“Health Opportunities
Across the
Commonwealth”

Getting to the root cause of
health inequity…
Health Begins Where We Live,
Learn, Work, and Play

Virginia Health
Equity Report 2012

Michael O. Royster, MD, MPH, FACP
Presentation Objectives

- Raise awareness about the magnitude of health inequities in Virginia
- Reinforce the impact of the distribution of social determinants of health on health equity
- Quantify the human and economic costs of health inequities in Virginia
- Identify tools and resources to promote health equity
2012 Virginia Health Equity Report

- Introduction
  - Background on health equity and SDOH; definitions
- 2012 Health Equity Report Findings
  - SES, neighborhood, discrimination
  - Mortality, Life Expectancy
  - HIV, Infant Mortality & LBW
- New Features of the Report
  - Cost of Health Inequities
  - Health Opportunity Index
- Key Recommendations
- Resources & References
Determinants of Health

Equitable Access to SDOH by Race, Class, Gender, Residence, etc.

Social Determinants of Health Equity

- Work Environment
- Social Support & Capital
- Neighborhood Environment
- Income
- Education
- Housing
- Food
- Smoking
- Drinking
- Overeating
- Illicit Drug Use
- Risky Sex
- Age, Sex and Hereditary Factors
- Individual Behavior
Virginia’s Demographics

Chart 1A: Population by Race
Virginia, 2009

- White: 72.7%
- Black: 20%
- Asian: 5%
- Two or More: 1.8%
- AIA: 0.4%
- NHO: 0.1%

AIA = American Indian/Native American
NHO = Native Hawaiian/Other Pacific Islander

Population by Ethnicity
Virginia, 2009

- Hispanic: 7.2%
- Non-Hispanic: 92.8%

U.S. Census 2009
Educational Attainment by Race, Virginia 2009

- Total Population
- White not Hispanic
- Black
- Asian
- American Indian
- Hispanic

- Less than High School
- High Diploma
- Some college
- Bachelor's or more

Race

Percentage
Percentage of Children and Total Population in Poverty, Virginia 2009

<table>
<thead>
<tr>
<th></th>
<th>Children</th>
<th>Total Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Not Hispanic</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Black</td>
<td>27</td>
<td>18</td>
</tr>
<tr>
<td>Asian</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>American Indians</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>16</td>
<td>14</td>
</tr>
</tbody>
</table>
Families Below Federal Poverty Level by County / Cities

2009

Percent Families Below FPL by Rural, Mixed Rural, Urban & Mixed Urban 2009

- RURAL: 9.82%
- MIXED RURAL: 6.37%
- URBAN: 6.88%
- MIXED URBAN: 3.90%

Urban Rural & Mixed Mixed Urban Rural

- Green: 0 ~ 4.99%
- Yellow: 5 ~ 9.99%
- Orange: 10 ~ 19.99%
- Red: > 20%

Health Insurance Coverage by Race, Ethnicity, and Income, Virginia 2009

Percent Uninsured by Race and Ethnicity, Virginia 2009

- White, NH: 14%
- Black, NH: 23%
- Hispanic: 34%
- Asian: 18%
- Native American: 28%

Percent Uninsured by Federal Poverty Level, Virginia 2009

- 0-1 FPL (N=212,869): 26.7%
- 1-2 FPL (N=261,576): 23.7%
- 2-3 FPL (N=190,319): 16.1%
- Above 3 FPL (N=237,222): 5.4%
SDOH and Inequities in Morbidity
Food Security Affects Health in Virginia, BRFSS 2008

The Associated store on Farmers Boulevard in St. Albans, Queens, is one of several supermarkets in the area that have closed in the last two years, leaving residents fewer options for fresh food.

The diagram shows the percentage of people reporting "fair/poor health" among those who are worried about food and those who are not. The chart indicates that 25.2% of those worried about food reported "fair/poor health," compared to 11.7% of those not worried about food.
Discrimination Affects Health in Virginia, BRFSS 2008

Overall Health

Mental Health

![Bar charts showing the percentage of people reporting fair/poor health and mental health days with or without racial discrimination.](image)
Inequities in Morbidity--HIV/AIDS and Low Birth Weight
HIV/AIDS Cases per 100,000 Population by Race & Ethnicity, Virginia, 2009

- **White, NH**:
  - Male: 8.3
  - Female: 0.9

- **Hispanic**:
  - Male: 21.5
  - Female: 6.7

- **Black, NH**:
  - Male: 56.4
  - Female: 20.0

- **Asian/PI**:
  - Male: 5.9
  - Female: 3.2
Virginia

HIV Rate per 100,000* by Census Tracts
Target Areas

* Data Source: Division of Disease Prevention, 2005-2009
Virginia Trends in Low Birth Weight Infants by Race/Ethnicity, 1999-2009

Per cent of low birth weight live births
Virginia

Percent Low Birth Weight* by Census Tracts Target Areas

Inequities in Mortality
Virginia Trends in Infant Mortality by Race/Ethnicity, 1999-2009

