Trends in Cancer Disparities between African Americans and Whites in Wisconsin

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OVERVIEW

Cancer incidence and mortality have decreased over the last few decades, yet nationally and in Wisconsin, not all people have benefited equally from these successes. This has exacerbated disparities in cancer burden between various population groups, including those defined by race.

The purpose of this report is to provide information about trends in cancer incidence (new diagnoses) and mortality (deaths) for African Americans and Whites in Wisconsin over the period 1995-2010 and to highlight disparities in the cancer burden between these populations. Monitoring trends in cancer incidence and mortality is an important part of any effort to reduce disparities. This information is useful to community organizations, advocates, clinicians, policy makers and researchers who seek to reduce the burden of cancer.

The report focuses on incidence and mortality for all cancers and for the four most commonly diagnosed cancers in Wisconsin: lung, colon, breast and prostate. Together, these four cancers accounted for 54% of all newly diagnosed cancer cases during the period 1995-2010.

Wisconsin’s racial and ethnic minority populations are of relatively small size and tend to be geographically clustered. Consequently, in these populations rates of rare events, like cancer, can fluctuate greatly from year to year for reasons other than an actual change in the underlying frequency of the disease. One strategy for producing stable estimates for rates of rare events within small populations is to pool several years of data. This methodology has been used in previously published reports on cancer disparities in Wisconsin. The present report uses a different approach and examines trends in annual rates over a 16-year period. The authors previously used this approach when examining similar data for the period 1995-2004/2005. The current report is limited to a comparison between African Americans and Whites due to data limitations resulting from the relatively small size of other minority populations in the state.

Cancer incidence and mortality data were obtained from the Wisconsin Cancer Reporting System (see Data Sources). Trends in rates over the period 1995-2010 for African Americans and Whites were calculated and changes in relative disparity were measured (see Methods). This report is an update to a 2009 University of Wisconsin Carbone Cancer Center Cancer Health Disparities Initiative report which included data through 2004/2005.
KEY FINDINGS

Trends in cancer incidence and mortality for African Americans and Whites by cancer site and sex are included in Results. This section presents key findings.

**Disparities in cancer incidence and mortality between African Americans and Whites in Wisconsin persisted over the period 1995-2010.** In most cases, African Americans had consistently higher rates of new cancers and cancer deaths than Whites. Incidence rates for African American ranged from being 15% higher than Whites (all site cancer for both sexes combined) to 73% higher (male lung cancer) in 2010. Mortality rates for African Americans ranged from being 31% higher than Whites (female all site cancer) to 75% higher (prostate cancer, male lung cancer) in 2010. There were some exceptions. Breast cancer incidence rates were lower for African Americans than for Whites over virtually the entire period. There was also little difference in all site cancer incidence rates between African American and White women. And for colorectal cancer for men and for both sexes combined, incidence was higher for Whites in the early years of the period.

**Disparities Persist: Trends in All Site Cancer Incidence and Mortality Wisconsin, 1995-2010**

![Graph showing trends in cancer incidence and mortality between African Americans and Whites in Wisconsin over 1995-2010.](image)

The impact of these disparities on human lives cannot be underestimated. In 2010, 192 African American cancer deaths would have been avoided if African Americans had experienced the lower age-specific cancer mortality rates of Whites. This represents more than one-third of African American cancer deaths that year.
For some cancer sites, disparities have increased over time. Despite efforts to reduce them, disparities in cancer incidence and mortality have increased over the last 16 years for several cancer sites. The increases were particularly large for colorectal cancer incidence and mortality and for breast cancer mortality.

But for some other cancer sites, there has been progress in reducing disparities. Over the period 1995-2010, there was notable progress in reducing disparities in lung cancer incidence for both men and women as well as lung, prostate and all site cancer mortality for men.
## Wisconsin Cancer Disparities Report Card

### Incidence Key:
- AA rates > W rates in all years
- AA rates > W rates in most years
- W rates > AA rates in all years
- No general pattern of disparity

### Change in Disparity Key:
- Slight improvement in disparity
- Improvement in disparity
- Slight worsening of disparity
- Worsening of disparity
- No change in disparity

<table>
<thead>
<tr>
<th>Site</th>
<th>Incidence Disparity</th>
<th>Change in Disparity</th>
<th>Mortality Disparity</th>
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</table>

AA = African American; W = White
IMPLICATIONS

Persistent and in many cases increasing disparities in cancer incidence and mortality between African Americans and Whites in Wisconsin were observed over the period 1995-2010. The causes of these disparities are complex and multifactorial. Other studies have shown that the factors which contribute to disparities between racial groups include socioeconomic status (SES) and the relationship of SES to access to prevention, screening and treatment, lack of health insurance, language and literacy barriers and quality of care.\(^{15-22}\) (SES is based primarily on a person’s income, education level and occupation.) The Wisconsin Cancer Reporting System, like most public health data systems, does not collect SES, let alone measures of access to and quality of care. Therefore, this report is unable to examine the causes of the racial disparities that were observed.

