Disparities in Cancer Incidence and Mortality in Delaware

Prepared by: DE Division of Public Health
Presented to: Disparities Committee, DE Cancer Consortium

March 21, 2006
Multifactorial Basis of Racial Disparities

Society and Health, Oxford University Press, 1995
Objectives

- To examine differences in cancer incidence and mortality by race, sex, age, and county of residence
- To examine trends in cancer incidence and mortality by race and sex
- To examine whether there are differences in access to health care, behavioral cancer risk factors, screening usage, stage of disease, and cancer treatment
Objective 1

To examine differences in cancer incidence and mortality by race, sex, age, and county of residence

Notes: Counts of five or fewer people appear as “<6.”

Rates based on <25 people in the numerator are considered unstable/unreliable, and are not presented.

All rate ratios are computed by dividing the age-adjusted incidence/mortality rate for the minority group by the rate for the reference group. A rate ratio of one indicates an absence of disparity.
Data Sources

Delaware Cancer Registry
- Central, state-level Registry
- Compiles incidence data submitted by hospitals, other facilities, laboratories, physicians into one central repository
- Submits data annually to, e.g., CDC

National Center for Health Statistics
- Captures vital statistics data, including mortality
### Number of New Cancers and Deaths From Cancer in Delaware

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>White</td>
<td>AA</td>
</tr>
<tr>
<td>All Cancers</td>
<td>16,416</td>
<td>2,867</td>
</tr>
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<td>Breast</td>
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<tr>
<td>Lung</td>
<td>2,609</td>
<td>418</td>
</tr>
<tr>
<td>Prostate</td>
<td>2,448</td>
<td>591</td>
</tr>
</tbody>
</table>

Data Source: Delaware Cancer Registry, National Center for Health Statistics
Disparities in Cancer Incidence Comparing Minorities* and Whites in Delaware, 1998–2002

<table>
<thead>
<tr>
<th></th>
<th>Incidence RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Cancers</strong></td>
<td><strong>1.08 (1.04–1.13)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>0.51 (0.44–0.59)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>0.58 (0.49–0.68)</strong></td>
</tr>
<tr>
<td>Breast</td>
<td>0.90 (0.81–1.01)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>1.19 (1.06–1.34)</td>
</tr>
<tr>
<td>Lung</td>
<td>1.06 (0.96–1.18)</td>
</tr>
<tr>
<td>Prostate</td>
<td>1.68 (1.53–1.84)</td>
</tr>
</tbody>
</table>

*African American, Hispanic, Asian/Pacific Islander

Data Source: Delaware Cancer Registry
Are racial disparities in cancer incidence dependent on sex?

Incidence Rate Ratios
Comparing African Americans to Whites by Sex

All Sites  Colorectal  Lung/Bronchus
Are racial disparities in cancer incidence dependent on age?

Incidence Rate Ratios
Comparing African Americans with Whites by Age

African American Rate / White Rate

F Breast  Colorectal  Lung/Bronchus  Prostate

20-39  40-49  50-64  65-79  80+

40-49  50-64  65-79  80+

40-49  50-64  65-79  80+

50-64  65-79  80+
Are racial disparities in cancer incidence dependent on the county of residence?

Incidence Rate Ratios
Comparing African Americans with Whites by County

African American Rate / White Rate


All Sites F Breast Colorectal Lung/Bronchus Prostate
### Disparities in Cancer Mortality Between Minorities* and Whites in Delaware, 1999–2002

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Mortality RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Cancers</td>
<td>1.21 (1.14–1.29)</td>
</tr>
<tr>
<td></td>
<td>0.72 (0.58–0.90)</td>
</tr>
<tr>
<td></td>
<td>0.50 (0.37–0.68)</td>
</tr>
<tr>
<td>Breast</td>
<td>1.33 (1.09–1.63)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>1.47 (1.22–1.76)</td>
</tr>
<tr>
<td>Lung</td>
<td>1.08 (0.96–1.21)</td>
</tr>
<tr>
<td>Prostate</td>
<td>2.48 (1.98–3.09)</td>
</tr>
</tbody>
</table>

*African American, Hispanic, Asian/Pacific Islander

Data Source: National Center for Health Statistics
Are racial disparities in cancer mortality dependent on sex?

Mortality Rate Ratios
Comparing African Americans with Whites by Sex
Are racial disparities in cancer mortality dependent on age?

