

DESIGNING HEALTH in VIRGINIA: VIRGINIA as the HEALTHIEST STATE IN THE NATION

**Marissa J. Levine, MD MPH
State Health Commissioner**

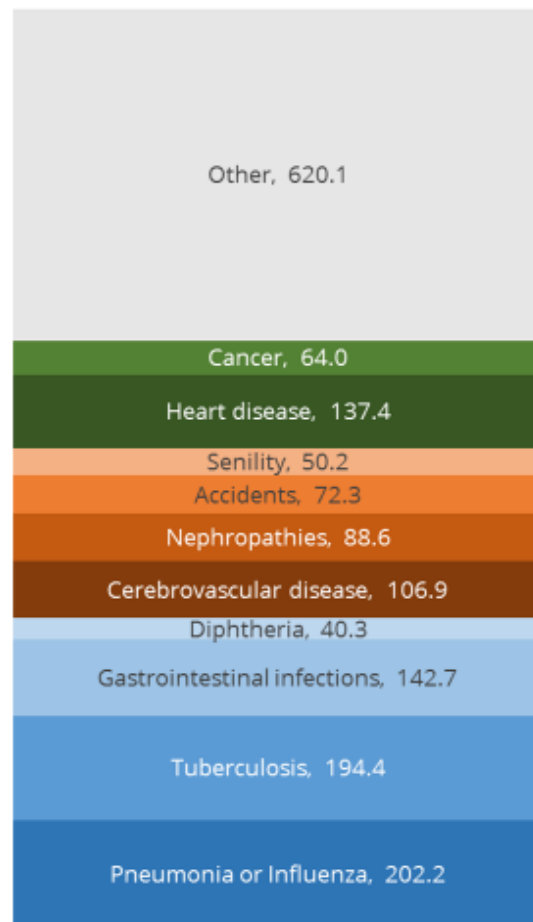
Mortality and Top 10 Causes of Death, USA, 1900 vs. 2010

(Rates per 100,000)

1900

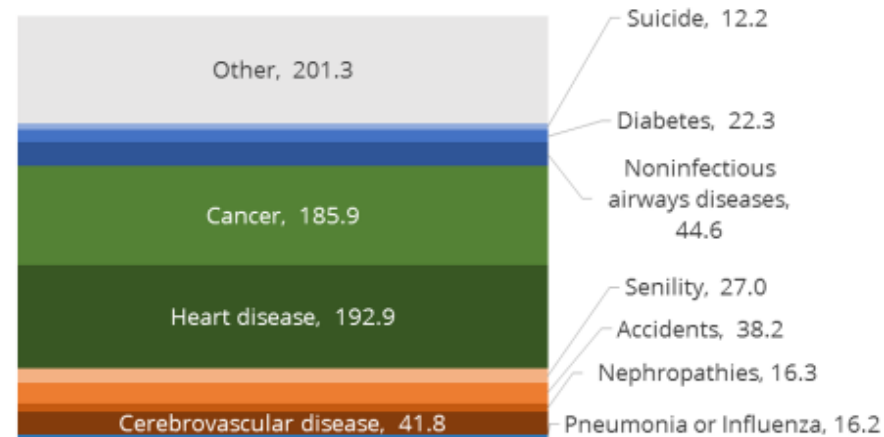
2010

All Causes: 1,719.1



Mortality from all causes **declined 54%** between 1900 and 2010.