Wisconsin’s report card on racial cancer disparities indicates that much work remains to be done to achieve the goal of reducing or eliminating disparities (see Healthiest Wisconsin 2020\(^{23}\)). There are many evidence-based strategies to reduce cancer health disparities for groups defined by race, ethnicity, SES and geography (where you live).\(^{3,24,25}\) These interventions target points across the cancer spectrum, from prevention to palliative care, in community settings as well as health care.\(^{26-28}\) Other strategies focus on changing the social determinants of health,\(^{29-31}\) addressing the conditions in which people “are born, grow, live, work and age.”\(^{32}\) Eliminating cancer disparities in Wisconsin will require sustained effort by communities, health systems, non-profit organizations, foundations, policy makers, researchers and others, working collaboratively for greatest impact.\(^{31,33}\)

LIMITATIONS

This study is subject to limitations. First, as noted above, without information about SES, access to care and quality of care for cases in the state cancer registry, we were unable to examine the causes of the racial disparities we observed and the extent to which they are explained by differences in these factors. County-level SES could be assigned to each registry case. However, with large variability in SES within a county, county-level analyses of the relationship between SES and cancer rates can produce misleading results.\(^{22}\)

Second, the scope of this report is limited to differences in cancer incidence and mortality between African American and Whites in Wisconsin. The decision to focus on these two groups was determined by the demographic composition of Wisconsin and the rarity of cancer events. Wisconsin has relatively small non-White populations, making comparisons similar to those featured in this report difficult to replicate among other racial/ethnic groups.

Third, although African Americans form the largest minority population in Wisconsin, there are still relatively few new cases and cancer deaths for some organ sites among this racial group. This yields rates for African Americans that vary more from year to year than White rates. Our approach for dealing with this variability was to measure disparities based on trends in rates rather than raw rates in any given year.
RESULTS
What’s the trend among all Wisconsin residents?
- In 2010, 28,541 people in Wisconsin were diagnosed with cancer.
- The number of new cancer cases per 100,000 population (incidence) decreased 7% between 1995 and 2010, from 476.4 per 100,000 to 444.8 per 100,000.
- The four most frequently occurring cancers were prostate (3,931 cases); breast (3,894); lung (3,849); and colorectal (2,387).

Is there a disparity between African Americans and Whites?
- Yes. Over the entire period 1995-2010, cancer incidence rates were higher for African Americans than Whites.
- In 1995 this meant that there were 65 more new cancer cases per 100,000 people for African Americans than Whites. In 2010, the difference was 68 new cancer cases per 100,000 people.

Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in cancer incidence rates between African Americans and Whites increased slightly. The ratio between African American and White rates was 1.13 in 1995 and 1.15 in 2010.

What does this mean?
- When considering all cancers, the disparity in incidence between African Americans and Whites in Wisconsin persists and has in fact worsened somewhat.
- In 2010, this meant that African Americans were 15% more likely to be diagnosed with cancer than Whites.
What’s the trend among all Wisconsin residents?
- In 2010, 13,680 women in Wisconsin were diagnosed with cancer.
- The number of new cancer cases per 100,000 women (incidence) decreased 2.7% between 1995 and 2010, from 414.2 per 100,000 to 403.1 per 100,000.

Is there a disparity between African Americans and Whites?
- There was not a general pattern of disparity over the period 1995-2010. Incidence rates for African American and White women were similar in many years.

Has there been a change in the disparity?
- Over the period 1995-2010, cancer incidence rates for African American women increased slightly while rates among White women decreased slightly.
- This resulted in a small increase in disparity in cancer incidence rates between African American and White women. The ratio between African American and White rates was .97 in 1995 and 1.04 in 2010.

What does this mean?
- When considering all cancers, there has been little difference in incidence between African American and White women in Wisconsin.
- It is too soon to say whether the disparity observed in 2010 will persist.
What’s the trend among all Wisconsin residents?
- In 2010, 14,861 men in Wisconsin were diagnosed with cancer.
- The number of new cancer cases per 100,000 population (incidence) decreased 13% between 1995 and 2010, from 573.7 per 100,000 to 501.7 per 100,000.

Is there a disparity between African Americans and Whites?
- Yes. Over the entire period 1995-2010, incidence rates were higher for African American men than White men.
- In 1995 this meant that there were 178 more new cancer cases per 100,000 for African American men compared to White men. In 2010, the difference was 142 new cancer cases per 100,000 men.

Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in cancer incidence rates between African Americans and Whites decreased slightly. The ratio between African American and White rates was 1.31 in 1995 and 1.28 in 2010.

What does this mean?
- When considering all cancers, the disparity in incidence between African American and White men in Wisconsin has improved somewhat.
- However, a large gap persists. In 2010, African American men had a 28% higher chance of being diagnosed with cancer than White men.
What’s the trend among all Wisconsin residents?
- In 2010, 11,279 people in Wisconsin died from cancer.
- The number of cancer deaths per 100,000 population (mortality rate) decreased 13% between 1995 and 2010, from 200.5 per 100,000 to 173.7 per 100,000.

Is there a disparity between African Americans and Whites?
- Yes. Over the entire period 1995-2010, cancer mortality rates were higher for African Americans than Whites.
- In 1995 this meant that there were 77 more cancer deaths per 100,000 people for African Americans than Whites. In 2010 the difference was 64 cancer deaths per 100,000 people.
- If African Americans experienced the lower age-specific mortality rates of Whites, about one in three African American cancer deaths in 1995 and 2010 would have been avoided.

Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in cancer incidence rates between African Americans and Whites decreased slightly. The ratio between African American and White rates was 1.39 in 1995 and 1.37 in 2010.

What does this mean?
- When considering all cancers, the disparity in cancer death rates between African Americans and Whites in Wisconsin has improved somewhat.
- However, a large gap persists, translating into 192 excess cancer deaths among African Americans in 2010 alone.
**What’s the trend among all Wisconsin residents?**
- In 2010, 5,361 women in Wisconsin died from cancer.
- The number of cancer deaths per 100,000 women (mortality rate) decreased 10% between 1995 and 2010, from 164.5 per 100,000 to 147.7 per 100,000.

**Is there a disparity between African Americans and Whites?**
- Yes. Over the entire period 1995-2010, cancer mortality rates were higher for African American women than White women.
- In 1995 this meant that there were 37 more cancer deaths per 100,000 for African American women compared to Whites. In 2010 the difference was 45 cancer deaths per 100,000 women.
- If African American women experienced the lower age-specific mortality rates of White women, about one in three African American cancer deaths in 1995 and 2010 would have been avoided.

