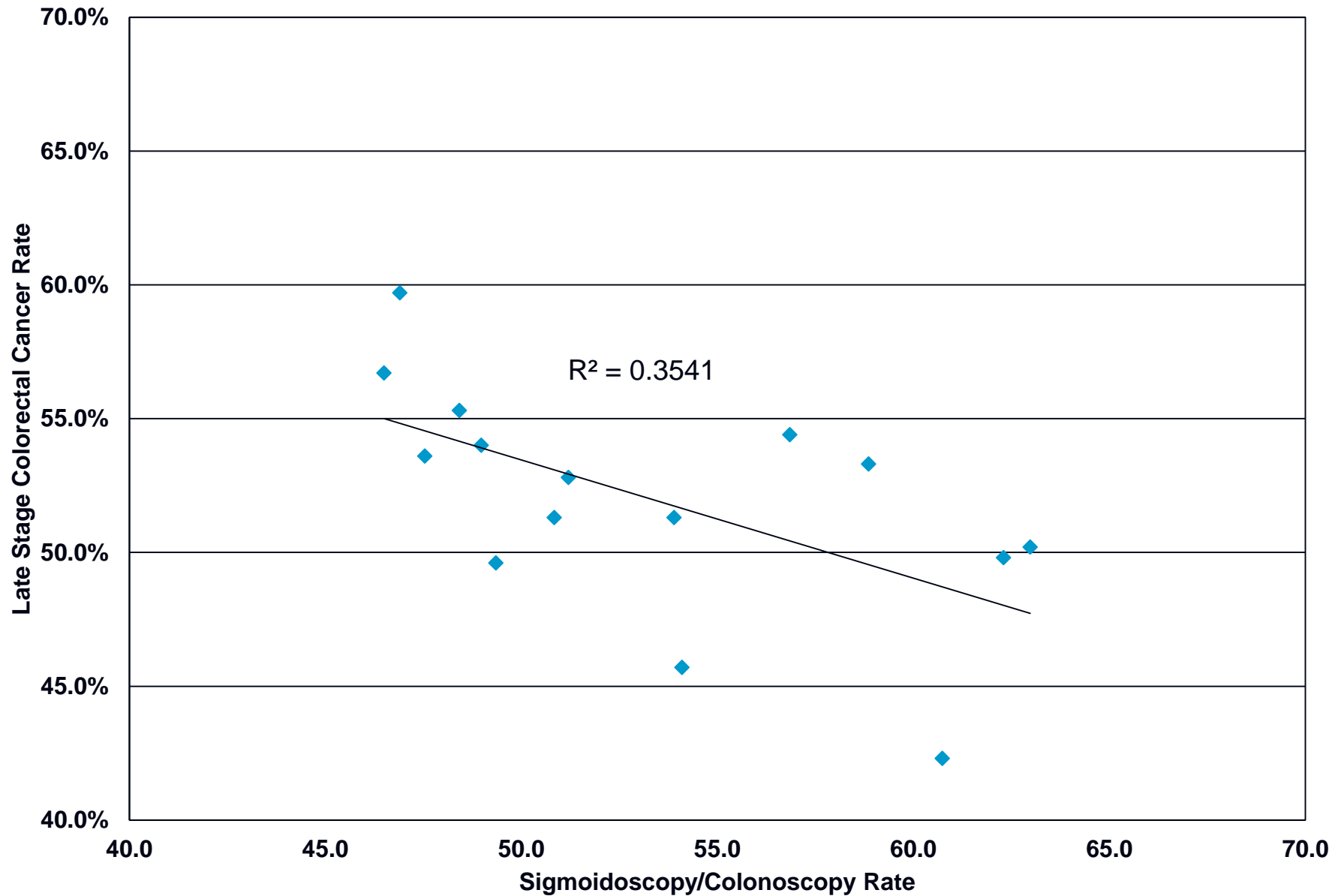
Colorectal Cancer By Area Development District in KY 2004-08

| Area Development District | High School Education (%) | Under Poverty Level (%) | Rate of Sigmoidoscopy & Colonoscopy (%) | Age-Adjusted Incidence | | Late Stage Incidence (%) | Age-Adjusted Mortality | |
|---------------------------|---------------------------|-------------------------|---|------------------------|-----------|--------------------------|------------------------|-----------|
| | | | | N | Adj. Rate | | N | Adj. Rate |
| US | 80.4 | 12.4 | 57.6 | 186,506 | 49.7 | 54.16 | 268783* | 17.6* |
| KENTUCKY | 74.1 | 15.8 | 56.7 | 13306 | 59.63 | 51.2 | 4388 | 19.93 |
| BARREN RIVER | 70.3 | 16.7 | 46.9 | 842 | 58.73 | 59.7 | 284 | 19.87 |
| BIG SANDY | 59.6 | 27.9 | 49.4 | 579 | 67.81 | 49.6 | 177 | 21.58 |
| BLUEGRASS | 79.0 | 13.1 | 63.0 | 2012 | 55.6 | 50.2 | 659 | 18.57 |
| BUFFALO TRACE | 66.6 | 19.6 | 47.5 | 217 | 66.92 | 53.6 | 72 | 22.52 |
| CUMBERLAND VALLEY | 58.0 | 29.1 | 49.0 | 769 | 59.28 | 54 | 276 | 21.69 |
| FIVECO | 71.2 | 18.8 | 54.1 | 535 | 65.2 | 45.7 | 167 | 20.82 |
| GATEWAY | 65.0 | 21.2 | 48.4 | 282 | 68.02 | 55.3 | 96 | 23.33 |
| GREEN RIVER | 77.1 | 13.7 | 56.9 | 651 | 54.34 | 54.4 | 211 | 17.61 |
| KENTUCKY RIVER | 56.0 | 31.0 | 46.5 | 445 | 70 | 56.7 | 142 | 22.96 |
| KIPDA | 81.3 | 11.5 | 62.3 | 2894 | 60.54 | 49.8 | 958 | 20.23 |
| LAKE CUMBERLAND | 61.3 | 23.0 | 50.8 | 686 | 56.24 | 51.3 | 209 | 17.1 |
| LINCOLN TRAIL | 76.1 | 12.9 | 53.9 | 827 | 63.93 | 51.3 | 259 | 20.76 |
| NORTHERN KENTUCKY | 80.6 | 9.0 | 58.9 | 1200 | 61.53 | 53.3 | 426 | 22.46 |
| PENNYRILE | 71.7 | 15.9 | 51.2 | 697 | 57.25 | 52.8 | 232 | 18.93 |
| PURCHASE | 77.1 | 15.0 | 60.7 | 670 | 54.04 | 42.3 | 220 | 17.04 |

Education vs. Sigmoidoscopy/Colonoscopy by Area Development Districts



Sigmoidoscopy/Colonoscopy vs. Late Stage Colorectal Cancer Rate by Area Development Districts