All Causes: 798.7

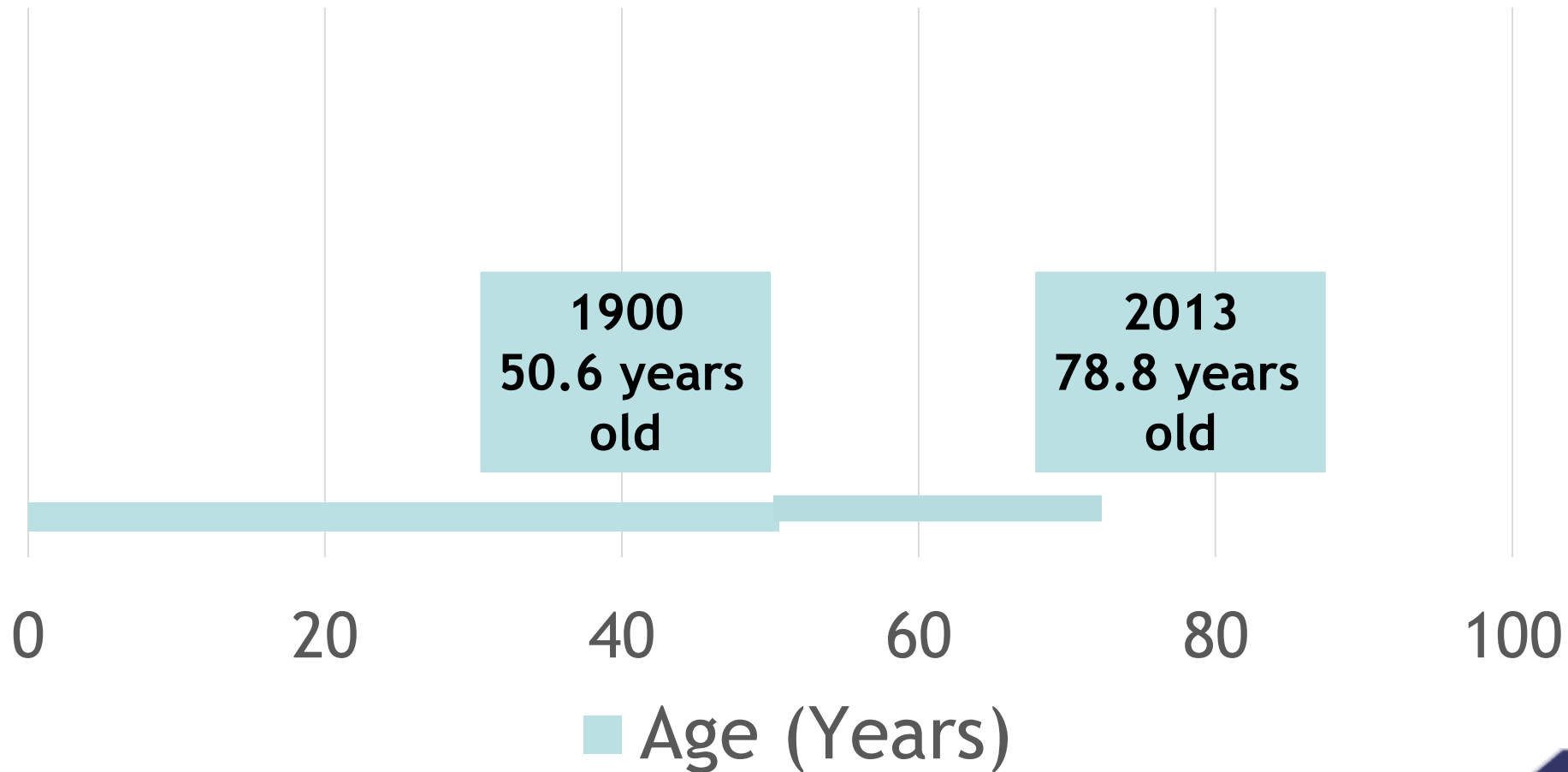


Data Source: Centers for Disease Control

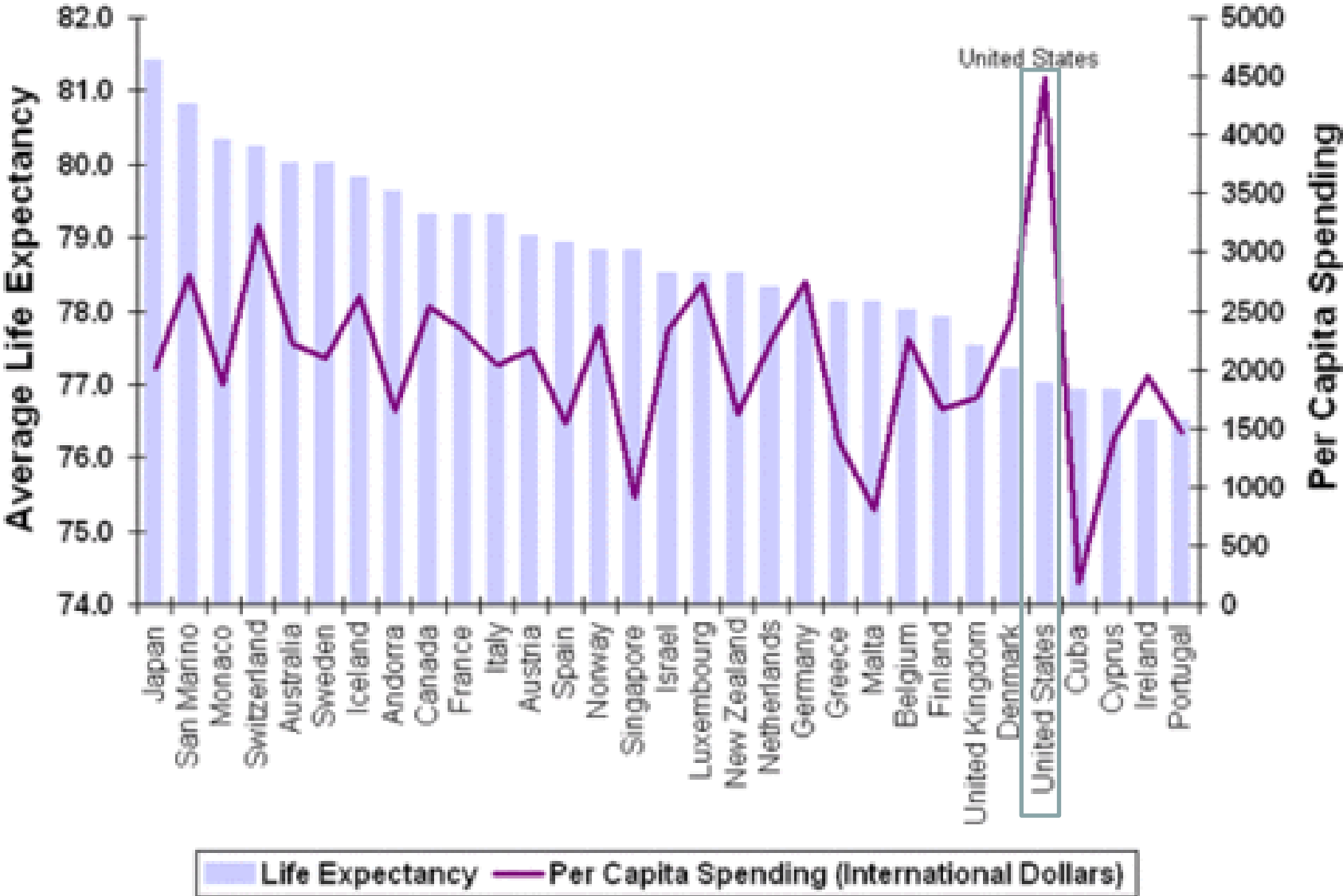


UNC CAROLINA
CAROLINA POPULATION CENTER
DEMOGRAPHY

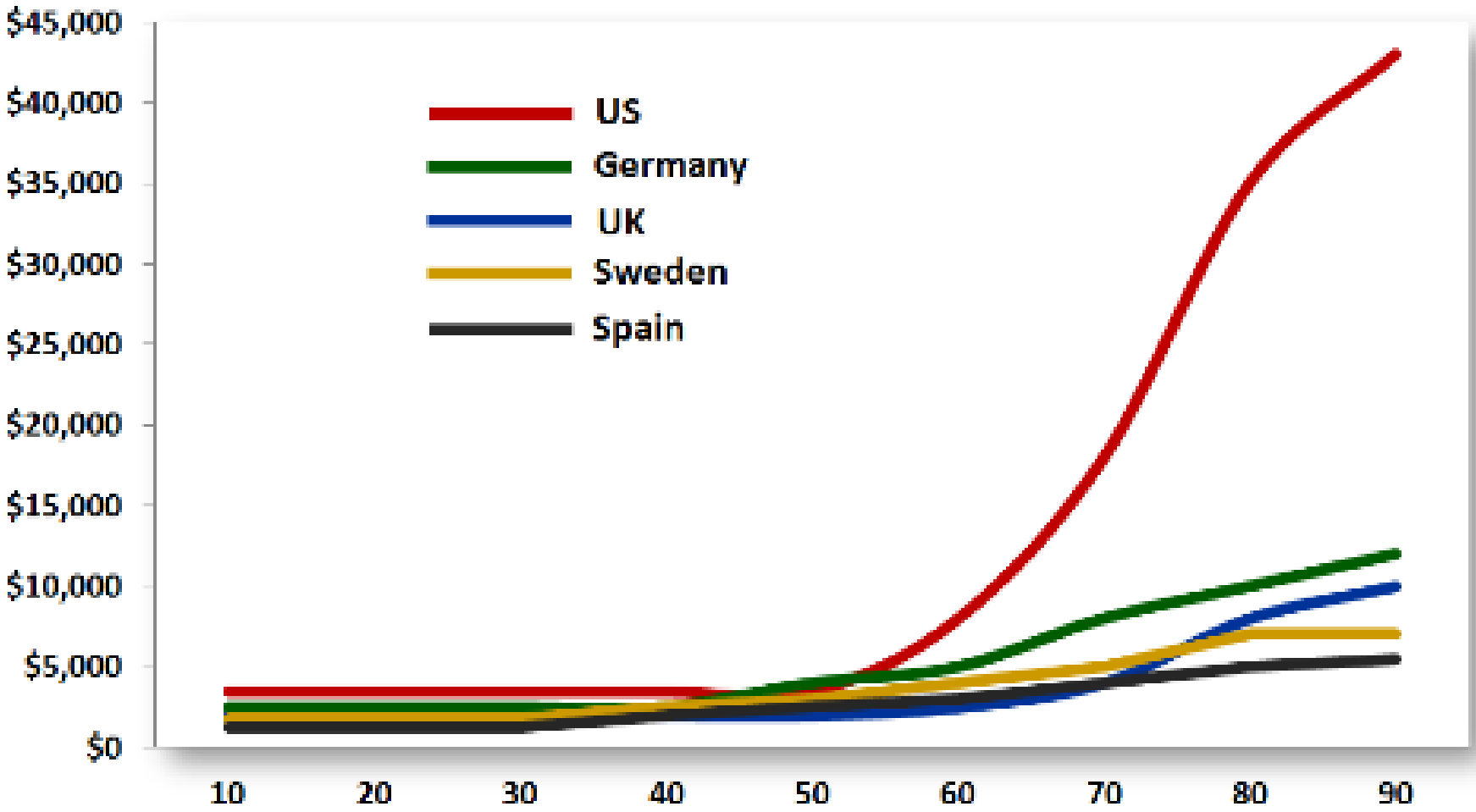
Life Expectancy 1900, 2013