**Has there been a change in the disparity?**
- Between 1995 and 2010, the disparity in cancer death rates between African American and White women increased slightly. The ratio between African American and White rates was 1.22 in 1995 and 1.31 in 2010.

**What does this mean?**
- When considering all cancers, the disparity in death rates between African American and White women in Wisconsin has worsened somewhat.
- This translated into 87 excess cancer deaths among African American women in 2010 alone.
What’s the trend among all Wisconsin residents?
- In 2010, 5,918 men in Wisconsin died from cancer.
- The number of cancer deaths per 100,000 men (mortality rate) decreased 18% between 1995 and 2010, from 257.7 per 100,000 to 211.2 per 100,000.

Is there a disparity between African Americans and Whites?
- Yes. Over the entire period 1995-2010, cancer mortality rates were markedly higher for African American men than White men.
- In 1995 this meant that there were 145 more cancer deaths per 100,000 men for African Americans than Whites. In 2010 the difference was 95 cancer deaths per 100,000 men.
- If African American men had the lower age-specific mortality rates of White men, about four in 10 African American cancer deaths in 1995 and 2010 would have been avoided.

Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in overall cancer incidence between African American and White men decreased. The ratio between African American and White rates was 1.57 in 1995 and 1.46 in 2010.

What does this mean?
- When considering all cancers, the disparity in cancer death rates between African American and White men in Wisconsin has improved.
- However, a large gap persists, translating into 111 excess cancer deaths among African American men in 2010 alone.
What’s the trend among all Wisconsin residents?
• In 2010, 3,894 women in Wisconsin were diagnosed with breast cancer.
• The number of new breast cancer cases per 100,000 women (incidence) decreased 8.7% between 1995 and 2010, from 128.2 per 100,000 to 117.0 per 100,000.

Is there a disparity between African Americans and Whites?
• Yes. Over virtually the entire period 1995-2010, the breast cancer incidence rate was lower for African American women than for White women.
• In 1995 there were 19 fewer new breast cancer cases per 100,000 for African Americans compared to Whites. In 2010, the difference was 7 new cancer cases per 100,000 women.

Has there been a change in the disparity?
• Between 1995 and 2010, the trend in African American breast cancer incidence rates stayed relatively constant while White rates decreased. As a result, the disparity in breast cancer incidence rates which favored African Americans decreased slightly.
• The ratio between African American and White rates was .86 in 1995 and .94 in 2010.

What does this mean?
• African American women and White women in Wisconsin now have very similar chances of being diagnosed with breast cancer.
• A key question for the future is will the incidence rates remain the same or, as White rates drop, will a disparity develop in which African American incidence exceeds White incidence?

*Trends in Age-Adjusted Female Breast Cancer Incidence, By Race
Wisconsin, 1995-2010

<table>
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<tr>
<th>Year</th>
<th>Incidence Rate*</th>
<th>Incidence Rate Trend*</th>
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<td>African American</td>
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<tr>
<td>1995</td>
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<td>2010</td>
<td>116.2</td>
<td>116.9</td>
</tr>
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</table>

* Rates are age-adjusted per 100,000 population. Trends were fitted from ordinary least squares regression of rates.
What’s the trend among all Wisconsin residents?
- In 2010, 767 women in Wisconsin died from breast cancer.
- The number of breast cancer deaths per 100,000 women (mortality rate) decreased 28% between 1995 and 2010, from 29.6 per 100,000 to 21.3 per 100,000.

Is there a disparity between African Americans and Whites?
- Yes. Over the entire period 1995-2010, the breast cancer mortality rate trend was higher for African American women than White women.
- In 1995 this meant that there were 3 more breast cancer deaths per 100,000 women for African Americans than Whites. In 2010 the difference grew to 8 cancer deaths per 100,000 women.

Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in breast cancer mortality rates between African American and White women increased. The ratio between African American and White rates was 1.09 in 1995 and 1.38 in 2010.

What does this mean?
- The disparity in breast cancer death rates between African American and White women in Wisconsin has worsened.
- By 2010, this meant that African American women were 38% more likely to die from breast cancer than White women.

### Trends in Age-Adjusted Female Breast Cancer Mortality, By Race
Wisconsin, 1995-2010

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<th>Year</th>
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<th>Mortality Rate Trend*</th>
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<tr>
<td>1995</td>
<td>33.5</td>
<td>29.5</td>
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<tr>
<td>2010</td>
<td>35.3</td>
<td>20.9</td>
</tr>
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</table>

* Rates are age-adjusted per 100,000 population. Trends were fitted from ordinary least squares regression of rates.
**What’s the trend among all Wisconsin residents?**
- In 2010, 2,387 people in Wisconsin were diagnosed with colorectal cancer.
- The number of new colorectal cancer cases per 100,000 people (incidence) decreased 39% between 1995 and 2010, from 60.2 per 100,000 to 37.0 per 100,000.

**Is there a disparity between African Americans and Whites?**
- At the beginning of the period 1995-2010, colorectal cancer incidence rates for African Americans were less than or similar to that of Whites. But from 1997 onward, the incidence rate for African Americans was higher than that of Whites.
- By 2010, there were 18 more new colorectal cancer cases per 100,000 for African Americans compared to Whites.

**Has there been a change in the disparity?**
- Between 1995 and 2010, the disparity in colorectal cancer incidence rates between African Americans and Whites increased dramatically. The ratio between African American and White rates was 0.99 in 1995 and 1.46 in 2010.