Mortality Rate Ratios
Comparing African Americans with Whites by Age
Are racial disparities in cancer mortality dependent on county of residence?

Mortality Rate Ratios
Comparing African Americans with Whites by County

- Kent
- New Castle
- Sussex

- All Sites
- Breast
- Colorectal
- Lung/Bronchus
Objective 2

To examine trends in cancer incidence and mortality by race and sex
Data Sources

- Delaware Cancer Registry
- National Center for Health Statistics
Trends in Incidence Rates - All Cancers
Delaware 1980 - 2002

Data Source: Delaware Cancer Registry

Data are presented as 5-year average rates.
Trends in Incidence Rates - Lung Cancer
Delaware 1980 - 2002

Data Source: Delaware Cancer Registry
Data are presented as 5-year average rates.
Trends in Incidence Rates - Colorectal Cancer
Delaware 1980 - 2002

Data Source: Delaware Cancer Registry
Data are presented as 5-year average rates.
Trends in Incidence Rates - Breast Cancer
Delaware 1980 - 2002

Data Source: Delaware Cancer Registry       Data are presented as 5-year average rates.
Trends in Incidence Rates - Prostate Cancer
Delaware 1980 - 2002

Data Source: Delaware Cancer Registry
Data are presented as 5-year average rates.
Trends in Mortality Rates - All Cancers
Delaware 1980 - 2002

Data Source: Delaware Cancer Registry
Data are presented as 5-year average rates.
Trends in Mortality Rates - Lung Cancer
Delaware 1980 - 2002

Data Source: Delaware Cancer Registry
Data are presented as 5-year average rates.
Trends in Mortality Rates - Colorectal Cancer
Delaware 1980 - 2002

Data Source: Delaware Cancer Registry
Data are presented as 5-year average rates.
Trends in Mortality Rates - Breast Cancer
Delaware 1980 - 2002

Data Source: Delaware Cancer Registry       Data are presented as 5-year average rates.
Trends in Mortality Rates - Prostate Cancer
Delaware 1980 - 2002

Data Source: Delaware Cancer Registry
Data are presented as 5-year average rates.
Objective 3

To examine whether there are differences in access to health care, behavioral cancer risk factors, screening usage, stage of disease, or cancer treatment
Data Sources

- Behavioral Risk Factor Surveillance System (BRFSS): Access to health care, behavioral cancer risk factors, and screening usage

- Delaware Cancer Registry: Stage of disease (at diagnosis) and treatment
## BRFS Limitations

- Self-reported; no examination data
- Phone-related issues:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>No phone</th>
<th>Cell only</th>
</tr>
</thead>
<tbody>
<tr>
<td>South</td>
<td>6.0%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Black</td>
<td>7.9%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>9.1%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Other</td>
<td>3.5%</td>
<td>5.4%</td>
</tr>
<tr>
<td>Age 35+</td>
<td>3.9-4.1%</td>
<td>2.5-5.0%</td>
</tr>
</tbody>
</table>

BRFS Limitations

Sample size issues:

- Large overall sample = high validity and reliability for total population and county estimates
- Small sample = unstable / unreliable estimates – or NO estimates, if numbers very small
Men responding to question about receipt of colonoscopy:

- Total sample = 4,028
- Number of men = 1,593
- Men age 50+ = 721
- African American men age 50+ = 63
- Hispanic men age 50+ = 11
DE Cancer Registry Limitations

- Treatment data collected only once, upon initial submission – i.e., no update required during subsequent update submissions.
- Treatment data not currently edited / audited by organizations to which data is annually submitted.
- Treatment data minimally audited at reporting facilities (~10% / year).
- Though all cancers submitted – not just a sample – some populations nonetheless small.
## Example Small Population Issue: DCR

<table>
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</tr>
</tbody>
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Data Source: Delaware Cancer Registry, National Center for Health Statistics
Lack of Access to Health Care Among Delawareans

Data Source: Behavioral Risk Factor Surveillance System. 2002
Can racial/ethnic differences in access to health care be explained by differences in age, sex, or education level?
Predictors of Lack of Access to Health Care: Delaware 2002