Colorectal Cancer Rank for Area Development District in KY 2004-08

| Area Development District | High School Ed. | | Had Sigmoidoscopy & Colonoscopy | | Late Stage | | Overall Rank |
|---------------------------|-----------------|------|---------------------------------|------|------------|------|--------------|
| | % | Rank | % | Rank | % | Rank | |
| KENTUCKY RIVER | 56.0 | 1 | 46.5 | 1 | 59.7 | 1 | 3 |
| LAKE CUMBERLAND | 61.3 | 4 | 50.8 | 7 | 55.3 | 3 | 14 |
| BARREN RIVER | 70.3 | 7 | 46.9 | 2 | 54 | 5 | 14 |
| GATEWAY | 65.0 | 5 | 48.4 | 4 | 53.6 | 6 | 15 |
| FIVECO | 71.2 | 8 | 54.1 | 10 | 56.7 | 2 | 20 |
| BUFFALO TRACE | 66.6 | 6 | 47.5 | 3 | 50.2 | 11 | 20 |
| CUMBERLAND VALLEY | 58.0 | 2 | 49.0 | 5 | 49.6 | 13 | 20 |
| PENNYRILE | 71.7 | 9 | 51.2 | 8 | 54.4 | 4 | 21 |
| BIG SANDY | 59.6 | 3 | 49.4 | 6 | 45.7 | 14 | 23 |
| PURCHASE | 77.1 | 11 | 60.7 | 13 | 53.3 | 7 | 31 |
| LINCOLN TRAIL | 76.1 | 10 | 53.9 | 9 | 49.8 | 12 | 31 |
| GREEN RIVER | 77.1 | 12 | 56.9 | 11 | 51.3 | 9 | 32 |
| BLUEGRASS | 79.0 | 13 | 63.0 | 15 | 52.8 | 8 | 36 |
| NORTHERN KENTUCKY | 80.6 | 14 | 58.9 | 12 | 51.3 | 10 | 36 |
| KIPDA | 81.3 | 15 | 62.3 | 14 | 42.3 | 15 | 44 |

Age-Adjusted Invasive Cancer Incidence Rates in Kentucky

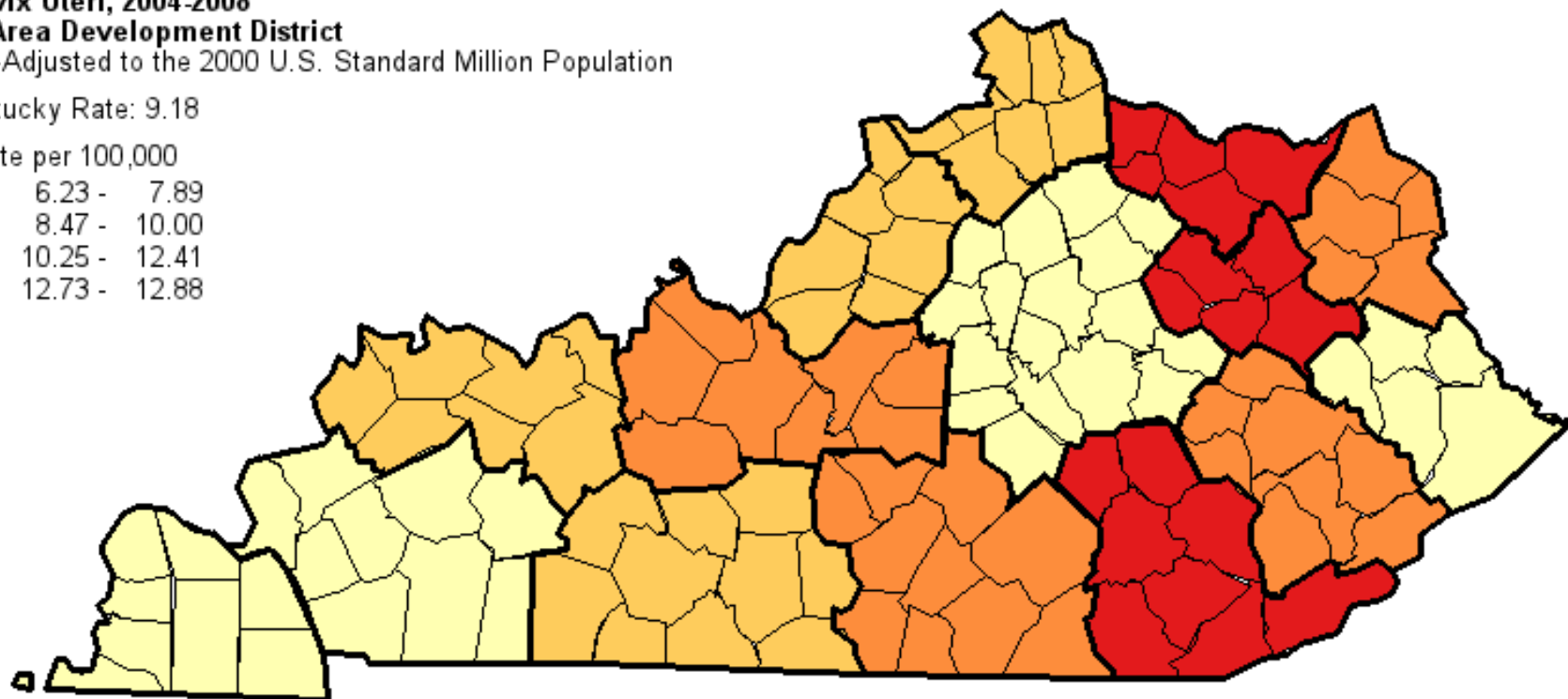
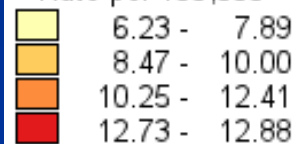
Cervix Uteri, 2004-2008