Infant Mortality per 1,000 live births

- Non-Hispanic White
- Non-Hispanic Black
- Hispanic
Infant Mortality Rate per 1,000 Live Births
By Census Tracts
2005 ~ 2009 *

* Data Source: Virginia Vital Records, 2005~2009

- 0.0 - 0.09
- 0.1 - 4.1
- 4.2 - 6.1
- 6.2 - 8.0
- 8.1 - 10.6
- 10.7 - 14.3
- >14.4

0 45 90 180 Miles
All Cause Death Rate by Educational Attainment, 2009

Educational Attainment

- Under 9th Grade: 1,873.0
- 9th to 11th Grade: 1,552.7
- 12th Grade: 1,413.5
- >12 Years: 689.5

Source: VDH Division of Health Statistics
Life Expectancy at Birth by Race and Sex, 2009

- White Male: 77.20
- Black Male: 72.19
- White Female: 81.64
- Black Female: 78.74

Source: VDH Division of Health Statistics
Virginia

Life Expectancy at Birth * in Years
By Census Tract
2005~2009

Life Expectancy **
- 59.6 - 68.9
- 69.0 - 74.5
- 74.6 - 75.8
- 75.9 - 77.0
- 77.1 - 78.2
- 78.3 - 79.7
- 79.8 - 85.7

* Data Source: Virginia Vital Records Data, 2005~2009
Virginia
Life Expectancy at Birth *
in Years
By Census Tract
2005~2009

Life Expectancy **

- 59.6 - 68.9
- 69.0 - 74.5
- 74.6 - 75.8
- 75.9 - 77.0
- 77.1 - 78.2
- 78.3 - 79.7
- 79.8 - 85.7

* Data Source: Virginia Vital Records Data, 2005~2009
Economic Costs of Health Inequities
Estimated Total of Five Health Risk Costs Associated with Health Outcome Disparities/Inequities, Virginia 2006-2008

- Race $917,322,000
- Rural / Urban $692,448,000
- Income (< 10,000) $2,362,306,000
- Education (less than high school) $4,697,858,000

Five Health Risks: Heart Disease, Cancer, Stroke, Injuries, Low Birth Weight

Health Risks Include Heart Disease, Stroke, Cancer Injuries, and Low Birth Weight; Source: Virginia Polytechnic Institute and State University, Department of Agriculture and Applied Economics; In 2009 US dollars.
Health Opportunity Index
Health Opportunity Index

- Affordability $\rightarrow$ (housing + transportation costs) relative to income
- Education $\rightarrow$ Attainment & Enrollment
- Job Participation $\rightarrow$ % of 16-64 yo employed or looking for work
- Townsend Deprivation $\rightarrow$ Unemployed; no car; % rental; crowding
- Income Diversity $\rightarrow$ Diversity of incomes
- Racial Diversity $\rightarrow$ Diversity of races
- EPA air toxics $\rightarrow$ Cancer risk, respiratory risk and neurological risk
- Local Commute of Workers $\rightarrow$ Ratio of in to outflow of workforce
- Population Churning $\rightarrow$ (in + out migration) relative to population
- Population Density $\rightarrow$ Control for population concentration
Distribution of the HOI by Race & Ethnicity, Virginia, 2009

Virginia

% of Population by Hispanic, Non-Hispanic and Statewide in Health Opportunity Areas (Quintiles) 2009

Virginia

% of Population by Race and Statewide in Health Opportunity Areas (Quintiles) 2009

<table>
<thead>
<tr>
<th>Health Opportunity Index Score</th>
<th>Statewide Pop.</th>
<th>% Statewide Pop.</th>
<th>White Pop.</th>
<th>% White</th>
<th>Black Pop.</th>
<th>% Black</th>
<th>Asian Pop.</th>
<th>% Asian</th>
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</thead>
<tbody>
<tr>
<td>Low Health Opportunity Index Score</td>
<td>1,291,345</td>
<td>15.4</td>
<td>361,283</td>
<td>9.2</td>
<td>525,505</td>
<td>24.1</td>
<td>56,914</td>
<td>15.6</td>
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<tr>
<td>2nd</td>
<td>1,055,280</td>
<td>21.1</td>
<td>912,917</td>
<td>18.6</td>
<td>425,277</td>
<td>27.6</td>
<td>92,065</td>
<td>24.2</td>
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<td>Middle</td>
<td>1,782,473</td>
<td>22.6</td>
<td>1,535,836</td>
<td>23.0</td>
<td>325,360</td>
<td>21.1</td>
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<td>4th</td>
<td>5,355,788</td>
<td>10.6</td>
<td>1,352,780</td>
<td>22.0</td>
<td>968,246</td>
<td>10.9</td>
<td>51,556</td>
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<td>High Health Opportunity Index Score</td>
<td>1,672,073</td>
<td>21.4</td>
<td>1,435,246</td>
<td>26.3</td>
<td>34,672</td>
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<td>Total</td>
<td>7,823,047</td>
<td>100</td>
<td>5,452,827</td>
<td>150</td>
<td>1,919,250</td>
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<td>880,428</td>
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<table>
<thead>
<tr>
<th>Health Opportunity Index Quintile</th>
<th>% Statewide Pop.</th>
<th>% Hispanic or Latino</th>
<th>% Non Hispanic or Latino</th>
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<tr>
<td>Low Health Opportunity Index Score</td>
<td>1,291,345</td>
<td>15.4</td>
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<td>2nd</td>
<td>1,055,280</td>
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<td>Middle</td>
<td>1,782,473</td>
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<td>4th</td>
<td>5,355,788</td>
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<td>High Health Opportunity Index Score</td>
<td>1,672,073</td>
<td>21.4</td>
<td>66,575</td>
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<td>Total</td>
<td>7,823,047</td>
<td>100</td>
<td>540,313</td>
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Virginia