<table>
<thead>
<tr>
<th></th>
<th>Insurance</th>
<th>Personal Doctor</th>
<th>Usual Source of Care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>African American</strong></td>
<td>1.5 (1.1-2.0)</td>
<td>1.0 (0.7-1.4)</td>
<td>1.6 (1.2-2.3)</td>
</tr>
<tr>
<td><strong>Hispanic</strong></td>
<td>1.6 (0.9-2.8)</td>
<td>2.3 (1.4-3.7)</td>
<td>2.7 (1.5-4.7)</td>
</tr>
<tr>
<td><strong>Non-H.S. Graduate</strong></td>
<td>7.8 (5.1-12.0)</td>
<td>2.5 (1.7-3.6)</td>
<td>2.1 (1.4-3.1)</td>
</tr>
<tr>
<td><strong>H.S. Graduate</strong></td>
<td>2.7 (1.9-3.9)</td>
<td>1.3 (0.9-1.7)</td>
<td>1.0 (0.7-1.5)</td>
</tr>
<tr>
<td><strong>Some College</strong></td>
<td>1.8 (1.2-2.7)</td>
<td>1.2 (0.8-1.6)</td>
<td>1.3 (0.8-1.7)</td>
</tr>
</tbody>
</table>

Data are presented as odds ratios from three separate multivariate logistic regression models with access to care as the dependent variables.

Data Source: Behavioral Risk Factor Surveillance System. 2002
Rates of Modifiable Behavioral Risks Among Delawareans

Comparison of Delawareans' Modifiable Risk Factors by Race / Ethnicity

Data Source: Behavioral Risk Factor Surveillance System. 2002
Can racial/ethnic differences in behavioral risk factors be explained by differences in age, sex, education level, and access to health care?
Predictors of Differences in Modifiable Behavioral Risk Factors: Delaware 2002

<table>
<thead>
<tr>
<th></th>
<th>Exercise</th>
<th>Smoking</th>
<th>Alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>2.4 (1.9-3.0)</td>
<td>0.55 (0.5-0.7)</td>
<td>0.54 (0.3-0.9)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.8 (1.1-3.0)</td>
<td>0.70 (0.5-1.1)</td>
<td>0.25 (0.1-1.0)</td>
</tr>
<tr>
<td>Non-H.S. Graduate</td>
<td>4.4 (3.3-5.9)</td>
<td>2.2 (1.7-2.8)</td>
<td>1.1 (0.6-2.0)</td>
</tr>
<tr>
<td>H.S. Graduate</td>
<td>2.2 (1.8-2.7)</td>
<td>1.7 (1.4-2.0)</td>
<td>1.3 (0.9-1.9)</td>
</tr>
<tr>
<td>Some College</td>
<td>1.6 (1.2-2.0)</td>
<td>1.5 (1.3-1.8)</td>
<td>1.4 (1.0-2.1)</td>
</tr>
<tr>
<td>Age 65-79</td>
<td>2.4 (1.9-3.1)</td>
<td>1.8 (1.5-2.2)</td>
<td>0.52 (0.3-0.8)</td>
</tr>
</tbody>
</table>

Data are presented as odds ratios from five separate multivariate logistic regression models with behavioral risk factors as the dependent variables.

Data Source: Behavioral Risk Factor Surveillance System. 2002
## Predictors of Differences in Modifiable Behavioral Risk Factors: Delaware 2002

<table>
<thead>
<tr>
<th></th>
<th>Obesity</th>
<th>Diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td><strong>2.5 (2.0-3.2)</strong></td>
<td><strong>1.4 (1.1-1.8)</strong></td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.2 (0.8-1.9)</td>
<td>0.71 (0.4-1.2)</td>
</tr>
<tr>
<td>Non-H.S. Graduate</td>
<td><strong>1.9 (1.5-2.6)</strong></td>
<td><strong>2.3 (1.6-3.2)</strong></td>
</tr>
<tr>
<td>H.S. Graduate</td>
<td><strong>1.6 (1.3-1.9)</strong></td>
<td><strong>1.9 (1.6-2.3)</strong></td>
</tr>
<tr>
<td>Some College</td>
<td>1.4 (1.2-1.7)</td>
<td><strong>1.6 (1.3-1.9)</strong></td>
</tr>
<tr>
<td>Age 65-79</td>
<td><strong>1.7 (1.4-2.1)</strong></td>
<td>0.62 (0.5-0.8)</td>
</tr>
</tbody>
</table>

Data are presented as odds ratios from five separate multivariate logistic regression models with behavioral risk factors as the dependent variables.