By Area Development District

Age-Adjusted to the 2000 U.S. Standard Million Population

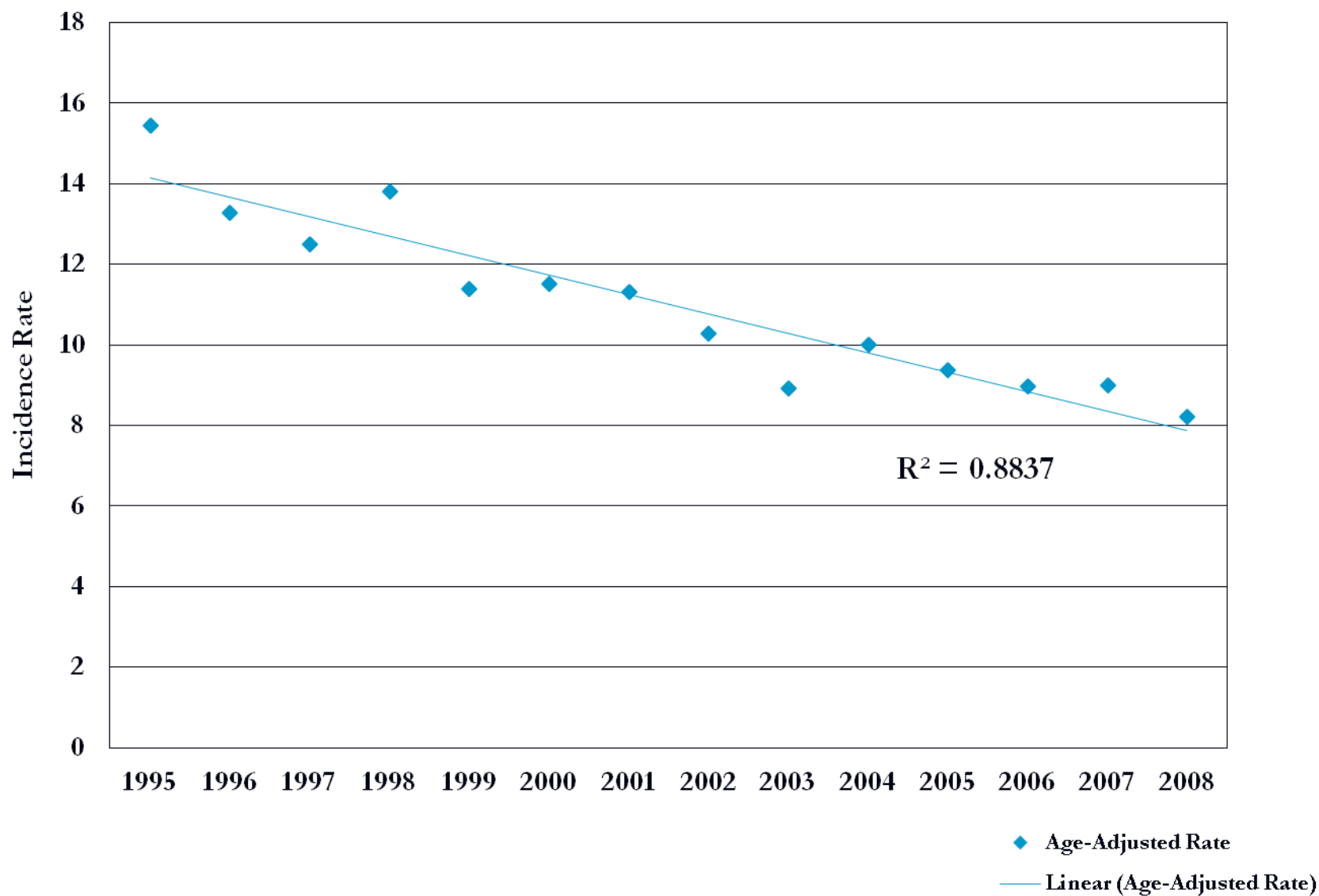
Kentucky Rate: 9.18

Rate per 100,000

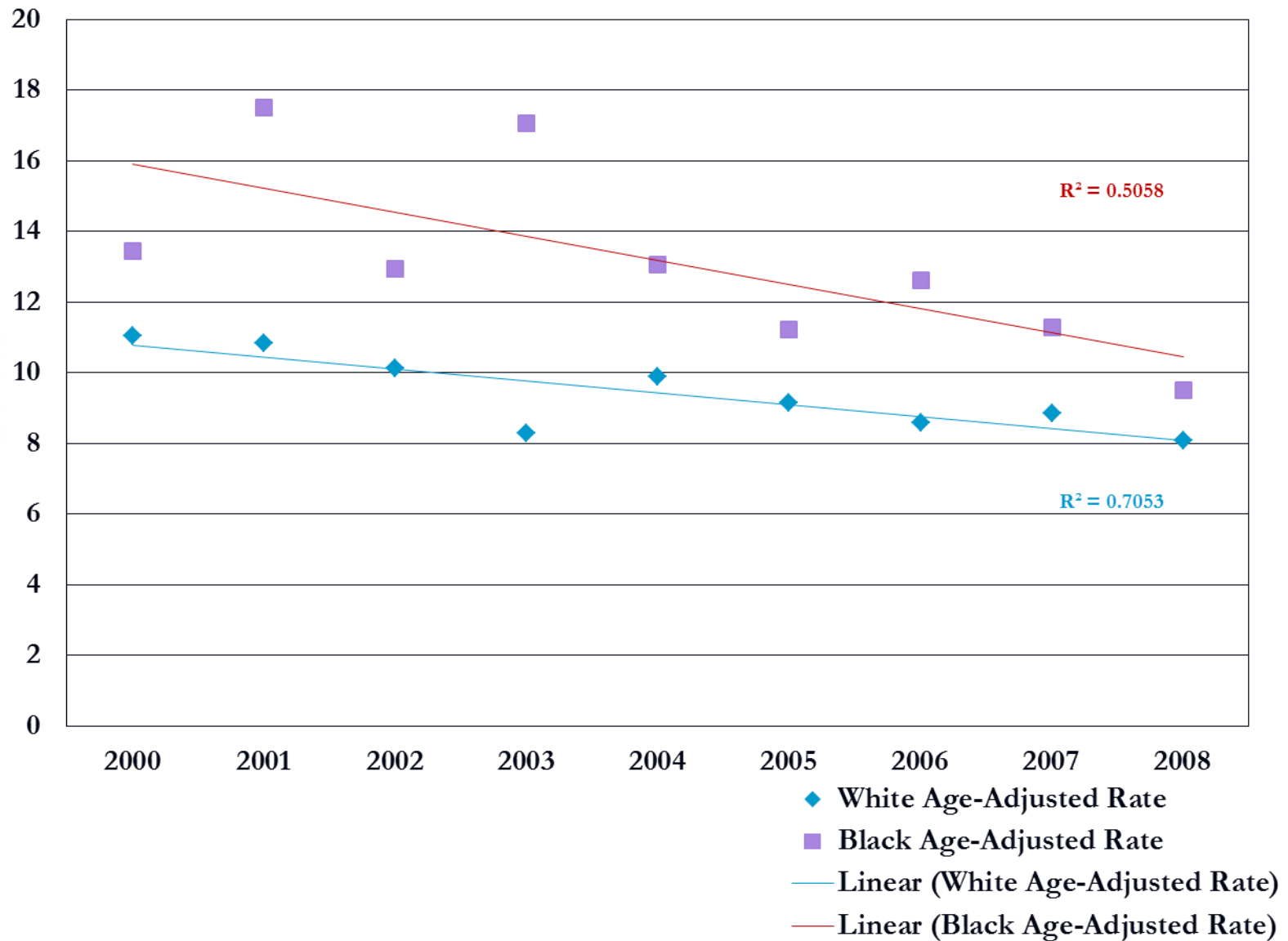


Data accessed July 30, 2012.
Based on data released February 16, 2012.
Copyright (C) 2012 Kentucky Cancer Registry

