

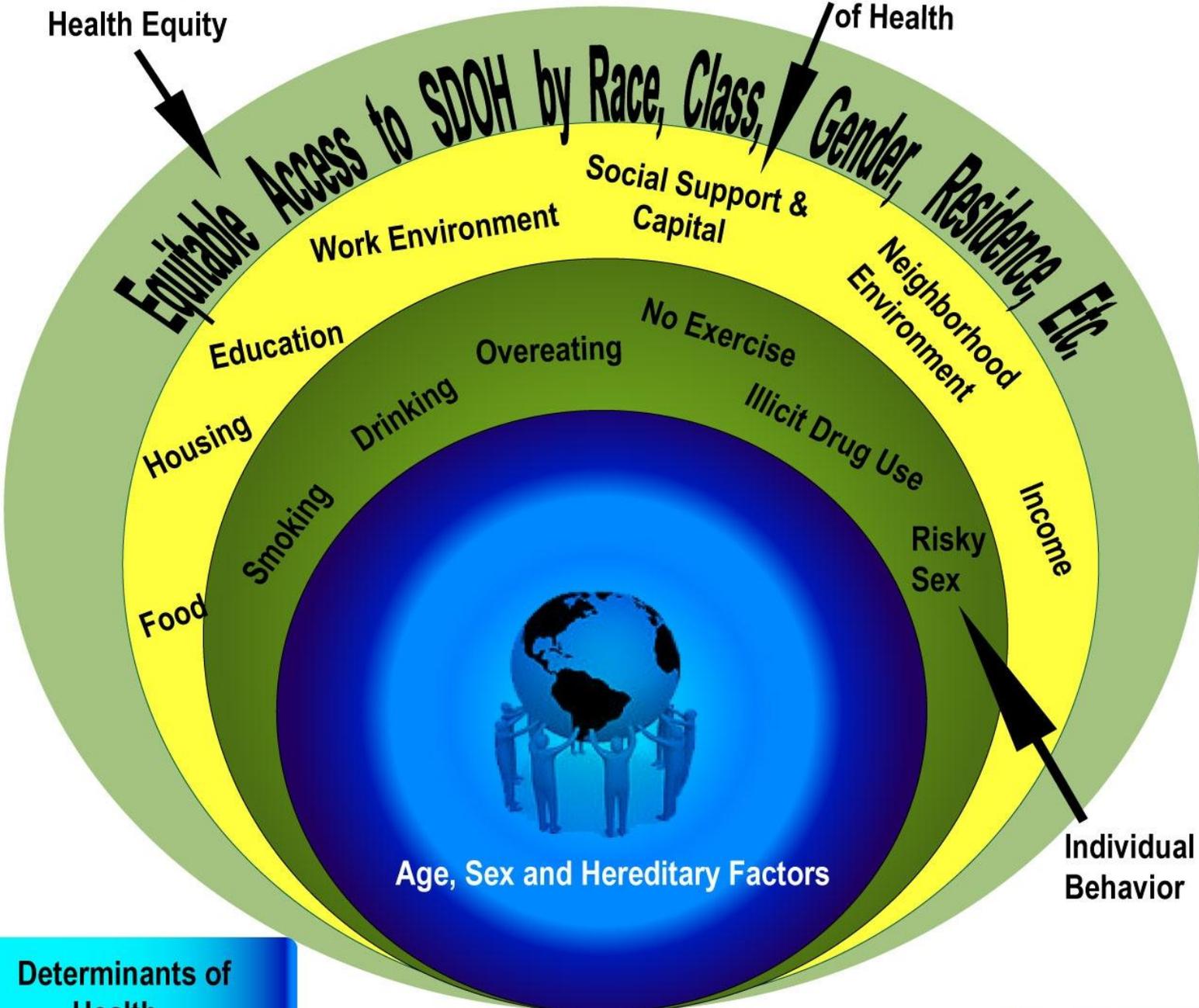
Presentation Objectives

- 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

Social Determinants of Health Equity

Social Determinants of Health

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

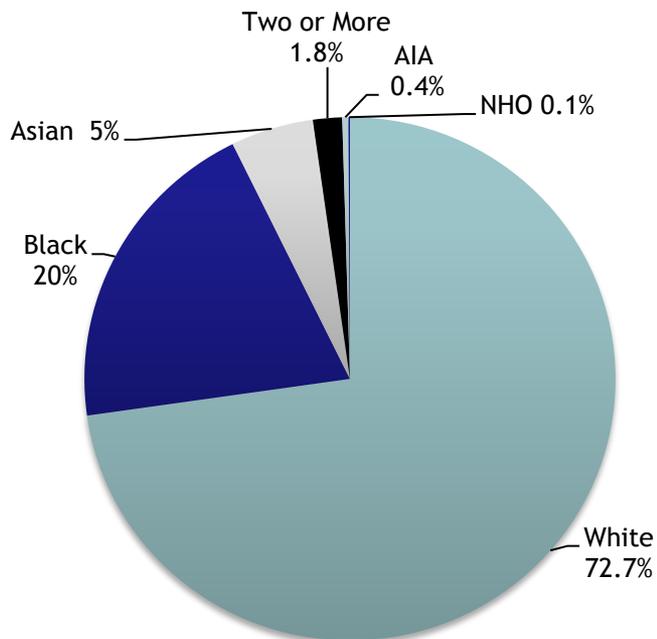


Determinants of Health

Individual Behavior

Virginia's Demographics

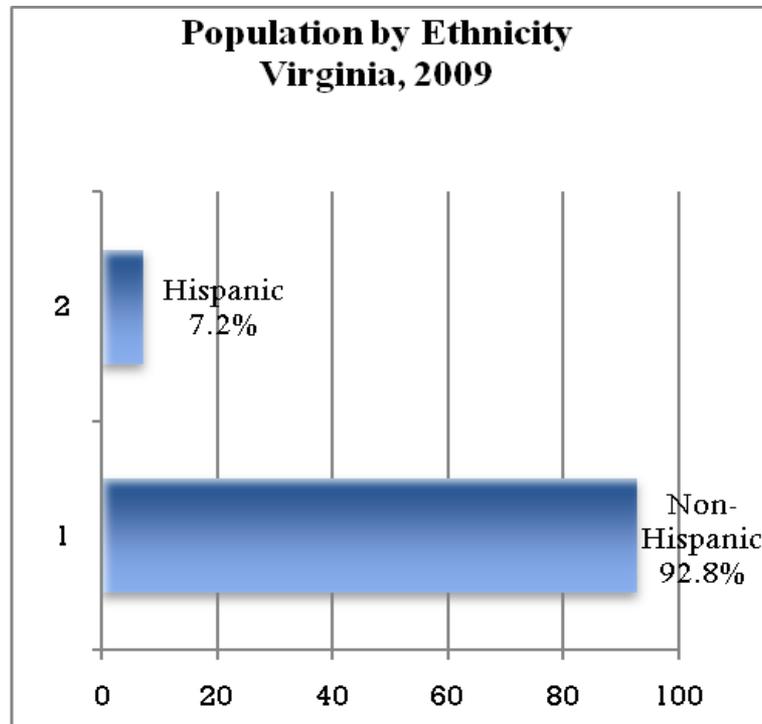
**Chart 1A: Population by Race
Virginia, 2009**



AIA= American Indian/Native American

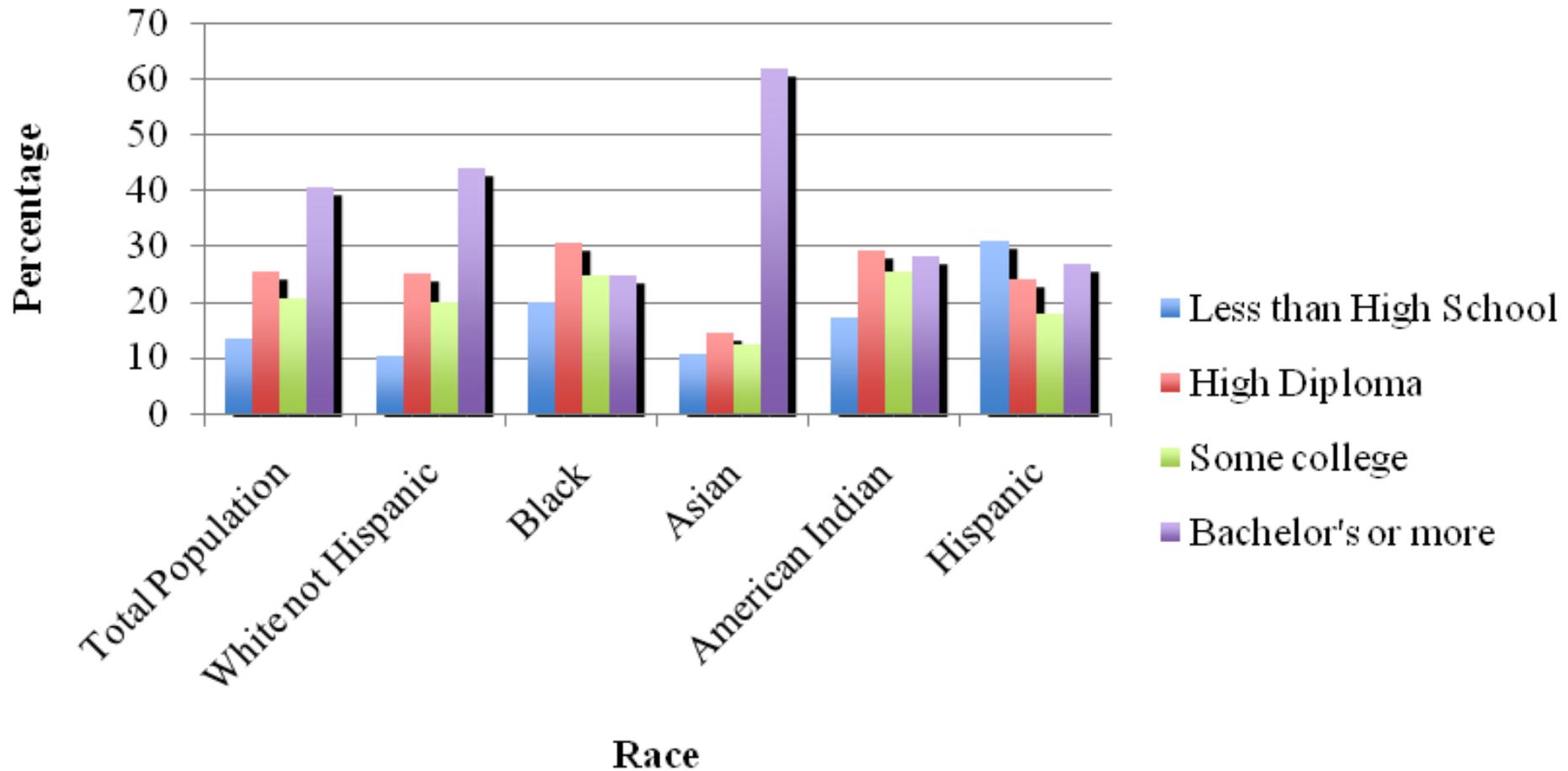
NHO= Native Hawaiian/Other Pacific
Islander