**What does this mean?**
- As colorectal cancer incidence among Whites has dropped steadily, the disparity in incidence between African Americans and Whites in Wisconsin has worsened markedly.
- By 2010, this meant that African Americans had a 46% higher chance of being diagnosed with colorectal cancer than Whites.
What’s the trend among all Wisconsin residents?
- In 2010, 1,161 women in Wisconsin were diagnosed with colorectal cancer.
- The number of new colorectal cancer cases per 100,000 women (incidence) decreased 38% between 1995 and 2010, from 51.8 per 100,000 to 32.3 per 100,000.

Is there a disparity between African Americans and Whites?
- Yes. Colorectal cancer incidence rates were higher for African American women than White women in nearly every year in the period 1995-2010.
- By 2010, there were 16 more new colorectal cancer cases per 100,000 for African American women compared to White women.

Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in colorectal cancer incidence rates between African American and White women increased dramatically. The ratio between African American and White rates was 1.04 in 1995 and 1.46 in 2010.

What does this mean?
- As colorectal cancer incidence among White women has dropped steadily, the disparity between African American and White women in Wisconsin has worsened markedly.
- By 2010, this meant that African American women had a 46% higher chance of being diagnosed with colorectal cancer than White women.
**What’s the trend among all Wisconsin residents?**
- In 2010, 1,226 men in Wisconsin were diagnosed with colorectal cancer.
- The number of new colorectal cancer cases per 100,000 men (incidence) decreased 41% between 1995 and 2010, from 71.5 per 100,000 to 42.4 per 100,000.

**Is there a disparity between African Americans and Whites?**
- Yes. For most years in the period 1995-2010, and particularly in the last decade, the colorectal cancer incidence rate was higher for African American men than White men.
- By 2010, there were 23 more new colorectal cancer cases per 100,000 for African American men compared to White men.

**Has there been a change in the disparity?**
- Between 1995 and 2010, the disparity in colorectal cancer incidence rates between African American and White men increased dramatically. The ratio between African American and White rates was .94 in 1995 and 1.53 in 2010.

**What does this mean?**
- As colorectal cancer incidence among White men has dropped steadily, the disparity between African American and White men in Wisconsin has worsened markedly.
- In 2010, this meant that African American men had a 53% higher chance of being diagnosed with cancer than White men.
What’s the trend among all Wisconsin residents?
• In 2010, 939 people in Wisconsin died from colorectal cancer.
• The number of colorectal cancer deaths per 100,000 population (mortality rate) decreased 35% between 1995 and 2010, from 22.3 per 100,000 to 14.4 per 100,000.

Is there a disparity between African Americans and Whites?
• Yes. Over the entire period 1995-2010, the colorectal cancer mortality rate trend was higher for African Americans than Whites.
• In 1995 this meant that there were 5 more colorectal cancer deaths per 100,000 for African Americans than Whites. In 2010 the difference was 8 cancer deaths per 100,000.

Has there been a change in the disparity?
• Between 1995 and 2010, the disparity in colorectal cancer mortality rates between African Americans and Whites increased. The ratio between African American and White rates was 1.22 in 1995 and 1.62 in 2010.

What does this mean?
• While deaths due to colorectal cancer are dropping for both groups, the disparity in rates between African Americans and Whites in Wisconsin has worsened.
• By 2010, this meant that African Americans were 62% more likely to die from colorectal cancer than Whites.
What’s the trend among all Wisconsin residents?
- In 2010, 454 women in Wisconsin died from colorectal cancer.
- The number of colorectal cancer deaths per 100,000 women (mortality rate) decreased 35% between 1995 and 2010, from 18.7 per 100,000 to 12.1 per 100,000.

Is there a disparity between African Americans and Whites?
- Yes. Over the entire period 1995-2010, the colorectal cancer mortality rate trend was higher for African American women than White women.
- In 1995 this meant that there were 5 more colorectal cancer deaths per 100,000 women for African Americans than Whites. In 2010 the difference was 8 cancer deaths per 100,000 women.

Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in colorectal cancer mortality rates between African American and White women increased dramatically. The ratio between African American and White rates was 1.25 in 1995 and 1.69 in 2010.

What does this mean?
- The disparity in colorectal cancer death rates between African American and White women in Wisconsin has worsened markedly.
- By 2010, this meant that African American women were 69% more likely to die from colorectal cancer than White women.

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**COLORECTAL CANCER | FEMALE MORTALITY**

Trends in Age-Adjusted Colorectal Cancer Mortality, Females, By Race Wisconsin, 1995-2010

<table>
<thead>
<tr>
<th>Year</th>
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<th>Mortality Rate Trend*</th>
<th>African American/White Rate Ratio</th>
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<td>1995</td>
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<td>2010</td>
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* Rates are age-adjusted per 100,000 population. Trends were fitted from ordinary least squares regression of rates.
What’s the trend among all Wisconsin residents?
- In 2010, 485 men in Wisconsin died from colorectal cancer.
- The number of colorectal cancer deaths per 100,000 men (mortality rate) decreased 36% between 1995 and 2010, from 27.4 per 100,000 to 17.5 per 100,000.

Is there a disparity between African Americans and Whites?
- Yes. Over the entire period 1995-2010, the colorectal cancer mortality rate trend was higher for African American men than White men.
- In 1995 this meant that there were 7 more colorectal cancer deaths per 100,000 men for African Americans than Whites. In 2010 the difference was 10 cancer deaths per 100,000 men.

Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in colorectal cancer mortality rates between African American and White men increased. The ratio between African American and White rates was 1.24 in 1995 and 1.62 in 2010.