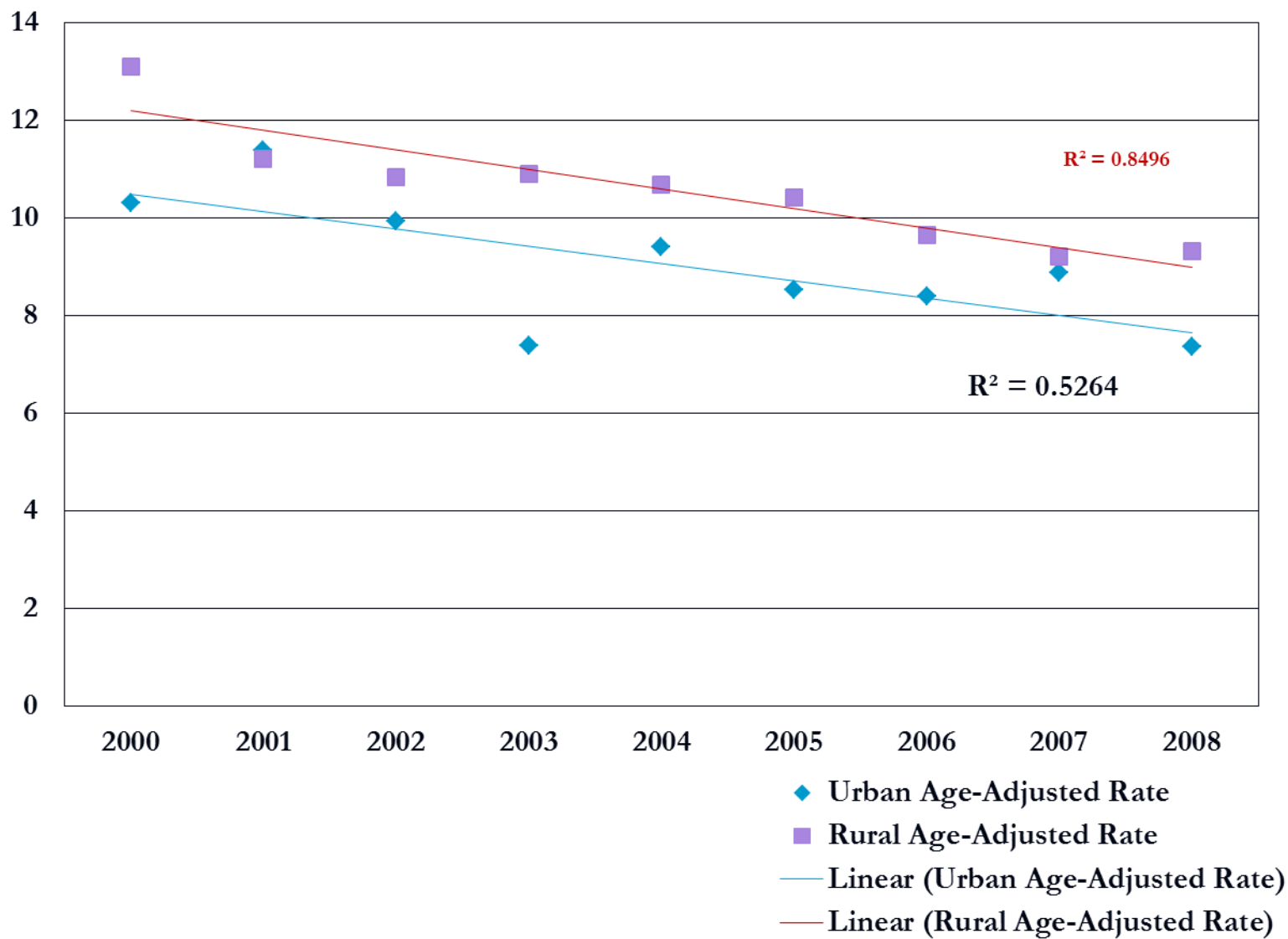
Cervical Cancer Incidence Rates in Kentucky 1995-08



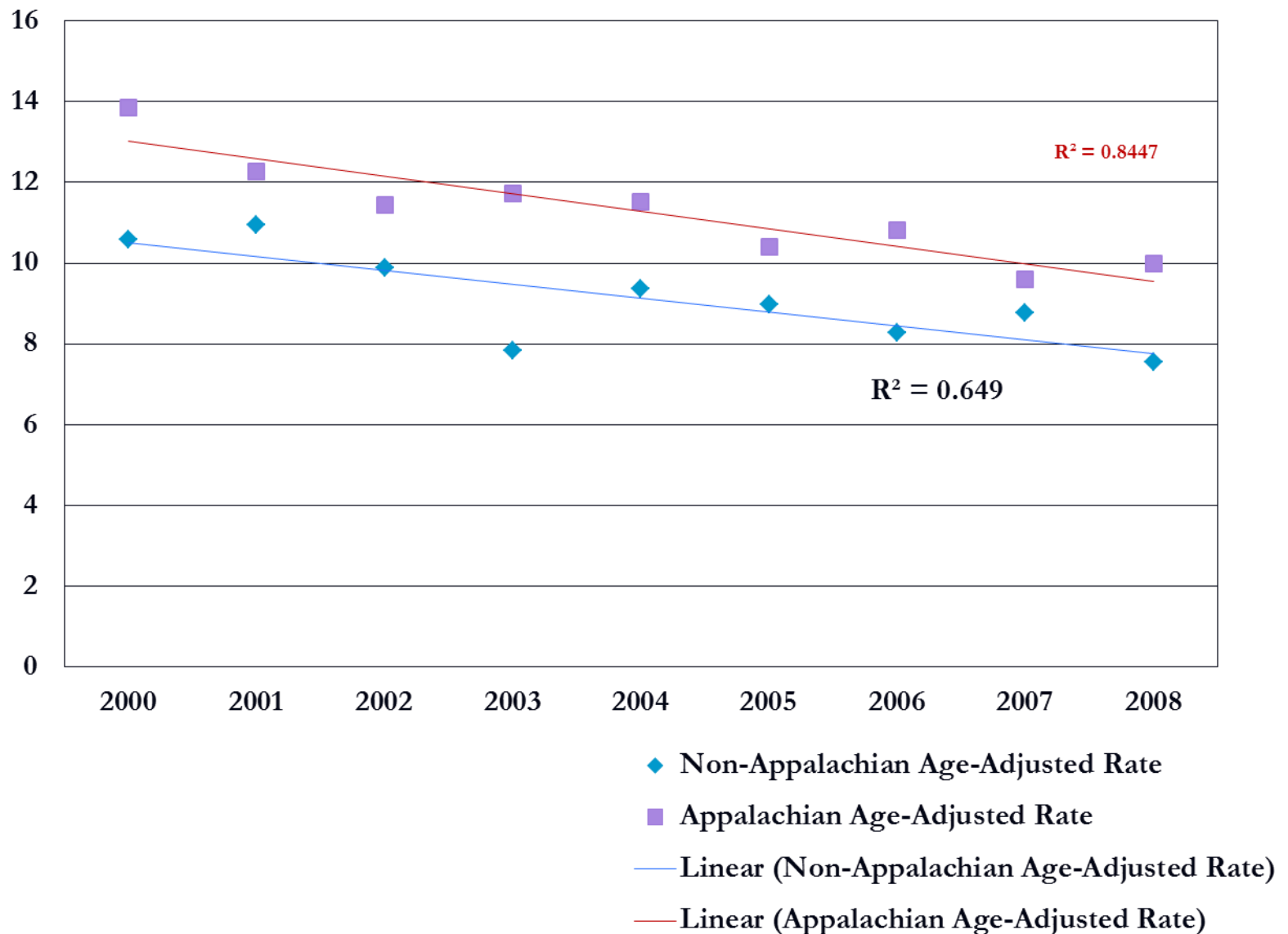
White / Black Cervical Cancer Incidence Rates in Kentucky 2000-08



