OVERVIEW

• Conceptualizing and Measuring Health Disparities
• Data Sources
• Connecticut Population & Demographics
• Health Care Access
• Leading Causes of Death
• Infectious Disease Incidence & Trends
• Birth Outcomes
Measuring Health Disparities

Basic Concepts and Mistakes to Avoid

Definitions of Statistics Used to Evaluate and Quantify Health Disparities

Rates—

• are basic measures of disease occurrence
• measure the probability of disease in a specific population and time period
• are a basic components of disparity measures
Definitions of Statistics Used to Evaluate and Quantify Health Disparities

Relative risk: The ratio of the rate or percentage in the minority group to the rate or percentage for the comparison group (whites).

Relative risk = \frac{\text{Minority rate or percentage}}{\text{White rate or percentage}}

Risk Difference: The difference between the rate or percentage in the minority group and the rate or percentage for the comparison group (whites).

Risk Difference = (\text{Minority rate or percentage}) - (\text{White rate or percentage})
Definitions of Statistics Used to Evaluate and Quantify Health Disparities

Excess events: Those events (births, deaths, cases of disease, hospitalizations, etc.) that would not have occurred to a minority group if the minority group had the same rate or percentage as the white population. Excess events are calculated as follows:

\[
\text{Excess events in minority group} = \text{Number of cases} \times [1 - (1 / \text{Relative risk})]
\]
Definitions of Statistics Used to Evaluate and Quantify Health Disparities

Sample Calculations of Relative Risk, Risk Difference, Excess Deaths


<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Numbers of Deaths</th>
<th>Age-Adjusted Death Rate</th>
<th>Relative Risk</th>
<th>Risk Difference</th>
<th>Excess Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>146,564</td>
<td>611.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American/Black</td>
<td>10,200</td>
<td>859.9</td>
<td>1.45</td>
<td>267.6</td>
<td>3174.2</td>
</tr>
<tr>
<td>Puerto Rican/Hispanic</td>
<td>3,775</td>
<td>461.3</td>
<td>0.78</td>
<td>-131.0</td>
<td>-1072.0</td>
</tr>
<tr>
<td>Asian American/PI</td>
<td>439</td>
<td>232.7</td>
<td>0.39</td>
<td>-359.6</td>
<td>-678.4</td>
</tr>
<tr>
<td>Native American</td>
<td>164</td>
<td>505.7</td>
<td>0.85</td>
<td>-86.6</td>
<td>-28.1</td>
</tr>
<tr>
<td>White</td>
<td>135,486</td>
<td>592.3</td>
<td>1.00</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Definitions of Statistics Used to Evaluate and Quantify Health Disparities

Relative Risk (African America / White)

\[
\frac{859.6}{592.3} = 1.45
\]

Risk Difference (African America -- White)

\[
859.6 - 592.3 = 267.6 \text{ deaths per 100,000 population.}
\]
Definitions of Statistics Used to Evaluate and Quantify Health Disparities

Excess Deaths

Number of deaths x \[1 - (1 / \text{Relative risk})]\]

\[(10,200) \times (1 - [1/1.45]) = 3,174.2\]

estimated excess deaths
Comparison of Risk Ratio and Risk Difference Measures

- In general, rare events (e.g. deaths) will have lower risk difference and excess event values than more common events (e.g. behavioral risk factors like smoking).

- In this example, the Black/White RR value is the same (1.5) for both indicators, but the RD value is very different, because deaths are rare by comparison.

<table>
<thead>
<tr>
<th>OUTCOME</th>
<th>RR</th>
<th>RD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Smoker</td>
<td>1.5</td>
<td>11,100.0</td>
</tr>
<tr>
<td>AAMR-All Causes</td>
<td>1.5</td>
<td>267.6</td>
</tr>
</tbody>
</table>

*Events per 100,000 population
Comparison of Risk Ratio and Risk Difference Measures

Conclusions:

• When using RD values, also consider the severity of the conditions being compared.

• To compare rare conditions with common conditions, use RR measures.

• The RR and RD measures provide different information, and each is worth considering.
Common Challenges in Measuring Disparities

• Reporting accurate statistics due to small numbers for some subpopulation groups (this is a problem in all databases but behavioral risk factor (BRFSS) data are particularly problematic;

• The importance of examining trends in disparities over time in order to develop an accurate picture of the problem.