What does this mean?
- While deaths due to colorectal cancer are dropping for both groups, the disparity in rates between African American and White men in Wisconsin has worsened.
- By 2010, this meant that African American men were 62% more likely to die from colorectal cancer than White men.
**LUNG CANCER | MALE & FEMALE INCIDENCE**

**Trends in Age-Adjusted Lung Cancer Incidence, By Race Wisconsin, 1995-2010**

**What’s the trend among all Wisconsin residents?**
- In 2010, 3,849 people in Wisconsin were diagnosed with lung cancer.
- The number of new lung cancer cases per 100,000 population (incidence) decreased 5.5% between 1995 and 2010, from 63.6 per 100,000 to 60.1 per 100,000.

**Is there a disparity between African Americans and Whites?**
- Yes. Over the entire period 1995-2010, lung cancer incidence rates were higher for African Americans than Whites.
- In 1995 this meant that there were 41 more new lung cancer cases per 100,000 for African Americans compared to Whites. In 2010, the difference was 28 new lung cancer cases per 100,000 people.

**Has there been a change in the disparity?**
- Between 1995 and 2010, the disparity in lung cancer incidence rates between African Americans and Whites decreased. The ratio between African American and White rates was 1.62 in 1995 and 1.47 in 2010.

**What does this mean?**
- As lung cancer incidence rates for African Americans have dropped steadily, the disparity in incidence between African Americans and Whites in Wisconsin has improved.
- However, a large gap persists. In 2010 African Americans had a 47% higher chance of being diagnosed with lung cancer than Whites.

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**Incidence Rate**

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<td>58.2</td>
</tr>
</tbody>
</table>

* Rates are age-adjusted per 100,000 population. Trends were fitted from ordinary least squares regression of rates.
What’s the trend among all Wisconsin residents?
- In 2010, 1,753 women in Wisconsin were diagnosed with lung cancer.
- The number of new lung cancer cases per 100,000 women (incidence) increased 12% between 1995 and 2010, from 46.5 per 100,000 to 52.0 per 100,000.

Is there a disparity between African Americans and Whites?
- Yes. In all but one year during the period 1995-2010, lung cancer incidence rates were higher for African American women than White women.
- In 1995 this meant that there were 17 more new lung cancer cases per 100,000 for African American women compared to White women. In 2010, the difference was 13 new cancer cases per 100,000 women.

Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in lung cancer incidence rates between African American and White women decreased. The ratio between African American and White rates was 1.35 in 1995 and 1.25 in 2010.

What does this mean?
- The disparity in lung cancer incidence between African American and White women in Wisconsin has improved.
- However, a large gap persists. In 2010 African American women had a 25% higher chance of being diagnosed with lung cancer than White women.
What’s the trend among all Wisconsin residents?
- In 2010, 2,054 men in Wisconsin were diagnosed with lung cancer.
- The number of new lung cancer cases per 100,000 men (incidence) decreased 19% between 1995 and 2010, from 87.1 per 100,000 to 70.9 per 100,000.

Is there a disparity between African Americans and Whites?
- Yes. Over the entire period 1995-2010, lung cancer incidence rates were higher for African American men than White men.
- In 1995 this meant that there were 78 more new lung cancer cases per 100,000 for African American men compared to White men. In 2010, the difference was 49 new lung cancer cases per 100,000 men.

Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in lung cancer incidence rates between African American and White men decreased. The ratio between African American and White rates was 1.87 in 1995 and 1.73 in 2010.

What does this mean?
- As lung cancer incidence rates for African American men have dropped steadily, the disparity in incidence between African Americans and Whites in Wisconsin has improved.
- However, a very large gap persists. In 2010 African American men had a 73% higher chance of being diagnosed with lung cancer than White men.
### What’s the trend among all Wisconsin residents?
- In 2010, 2,971 people in Wisconsin died from lung cancer.
- The number of lung cancer deaths per 100,000 population (mortality rate) decreased 5% between 1995 and 2010, from 48.5 per 100,000 to 46.2 per 100,000.

### Is there a disparity between African Americans and Whites?
- Yes. Over the entire period 1995-2010, lung cancer mortality rates were markedly higher for African Americans than Whites.
- In 1995 this meant that there were 34 more lung cancer deaths per 100,000 for African Americans compared to Whites. In 2010 the difference was 24 cancer deaths per 100,000 people.

### Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in lung cancer mortality rates between African Americans and Whites decreased. The ratio between African American and White rates was 1.70 in 1995 and 1.53 in 2010.

### What does this mean?
- As lung cancer death rates for African Americans have dropped steadily, the disparity in rates between African Americans and Whites in Wisconsin has improved.
- However, a very large gap persists. In 2010 African Americans had a 53% higher chance of dying of lung cancer than Whites.

### Trends in Age-Adjusted Lung Cancer Mortality, By Race

#### Wisconsin, 1995-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>African American Rate</th>
<th>White Rate</th>
<th>African American Rate Trend</th>
<th>White Rate Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>82.1</td>
<td>47.6</td>
<td>83.5</td>
<td>49.2</td>
</tr>
<tr>
<td>2010</td>
<td>69.5</td>
<td>45.4</td>
<td>70.1</td>
<td>46.0</td>
</tr>
</tbody>
</table>

* Rates are age-adjusted per 100,000 population. Trends were fitted from ordinary least squares regression of rates.
What’s the trend among all Wisconsin residents?
• In 2010, 1,359 women in Wisconsin died from lung cancer.
• The number of lung cancer deaths per 100,000 women (mortality rate) increased 16% between 1995 and 2010, from 33.1 per 100,000 to 38.4 per 100,000.

Is there a disparity between African Americans and Whites?
• Yes. Lung cancer mortality rates were higher for African American women than White women in virtually every year in the period 1995-2010.
• In 1995 this meant that there were 12 more lung cancer deaths per 100,000 women for African Americans than Whites. In 2010 the difference was 13 cancer deaths per 100,000 women.

Has there been a change in the disparity?
• Between 1995 and 2010, the disparity in lung cancer mortality rates between African American and White women remained constant. The ratio between African American and White rates was 1.33 in both 1995 and 2010.