Urban / Rural Female Cervical Cancer Incidence Rate in Kentucky 2000-08



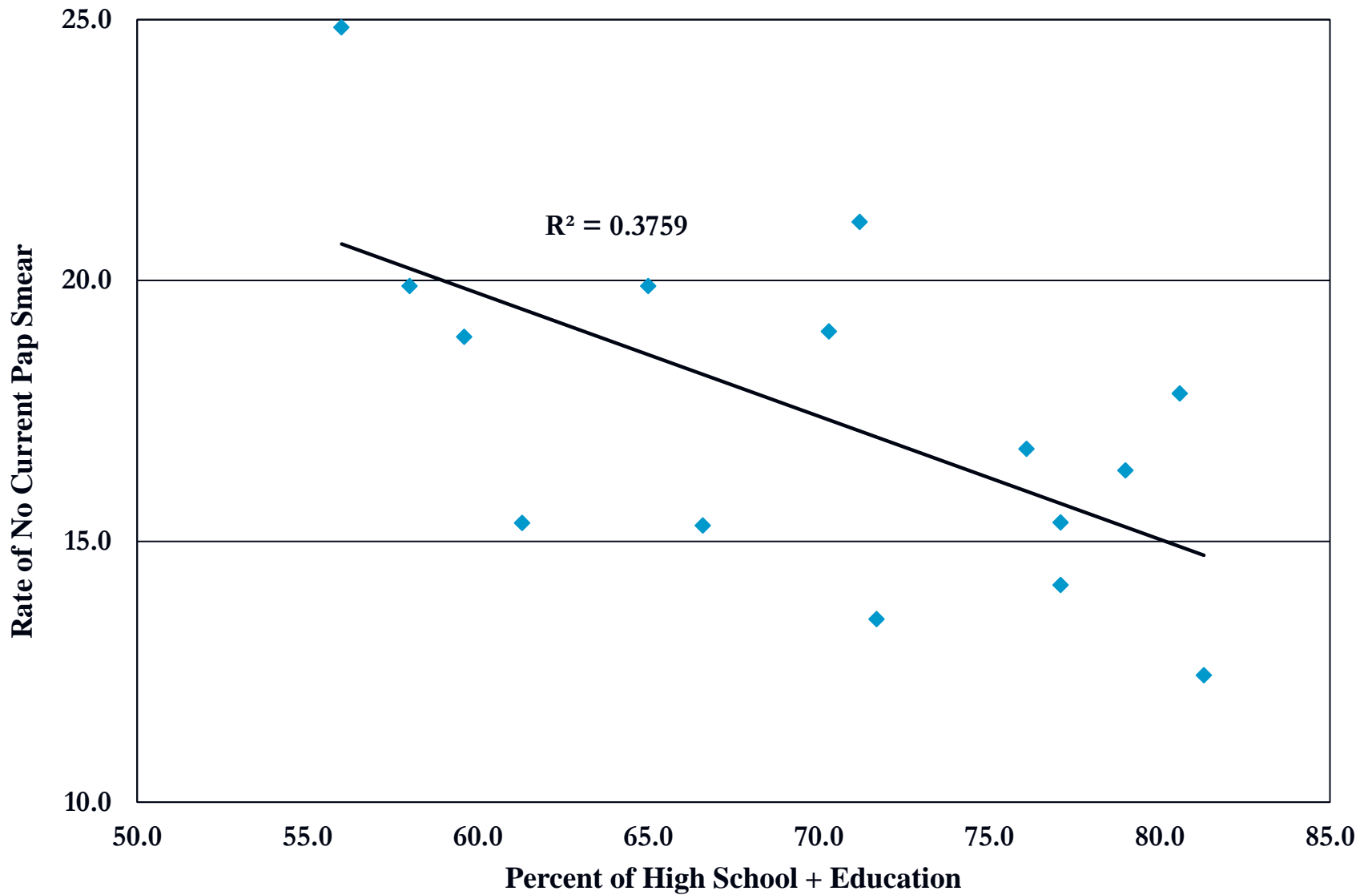
App / Non App Female Cervical Cancer Incidence Rate in Kentucky 2000-08



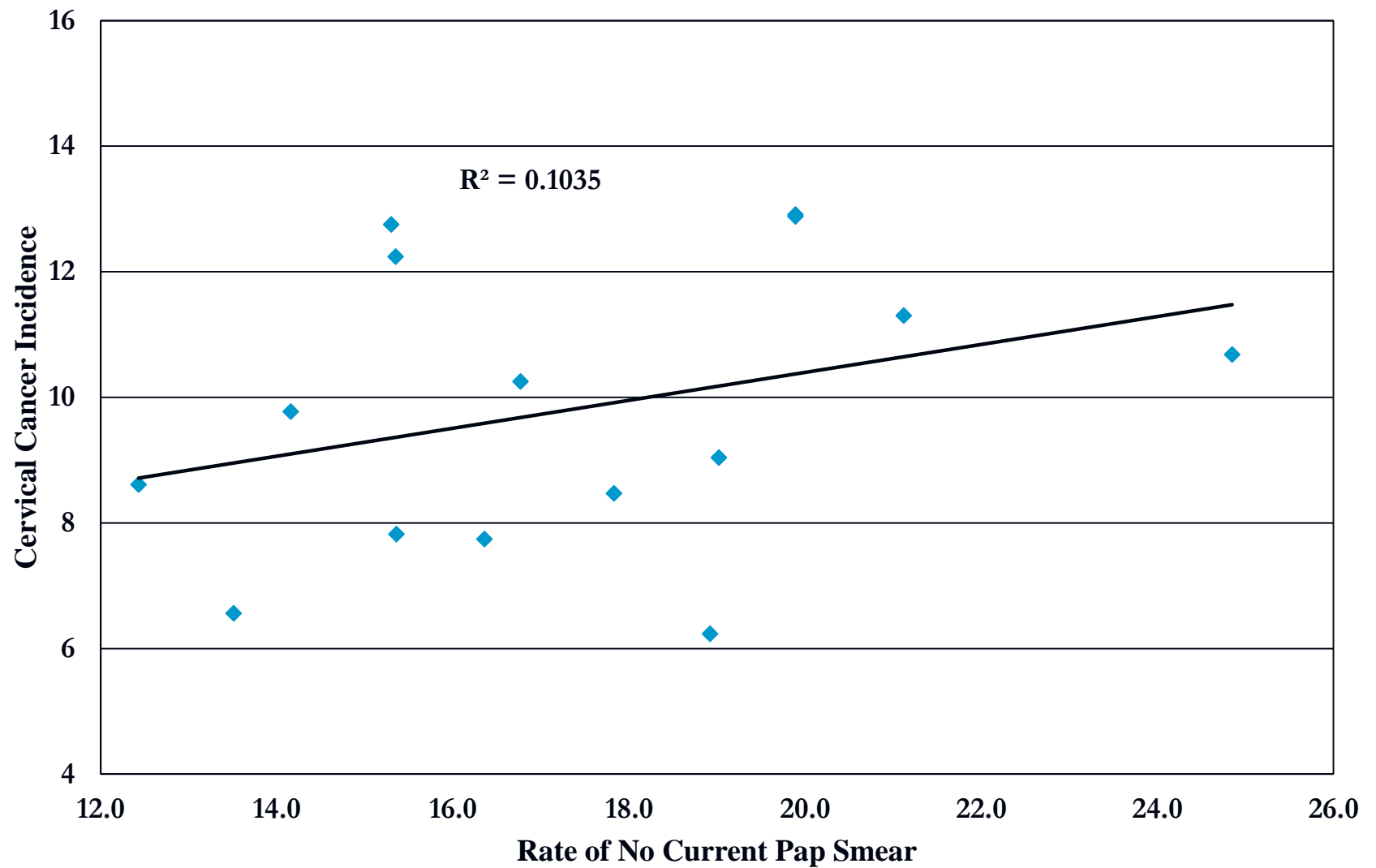
Cervical Cancer By Area Development District in KY 2004-08