• Missing information on race/ethnicity in some databases (hospital discharge, in particular).
Summary Statistics Like an Age-Adjusted Mortality Rate Can Mask Important Details

The Connecticut AAMR for all-cause mortality in 1993-1997 was lower for Hispanic than for the White population.

Hispanic rate = 461.3 per 100,000

White rate = 592.3 per 100,000
Summary Statistics Like an Age-Adjusted Mortality Rate Can Mask Important Details

Age-specific Disparities for All-cause Mortality, Connecticut 1993-97

RR (Hispanic/White)

Age at Death

Age 60 and over
Protective & Risk Factor Disparities May Look Different

- Assessing disparities based on the protective rather than the risk-factor characterization of an indicator can change the perceived degree of disparity.

- Prenatal care timing is a good example. Care can be characterized as "early", meaning that it began in the 1st trimester (per HP 2000), or the same data can be expressed in terms of "late or no care," as in the Connecticut data below.
Protective & Risk Factor Disparities May Look Different


GROUP MOTHER'S ETHNICITY/RACE

<table>
<thead>
<tr>
<th>Geographic Area</th>
<th>BIRTHS</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOTHER'S ETHNICITY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Races</td>
<td>43,741</td>
<td>5,005</td>
<td>12.2</td>
</tr>
<tr>
<td>White NonHspnc</td>
<td>28,283</td>
<td>2,397</td>
<td>8.8</td>
</tr>
<tr>
<td>Black NonHspnc</td>
<td>4,903</td>
<td>916</td>
<td>20.7</td>
</tr>
<tr>
<td>Other NonHspnc</td>
<td>1,456</td>
<td>192</td>
<td>14.1</td>
</tr>
<tr>
<td>Unknown NonHspn</td>
<td>183</td>
<td>33</td>
<td>19.1</td>
</tr>
<tr>
<td>Hispanic</td>
<td>6,178</td>
<td>1,211</td>
<td>21.9</td>
</tr>
</tbody>
</table>

Reference Group

Risk Groups
Data Sources

- U.S. Census 2000
- Behavioral Risk Factor Surveillance System
- Connecticut Death Registry
- Connecticut Hospital Discharge Abstract & Billing Data Base
- Connecticut Birth Registry
- Infectious Diseases Division, CT DPH
Population Growth 1990 - 2000
Connecticut Subpopulation Groups

Racial/Ethnic Subpopulation Groups

- Total: 3.6%
- White: -3.1%
- Black: 20.1%
- Hispanic: 50.3%
- Asian/PI: 80.5%
- Native American: 52.5%

Source: CT DPH, Health Information Systems and Reporting Division

<table>
<thead>
<tr>
<th>Race / Ethnicity</th>
<th>1990</th>
<th>2000</th>
<th># Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>2,756,868</td>
<td>2,672,622</td>
<td>- 84,246</td>
<td>- 3.1%</td>
</tr>
<tr>
<td>Black</td>
<td>261,934</td>
<td>314,642</td>
<td>+ 52,708</td>
<td>+ 20.1%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>213,116</td>
<td>320,323</td>
<td>+107,207</td>
<td>+ 50.3%</td>
</tr>
<tr>
<td>Asian/ PI</td>
<td>49,238</td>
<td>88,890</td>
<td>+ 39,652</td>
<td>+ 80.5%</td>
</tr>
<tr>
<td>Native American</td>
<td>5,960</td>
<td>9,088</td>
<td>+ 3,128</td>
<td>+ 52.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,287,116</td>
<td>3,405,565</td>
<td>+ 118,449</td>
<td>+ 3.6%</td>
</tr>
</tbody>
</table>

Source: CT DPH, Health Information Systems & Reporting Division
Per Capita Income –
CT Residents by Race/Ethnicity

- Latino/Hispanic (all races): $13,123
- African American/Black: $16,685
- American Indian: $18,186
- Native Hawaiian & PI: $18,345
- Asian: $27,948
- White, Non-Hispanic: $32,330

Source: 2000 Census (Connecticut Residents)
Educational Attainment - CT residents 25 Years and Older by Race/Ethnicity

Less than a High School diploma:
- 42% of all Latinos/Hispanics (all races)
- 26% of all African Americans/Blacks
- 32% of all American Indians
- 20% of all Native Hawaiian & PI
- 15% of all Asians
- 13% of all White, Non-Hispanics