**Population by Ethnicity
Virginia, 2009**

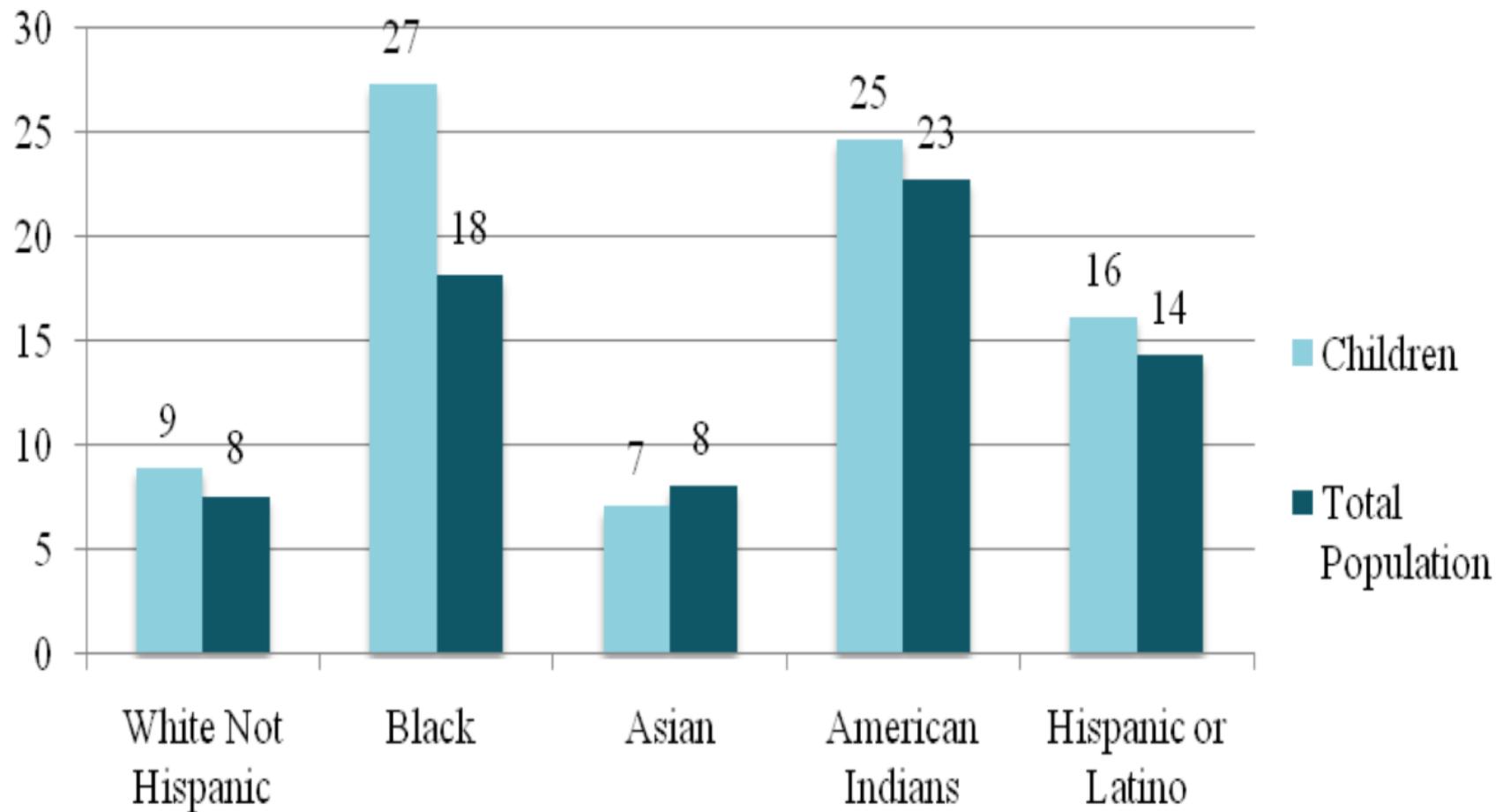


U.S. Census 2009

Educational Attainment by Race, Virginia 2009

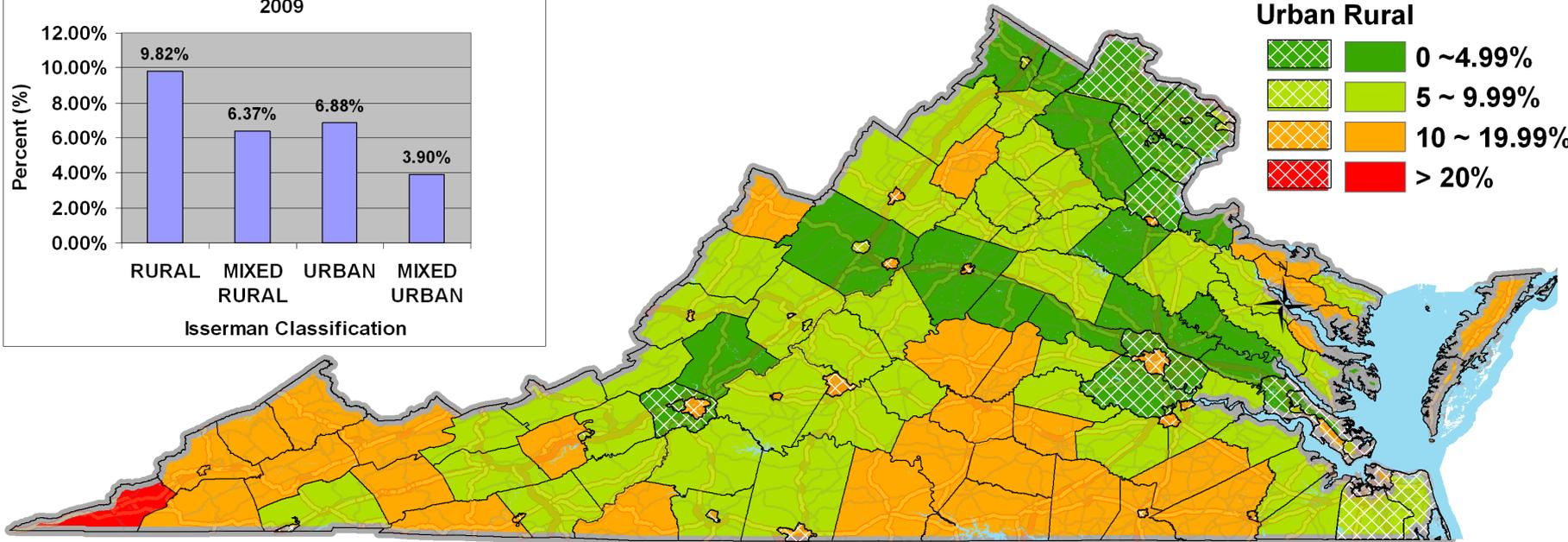
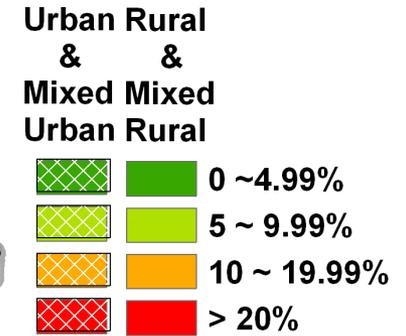
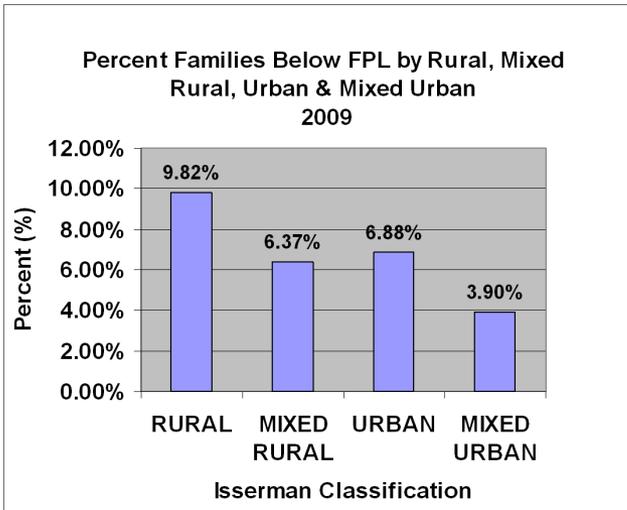


Perecentage of Children and Total Population in Poverty, Virginia 2009



Families Below Federal Poverty Level by County / Cities

2009

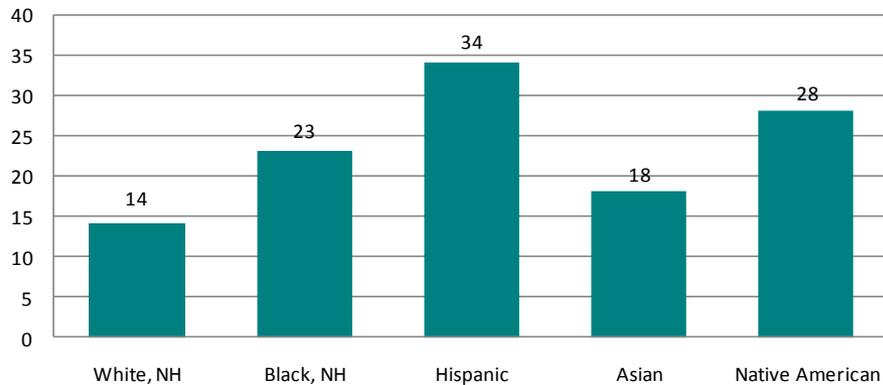


Source: Claritas 2009 Population Data. Analysis Based on Isserman Urban-Rural Classifications (2005)

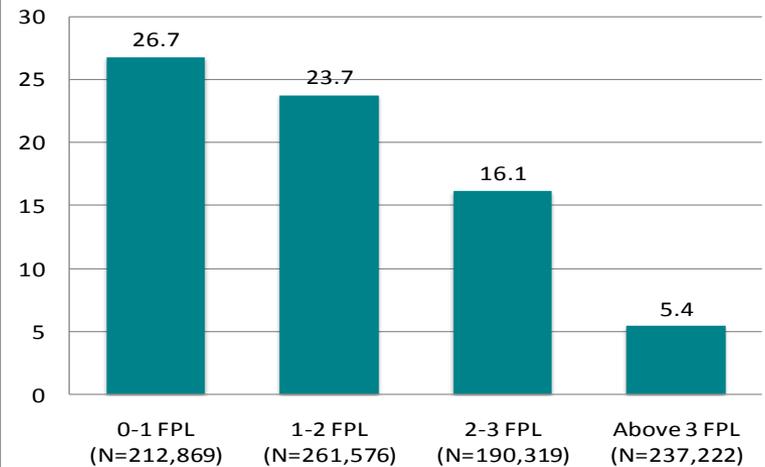
Health Insurance Coverage by Race, Ethnicity, and Income, Virginia 2009



Percent Uninsured by Race and Ethnicity, Virginia 2009

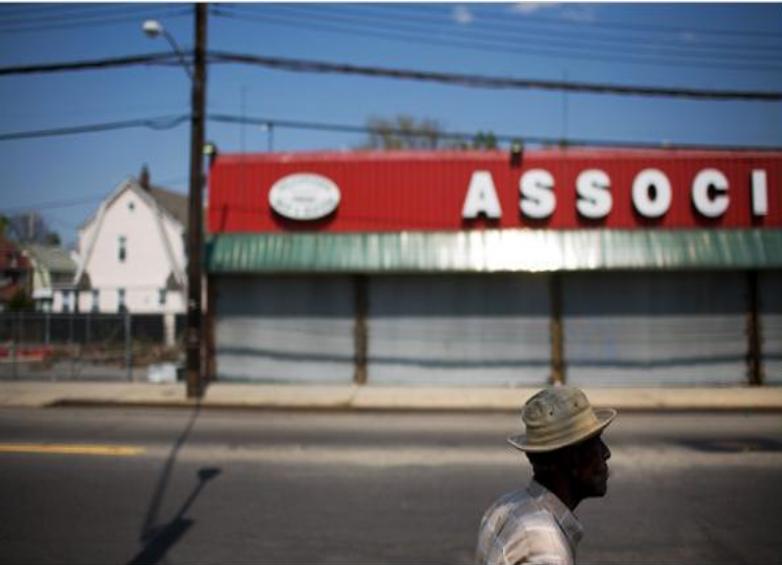


Percent Uninsured by Federal Poverty Level, Virginia 2009



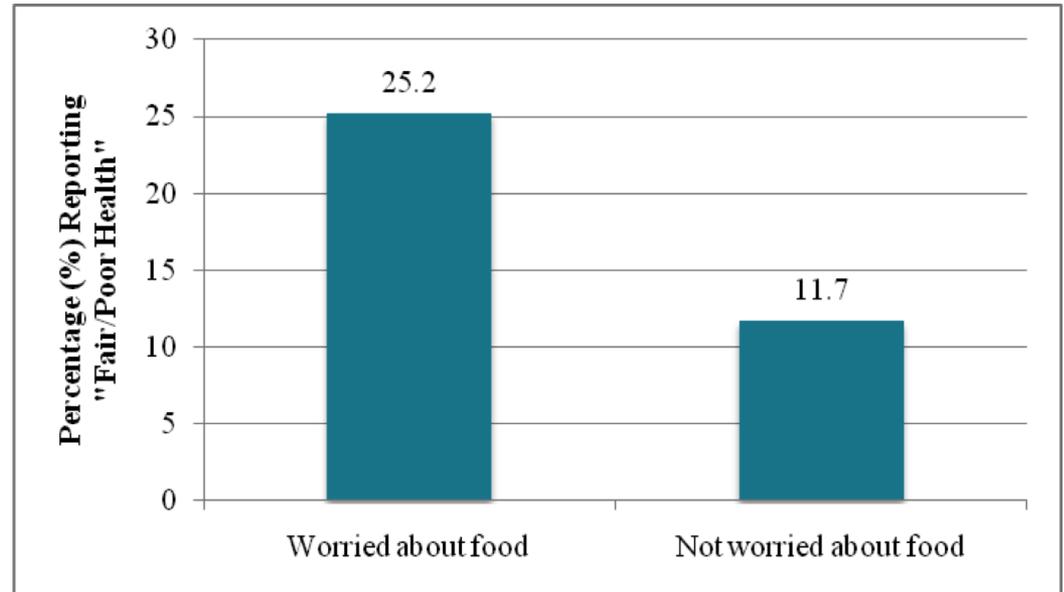
SDOH and Inequities in Morbidity

Food Security Affects Health in Virginia, BRFSS 2008



Todd Heisler/The New York Times

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.

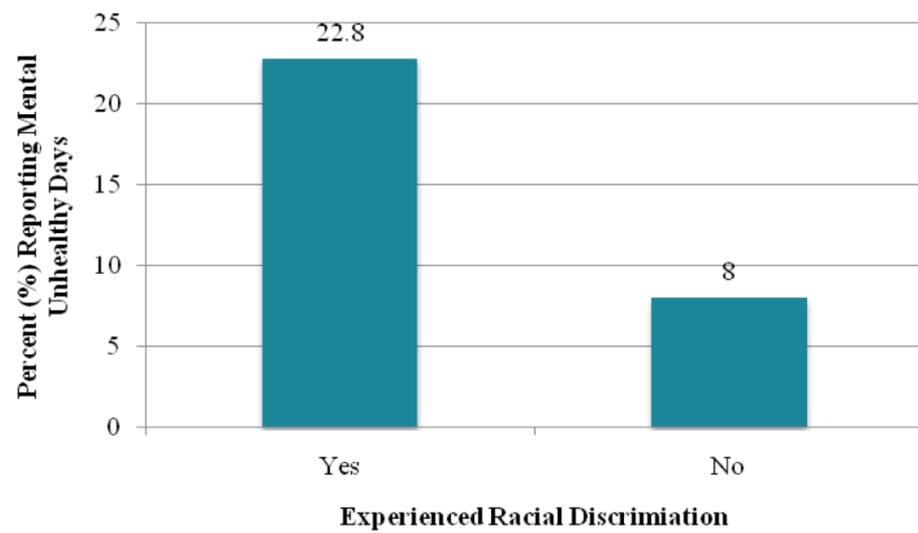
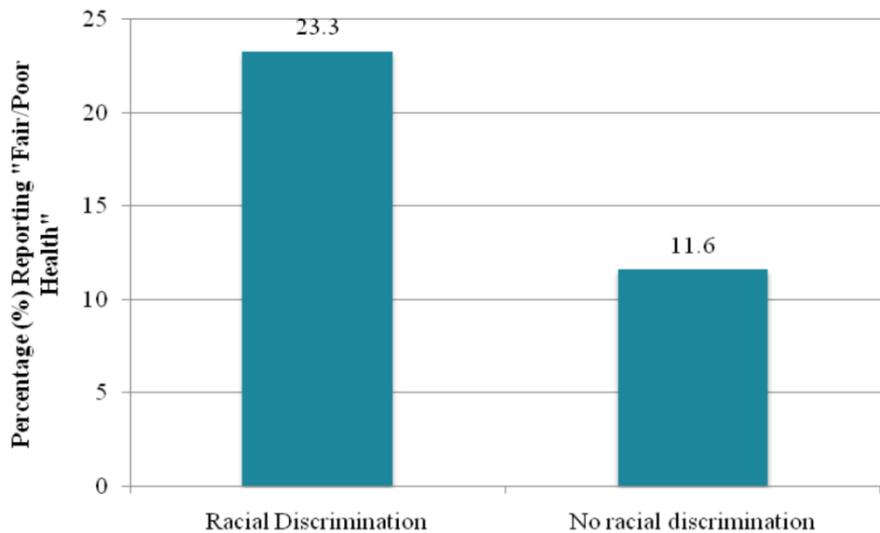