The Cost of a Long Life

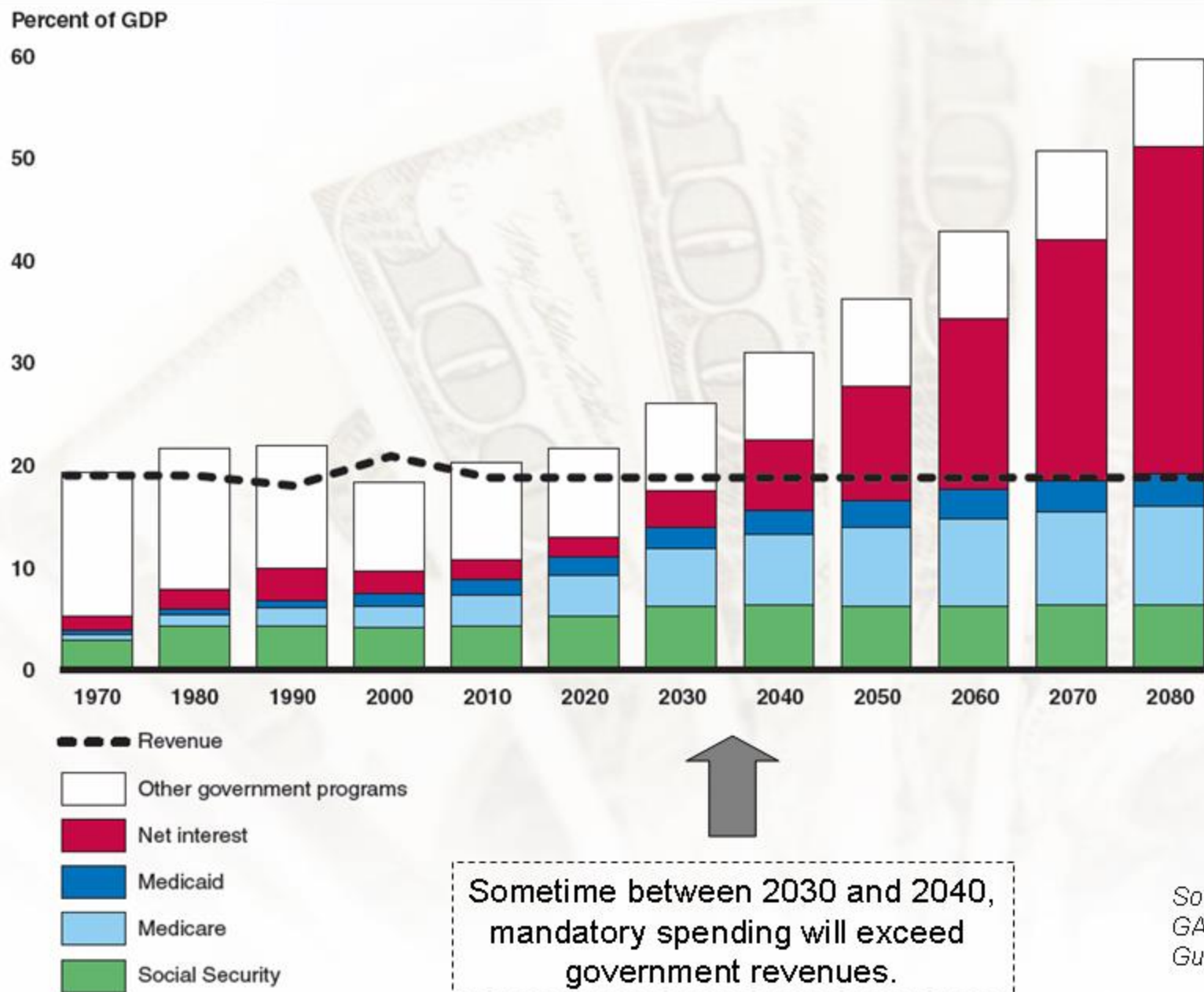


Annual Per Capita Healthcare Costs by Age



Source: <http://www.forbes.com/sites/danmunro/2012/12/30/2012-the-year-in-healthcare-charts/>

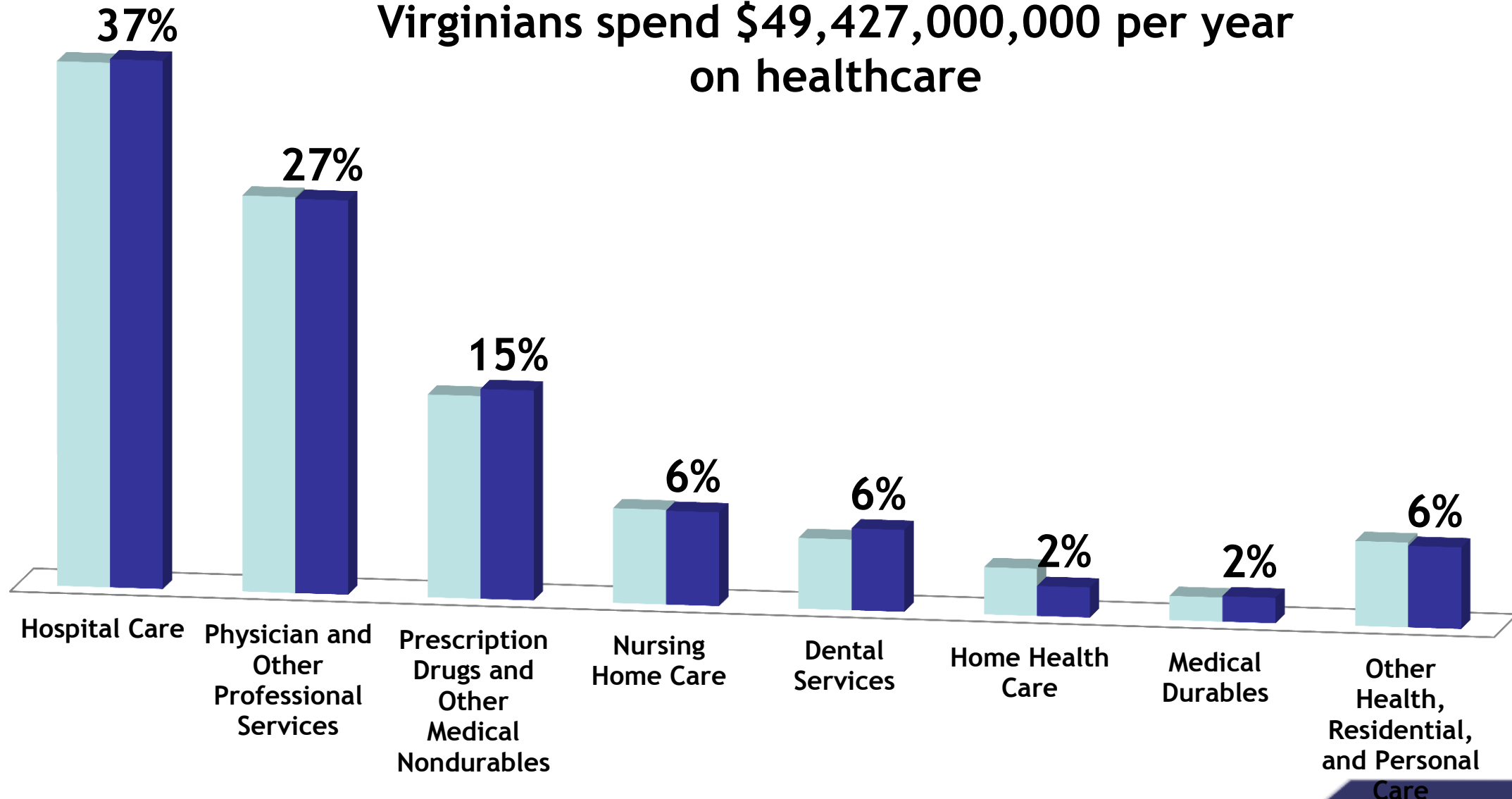
The Risks of Growing Entitlement Spending