Source: 2000 Census (Connecticut Residents)
No Health Care Coverage
Connecticut Residents, 2002

CT Residents by Race & Ethnicity

Estimated Percentage

Connecticut Department of Public Health
Behavioral Risk Factor Surveillance System
Leading Causes of Death
## Leading Causes of Death
### Connecticut Residents, 1999-2001

<table>
<thead>
<tr>
<th>Rank</th>
<th>All</th>
<th>White</th>
<th>African American/Black</th>
<th>Latino/Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heart disease</td>
<td>Heart disease</td>
<td>Heart disease</td>
<td>Heart disease</td>
</tr>
<tr>
<td>2</td>
<td>Cancer</td>
<td>Cancer</td>
<td>Cancer</td>
<td>Cancer</td>
</tr>
<tr>
<td>3</td>
<td>Cerebrovascular Disease</td>
<td>Cerebrovascular Disease</td>
<td>Unintentional Injuries</td>
<td>Unintentional Injuries</td>
</tr>
<tr>
<td>4</td>
<td>Chronic Lower Respiratory Disease</td>
<td>Chronic Lower Respiratory Disease</td>
<td>Cerebrovascular Disease</td>
<td>HIV</td>
</tr>
<tr>
<td>5</td>
<td>Unintentional Injuries</td>
<td>Unintentional Injuries</td>
<td>HIV</td>
<td>Cerebrovascular Disease</td>
</tr>
<tr>
<td>6</td>
<td>Pneumonia &amp; Influenza</td>
<td>Pneumonia &amp; Influenza</td>
<td>Diabetes</td>
<td>Diabetes</td>
</tr>
</tbody>
</table>
Age-Adjusted Death Rates for Heart Disease
Connecticut Residents, 1999-2001

Age-adjusted rate per 100,000

CT Residents by Race & Ethnicity

All  White  Black  Hispanic

Connecticut Department of Public Health
Vital Records Mortality Files
Age-Adjusted Premature Death Rates (<75 yrs) for Heart Disease
Connecticut Residents, 1999-2001

CT Residents by Race & Ethnicity

Age-adjusted rate per 100,000

Connecticut Department of Public Health
Vital Records Mortality Files
Age-Adjusted Death Rates for Cancer
Connecticut Residents, 1999-2001

CT Residents by Race & Ethnicity

All  White  Black  Hispanic

Age-adjusted rate per 100,000

Connecticut Department of Public Health
Vital Records Mortality Files
Age-Adjusted Premature Death Rates (<75 yrs) for Cancer
Connecticut Residents, 1999-2001

CT Residents by Race & Ethnicity

<table>
<thead>
<tr>
<th>Race &amp; Ethnicity</th>
<th>Age-adjusted rate per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>1300</td>
</tr>
<tr>
<td>White</td>
<td>1200</td>
</tr>
<tr>
<td>Black</td>
<td>1800</td>
</tr>
<tr>
<td>Hispanic</td>
<td>900</td>
</tr>
</tbody>
</table>

Connecticut Department of Public Health
Vital Records Mortality Files
Age-Adjusted Death Rates for Unintentional Injury
Connecticut Residents, 1999-2001

CT Residents by Race & Ethnicity

Age-adjusted rate per 100,000

Connecticut Department of Public Health
Vital Records Mortality Files
Age-Adjusted Premature Death Rates (<75 yrs) for Unintentional Injury Connecticut Residents, 1999-2001

CT Residents by Race & Ethnicity

All  White  Black  Hispanic

Age-adjusted rate per 100,000
Age-Adjusted Death Rates for Cerebrovascular Disease
Connecticut Residents, 1999-2001

CT Residents by Race & Ethnicity

- All
- White
- Black
- Hispanic

Age-adjusted rate per 100,000

Connecticut Department of Public Health
Vital Records Mortality Files
Age-Adjusted Premature Death Rates (<75 yrs) for Cerebrovascular Disease Connecticut Residents, 1999-2001

CT Residents by Race & Ethnicity

Age-adjusted rate per 100,000

Connecticut Department of Public Health Vital Records Mortality Files
Age-Adjusted Death Rates for HIV Connecticut Residents, 1999 -2001

CT Residents by Race & Ethnicity

- All
- White
- Black
- Hispanic

Age-adjusted rate per 100,000
Age-Adjusted Premature Death Rates (<75 yrs) for HIV Connecticut Residents, 1999-2001