Discrimination Affects Health in Virginia, BRFSS 2008



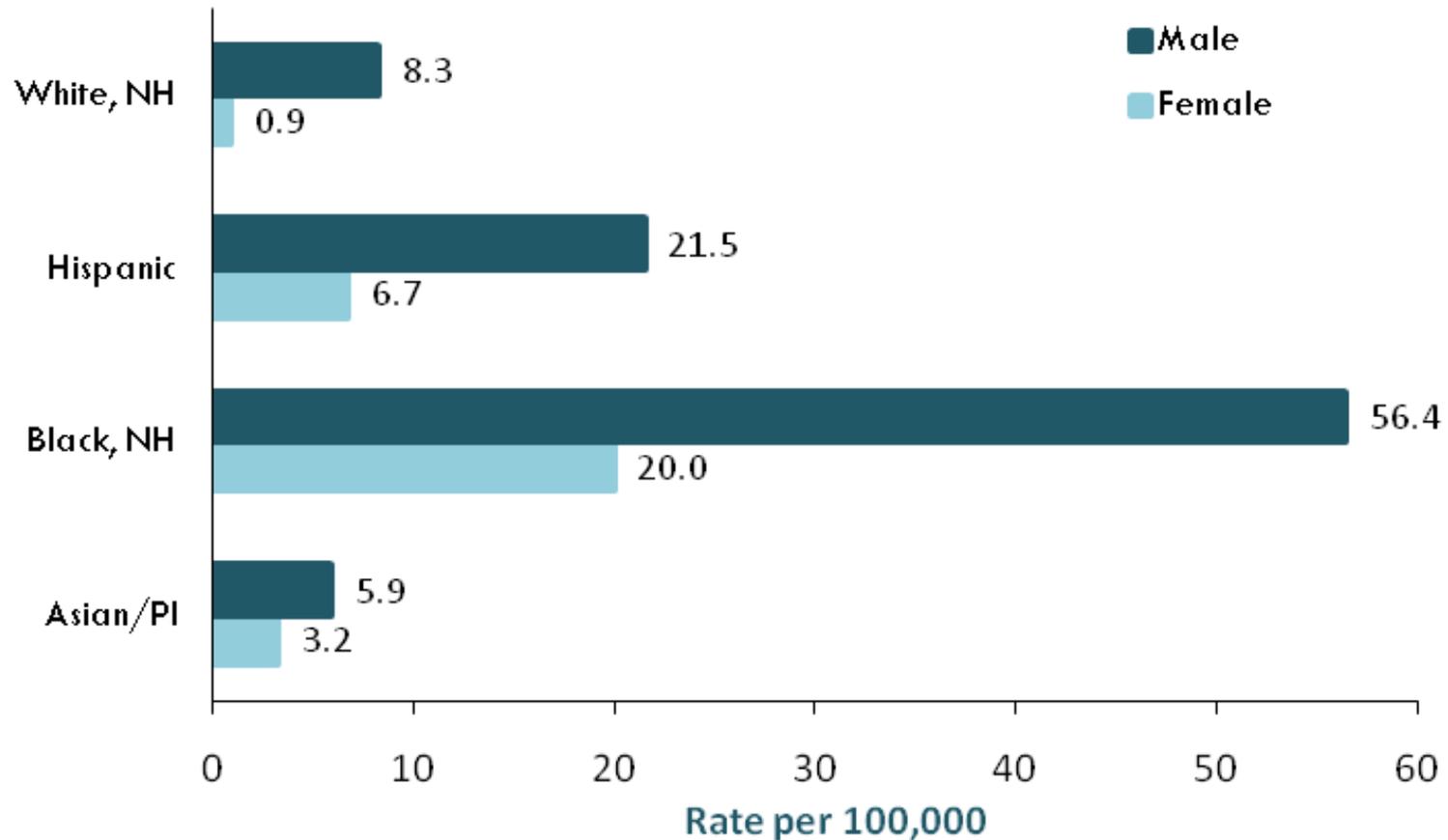
Overall Health

Mental Health



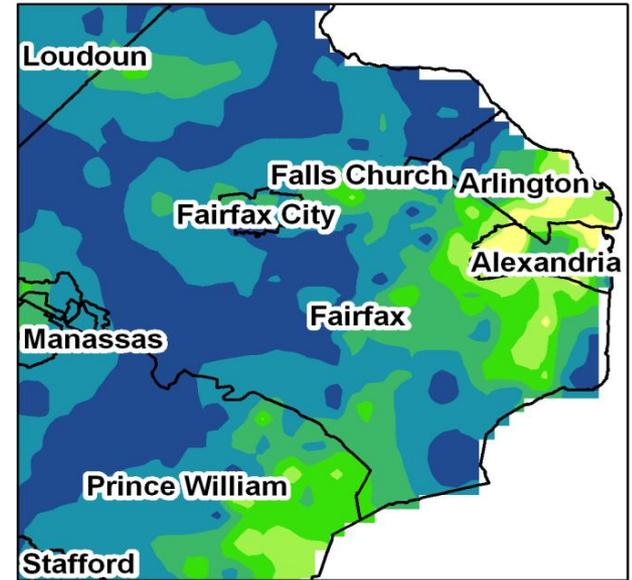
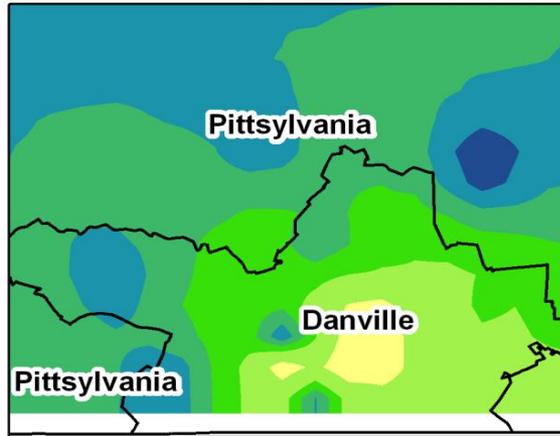
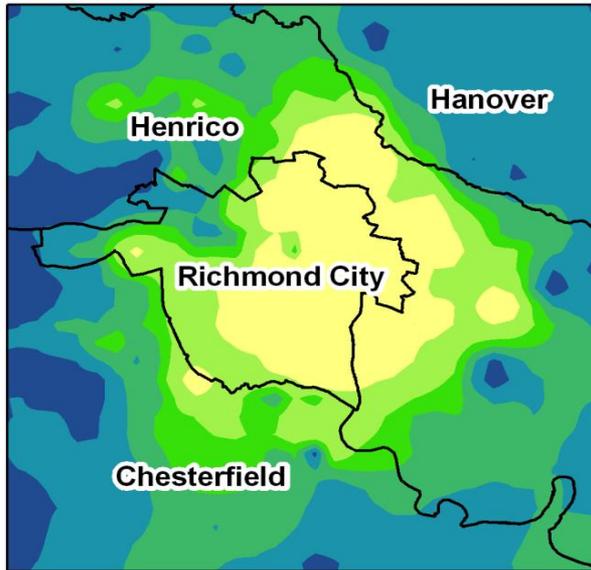
Inequities in Morbidity-- HIV/AIDS and Low Birth Weight

HIV/AIDS Cases per 100,000 Population by Race & Ethnicity, Virginia, 2009

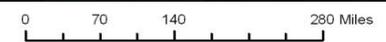
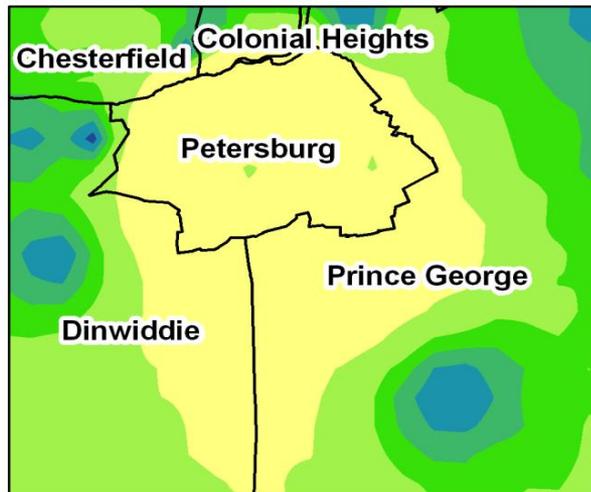
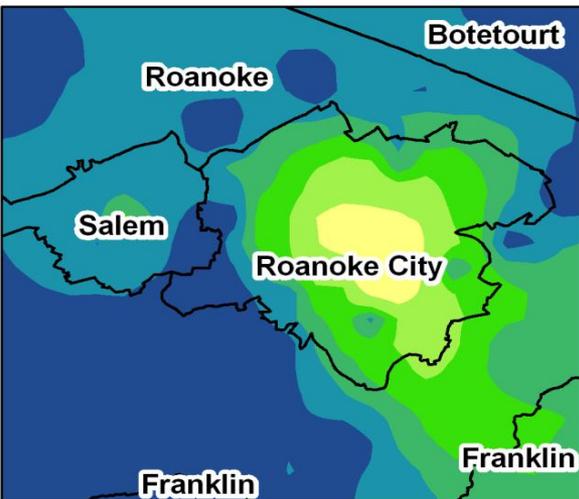


Virginia

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



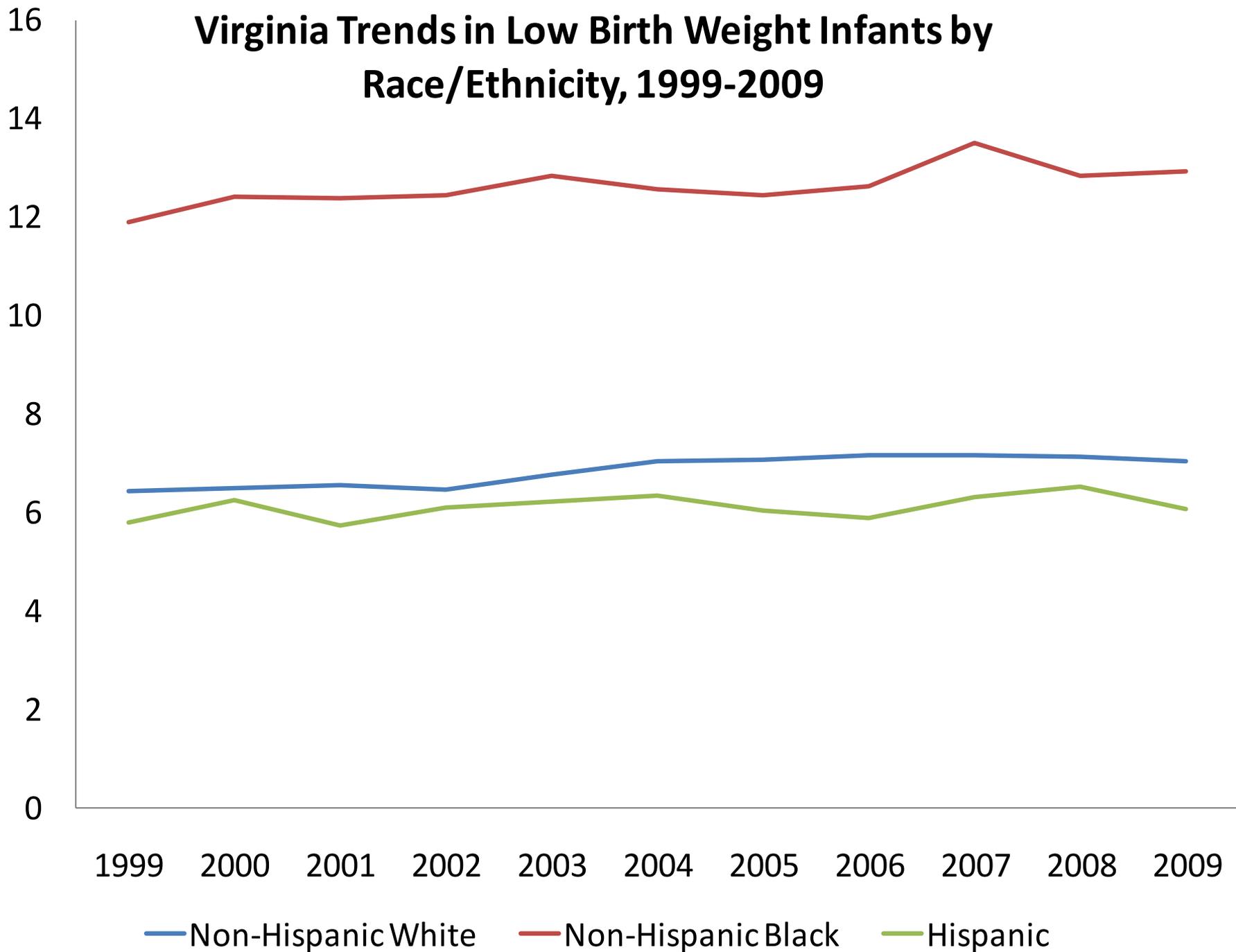
Lower Priority
Higher Priority



* Data Source: Division of Disease Prevention, 2005-2009

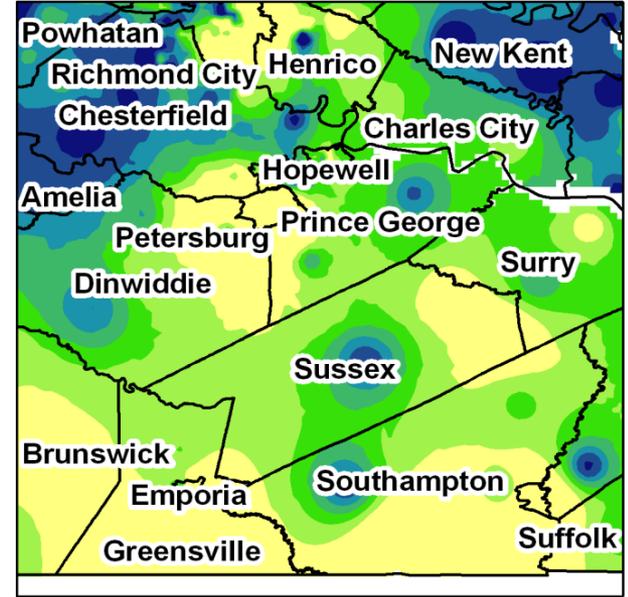
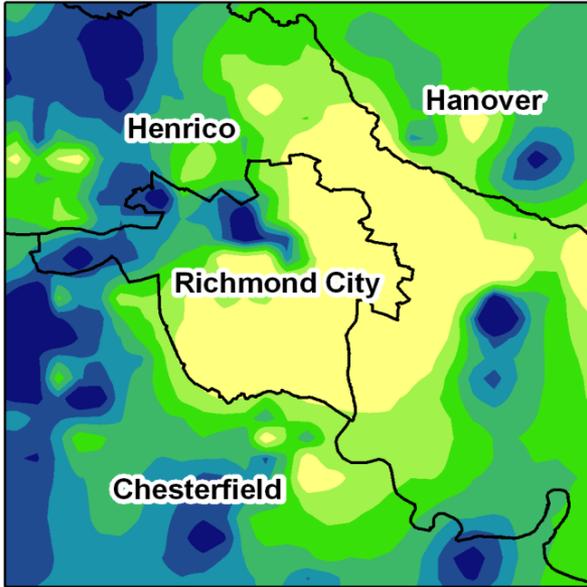
Virginia Trends in Low Birth Weight Infants by Race/Ethnicity, 1999-2009