What does this mean?
• As lung cancer death rates for both African American and White women in Wisconsin have risen, the disparity in rates between the two groups has persisted.
• In 2010, this meant that African American women were 33% more likely to die from lung cancer than White women.
What’s the trend among all Wisconsin residents?
- In 2010, 1,612 men in Wisconsin died from lung cancer.
- The number of lung cancer deaths per 100,000 men (mortality rate) decreased 20% between 1995 and 2010, from 70.5 per 100,000 to 56.7 per 100,000.

Is there a disparity between African Americans and Whites?
- Yes. Over the entire period 1995-2010, lung cancer mortality rates were markedly higher for African American men than White men.
- In 1995 this meant that there were 71 more lung cancer deaths per 100,000 for African American men than White men. In 2010 the difference was 42 cancer deaths per 100,000 men.

Has there been a change in the disparity?
- Between 1995 and 2010, the disparity in lung cancer mortality rates between African American and White men decreased. The ratio between African American and White rates was 2.03 in 1995 and 1.75 in 2010.

What does this mean?
- As the lung cancer death rate for African American men has dropped steadily, the disparity in rates between African American and White men in Wisconsin has improved.
- However, a very large gap persists. In 2010 African American men had a 75% higher chance of dying of lung cancer than White men.
**What’s the trend among all Wisconsin residents?**

- In 2010, 3,931 men in Wisconsin were diagnosed with prostate cancer.
- The number of new prostate cancer cases per 100,000 men (incidence) decreased 24% between 1995 and 2010, from 165.1 per 100,000 to 125.4 per 100,000.

**Is there a disparity between African Americans and Whites?**

- Yes. Over the entire period 1995-2010, prostate cancer incidence rates were higher for African American men than White men.
- In 1995 this meant that there were 107 more new prostate cancer cases per 100,000 for African Americans compared to Whites. In 2010, the difference was 76 new cases per 100,000 men.

**Has there been a change in the disparity?**

- Between 1995 and 2010, the disparity in cancer incidence rates between African Americans and Whites decreased slightly. The ratio between African American and White rates was 1.62 in 1995 and 1.53 in 2010.

**What does this mean?**

- The disparity in prostate cancer incidence between African American and White men in Wisconsin has improved somewhat.
- However, a very large gap persists. In 2010 African American men had a 53% higher chance of being diagnosed with prostate cancer than White men.

---

### Trends in Age-Adjusted Prostate Cancer Incidence, By Race

**Wisconsin, 1995-2010**

<table>
<thead>
<tr>
<th>Year</th>
<th>African American</th>
<th>White</th>
<th>African American Trend</th>
<th>White Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>257.9</td>
<td>161.7</td>
<td>278.9</td>
<td>172.3</td>
</tr>
<tr>
<td>2010</td>
<td>213.1</td>
<td>122.1</td>
<td>218.1</td>
<td>142.3</td>
</tr>
</tbody>
</table>

* Rates are age-adjusted per 100,000 population. Trends were fitted from ordinary least squares regression of rates.
What’s the trend among all Wisconsin residents?

- In 2010, 621 men in Wisconsin died from prostate cancer.
- The number of prostate cancer deaths per 100,000 men (mortality rate) decreased 38% between 1995 and 2010, from 38.4 per 100,000 to 23.8 per 100,000.

Is there a disparity between African Americans and Whites?

- Yes. Over the entire period 1995-2010, prostate cancer mortality rates were significantly higher for African American men compared to White men.
- In 1995 this meant that there were 32 more prostate cancer deaths per 100,000 men for African Americans than Whites. In 2010 the difference was 17 cancer deaths per 100,000 men.

Has there been a change in the disparity?

- Between 1995 and 2010, the disparity in prostate cancer mortality rates between African American and White men decreased. The ratio between African American and White rates was 1.86 in 1995 and 1.75 in 2010.

What does this mean?

- The disparity in prostate cancer death rates between African American and White men in Wisconsin has improved.
- However, a very large gap persists. In 2010 African American men had a 75% higher chance of dying from prostate cancer than White men.

<table>
<thead>
<tr>
<th>Year</th>
<th>Mortality Rate*</th>
<th>Mortality Rate Trend*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>African American</td>
<td>White</td>
</tr>
<tr>
<td>1995</td>
<td>69.1</td>
<td>37.9</td>
</tr>
<tr>
<td>2010</td>
<td>32.0</td>
<td>23.7</td>
</tr>
</tbody>
</table>

* Rates are age-adjusted per 100,000 population. Trends were fitted from ordinary least squares regression of rates.
DATA SOURCES

Incidence data

Cancer incidence is defined as the number of new cancer cases that occur during a specified period for a population at risk for developing the disease. Incidence is expressed as a number of cases or as a rate (the number of cases per 100,000 persons).

This report details the occurrence of new cancers among Wisconsin residents during the period 1995-2010 as reported by the Wisconsin Cancer Reporting System (WCRS). WCRS is a population-based registry guided by statutory mandate to collect, manage and analyze all cancer cases for Wisconsin residents. The registry is located in the Division of Public Health, Wisconsin Department of Health Services. WCRS was established in 1976 to collect cancer incidence data of Wisconsin residents as mandated by Wisconsin Statute 255.04, Cancer Reporting. In compliance with state law, hospitals, physicians and clinics report cancer cases to WCRS. All tumors with malignant cell types are reportable to WCRS, except basal cell and squamous cell carcinomas of the skin and in situ cervical cancer. With the passage of the Cancer Registries Amendment Act (Public Law 102-515) in 1994, WCRS became part of the National Program of Cancer Registries.