| Area Development District | High School + Education (%) | Under Poverty Level (%) | No Current Pap Test (%) | Age-Adjusted Incidence | | Late Stage Incidence (%) | Age-Adjusted Mortality | |
|---------------------------|-----------------------------|-------------------------|-------------------------|------------------------|-----------|--------------------------|------------------------|-----------|
| | | | | N | Adj. Rate | | N | Adj. Rate |
| US | 80.4 | 12.4 | 15.7 | 15,953 | 8.1 | 50.6 | 19690* | 2.4* |
| KENTUCKY | 74.1 | 15.8 | 16.3 | 1019 | 9.11 | 51.4 | 304 | 2.6 |
| BARREN RIVER | 70.3 | 16.7 | 19.0 | 65 | 9.04 | 61.3 | 17 | 2.4 |
| BIG SANDY | 59.6 | 27.9 | 18.9 | 27 | 6.23 | 51.9 | 8 | 1.94*** |
| BLUEGRASS | 79.0 | 13.1 | 16.4 | 146 | 7.74 | 49.3 | 37 | 1.84 |
| BUFFALO TRACE | 66.6 | 19.6 | 15.3 | 17 | 12.75 | 58.8 | 10 | 7.24*** |
| CUMBERLAND VALLEY | 58.0 | 29.1 | 19.9 | 84 | 12.91 | 56 | 27 | 4.13 |
| FIVECO | 71.2 | 18.8 | 21.1 | 42 | 11.3 | 68.4 | 17 | 4.38 |
| GATEWAY | 65.0 | 21.2 | 19.9 | 26 | 12.88 | 44 | 5 | 2.29*** |
| GREEN RIVER | 77.1 | 13.7 | 14.2 | 54 | 9.77 | 66 | 11 | 1.90*** |
| KENTUCKY RIVER | 56.0 | 31.0 | 24.9 | 34 | 10.68 | 40.6 | 11 | 3.08*** |
| KIPDA | 81.3 | 11.5 | 12.4 | 212 | 8.61 | 46.2 | 58 | 2.26 |
| LAKE CUMBERLAND | 61.3 | 23.0 | 15.4 | 69 | 12.24 | 42.2 | 23 | 3.53 |
| LINCOLN TRAIL | 76.1 | 12.9 | 16.8 | 67 | 10.25 | 46.9 | 22 | 3.23 |
| NORTHERN KENTUCKY | 80.6 | 9.0 | 17.8 | 93 | 8.47 | 54.7 | 27 | 2.42 |
| PENNYRILE | 71.7 | 15.9 | 13.5 | 39 | 6.56 | 45.9 | 14 | 2.27*** |
| PURCHASE | 77.1 | 15.0 | 15.4 | 44 | 7.82 | 56.1 | 17 | 2.83 |

Education vs. No Current Pap Smear by Area Development Districts



No Current Pap Smear vs. Incidence by Area Development Districts



Cervical Cancer Rank for Area Development District in KY 2004-08

| Area Development District | High School Ed. + | | No Pap Test | | Age-Adjusted Incidence | | Overall Rank |
|---------------------------|-------------------|-----------|-------------|-----------|------------------------|-----------|--------------|
| | % | Rank | % | Rank | Rate | Rank | |
| CUMBERLAND VALLEY | 58.0 | 2 | 19.9 | 3 | 12.91 | 1 | 6 |
| KENTUCKY RIVER | 56.0 | 1 | 24.9 | 1 | 10.68 | 6 | 8 |
| GATEWAY | 65.0 | 5 | 19.9 | 4 | 12.88 | 2 | 11 |
| FIVECO | 71.2 | 8 | 21.1 | 2 | 11.3 | 5 | 15 |
| LAKE CUMBERLAND | 61.3 | 4 | 15.4 | 11 | 12.24 | 4 | 19 |
| BARREN RIVER | 70.3 | 7 | 19.0 | 5 | 9.04 | 9 | 21 |
| BUFFALO TRACE | 66.6 | 6 | 15.3 | 12 | 12.75 | 3 | 21 |
| BIG SANDY | 59.6 | 3 | 18.9 | 6 | 6.23 | 15 | 24 |
| LINCOLN TRAIL | 76.1 | 10 | 16.8 | 8 | 10.25 | 7 | 25 |
| NORTHERN KENTUCKY | 80.6 | 14 | 17.8 | 7 | 8.47 | 11 | 32 |
| GREEN RIVER | 77.1 | 12 | 14.2 | 13 | 9.77 | 8 | 33 |
| PURCHASE | 77.1 | 11 | 15.4 | 10 | 7.82 | 12 | 33 |
| BLUEGRASS | 79.0 | 13 | 16.4 | 9 | 7.74 | 13 | 35 |
| PENNYRILE | 71.7 | 9 | 13.5 | 14 | 6.56 | 14 | 37 |
| KIPDA | 81.3 | 15 | 12.4 | 15 | 8.61 | 10 | 40 |

An Example

In 2001, Kentucky had the highest colorectal cancer incidence rate in the U.S. compared to all of the other states

Rankings by State: 2001, Male and Female, Colon and Rectum



In 2001, it was also noted that Kentucky was ranked 49th in colorectal cancer screening compared to all other states with the second to the lowest rate (34.7% of the age eligible population).