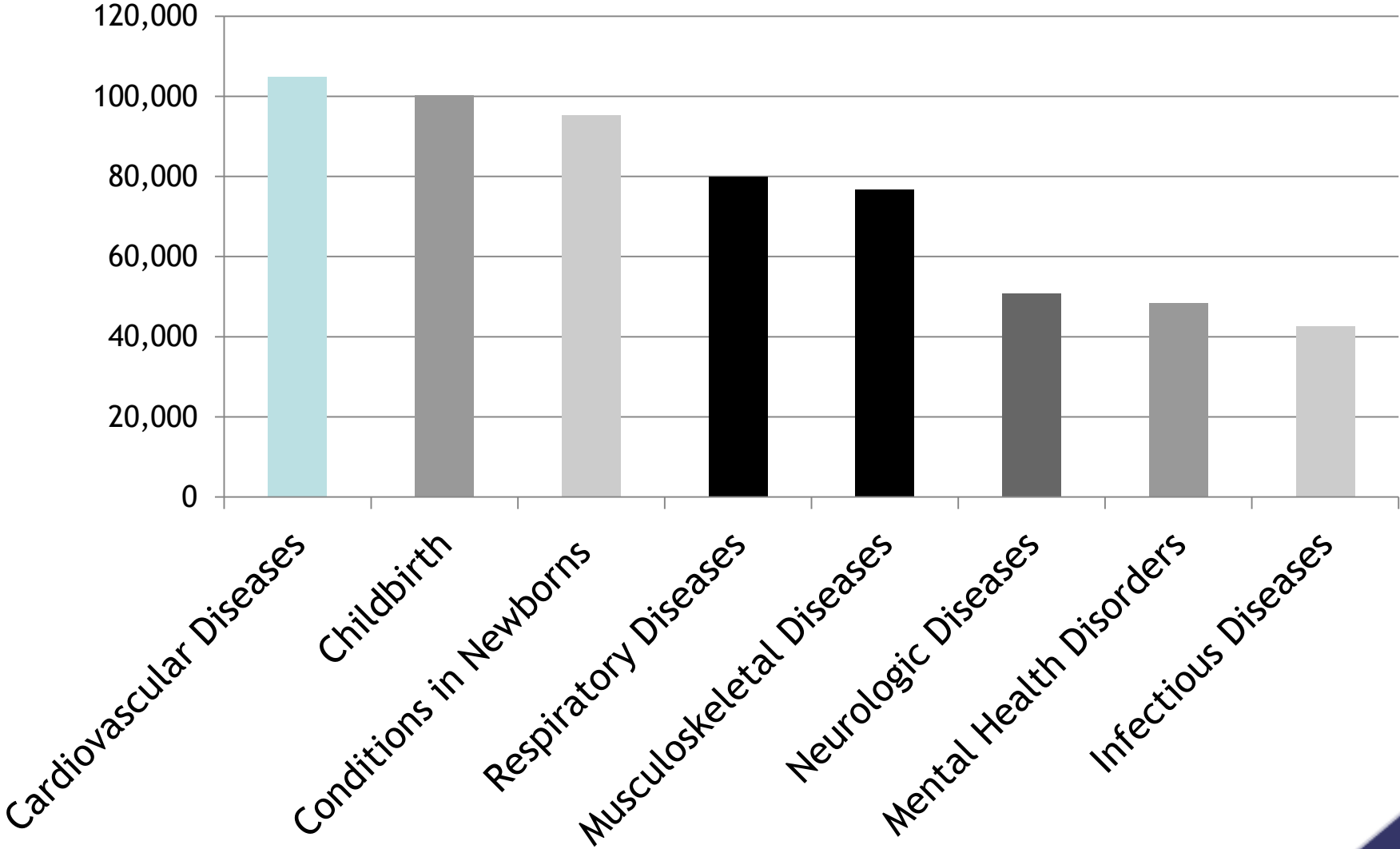
Source:
GAO Citizen's
Guide 2007

■ United States ■ Virginia

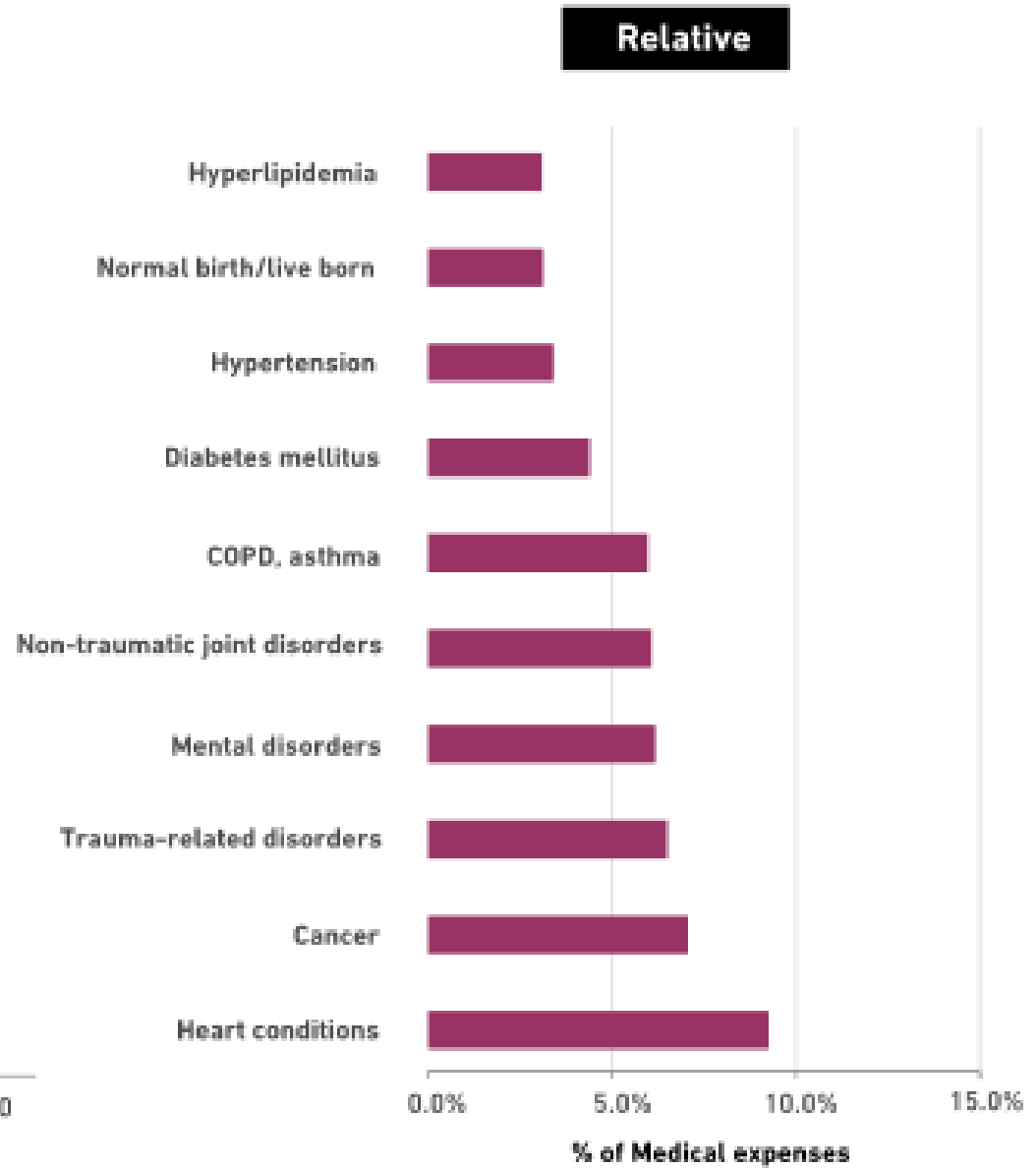
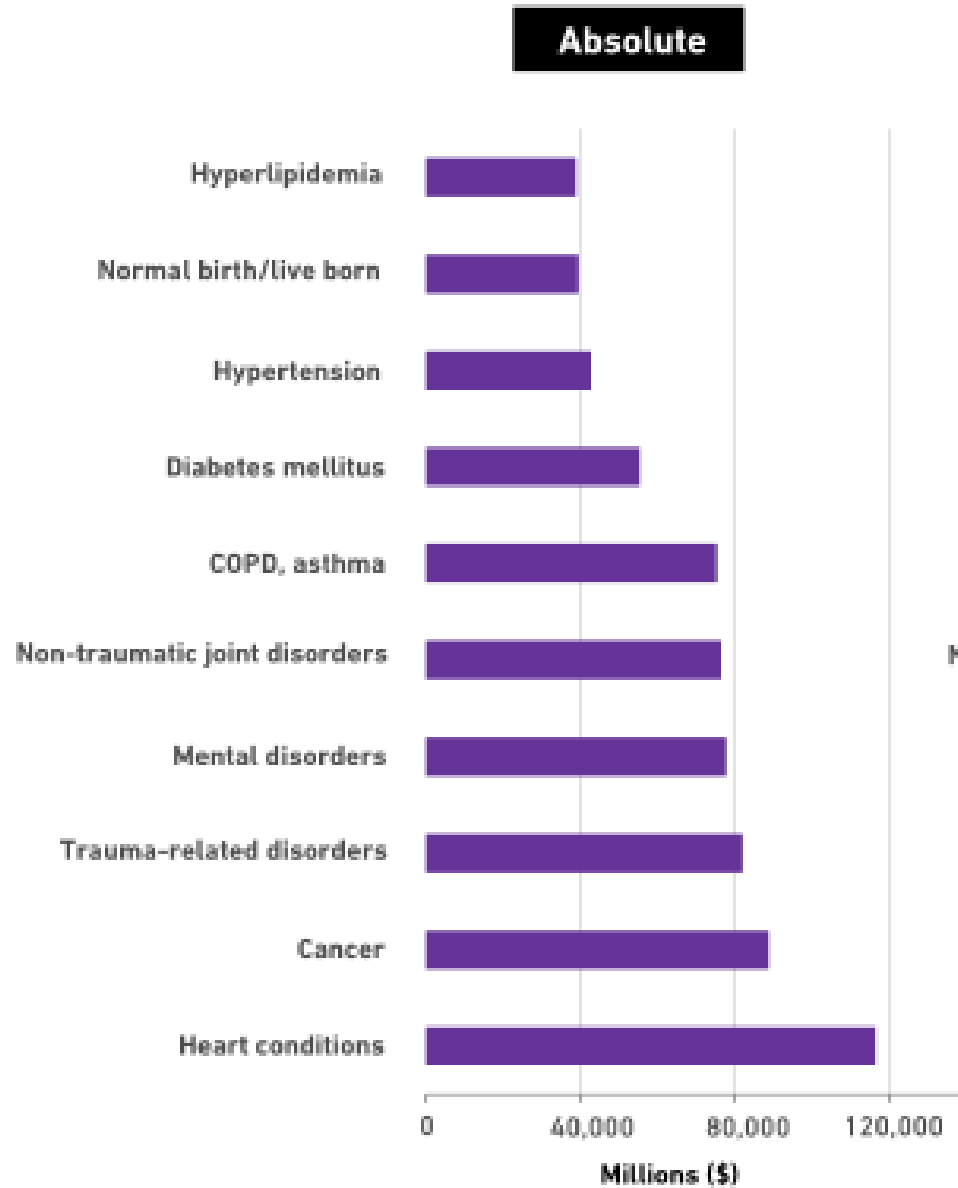
Virginians spend \$49,427,000,000 per year on healthcare