WCRS cancer incidence data were obtained from the Wisconsin Interactive Statistics on Health (WISH) Cancer Module, available for public use at http://www.dhs.wisconsin.gov/wish/cancer/. Data were accessed on April 23, 2013. Subsequent data releases add additional years of data as well as newly identified cases to previously reported years, changing the reported rates.

Mortality data

Cancer mortality is defined as deaths from cancer that occur during a specified period of time for a particular population. Mortality is expressed as a number of deaths or as a rate (the number of deaths per 100,000 persons).

This report details cancer deaths among Wisconsin residents during the period 1995-2010 as reported by WCRS. WCRS obtains these data from the National Center for Health Statistics in the Centers for Disease Control and Prevention. This data source codes underlying cause of death using the International Classification of Diseases (ICD). Cancer deaths were defined as those coded 140.0 through 208.9 in ICD-9 (up to 1998) and C00 through C97 in ICD-10 (after 1998).

WCRS cancer mortality data were obtained from the Wisconsin Interactive Statistics on Health (WISH) Cancer Module, available for public use at http://www.dhs.wisconsin.gov/wish/cancer/. Data were accessed on April 23, 2013. Subsequent data releases add additional years of data as well as newly identified cases to previously reported years, changing the reported rates.
Cancer types

Cancers are named after the part of the body where they originate. The cancer types covered in this report are:

- All sites (all cancers regardless of type)
- Breast (female)
- Colorectal
- Lung (lung and bronchus)
- Prostate

Breast, colorectal, lung and prostate are the four most common cancers.

Race definition

The methodology for defining race developed by the National Center for Health Statistics and the U.S. Census Bureau was modified in 2007. The National Center for Health Statistics recoded detailed historical race information into four major categories to make the race information compatible with available annual population estimates used as denominators for the rates. These categories are “White”, “Black or African American,” “American Indian/Alaska Native” and “Asian or Pacific Islander.” For a more detailed description of race variables, please refer to the National Center for Health Statistics and U.S. Census Bureau documentation.34,35

Age standardization

All rates presented in this report are age-adjusted by WCRS using the 2000 U.S. standard population. Age adjustment of rates allows comparison of populations by eliminating differences in observed rates that result from age differences in underlying populations.
**METHODS**

**Definition of disparities**

Our analysis follows the National Cancer Institutes’ definition of *cancer health disparities* as “differences in the incidence, prevalence, mortality, and burden of cancer and related adverse health conditions that exist among specific population groups in the United States.” Specifically, we measured disparities as differences in the incidence and mortality of cancer between African Americans and Whites.

**Measure of relative disparity**

We used the rate ratio to measure relative disparity. Since the report involves only comparisons between two groups (African Americans and Whites), this pairwise measure of relative disparity is sufficient. For both incidence and mortality, the rate ratio is defined as the ratio of the African American rate to the White rate in a given year. To measure change in relative disparity, we compared the ratio for the first and last year in the period of analysis.

**Trends vs. observed rates**

There is a relatively small population of African Americans in Wisconsin (see Appendix). This can make it difficult to obtain stable estimates for rates of less common cancers in this population. To address this problem, other reports on cancer health disparities in Wisconsin have pooled several years of data. This report used an alternative approach by comparing trends in annual rates over a 16-year period. Specifically, we calculated the least squares regression (the best fit straight line) of the rates over the years 1995-2010 and graphed the resulting smoothed trend line. The trend line reflects movements in rates occurring over the entire period while minimizing the fluctuation in any given year that may be due to small population sizes. (Notably, because of the larger population size, the White trend line closely matches the actual rates in any given year.)

In measures of disparity, we use the rate from the trend line rather than the observed rate to measure incidence or mortality in a given year. Again, this reflects changes in disparities over time while minimizing the fluctuation in the rate ratio in any given year due to small population sizes.

**Calculation of excess mortality**

One way to express the extent of racial cancer disparities is to pose a hypothetical situation in which African Americans experience the same cancer mortality rates observed among Whites. Using this method, we calculated simulated deaths by multiplying the age-specific mortality rates observed among Whites by the African American population in each age group. The ratio of the difference between observed and modeled deaths to observed deaths among African Americans is an estimate of excess mortality, or deaths that would have been avoided if African Americans had experienced the lower age-specific death rates of Whites. We calculated excess deaths for all site cancer only, as the number of cases for specific cancer sites was too small to permit meaningful analysis.
Table 1 (next page) provides an example for all cancers in males and females in 1995. Column 1 shows the age-specific cancer death rates observed among Whites in each 5-year age group. Column 2 shows the number of cancer deaths observed among African Americans in each 5-year age group. Column 3 shows the African American statewide population in each 5-year age group. Column 4 shows the age-specific death rate for African Americans calculated by dividing column 2 by column 3. There were 351 African American deaths caused by cancer in Wisconsin in 1995. Column 5 shows the number of deaths that would have occurred if African Americans had experienced the same age-specific death rates as Whites in 1995. These modeled deaths are calculated by multiplying the White age-specific mortality rate by the African American population in each age group. Summing across the age groups, 226 African Americans would have died from cancer in 1995 if the population had experienced the White cancer death rates. The difference between the observed and modeled deaths among African Americans was 125 deaths, thus 36% (125/351) of African American deaths would have been averted if African Americans had experienced the lower age-specific death rates of Whites.
Table 1: Calculation of Excess African American Cancer Deaths: All Cancer Sites, Male & Female, Wisconsin, 1995