Cancer Control in Kentucky

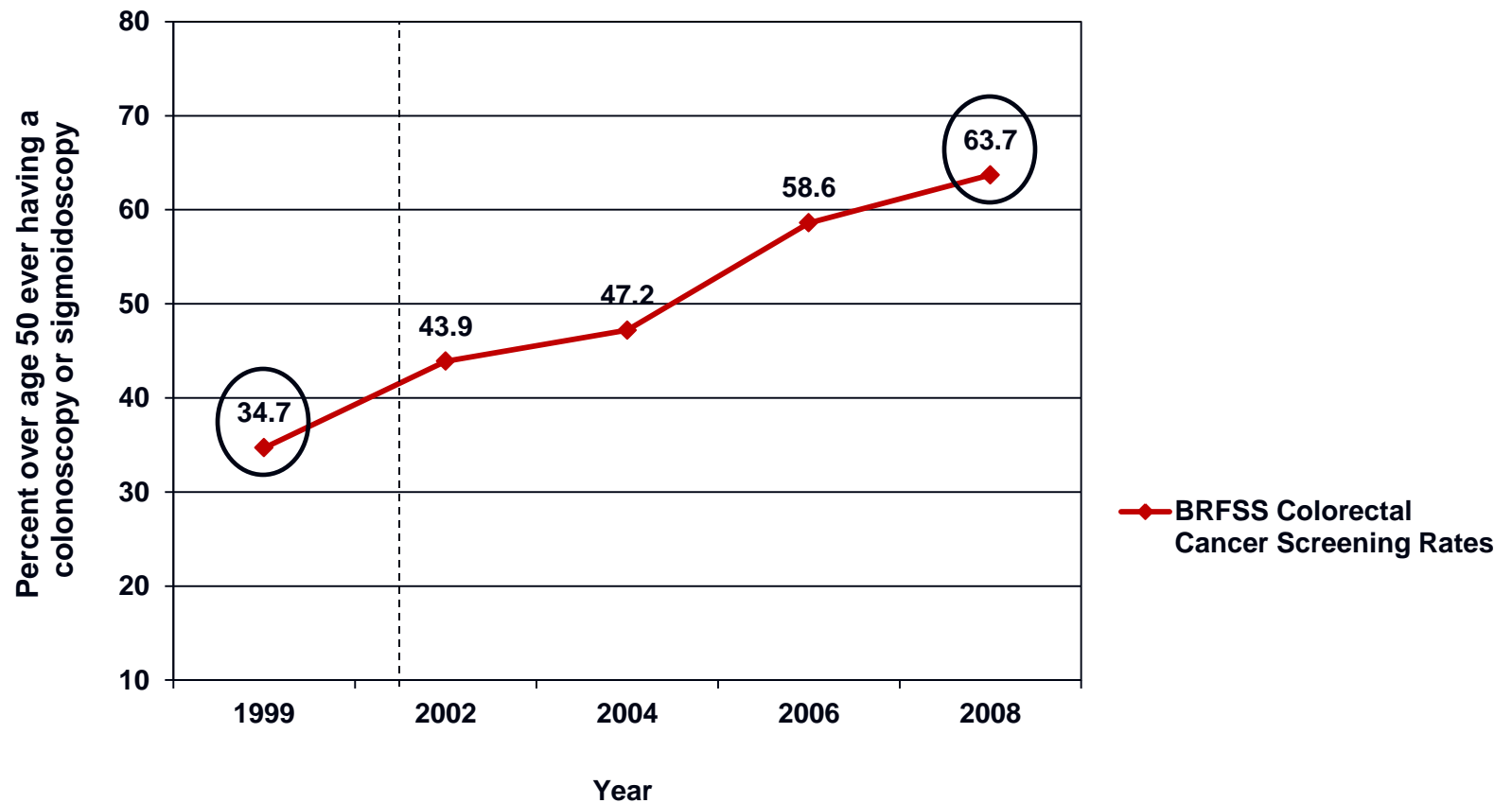
The Kentucky Cancer Registry develops a profile of the cancer burden for the major cancers in each of the states 15 Area Development Districts (ADD's) and presents these data annually to the District Cancer Councils that have been established in each ADD



Using the process for cancer control that was previously described, data about the burden of colorectal cancer was assembled and presented to each of the 15 District Cancer Councils. Following these presentations, all of the District Cancer Councils have implemented cancer control programs aimed at increasing colorectal cancer screening for age eligible people living in Kentucky.

**What has happened since the
implementation of these cancer
prevention and control programs?**

BRFSS Colorectal Cancer Screening Rates Kentucky 1999-2008



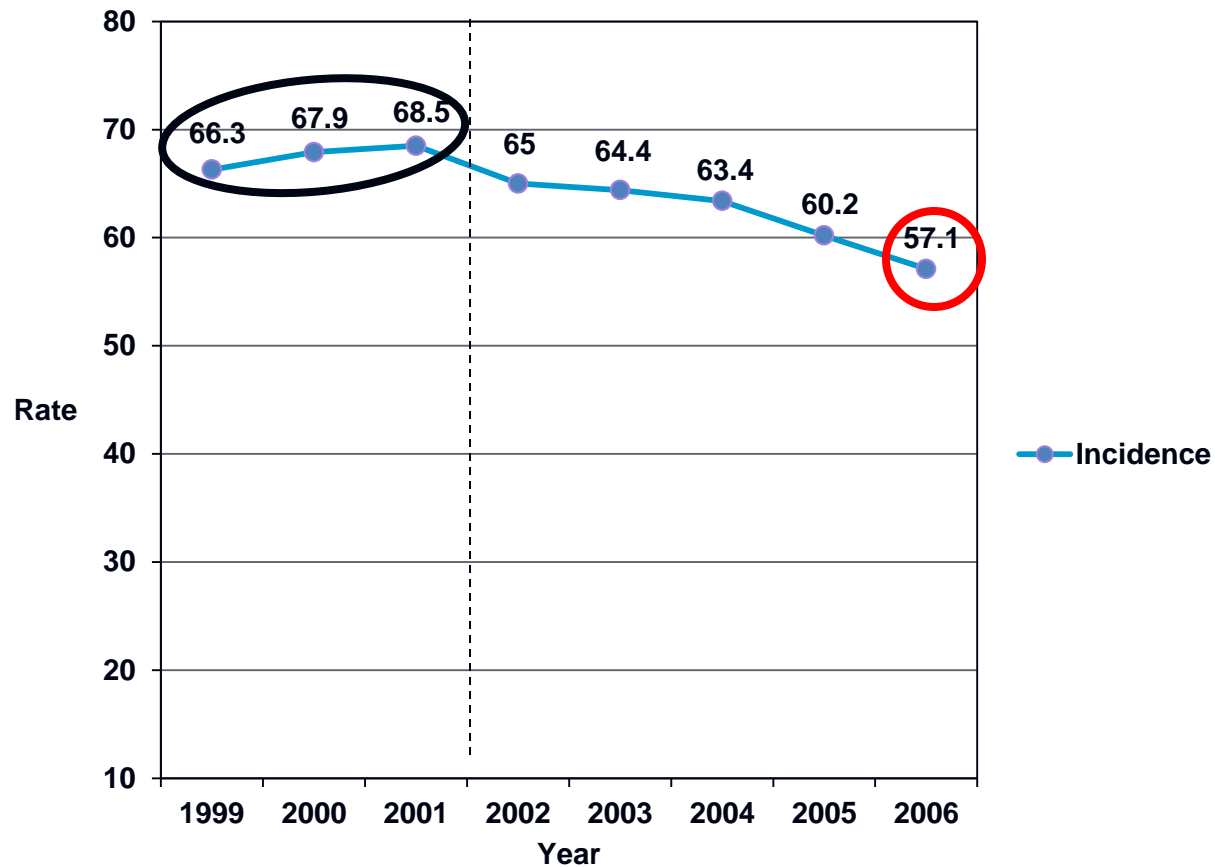
Source: CDC/BRFSS Website, Accessed Jan. 2010