Data Source: Behavioral Risk Factor Surveillance System. 2002
Lack of Cancer Screening Tests Among Delawareans

Delawareans’ Lack of Cancer Screening Tests by Race / Ethnicity

Data Source: Behavioral Risk Factor Surveillance System. 2002
There were no differences in the proportions lacking screening when comparing Whites and African Americans. Factors which were predictors of a difference were:
## Predictors of Disparities in Screening Usage: Delaware 2002

<table>
<thead>
<tr>
<th></th>
<th>FOBT</th>
<th>Sig-/Colo</th>
<th>PSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-H.S. Graduate</td>
<td>1.2 (0.8-1.8)</td>
<td>2.7 (1.9-3.9)</td>
<td>1.8 (1.0-3.2)</td>
</tr>
<tr>
<td>H.S. Graduate</td>
<td>1.0 (0.7-1.3)</td>
<td>2.1 (1.6-2.7)</td>
<td>0.9 (0.6-1.3)</td>
</tr>
<tr>
<td>No Health Insurance</td>
<td>1.4 (0.7-2.7)</td>
<td>2.5 (1.4-4.6)</td>
<td>3.7 (1.6-8.3)</td>
</tr>
<tr>
<td>No Personal Doctor</td>
<td>2.5 (1.2-5.3)</td>
<td>2.3 (1.3-4.0)</td>
<td>3.8 (1.6-8.6)</td>
</tr>
</tbody>
</table>

Data are presented as odds ratios from six separate multivariate logistic regression models with the screening tests as the dependent variables.

Data Source: Behavioral Risk Factor Surveillance System. 2002
# Predictors of Disparities in Screening Usage: Delaware 2002

<table>
<thead>
<tr>
<th></th>
<th>DRE</th>
<th>Mam</th>
<th>CBE</th>
</tr>
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<tbody>
<tr>
<td>Non-H.S. Graduate</td>
<td>2.3 (1.4-3.7)</td>
<td>2.1 (1.2-3.6)</td>
<td>4.5 (2.8-7.4)</td>
</tr>
<tr>
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<td>1.8 (1.2-2.6)</td>
<td>2.5 (1.7-3.7)</td>
</tr>
<tr>
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<td>2.6 (1.5-4.6)</td>
<td>2.1 (1.4-3.2)</td>
</tr>
<tr>
<td>No Personal Doctor</td>
<td>4.0 (2.0-8.1)</td>
<td>3.5 (1.9-6.4)</td>
<td>1.7 (1.0-2.8)</td>
</tr>
</tbody>
</table>

Data are presented as odds ratios from six separate multivariate logistic regression models with the screening tests as the dependent variables.

Data Source: Behavioral Risk Factor Surveillance System. 2002
## Distribution of Cancer Cases by Stage: Delaware 1998 - 2002

<table>
<thead>
<tr>
<th></th>
<th>Colorectal</th>
<th>Breast</th>
<th>Prostate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>White</td>
<td>AA</td>
<td>White</td>
</tr>
<tr>
<td>Local</td>
<td>29%</td>
<td>29%</td>
<td>67%</td>
</tr>
<tr>
<td>Regional</td>
<td>47%</td>
<td>44%</td>
<td>26%</td>
</tr>
<tr>
<td>Distant</td>
<td>16%</td>
<td>21%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Data Source: Delaware Cancer Registry

Restricted to cancer sites with available screening test.
Which brings us to…

Cancer treatment

Three analyses:
– Initial analysis
– Initial subset analysis
– Post-review subset analysis
Receipt of “Standard” Treatment

Limited to:

- People with breast, colorectal, lung/bronchus or prostate cancer
- People diagnosed at local stage disease
- Delaware residents treated at Delaware facilities
- First course of treatment
“Standard” Treatment

- Standard during the study period (1998-2002)
- As defined by the National Cancer Institute, Physician Data Query
- Based solely on treatment data contained in Delaware Cancer Registry
- Included 3,845 cases
“Standard” Treatment

Breast cancer (n = 1,675; 87% W, 13% AA):
   – Mastectomy
   – Breast conserving surgery (BCS) + radiation

Colorectal cancer (n = 570; 84% W, 16% AA):
   – Partial colectomy (at least)
“Standard” Treatment

- **Lung/bronchus cancer (n = 514; 88% W, 12% AA):**
  - Wedge, segmental or bronchial sleeve resection or
  - Resection of at least one lobe of lung