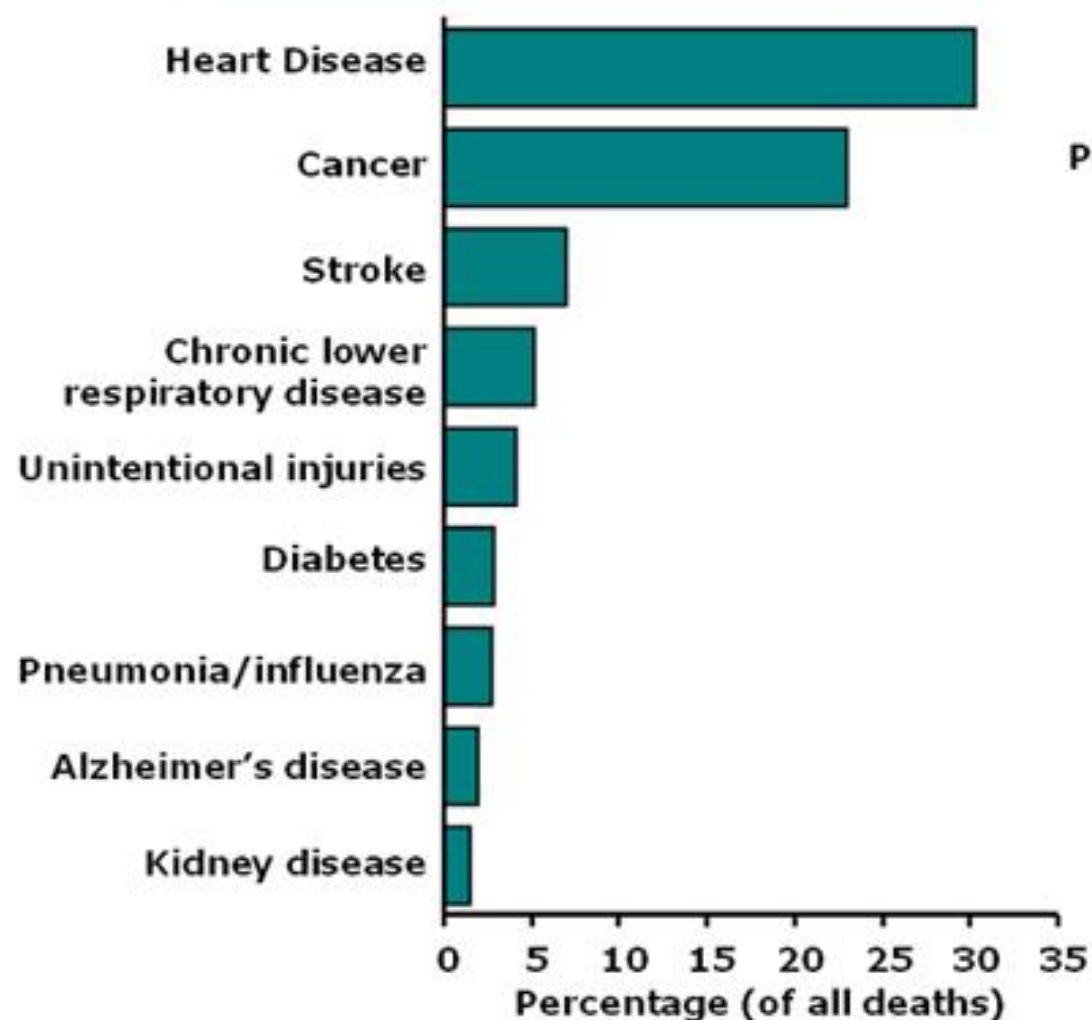
Leading Causes of Hospitalization in Virginia - 2013