Life Expectancy at Birth in Years
By Census Tract

- < 72.7
- 72.7 - 74.5
- 74.6 - 75.8
- 75.9 - 77.0
- 77.1 - 78.2
- 78.3 - 79.7
- 79.8 - 81.7

Health Opportunity Index (HOI)
By Census Tract

High Opportunity Areas

Low Opportunity Areas

Relationship Between Health Opportunity Index & Life Expectancy *
By Census Tract

Mapping of Geographically Weighted Regression Coefficient **
2009

Not Positive Relationship

Weak

Strong

** Dependent Variable ~ Life Expectancy
Independent Variables ~ Health Opportunity Index
Variables may have little influence at the global level but great impact locally.
Variables may act as a significant “tipping point” that may transform a community.
Influential indicators at the global level may actually be inversely related within some local areas.
Interaction effects need not be proportional to the global impact of an indicator.
Virginia

Life Expectancy at Birth in Years By Census Tract

More Affordable

Less Affordable

Relationship Between Affordability Indicator & Life Expectancy *
By Census Tract

Mapping of Geographically Weighted Regression Coefficient **
2009

Not Positive Relationship

Weak

Strong

** Dependent Variable – Life Expectancy
Independent Variables – Education Indicator, EPA Environmental Indicator, Affordability Indicator, Townsend Material Deprivation Indicator, Job Participation Indicator, Population Churning Indicator, Local Commute of Workers Indicator, Racial Diversity Indicator, Population Density Indicator & Household Income Indicator. The coefficient takes into account the local spatial interaction of all ten HOI indicators.
Virginia

Life Expectancy at Birth in Years
By Census Tract

High Education Attainment
Low Education Attainment

Education Attainment Indicator

Relationship Between Education Attainment Indicator & Life Expectancy *
By Census Tract
Mapping of Geographically Weighted Regression Coefficient **
2009

Not Positive Relationship
Weak
Strong

** Dependent Variable – Life Expectancy
Independent Variables – Education Indicator, EPA Environmental Indicator, Affordability Indicator, Townsend Material Deprivation Indicator, Job Participation Indicator, Population Churning Indicator, Local Commute of Workers Indicator, Racial Diversity Indicator, Population density Indicator & Household Income Indicator. The coefficient takes into account the local spatial interaction of all ten HOI indicators.
Value of the HOI

- To identify the impact of HOI (i.e. SDOH) indicators on health across Virginia

- To identify local HOI indicators that shape health

- To learn from communities with good health despite adverse HOI indicators

- To build collaboration across all sectors to promote health equity

- Place (& SDOH) Matters when it comes to health
Recommendations to Promote Health Equity

1. Raise awareness of the importance of SDOH and their distribution as root causes of health disparities/inequities
2. Engage communities and build social capital by using community-based participatory approaches to advance health equity
3. Conduct health impact assessments to inform public policy makers about the impacts of their decisions on health equity
4. Enhance access to health opportunity neighborhoods for low income and racial/ethnic minority families and children in Virginia
5. Improve educational attainment for all Virginians
6. Address affordability of housing and transportation
   1. Assure equitable access to multiple affordable transit options
   2. Assure availability of stable, affordable and quality housing
7. Enhance job skills and increase access to jobs that match skill levels of neighborhood residents
8. Reduce disproportionate exposure to environmental air toxins in low income and racial/ethnic minority neighborhoods
9. Develop policies, programs, and practices within organizations and communities that support racial, economic, and gender equality
10. Reduce income inequality; encourage livable wages and benefits
11. Enhance food security
12. Evaluate the impact of public, health, and social policies and practices on health equity

http://minorityhealth.hhs.gov/npa/
“Health Opportunities Across the Commonwealth”

Getting to the root cause of health inequity…
Health Begins Where We Live, Learn, Work, and Play

www.vdh.virginia.gov/healthpolicy

Virginia Health Equity Report 2012

Office of Minority Health & Health Equity
Advancing Health Equity For All Virginians
Acknowledgments

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  - Office of Family Health Services,
  - Division of Health Statistics,
  - Office of Minority Health and Health Equity,
  - Office of Risk Communication and Education

• **Virginia Tech Department of Agricultural & Applied Economics**