Percent of low birth weight live births



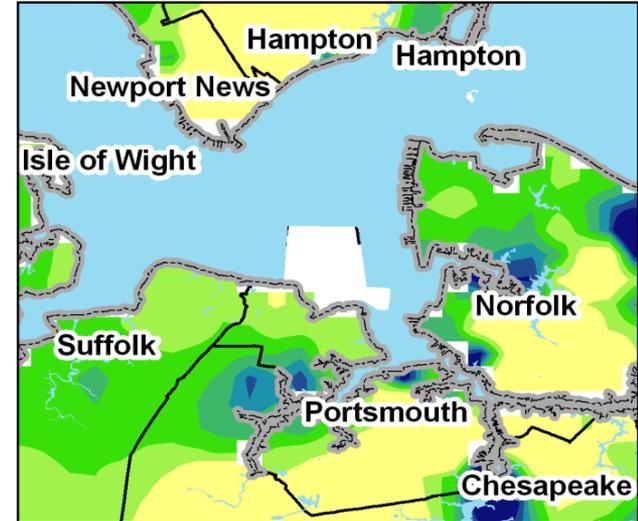
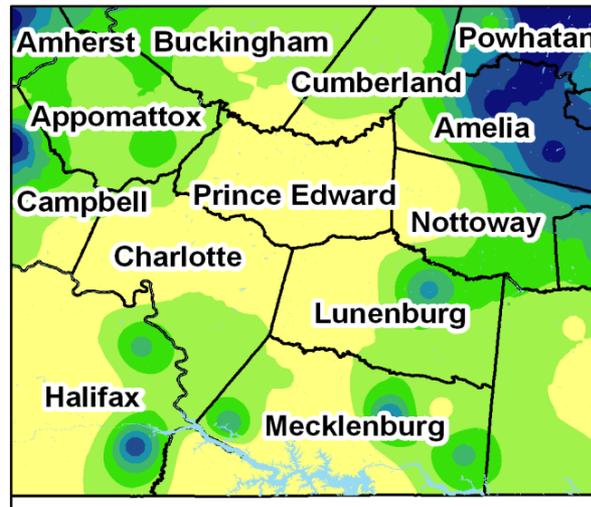
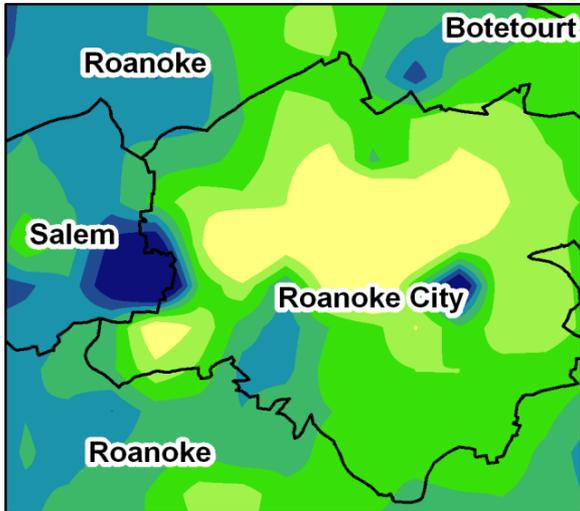
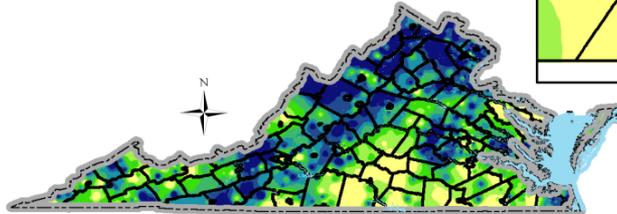
Virginia

Percent Low Birth Weight* by Census Tracts
Target Areas



Lower
Priority

Higher
Priority



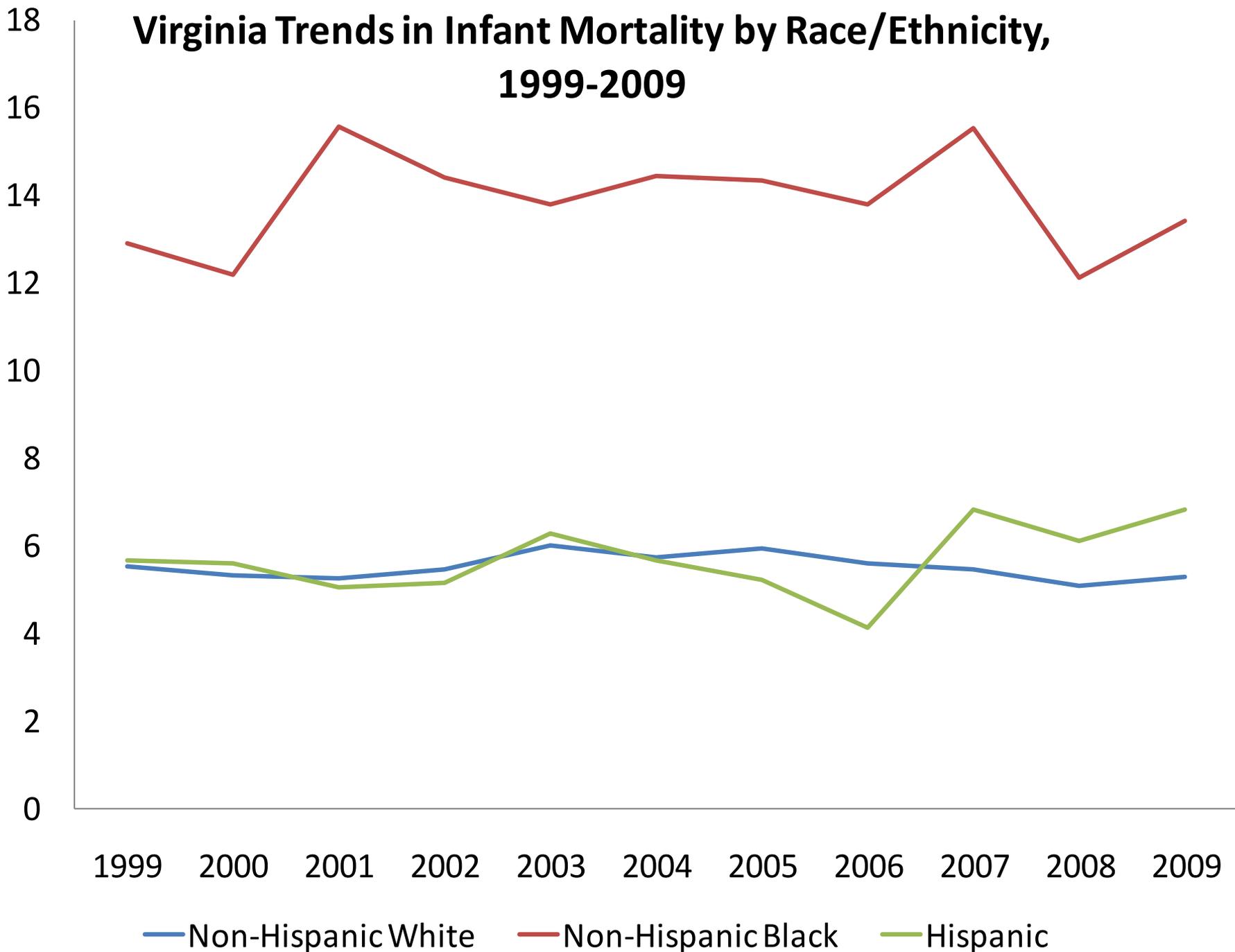
* Data Source: Virginia Vital Records, 2005-2009