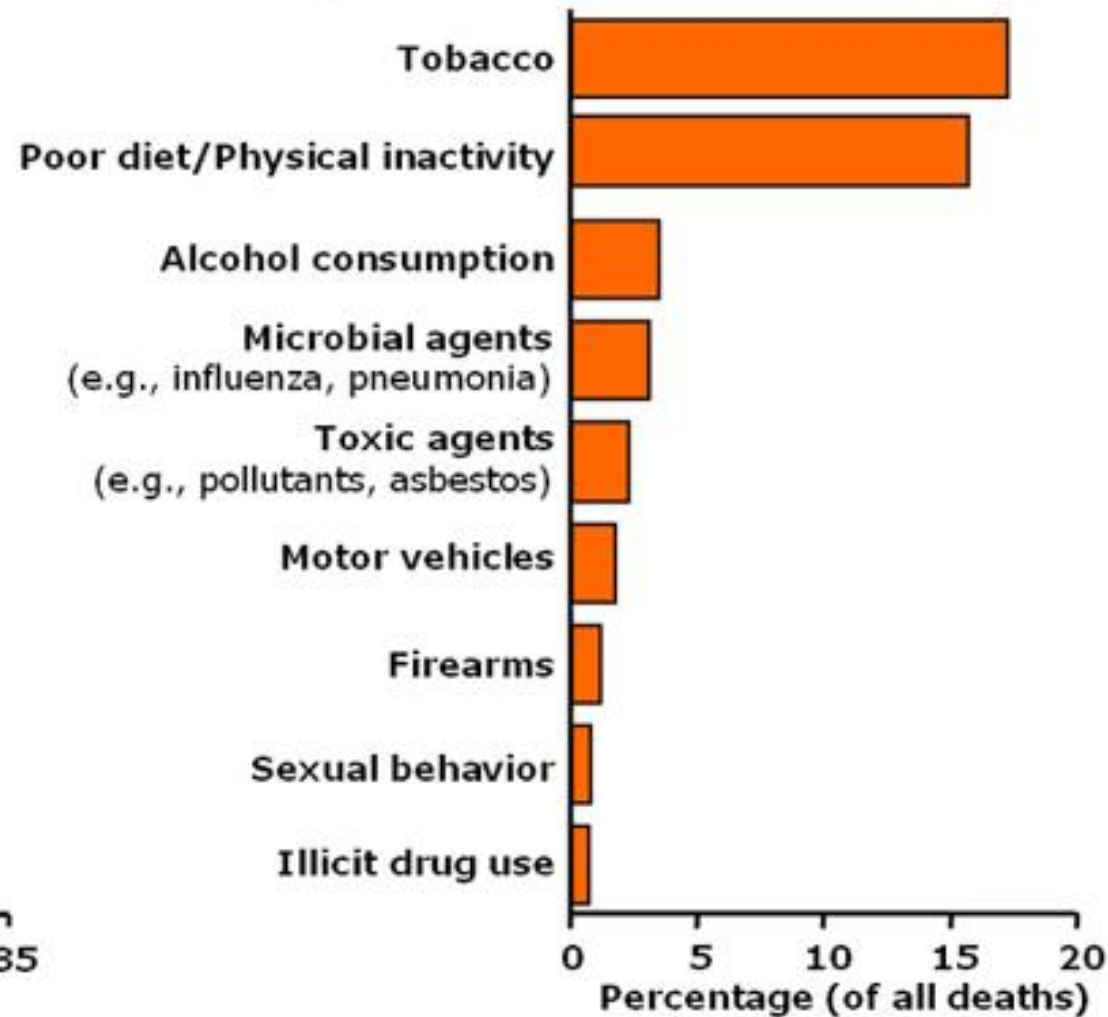
TOP 10 MOST EXPENSIVE MEDICAL CONDITIONS



Leading Causes of Death* United States, 2000



Actual Causes of Death† United States, 2000



* Miniño AM, Arias E, Kochanek KD, Murphy SL, Smith BL. Deaths: final data for 2000. National Vital Statistics Reports 2002; 50(15):1-120.

† Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. JAMA. 2004;291(10):1238-1246.