Connecticut Department of Public Health Vital Records Mortality Files
New AIDS Cases, AIDS Deaths, and People Living with AIDS,
By Year, Connecticut Data through December 31, 2003
Age-Adjusted Death Rates for Diabetes
Connecticut Residents, 1999-2001

CT Residents by Race & Ethnicity

- All
- White
- Black
- Hispanic

Age-adjusted rate per 100,000

Connecticut Department of Public Health
Vital Records Mortality Files
Age-Adjusted Premature Death Rates (<75 yrs) for Diabetes
Connecticut Residents, 1999-2001

CT Residents by Race & Ethnicity

Age-adjusted rate per 100,000

0 100 200 300

All  White  Black  Hispanic

Connecticut Department of Public Health
Vital Records Mortality Files
Age-Adjusted Hospitalization Rates for Diabetes Connecticut Residents, 2001

CT Residents by Race & Ethnicity

- White
- Black
- Hispanic

Age-adjusted rate per 100,000
Age-Adjusted Hospitalization Rates for Diabetes-related Lower Extremity Amputation Connecticut Residents, 2001

Connecticut Department of Public Health Hospital Discharge Abstract & Billing Data Base
Age-Adjusted Death Rates for Homicide
Connecticut Residents, 1999-2001

CT Residents by Race & Ethnicity

All
White
Black
Hispanic

Age-adjusted rate per 100,000
Age-Adjusted Premature Death Rates (<75 yrs) for Homicide
Connecticut Residents, 1999-2001

CT Residents by Race & Ethnicity

- All
- White
- Black
- Hispanic
Changes in Age-Adjusted Mortality Rates

- Significant decreases for Black males:
  - All Causes of Death
  - Cerebrovascular Disease
  - Heart Disease
  - COPD

- There were no significant increases in mortality rates for Black males among any of the leading causes of death.

Changes in Age-Adjusted Mortality Rates

• Significant increase for Black females:
  – Congestive Heart Failure
• There were no significant decreases in mortality rates for Black females among any of the leading causes of death.
• There were no other significant changes in mortality rates for Black females during the 1990s.

Infectious and Sexually Transmitted Diseases
P&S Syphilis Incidence Rates
Connecticut Residents, 1999 -2003

CT Residents by Race & Ethnicity

Rate per 100,000 Population

Connecticut Department of Public Health
Infectious Diseases Division, STD Control Program
Primary & Secondary Syphilis Cases Overall and Among Blacks, CT 1985 - 2003

Source: CT STD Control Program
Gonorrhea Incidence Rates
Connecticut Residents, 1999-2003

Connecticut Department of Public Health
Infectious Diseases Division, STD Control Program

Source: CT STD Control Program
Chlamydia Incidence Rates
Connecticut Residents, 1999 -2003

Rate per 100,000 Population

CT Residents by Race & Ethnicity

Connecticut Department of Public Health
Infectious Diseases Division, STD Control Program

Source: CT STD Control Program
5-Year Annual Average TB Case Rates by Race-ethnicity, CT 1985-2003

* Projected thru '04 based on '00-03 annual average
Birth Outcomes
Infant Death Rate
Connecticut Residents, 2001

Per 1,000 Live Births

CT Residents by Race & Ethnicity

Connecticut Department of Public Health
Vital Records Birth Cohort File
Late or No Prenatal Care
Connecticut Residents, 2002

Percentage

CT Residents by Race & Ethnicity

All
White
Black
Hispanic

Connecticut Department of Public Health
Vital Records Birth Files
Low Birthweight Births
Connecticut Residents, 2002

CT Residents by Race & Ethnicity

Percentage

All  White  Black  Hispanic
Teen Births (Under 20 Years of Age)
Connecticut Residents, 2003

Percentage

CT Residents by Race & Ethnicity

All
White
Black
Hispanic
Challenges for Communities

- Conduct community health inventories
- Identify emerging health issues
- Advocate for community-based health needs by:
  - organizing at the neighborhood level;
  - gathering relevant data;
  - encouraging legislative action;
  - partnering with public and private sector;
Challenges for the CT DPH

- On-going surveillance of health needs and status of ethnic and cultural communities in CT
- Support community-based efforts to identify and eliminate disparities by:
  - meeting with community groups to elicit needs;
  - provide relevant data;
  - provide technical assistance;
  - collaborating in support of community-based programming;