0 70 140 280 Miles

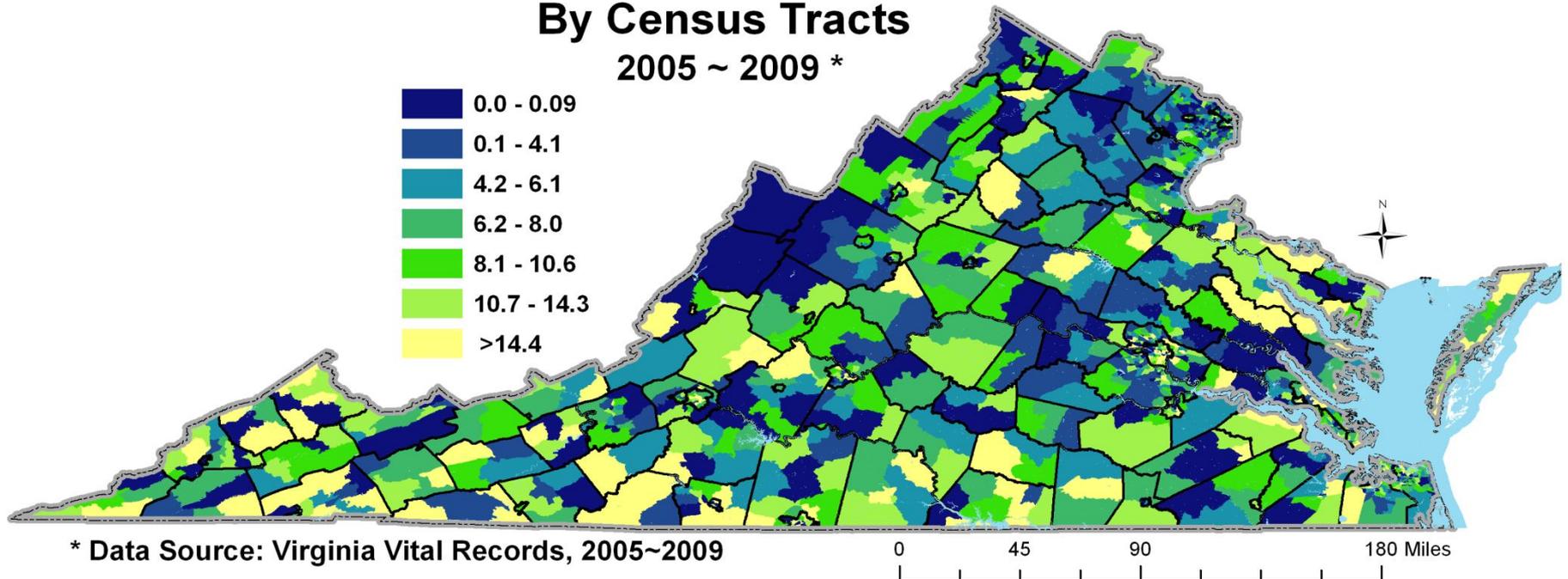
Inequities in Mortality

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

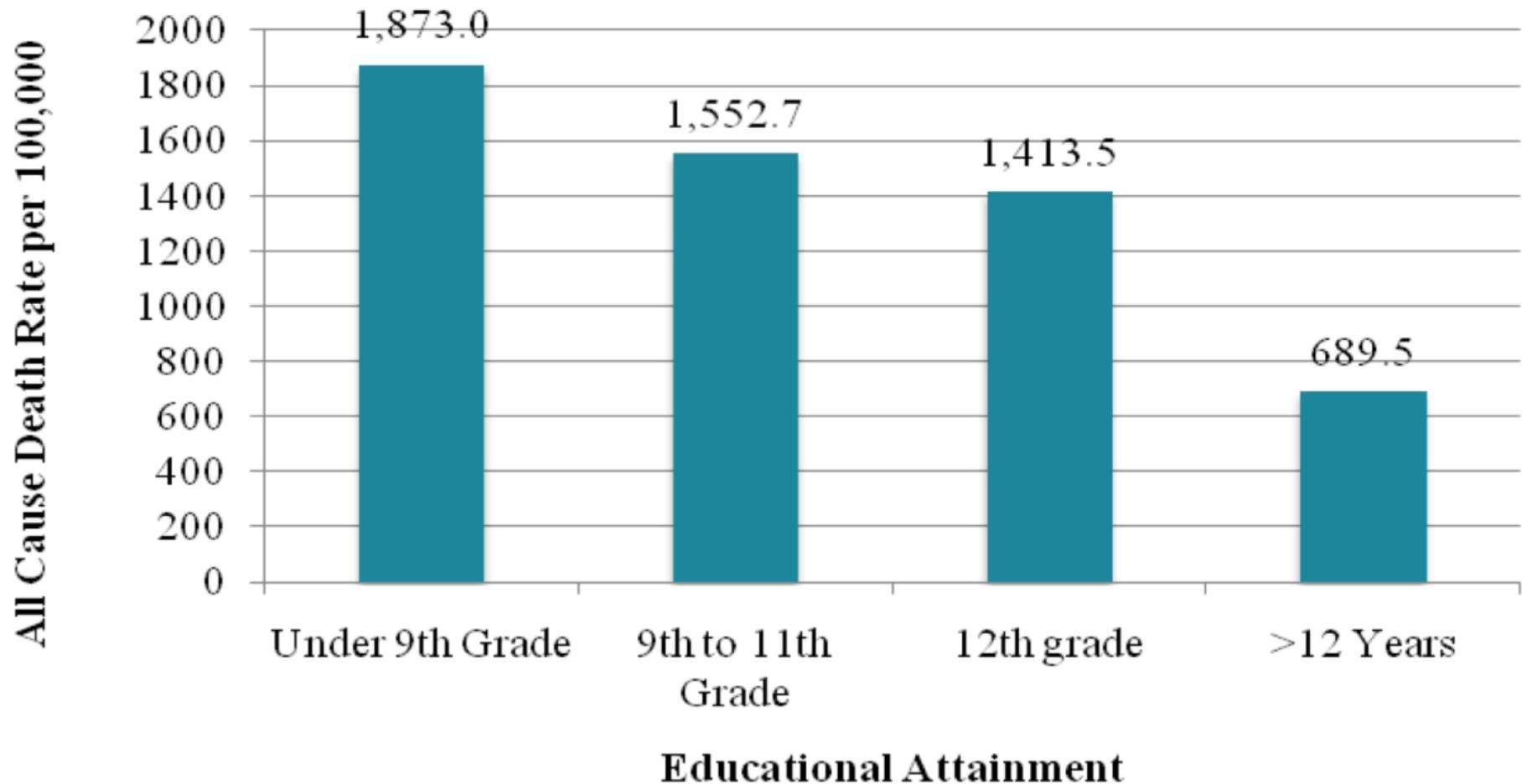
Infant Mortality per 1,000 live births



Infant Mortality Rate per 1,000 Live Births By Census Tracts 2005 ~ 2009 *

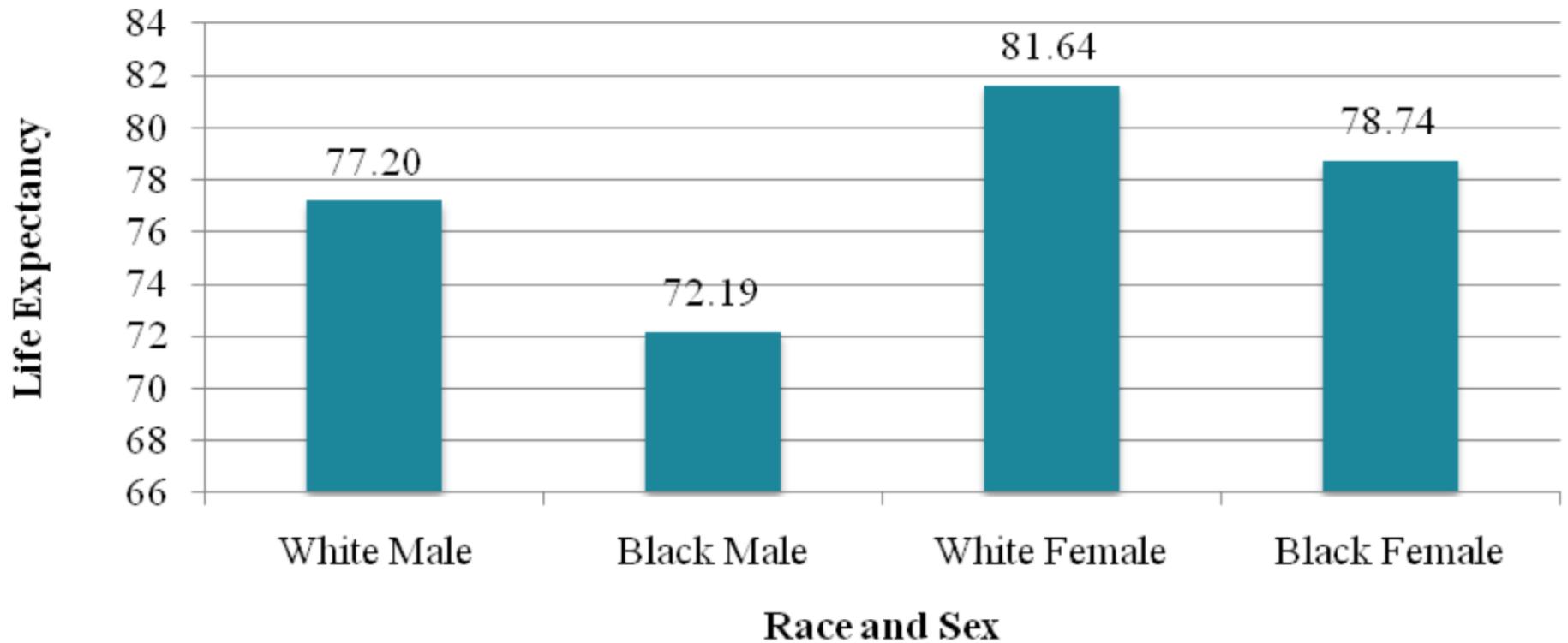


All Cause Death Rate by Educational Attainment, 2009



Source: VDH Division of Health Statistics

Life Expectancy at Birth by Race and Sex, 2009



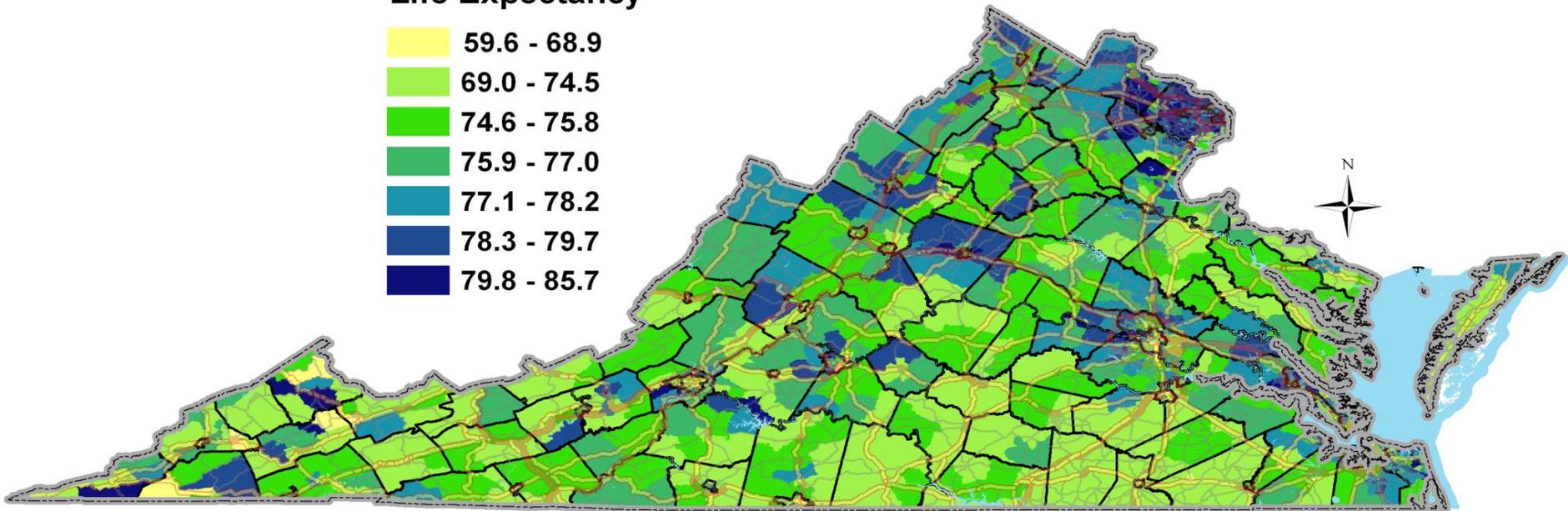
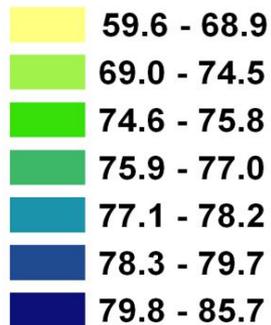
Source: VDH Division of Health Statistics

Virginia

Life Expectancy at Birth * in Years By Census Tract

2005~2009

Life Expectancy **



* Data Source: Virginia Vital Records Data, 2005~2009

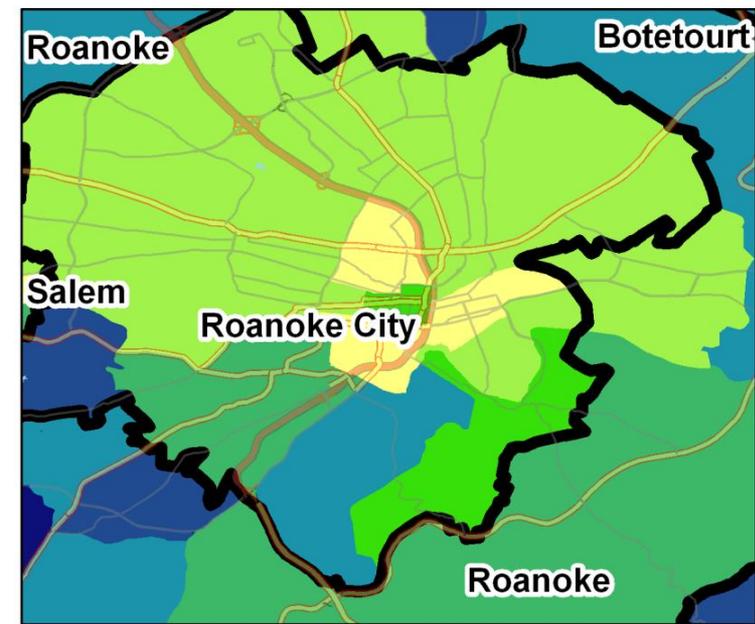
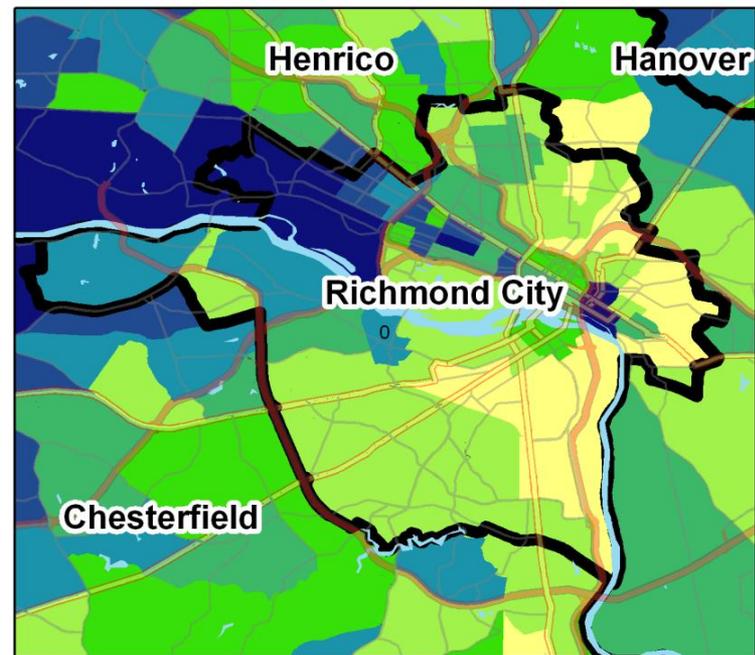
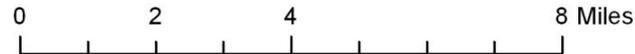
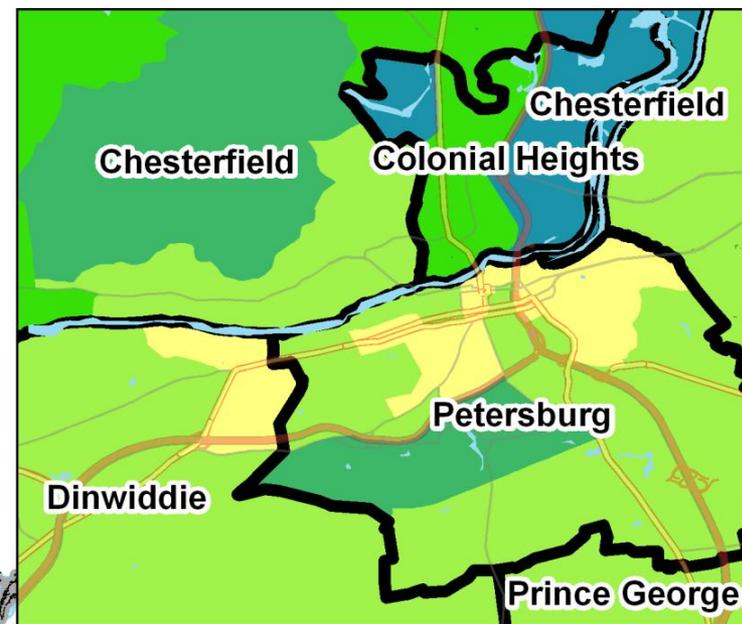
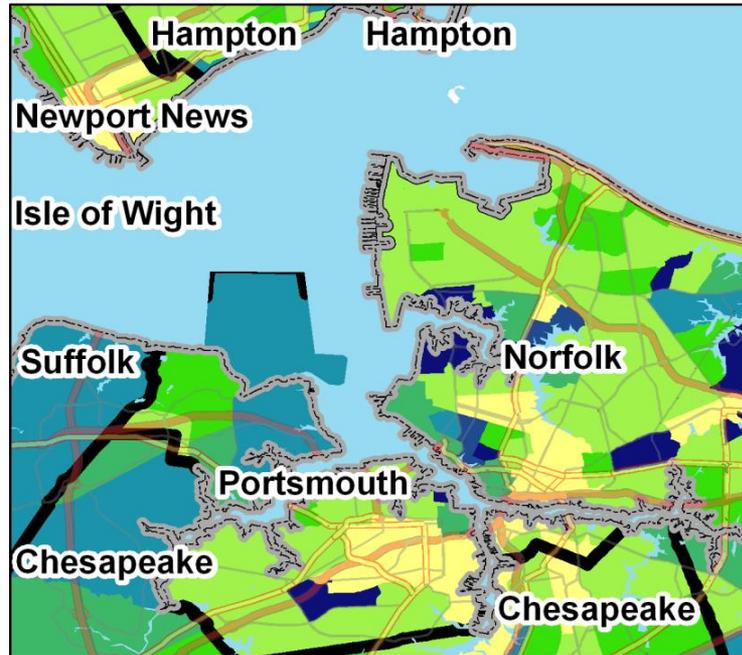
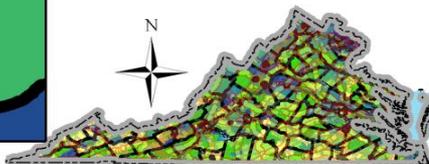
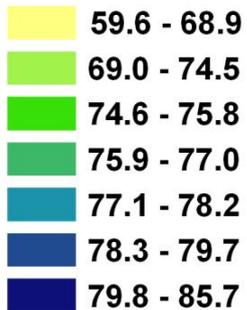
** The life expectancy calculation is based on a methodology published by Chiang.
http://www.statistics.gov.uk/methods_quality/publications.asp