By 2008, Kentucky was ranked 23rd among all states in colorectal cancer screening.

This is a remarkable improvement not matched by any other state. In other words, no state improved it's colorectal cancer screening rate in such a short period of time more then Kentucky.

The increase in colorectal cancer screening has also been accompanied by a 16% decrease in both the incidence and mortality of colorectal cancer in Kentucky. It is important to note that these changes are statistically significant ($P < .05$). In other words, it is unlikely that these changes happened by random accident.

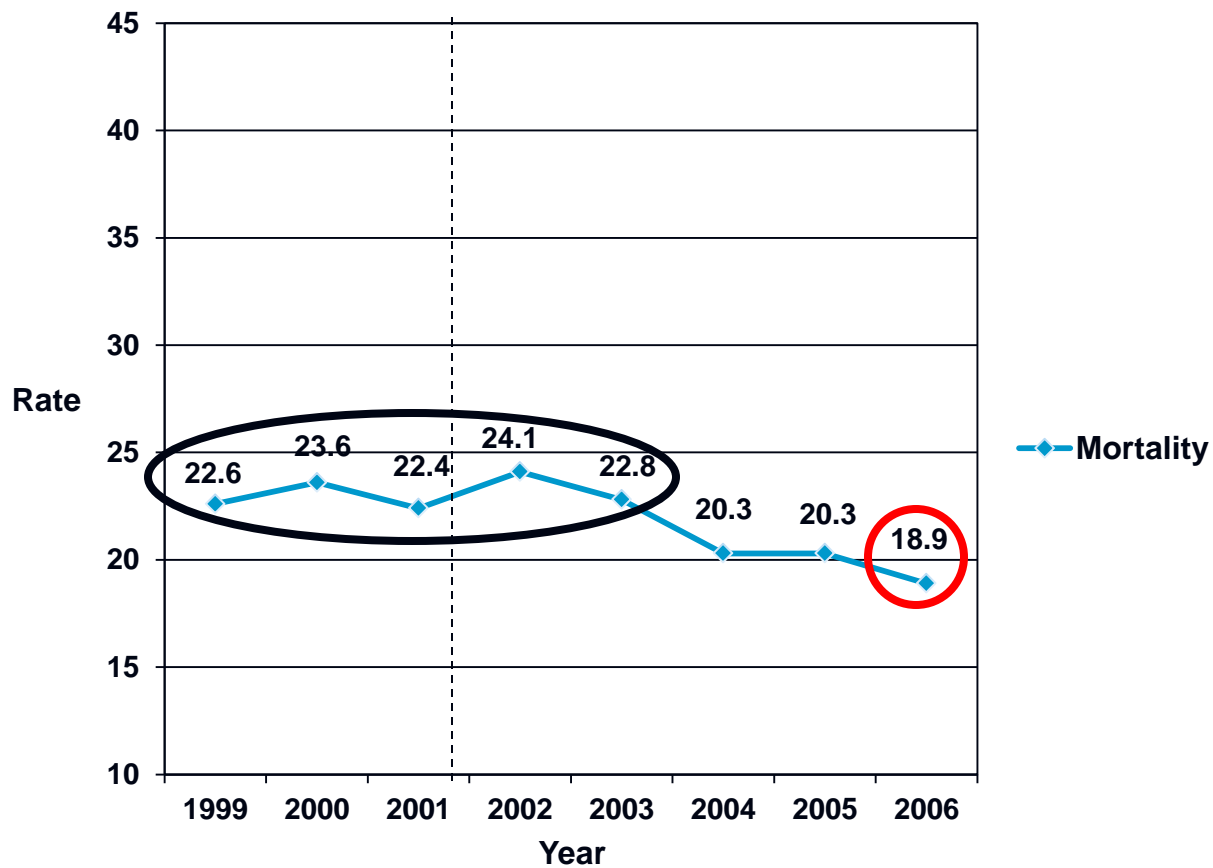
Colorectal Cancer Incidence, Kentucky (1999-2006)



$P < .05$

Source: KCR Website, Accessed Jan. 2010

Colorectal Cancer Mortality, Kentucky (1999-2006)



$P < .05$

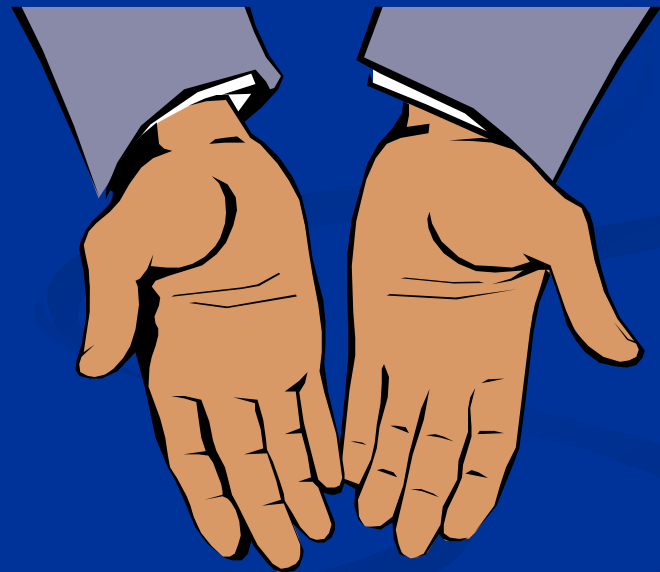
Source: KCR Website, Accessed Jan. 2010

A 16% reduction in colorectal cancer incidence and mortality in Kentucky is a significant public health success.

**Cancer Surveillance
Data**



**Cancer Control
Activities**



Together we can make a real difference in peoples lives

A scenic view from a wooden balcony overlooking a misty forest and mountains. The balcony has a dark wooden railing with a decorative fan-like pattern. The background shows a dense forest of green trees, with mist or fog rising from the valley between the mountains. The sky is overcast and grey.

Thank You!

Questions
The End