- **Prostate cancer (n = 1,086; 72% W, 28% AA):**
  - Subtotal, segmental or simple prostatectomy (men aged <70)
Results, Initial Analysis

Characteristics Associated with a Lack of “Standard” Treatment

<table>
<thead>
<tr>
<th></th>
<th>Breast</th>
<th>Colorectal</th>
<th>Lung/Bron</th>
<th>Prostate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 65-79</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Age 80+</td>
<td>X</td>
<td></td>
<td>X</td>
<td>(NA)</td>
</tr>
<tr>
<td>Kent Cnty (res)</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>No Health Ins</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Only statistically significant results displayed
Results, Initial Analysis

Looking across all four cancers combined, statistically significant associations found between likelihood of receiving standard treatment and:

- Facility (p <0.0001)
- Cancer type (p <0.0001)
- Race (p <0.0007)
Issues with Initial Treatment Analysis

“Standard” treatment not equally “standard” for all cancers included:
- Variations are common / appropriate for lung / bronchus cancer
  - “Enroll in clinical trial” may be best approach
  - Outcome – no matter what treatment is used – is generally poor
- Variations are common / appropriate for prostate cancer
  - “Watchful waiting” (i.e., no treatment, in terms of data capture) is entirely legitimate
Plan Developed to Address

Limit analysis to cancers where treatment approach is ~universally agreed:

– Breast
– Colorectal

Limit patients analyzed to those who:

– Received *some* treatment (indicator of candidacy for treatment)
– Lacked “*standard*” treatment
Plan Developed to Address

- Breast cancer (n = 1,078; 88% W, 12% AA)
  - Received breast conserving surgery, but not follow-up radiation

- Colorectal cancer (n = 73; 78% W, 22% AA)
  - Received polypectomy, but not at least a partial colectomy
Results, Initial Subset Analysis
(n=1,151)

Statistically significant associations found between likelihood of receiving standard treatment and:

- Facility (p <0.0001)
- Cancer type (p <0.0001)
- Race – both cancers combined (p <0.004)
- Race – breast cancer only (p <0.04)
Issues with Subset Treatment Analysis

- Still depended solely on data in DCR
- DCR treatment data not routinely audited by any accrediting organization for completeness or accuracy
- Treatment data collected from reporting facilities only on initial submission to DCR (i.e., not included in follow-up submissions)
- Treatment data minimally audited at facility level (~10% of annual cases)
- No accommodation of justifiable variations from “standard”
  - Patient choice
  - Co-morbidities precluding more extensive surgery / radiation
Plan Developed to Address

- Identify all (subset analysis) cases who did not receive “standard” treatment (n = 334)
- Conduct on-site reviews at each facility to validate DCR data used in analyses
- Revise dataset to reflect results of reviews (if indicated)
- Re-run subset analysis, using revised dataset
Plan Implemented

- Physician / oncologist members of Cancer Consortium formed review team
- Team visited six facilities between mid-December 2005 and early-February 2006
- Reviewed all available records for each case (e.g., inpatient, radiation facility, facility-based registry)
- Documented review findings
Review Results

Percentage of Cases by Review Outcome
All (6) Facilities

- 37.1% Doc insufficient to determine
- 62.9% Doc sufficient to determine
Review Results

Percentage of Cases by Review Outcome
All (6) Facilities

- 37.1% Doc insufficient to determine
- 62.9% Radiation done
- 28.0% No radiation/add'l surg req'd
- 22.5% No radiation/add'l surg; justified

61
Results, Post-Review Subset Analysis
(n=1,144*)

Statistically significant associations found between likelihood of receiving “appropriate” treatment and:

- Facility (p <0.0001)

* Seven (7) cases eliminated due to non-analytic case type or incorrect staging – i.e., review revealed disease not diagnosed at local stage.
Remaining Treatment Issue

- Where patients receive treatment still appears to impact likelihood of receiving “appropriate” treatment

Possible contributing factor:
- Results may be more reflective of quality of documentation than quality of treatment
Remaining Treatment Issue

**Plan:**
- Continue follow-up on cases not yet resolved

**Progress to date:**
- Follow-up plan developed
- Implementation in progress
  - Cases sought at one facility to date (21 resolved)
  - Plan in place to ask other facilities to search for remaining outstanding cases
Remaining Data Issue

Reviews revealed numerous issues with DCR data and with some facility-specific registry data