0 0.5 1 2 Miles

Virginia

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

Life Expectancy **

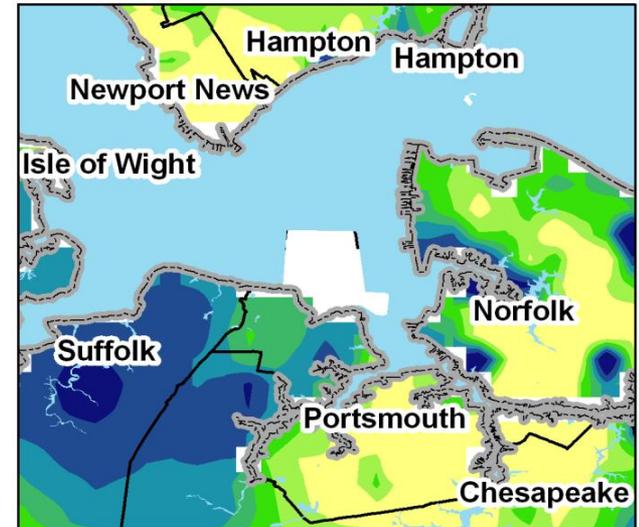
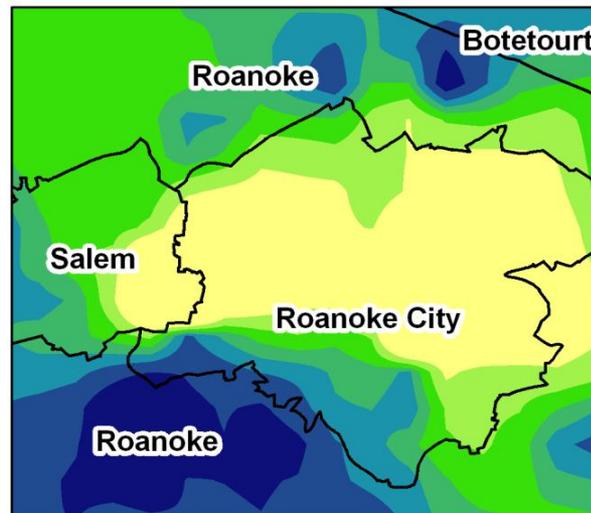
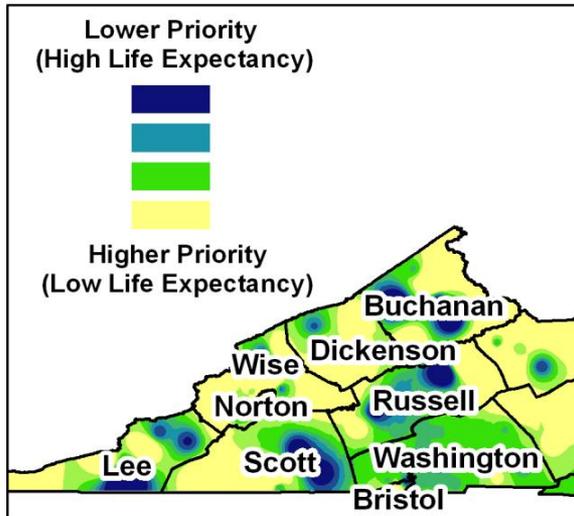
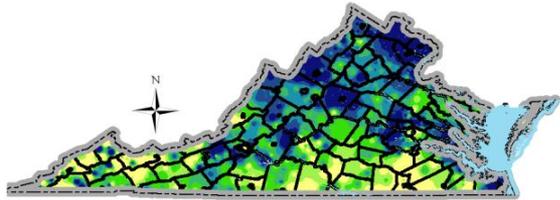
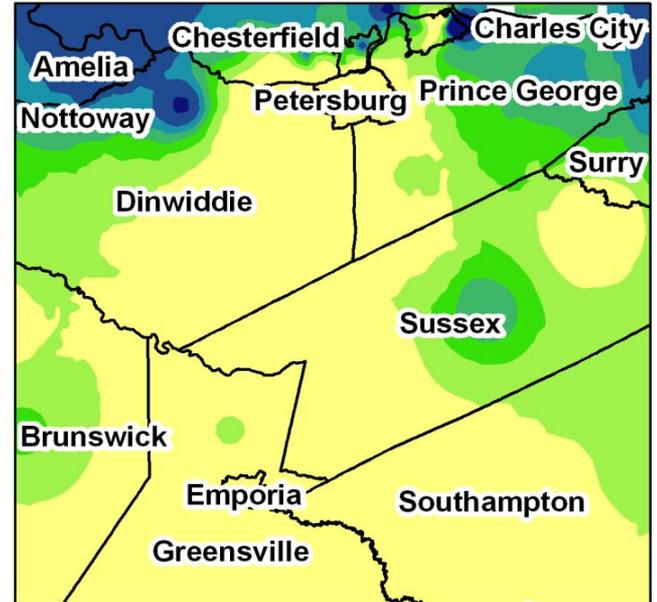
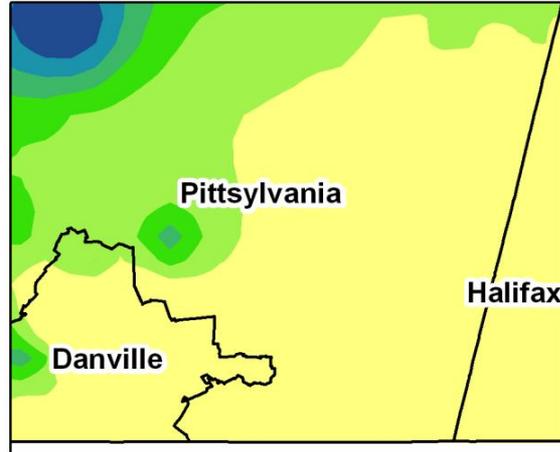
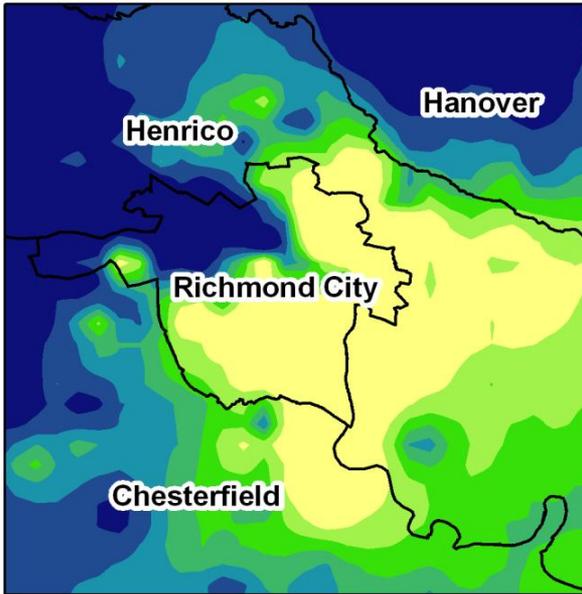


* Data Source: Virginia Vital Records Data, 2005~2009

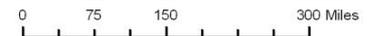
** The life expectancy calculation is based on a methodology published by Chiang.
http://www.statistics.gov.uk/methods_quality/publications.asp

Virginia

Life Expectancy at Birth* by Census Tracts
Target Areas



* Data Source: Virginia Vital Records 2005-2009



Economic Costs of Health Inequities

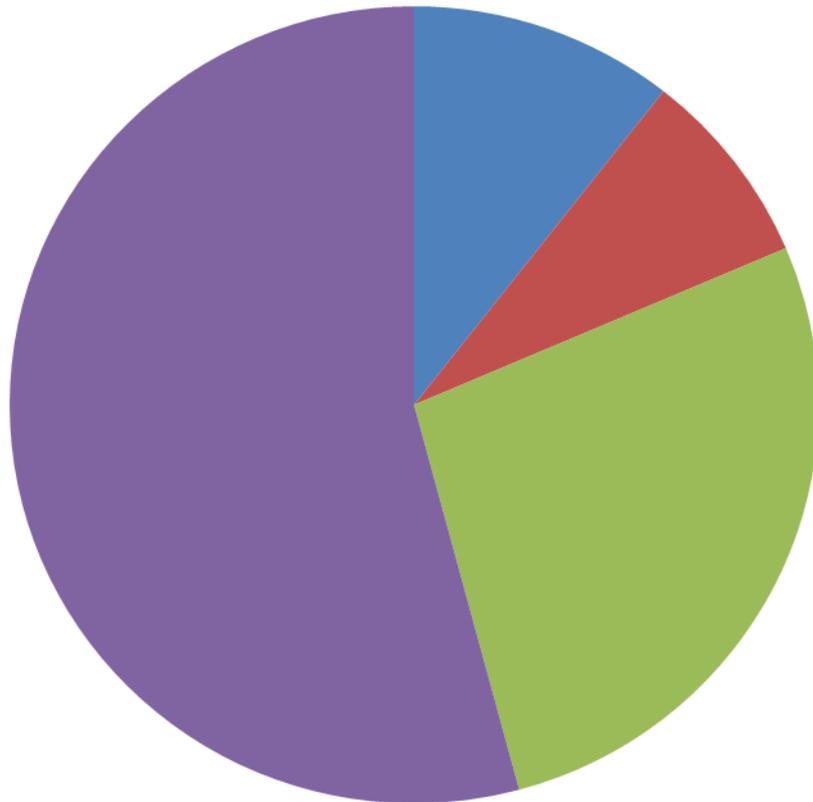
Estimated Total of Five Health Risk Costs Associated with Health Outcome Disparities/Inequities, Virginia 2006-2008

■ 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

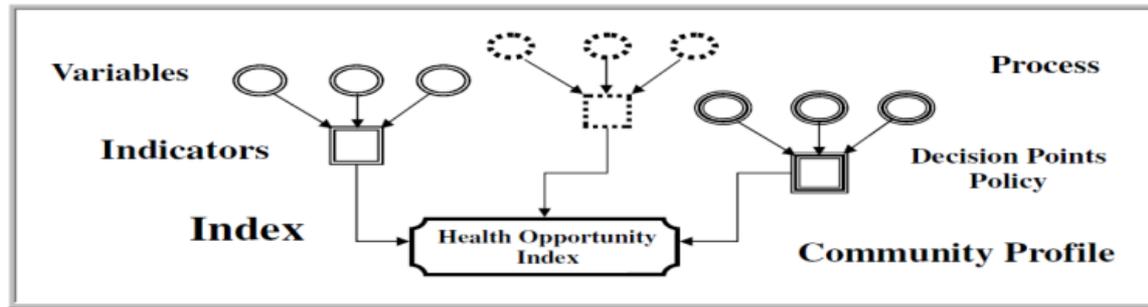


Health Risks Include Heart Disease, Stroke, Cancer Injuries, and Low Birth Weight; Source: Virginia Polytechnic Institute and State University, Department of Agriculture and Applied Economics; In 2009 US dollars.

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

Health Opportunity Index

Health Opportunity Index

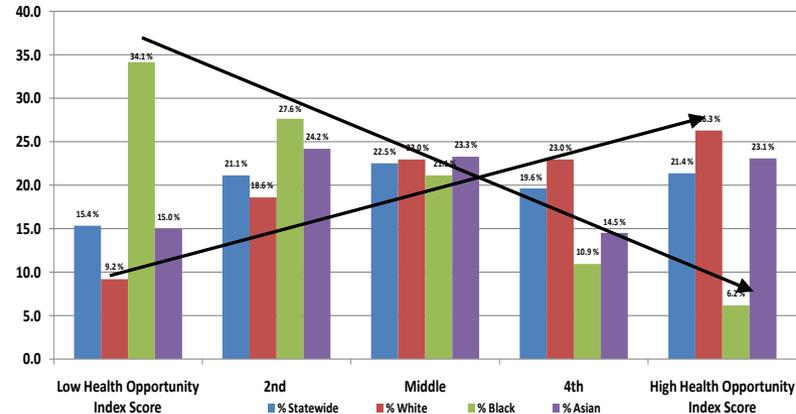


- **Affordability** → (housing + transportation costs) relative to income
- **Education** → Attainment & Enrollment
- **Job Participation** → % of 16-64 yo employed or looking for work
- **Townsend Deprivation** → Unemployed; no car; % rental; crowding
- **Income Diversity** → Diversity of incomes
-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

Distribution of the HOI by Race & Ethnicity, Virginia, 2009

Virginia

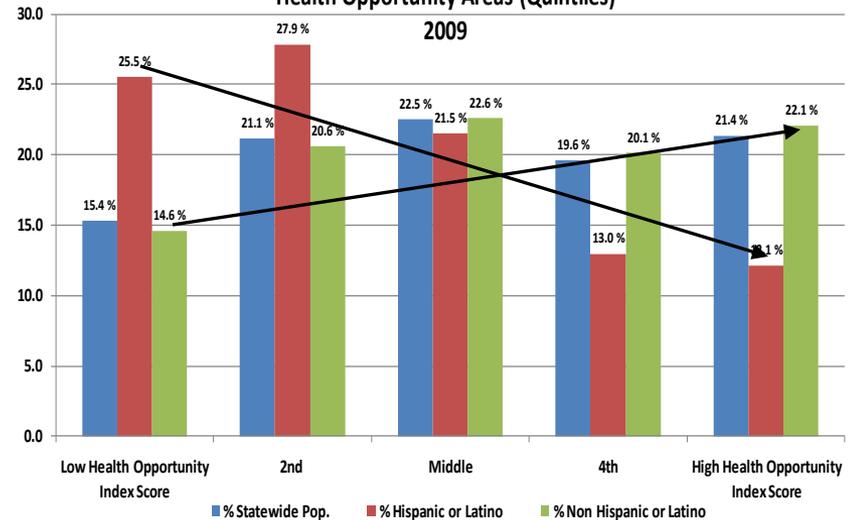
% of Population by Race and Statewide in Health Opportunity Areas (Quintiles) 2009



| Health Opportunity Index Quintile | Statewide Pop. | % Statewide Pop. | White Pop. | % White | Black Pop. | % Black | Asian Pop. | % Asian |
|-------------------------------------|----------------|------------------|------------|---------|------------|---------|------------|---------|
| Low Health Opportunity Index Score | 1,201,345 | 15.4 | 501,289 | 9.2 | 525,505 | 34.1 | 56,914 | 15.0 |
| 2nd | 1,653,452 | 21.1 | 1,012,857 | 18.6 | 425,237 | 27.6 | 92,066 | 24.2 |
| Middle | 1,762,423 | 22.5 | 1,252,636 | 23.0 | 325,340 | 21.1 | 88,482 | 23.3 |
| 4th | 1,535,754 | 19.6 | 1,252,799 | 23.0 | 168,246 | 10.9 | 55,156 | 14.5 |
| High Health Opportunity Index Score | 1,672,073 | 21.4 | 1,433,246 | 26.3 | 94,872 | 6.2 | 87,810 | 23.1 |
| Total | 7,825,047 | 100 | 5,452,827 | 100 | 1,539,200 | 100 | 380,428 | 100 |