1,159,396

tobacco
users

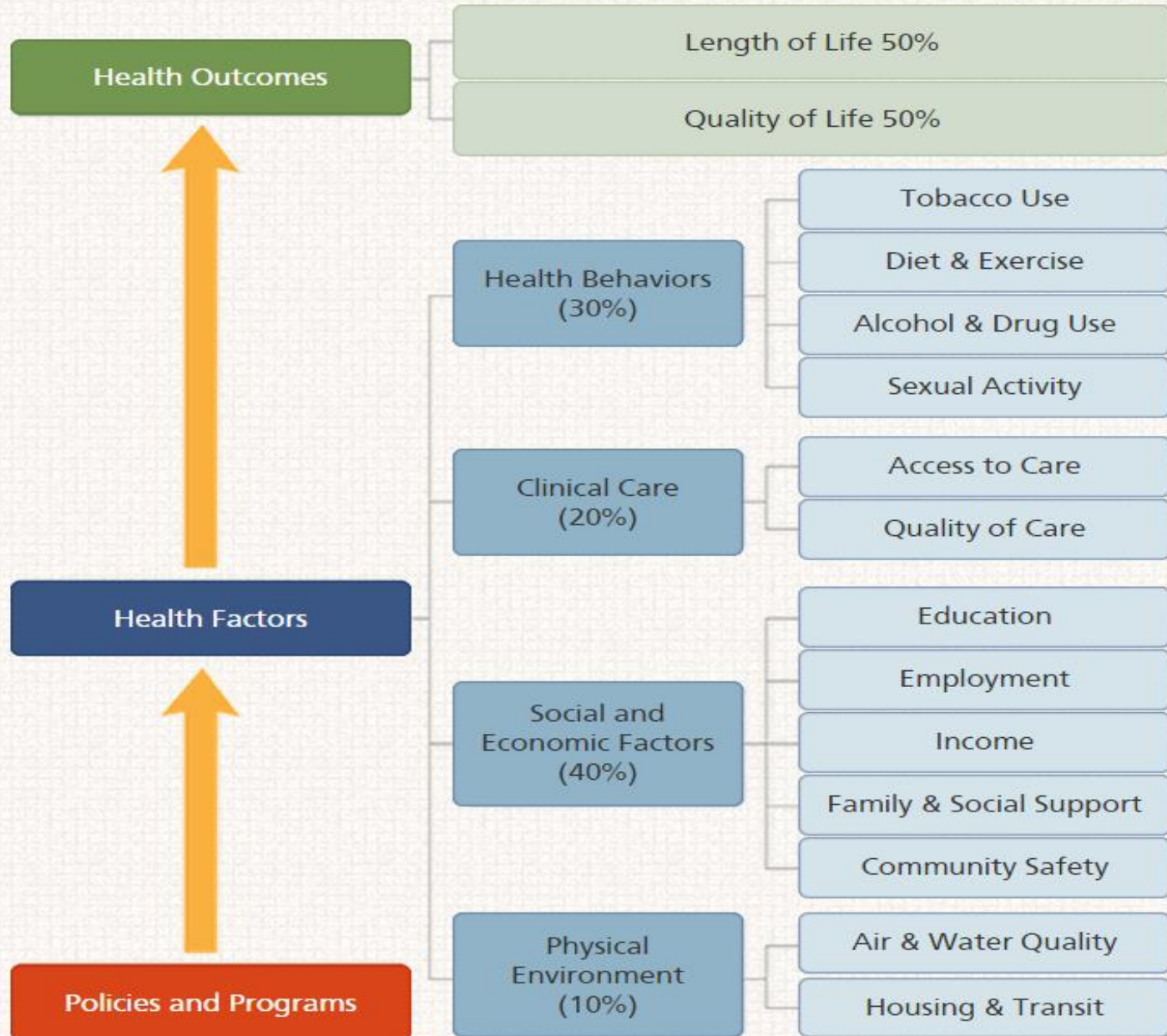
3,838,092

overweight
or obese

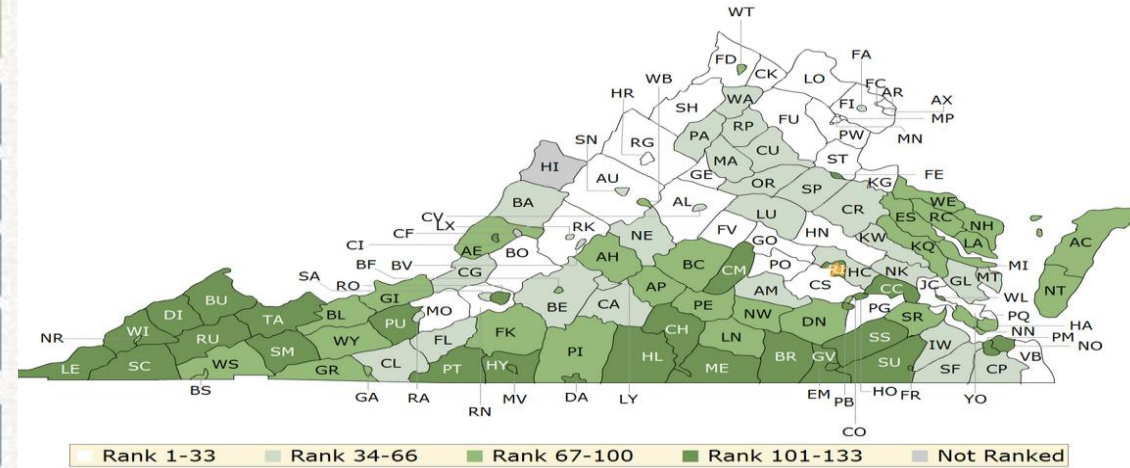


VIRGINIANS

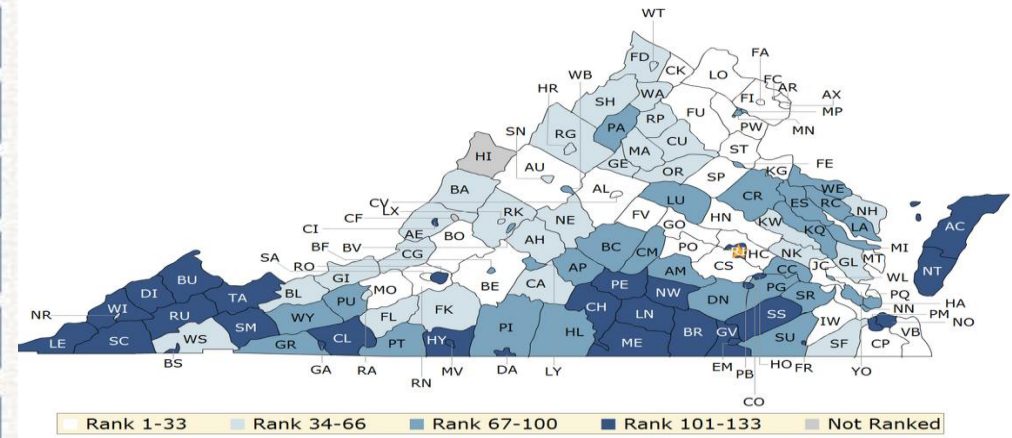
County Health Rankings from Robert Wood Johnson



2014 Health Outcomes - Virginia



2014 Health Factors - Virginia



VIRGINIA'S PLAN FOR WELL BEING: AN APPROACH

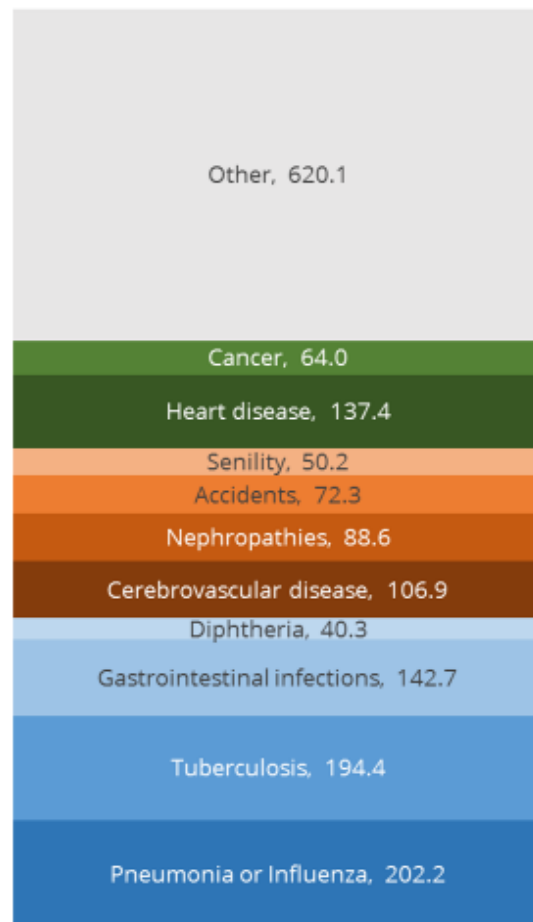
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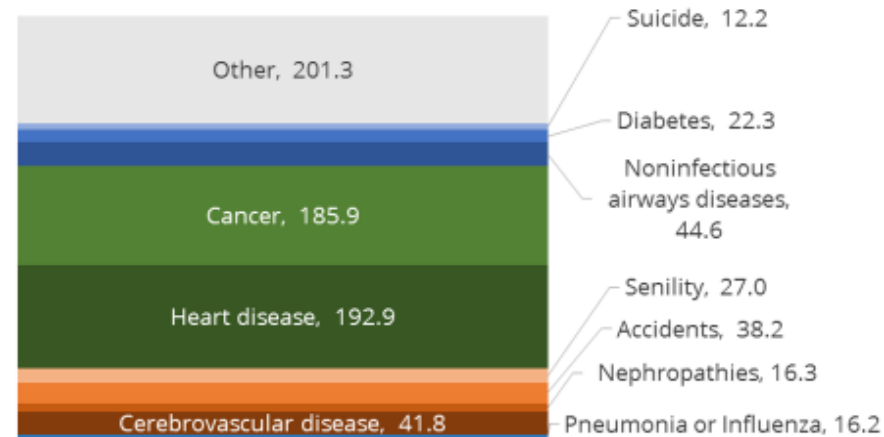
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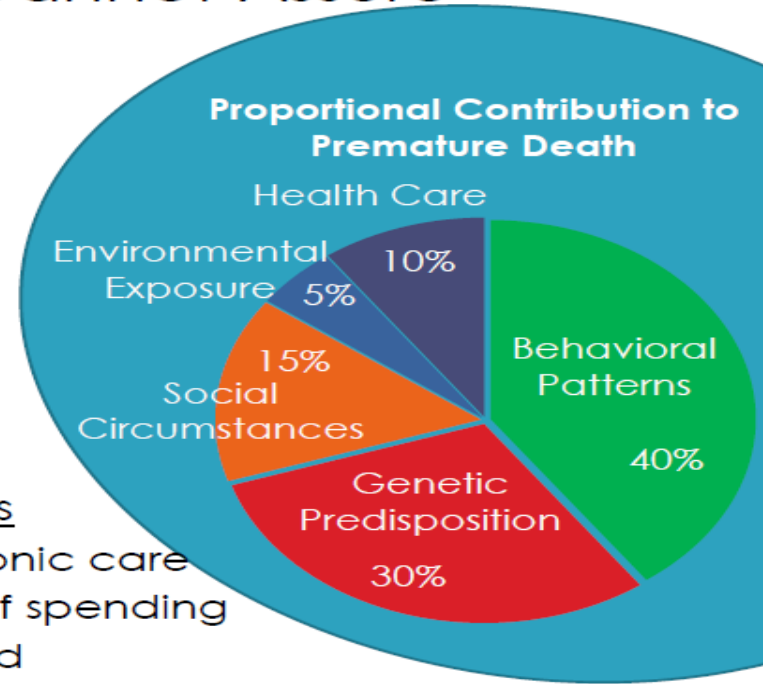
Excellent Health Care Cannot Assure an Individual's Health