- DCR data – considered alone – do not support analysis of treatment (nor have they – historically – been intended to)
- DCR data and facility registry data often differ
- Registry data at some facilities found to be especially problematic during study time frame – e.g., staging inaccuracies
Remaining Data Issue

Problems identified have implications for more than just our study…

– In-state: Staging inaccuracies impact, e.g., program evaluations that track stage-at-diagnosis as a measure of success

– Out-of-state: Data – both DCR- and facility-registry-specific – are submitted to other databases, certifying agencies, etc., and are used to develop Delaware “profiles”
Remaining Data Issue

Plan:

– To be developed by, e.g., Cancer Consortium Advisory Council and DCR Advisory Committee

– Considerations include:
  
  ▪ Scope, e.g., do we want to look to DCR for treatment data
  
  ▪ Policy, e.g., should required update fields be redefined; should some intra-state body routinely oversee / audit DCR (and/or facility) data
  
  ▪ IT capabilities, e.g., should DCR move toward electronic, perhaps web-based, data capture
  
  ▪ Staffing support, e.g., what are appropriate facility registry staffing levels
Remaining Report Issue

- Current treatment section of Disparities Report does not accurately reflect what we now know
  - Reflects analysis of original DCR data
    - All four cancers
    - Registry data only, w/o benefit of source document review
  - Includes no subsequent analysis results
Plan:

- Release rest of report, but hold off on treatment section?
- Hold entire report till treatment section can be rewritten to include all analyses?
  - Include only those done to date?
  - Await completion of current follow-up project?
- Other options?
Remaining Disparities Issues

What are the factors that contribute to the increased cancer incidence rates among African Americans in Delaware?

<table>
<thead>
<tr>
<th></th>
<th>Incidence RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Cancers</td>
<td>1.08 (1.04–1.13)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>1.19 (1.06–1.34)</td>
</tr>
<tr>
<td>Prostate</td>
<td>1.68 (1.53–1.84)</td>
</tr>
</tbody>
</table>
Remaining Disparities Issues

What are the factors that contribute to the increased cancer mortality rates among African Americans in Delaware?

<table>
<thead>
<tr>
<th></th>
<th>Mortality RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Cancers</td>
<td>1.21 (1.14–1.29)</td>
</tr>
<tr>
<td>Breast</td>
<td>1.33 (1.09–1.63)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>1.47 (1.22–1.76)</td>
</tr>
<tr>
<td>Prostate</td>
<td>2.48 (1.98–3.09)</td>
</tr>
</tbody>
</table>
Remaining Disparities Issues

Why are we observing increases in colorectal and prostate cancer incidence?
Remaining Disparities Issues

- Why are we observing increases in colorectal and breast cancer mortality?
African Americans, Hispanics and people with less than a high school education are more likely to lack access to health care.

<table>
<thead>
<tr>
<th></th>
<th>Insurance</th>
<th>Personal Doctor</th>
<th>Usual Source of Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Non-H.S. Graduate</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
African Americans, people with less than a college education, and those age 50-79 are more likely to exhibit behavioral risks.

<table>
<thead>
<tr>
<th></th>
<th>No Exercise</th>
<th>Smoking</th>
<th>Obesity</th>
<th>Poor Diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Non-H.S. Graduate</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>H.S. Graduate</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Some College</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Age 50-64</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 65-79</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
People with less than a high school education, those who lack health insurance, and those who lack a personal doctor are less likely to undergo routine screenings.

<table>
<thead>
<tr>
<th></th>
<th>FOBT</th>
<th>Sig-/Colo</th>
<th>PSA</th>
<th>DRE</th>
<th>Mam</th>
<th>CBE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-H.S. Graduate</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>No Health Insurance</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>No Personal Doctor</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Remaining Disparities Issues

Common, likely inter-relating themes:

– Race and a lack of education are factors in healthcare access
– Race and a lack of education are factors in behavioral risks
– Lack of education and lack of healthcare access (insurance, personal doctor) are factors in screening receipt
Remaining Disparities Issues

Social, cultural and political factors, beyond the scope of this analysis:

- **Patient barriers**
  - Poverty
  - Language / cultural barriers
  - Health literacy
  - Health insurance (benefits-specific)

- **System barriers**
  - Equal access
  - Interactions with healthcare system
  - Insurance / self-insurance
Where shall we go from here?

Treatment

Behavior

Access

Report

Data

Education

Outreach

Other?