Virginia

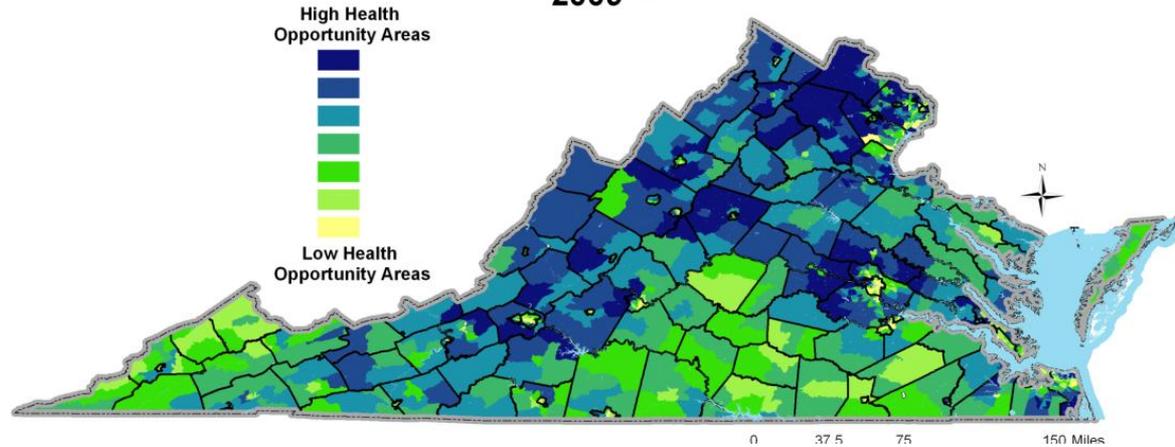
% of Population by Hispanic, Non-Hispanic and Statewide in Health Opportunity Areas (Quintiles) 2009



| Health Opportunity Index Quintile | Statewide Pop. | % Statewide Pop. | Hispanic or Latino Pop. | % Hispanic or Latino | Non-Hispanic or Latino Pop. | % Non-Hispanic or Latino |
|-------------------------------------|----------------|------------------|-------------------------|----------------------|-----------------------------|--------------------------|
| Low Health Opportunity Index Score | 1,201,345 | 15.4 | 138,045 | 25.5 | 1,063,300 | 14.6 |
| 2nd | 1,653,452 | 21.1 | 450,554 | 27.9 | 1,502,898 | 20.6 |
| Middle | 1,762,423 | 22.5 | 376,067 | 21.5 | 1,646,356 | 22.6 |
| 4th | 1,535,754 | 19.6 | 201,111 | 13.0 | 1,465,643 | 20.1 |
| High Health Opportunity Index Score | 1,672,073 | 21.4 | 200,575 | 12.1 | 1,606,498 | 22.1 |
| Total | 7,825,047 | 100 | 540,352 | 100 | 7,284,695 | 100 |

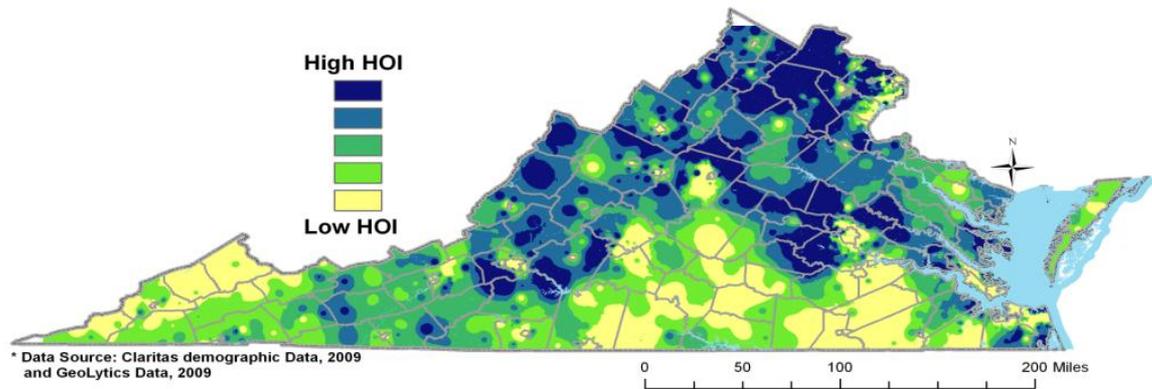
Virginia

Health Opportunity Index (HOI) * By Census Tracts 2009 **



Virginia

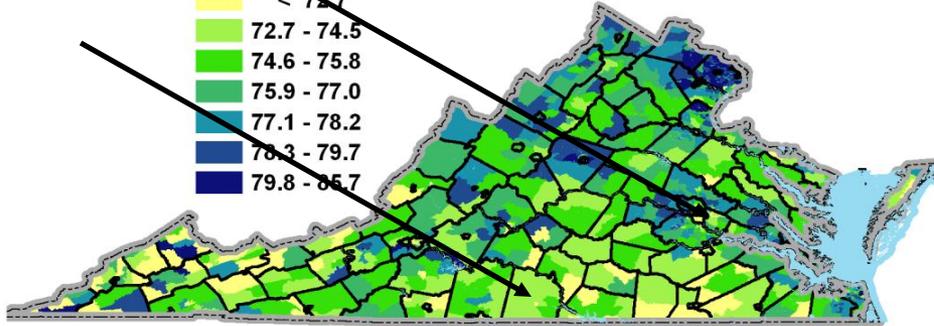
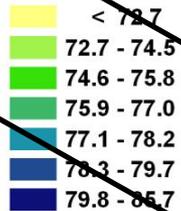
Health Opportunity Index (HOI) Inverse Distance Weighted (IDW) (spatial correlation that is used to explain variation on the surface)



Virginia

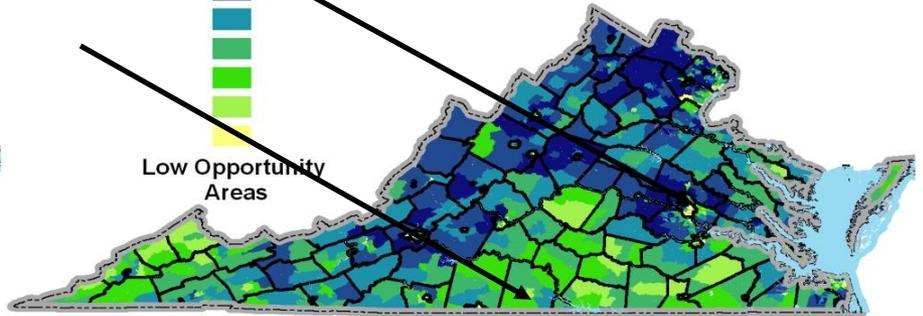
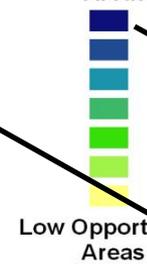
Life Expectancy at Birth in Years
By Census Tract

Life Expectancy



High Opportunity
Areas

Health Opportunity Index (HOI)
By Census Tract

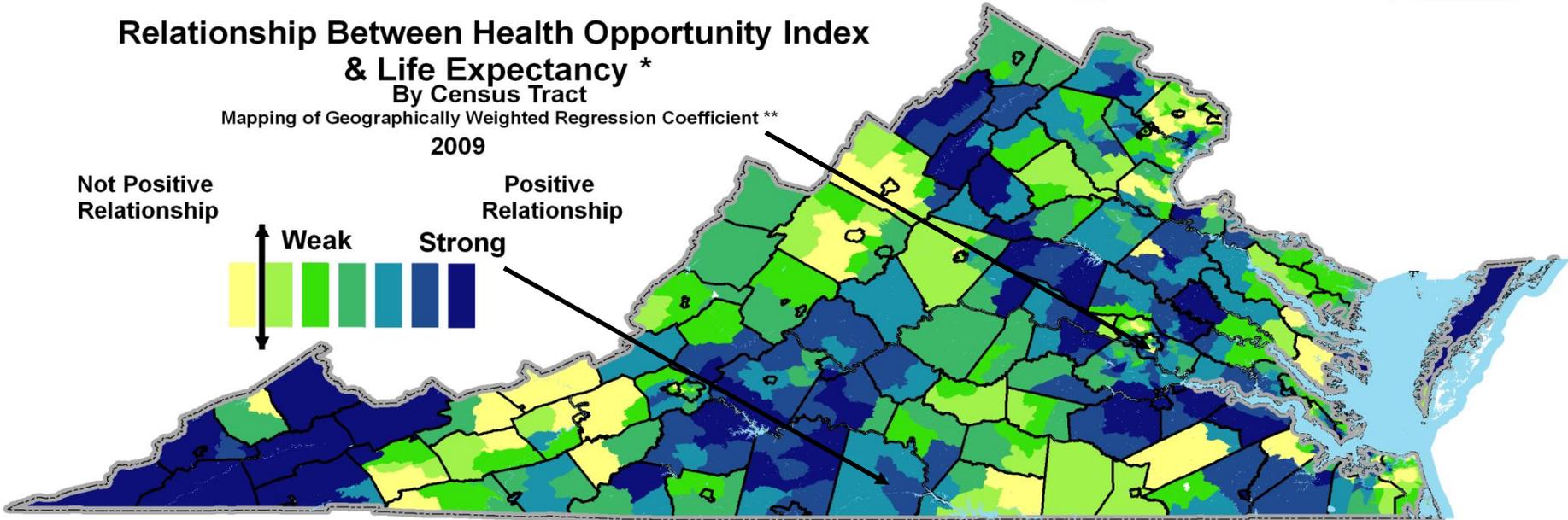
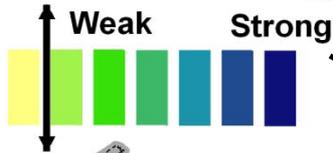


Relationship Between Health Opportunity Index
& Life Expectancy *
By Census Tract

Mapping of Geographically Weighted Regression Coefficient **
2009

Not Positive
Relationship

Positive
Relationship



* Data Source: Virginia Vital Records Data, 2005-2009

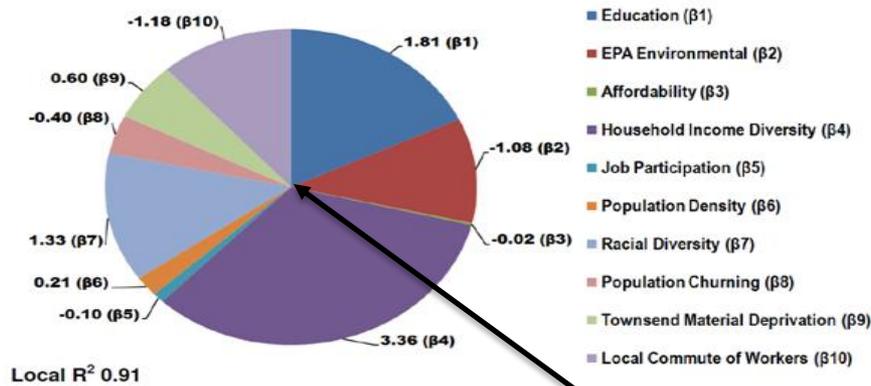
** Dependent Variable - Life Expectancy
Independent Variables - Health Opportunity Index



Decomposition of HOI Into 10 Indicators

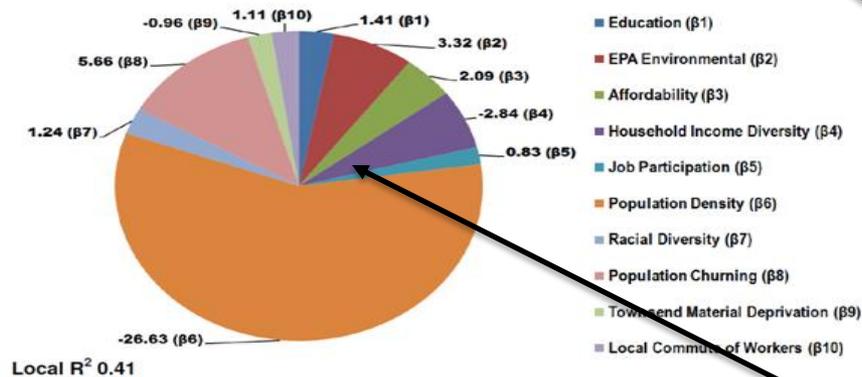
- Variables may have little influence at the global level but great impact locally.
- Variables may act as a significant “tipping point” that may transform a community.
- Influential indicators at the global level may actually be inversely related within some local areas.
- Interaction effects need not be proportional to the global impact of an indicator.