<table>
<thead>
<tr>
<th>Age</th>
<th>White Observed Death Rate (per 100,000)† (Column 1)</th>
<th>White Observed Number of Deaths† (Column 2)</th>
<th>African American Population^ (Column 3)</th>
<th>African American Observed Death Rate (per 100,000) (2)/(3) (Column 4)</th>
<th>Modeled Deaths (if exposed to White Rate) (1) * (3) (Column 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1</td>
<td>0</td>
<td>0</td>
<td>6,722</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>1 - 4</td>
<td>1</td>
<td>1</td>
<td>28,254</td>
<td>3.5</td>
<td>0.3</td>
</tr>
<tr>
<td>5 - 9</td>
<td>1</td>
<td>1</td>
<td>34,312</td>
<td>2.9</td>
<td>0.3</td>
</tr>
<tr>
<td>10 - 14</td>
<td>2.8</td>
<td>0</td>
<td>31,374</td>
<td>0.0</td>
<td>0.9</td>
</tr>
<tr>
<td>15 - 17</td>
<td>1</td>
<td>0</td>
<td>17,649</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td>18 - 19</td>
<td>0</td>
<td>0</td>
<td>9,273</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>20 - 24</td>
<td>1</td>
<td>1</td>
<td>21,639</td>
<td>4.6</td>
<td>0.2</td>
</tr>
<tr>
<td>25 - 29</td>
<td>1</td>
<td>1</td>
<td>21,919</td>
<td>4.6</td>
<td>0.2</td>
</tr>
<tr>
<td>30 - 34</td>
<td>1</td>
<td>1</td>
<td>23,746</td>
<td>4.2</td>
<td>0.2</td>
</tr>
<tr>
<td>35 - 39</td>
<td>1</td>
<td>1</td>
<td>23,623</td>
<td>4.2</td>
<td>0.2</td>
</tr>
<tr>
<td>40 - 44</td>
<td>41.6</td>
<td>24</td>
<td>18,817</td>
<td>127.5</td>
<td>7.8</td>
</tr>
<tr>
<td>45 - 49</td>
<td>83.1</td>
<td>23</td>
<td>14,208</td>
<td>161.9</td>
<td>11.8</td>
</tr>
<tr>
<td>50 - 54</td>
<td>156.7</td>
<td>35</td>
<td>9,280</td>
<td>377.2</td>
<td>14.5</td>
</tr>
<tr>
<td>55 - 59</td>
<td>292.7</td>
<td>36</td>
<td>7,573</td>
<td>475.4</td>
<td>22.2</td>
</tr>
<tr>
<td>60 - 64</td>
<td>447.7</td>
<td>43</td>
<td>6,384</td>
<td>673.6</td>
<td>28.6</td>
</tr>
<tr>
<td>65 - 69</td>
<td>700.9</td>
<td>52</td>
<td>5,475</td>
<td>949.8</td>
<td>38.4</td>
</tr>
<tr>
<td>70 - 74</td>
<td>956.7</td>
<td>44</td>
<td>3,423</td>
<td>1,285.4</td>
<td>32.7</td>
</tr>
<tr>
<td>75 - 79</td>
<td>1240.7</td>
<td>37</td>
<td>2,208</td>
<td>1,675.7</td>
<td>27.4</td>
</tr>
<tr>
<td>80 - 84</td>
<td>1485.2</td>
<td>24</td>
<td>1,252</td>
<td>1,916.9</td>
<td>18.6</td>
</tr>
<tr>
<td>85+</td>
<td>1880.3</td>
<td>21</td>
<td>1,120</td>
<td>1,875.0</td>
<td>21.1</td>
</tr>
<tr>
<td>Total</td>
<td>351§</td>
<td>288,251</td>
<td>226</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† Source: Wisconsin Cancer Registry System. Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics. Wisconsin Interactive Statistics on Health (WISH) data query system, Cancer module. [http://www.dhs.wisconsin.gov/wish/cancer/](http://www.dhs.wisconsin.gov/wish/cancer/). Accessed June 5, 2013. WCRS suppresses values if there are less than 10 (but more than zero) observed deaths in an age category. For the excess death analysis, in those instances the rate or number of deaths was given the value of 1, resulting in a conservative estimate of excess mortality.


§ Sum among all age groups. Difference from sum of observed number of deaths by age group listed in table due to suppressed values.
REFERENCES


APPENDIX

RACIAL DIVERSITY IN WISCONSIN

Compared to other states, Wisconsin does not have large minority populations. Taken together, racial and ethnic minority populations comprise 15.6% of Wisconsin's total population. (See Table A below.) African Americans are the largest minority group, comprising 6.3% of the total population. Nearly 90% of African Americans live in five counties (Milwaukee, Racine, Dane, Kenosha and Rock) and almost two-thirds (66%) reside in the City of Milwaukee. 38

Table A. Wisconsin demographic estimates, by race and ethnicity, 2010

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>5,686,986</td>
<td></td>
</tr>
<tr>
<td>One race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>4,902,067</td>
<td>86.2%</td>
</tr>
<tr>
<td>Black or African American</td>
<td>359,148</td>
<td>6.3%</td>
</tr>
<tr>
<td>American Indian and Alaska Native</td>
<td>54,526</td>
<td>1.0%</td>
</tr>
<tr>
<td>Asian</td>
<td>129,234</td>
<td>2.3%</td>
</tr>
<tr>
<td>Native Hawaiian and Other Pacific Islander</td>
<td>1,827</td>
<td>0.0%</td>
</tr>
<tr>
<td>Some other race</td>
<td>135,867</td>
<td>2.4%</td>
</tr>
<tr>
<td>Two or more races</td>
<td>104,317</td>
<td>1.8%</td>
</tr>
<tr>
<td>Hispanic or Latino ethnicity (of any race)</td>
<td>336,056</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

Increasing the capacity of communities and the University of Wisconsin Carbone Cancer Center to reduce inequities in cancer burden through research, outreach and education
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chdi@uwcarbone.wisc.edu chdi.wisc.edu

QUESTIONS OR COMMENTS ABOUT THIS REPORT?
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