LIFE EXPECTANCY
HOI Local Coefficient Contribution
Richmond City Census Tract 760070400 *

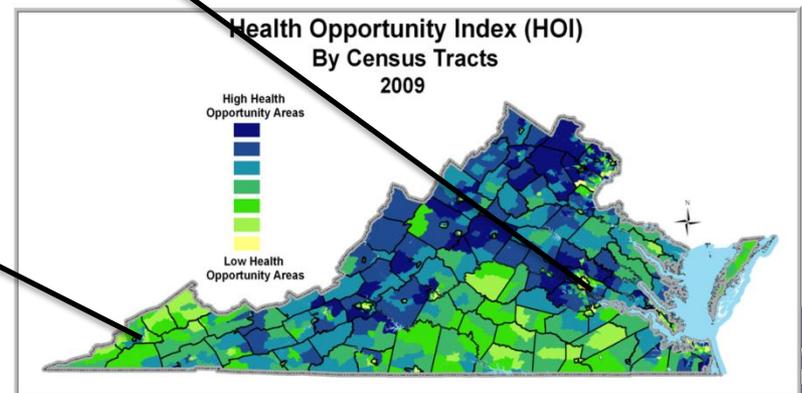


$$* \text{Life Expectancy} = \beta_1 \text{Education} + \beta_2 \text{EPA Environmental} + \beta_3 \text{Affordability} + \beta_4 \text{Household Income Diversity} + \beta_5 \text{Job Participation} + \beta_6 \text{Population Density} + \beta_7 \text{Racial Diversity} + \beta_8 \text{Population Churning} + \beta_9 \text{Townsend Material Deprivation} + \beta_{10} \text{Local Commute of Workers}$$

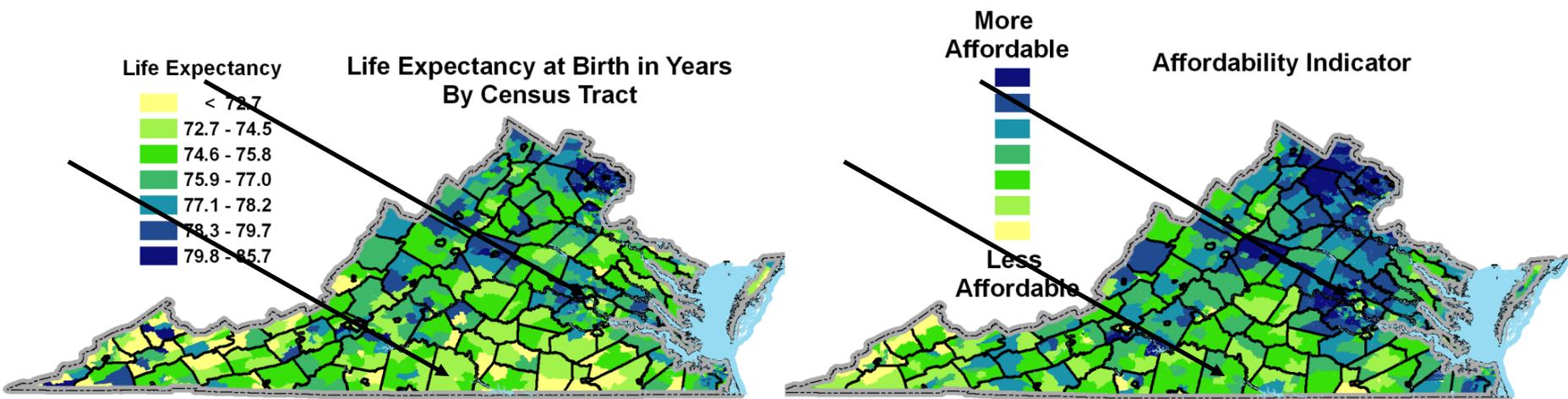
LIFE EXPECTANCY
HOI Local Coefficient Contribution
Norton City Census Tract 51720990100 *



$$* \text{Life Expectancy} = \beta_1 \text{Education} + \beta_2 \text{EPA Environmental} + \beta_3 \text{Affordability} + \beta_4 \text{Household Income Diversity} + \beta_5 \text{Job Participation} + \beta_6 \text{Population Density} + \beta_7 \text{Racial Diversity} + \beta_8 \text{Population Churning} + \beta_9 \text{Townsend Material Deprivation} + \beta_{10} \text{Local Commute of Workers}$$

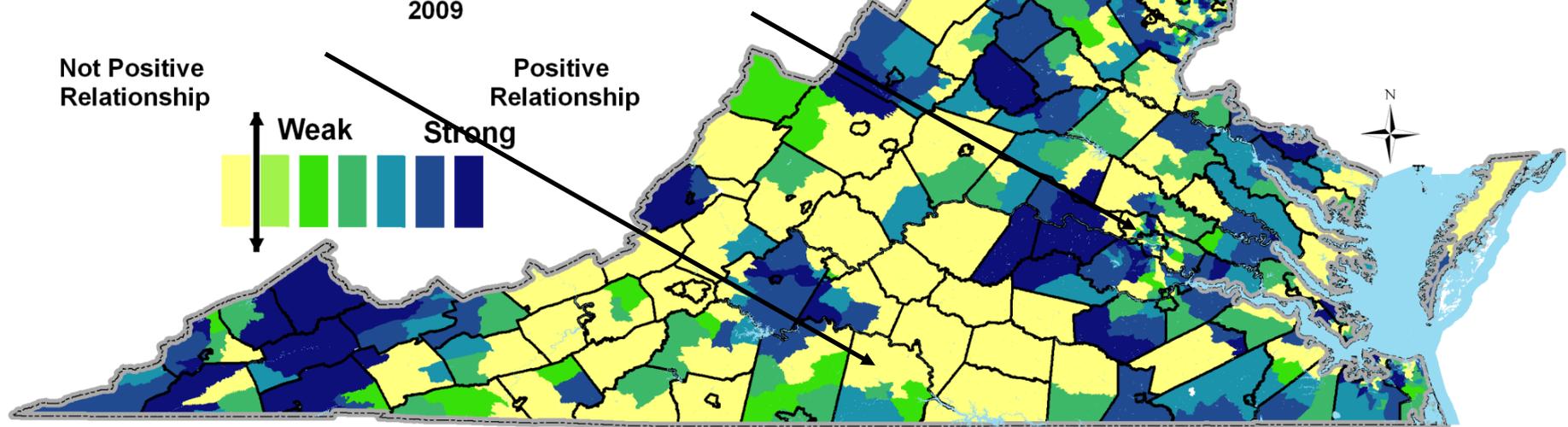


Virginia

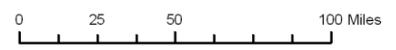


Relationship Between Affordability Indicator & Life Expectancy * By Census Tract

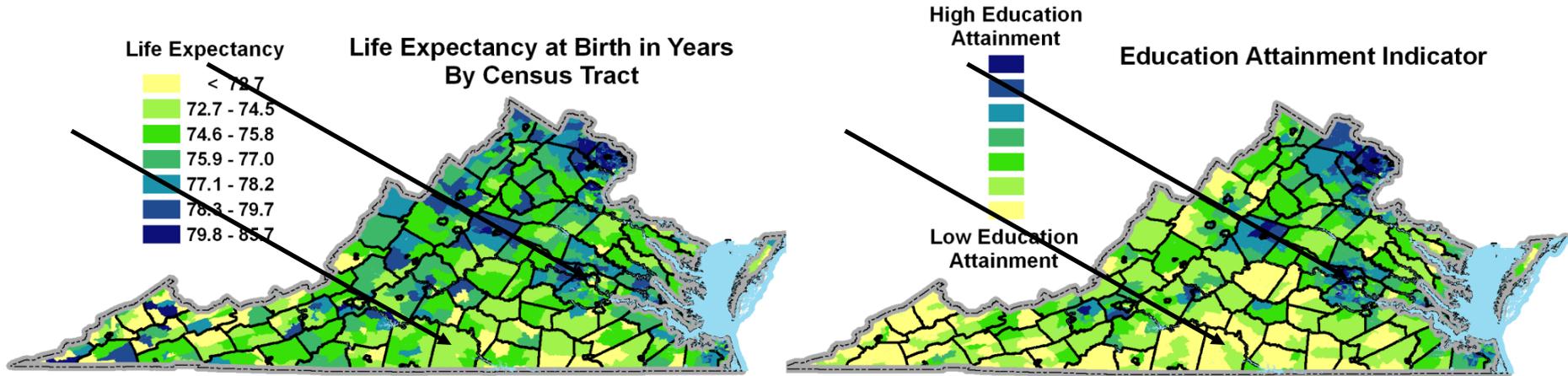
Mapping of Geographically Weighted Regression Coefficient **
2009



** 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.

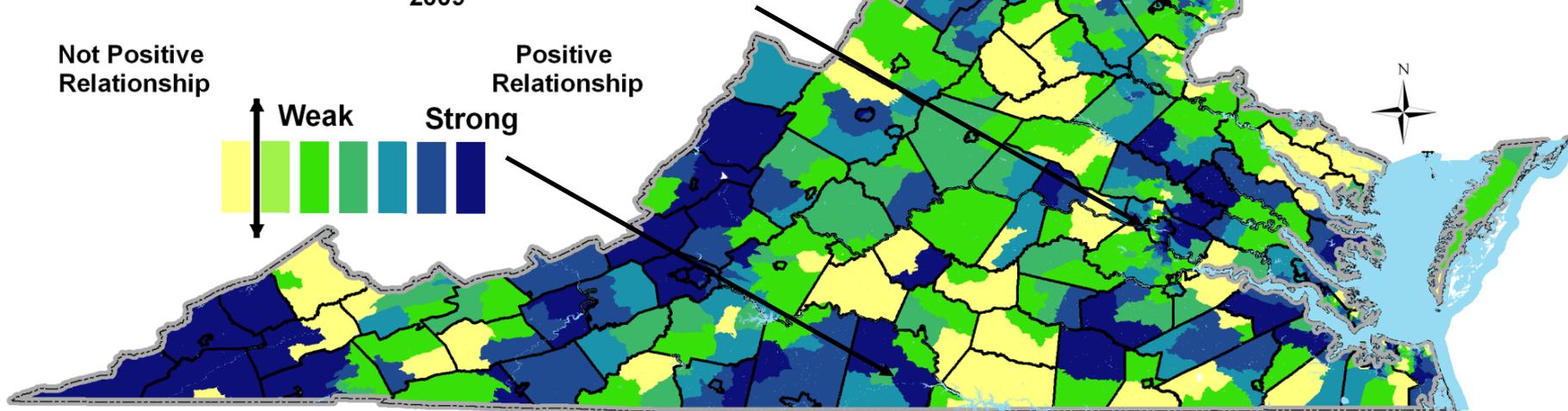


Virginia



Relationship Between Education Attainment Indicator & Life Expectancy * By Census Tract

Mapping of Geographically Weighted Regression Coefficient **
2009



** 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

| SUMMARY OF NPA GOALS AND STRATEGIES | | |
|-------------------------------------|---|--|
| GOAL # | GOAL DESCRIPTION | STRATEGIES |
| 1 | AWARENESS — Increase awareness of the significance of health disparities, their impact on the nation, and the actions necessary to improve health outcomes for racial, ethnic, and underserved populations | <p>1. Healthcare Agenda Ensure that ending health disparities is a priority on local, state, tribal, regional, and federal healthcare agendas</p> <p>2. Partnerships Develop and support partnerships among public, nonprofit, and private entities to provide a comprehensive infrastructure to increase awareness, drive action, and ensure accountability in efforts to end health disparities and achieve health equity across the lifespan</p> <p>3. Media Leverage local, regional, and national media outlets using traditional and new media approaches as well as information technology to reach a multi-tier audience — including racial and ethnic minority communities, youth, young adults, older persons, persons with disabilities, LGBT groups, and geographically isolated individuals — to encourage action and accountability</p> <p>4. Communication Create messages and use communication mechanisms tailored for specific audiences across their lifespan, and present varied views of the consequences of health disparities that will encourage individuals and organizations to act and to reinvest in public health</p> |
| 2 | LEADERSHIP — Strengthen and broaden leadership for addressing health disparities at all levels | <p>5. Capacity Building Build capacity at all levels of decision making to promote community solutions for ending health disparities</p> <p>6. Funding Priorities Improve coordination, collaboration, and opportunities for soliciting community input on funding priorities and involvement in research and services</p> <p>7. Youth Invest in young people to prepare them to be future leaders and practitioners by actively engaging and including them in the planning and execution of health, wellness, and safety initiatives</p> |
| 3 | HEALTH SYSTEM AND LIFE EXPERIENCE — Improve health and healthcare outcomes for racial, ethnic, and underserved populations | <p>8. Access to Care Ensure access to quality health care for all</p> <p>9. Children Ensure the provision of needed services (e.g., mental, oral, vision, hearing, and physical health; nutrition; and those related to the social and physical environments) for at-risk children, including children in out-of-home care</p> <p>10. Older Adults Enable the provision of needed services and programs to foster healthy aging</p> <p>11. Health Communication Enhance and improve health service experience through improved health literacy, communications, and interactions</p> <p>12. Education Substantially increase, with a goal of 100%, high school graduation rates by working with schools, early childhood programs, community organizations, public health agencies, health plan providers, and businesses to promote the connection between educational attainment and long-term health benefits</p> <p>13. Social and Economic Conditions Support and implement policies that create the social, environmental, and economic conditions required to realize healthy outcomes</p> |
| 4 | CULTURAL AND LINGUISTIC COMPETENCY — Improve cultural and linguistic competency and the diversity of the health-related workforce | <p>14. Workforce Develop and support the health workforce and related industry workforces to promote the availability of cultural and linguistic competency training that is sensitive to the cultural and language variations of diverse communities</p> <p>15. Diversity Increase diversity and competency of the health workforce and related industry workforces through recruitment, retention, and training of racially, ethnically, and culturally diverse individuals and through leadership action by healthcare organizations and systems</p> <p>16. Ethics and Standards, and Financing for Interpreting and Translation Services Encourage interpreters, translators, and bilingual staff providing services in languages other than English to follow codes of ethics and standards of practice for interpreting and translation; encourage financing and reimbursement for health interpreting services</p> |
| 5 | DATA, RESEARCH, AND EVALUATION — Improve data availability, and coordination, utilization, and diffusion of research and evaluation outcomes | <p>17. Data Ensure the availability of health data on all racial, ethnic, and underserved populations</p> <p>18. Community-Based Research and Action, and Community-Originated Intervention Strategies Invest in community-based participatory research and evaluation of community-originated intervention strategies in order to build capacity at the local level for ending health disparities</p> <p>19. Coordination of Research Support and improve coordination of research that enhances understanding about, and proposes methodology for, ending health and healthcare disparities</p> <p>20. Knowledge Transfer Expand and enhance transfer of knowledge generated by research and evaluation for decision making about policies, programs, and grant making related to health disparities and health equity</p> |

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/>

Acknowledgments

- VDH Partners:
 - Office of Epidemiology,
 - 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