Health Is Influenced by 5 Factors

- Genetic predisposition
- Social circumstances
- Environmental exposures
- Behavioral patterns, and
- Health care

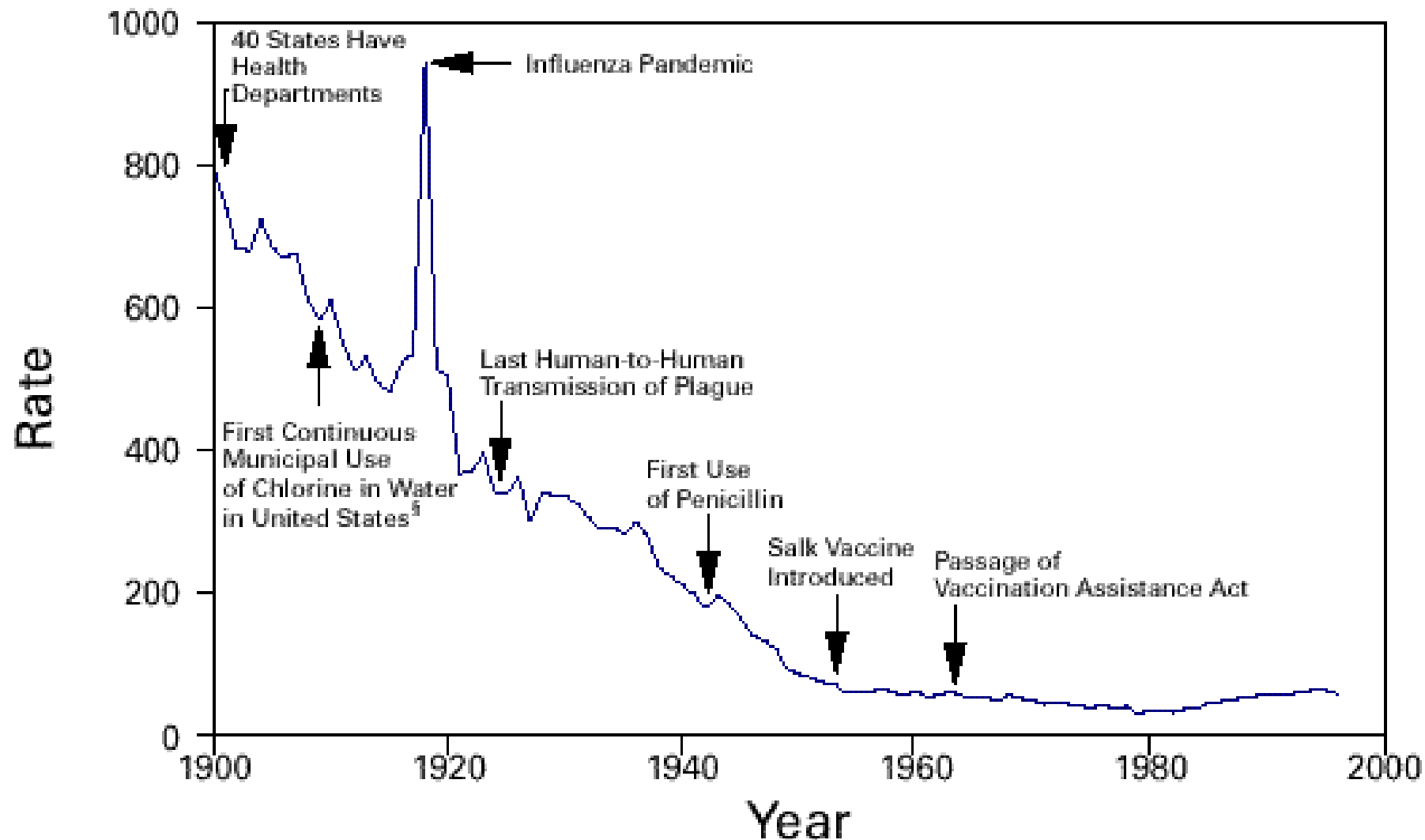
U.S. Health Care Expenditure Facts

- 75% of expenditures related to chronic care
- 5% of individuals account for 50% of spending
- 3.5% is spent toward prevention and public health services



Sources: Steven A. Schroeder M.D., We Can Do Better-Improving the Health of American People, N Engl J Med 2007; 357:1221-8, GAO, Preventive Health Activities, December 2012 at <http://www.gao.gov/assets/660/650617.pdf>, and American Public Health Association, Issue Brief: The Prevention and Public Health Fund, July 2012 at http://www.apha.org/NR/rdonlyres/8FA13774-AA47-43F2-838B-1B0757D111C6/0/APHA_PrevFundBrief_June2012.pdf.

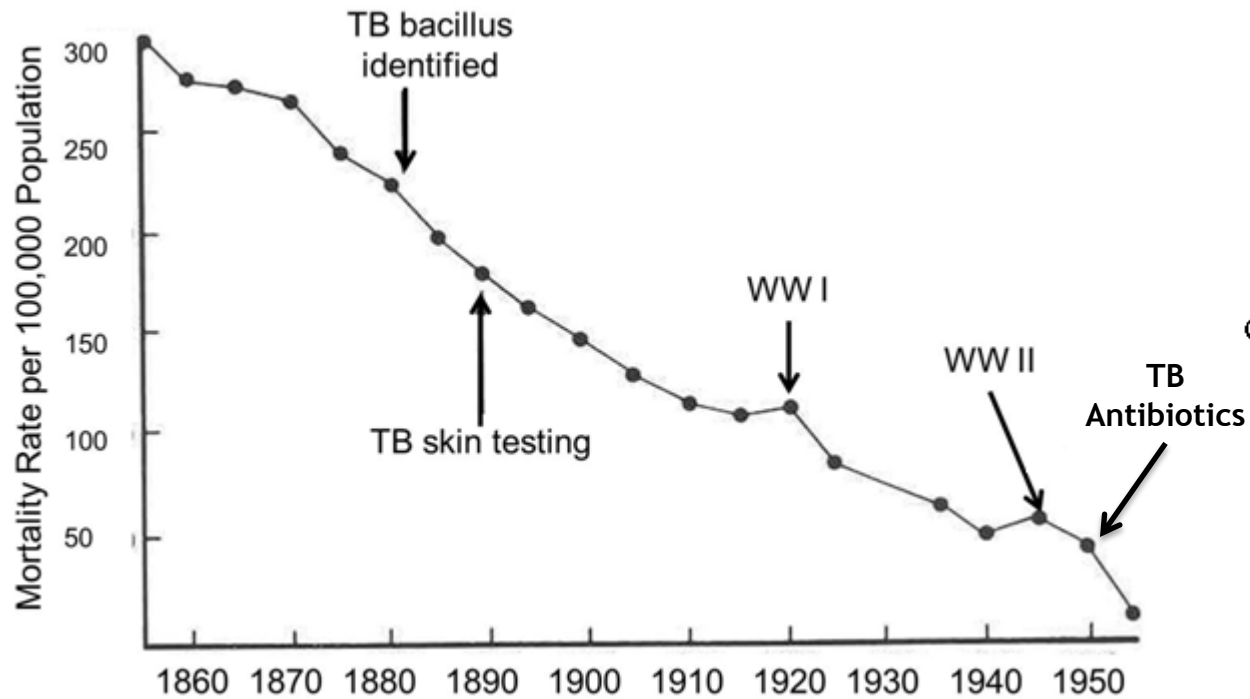
FIGURE 1. Crude death rate* for infectious diseases — United States, 1900–1996†



*Per 100,000 population per year.

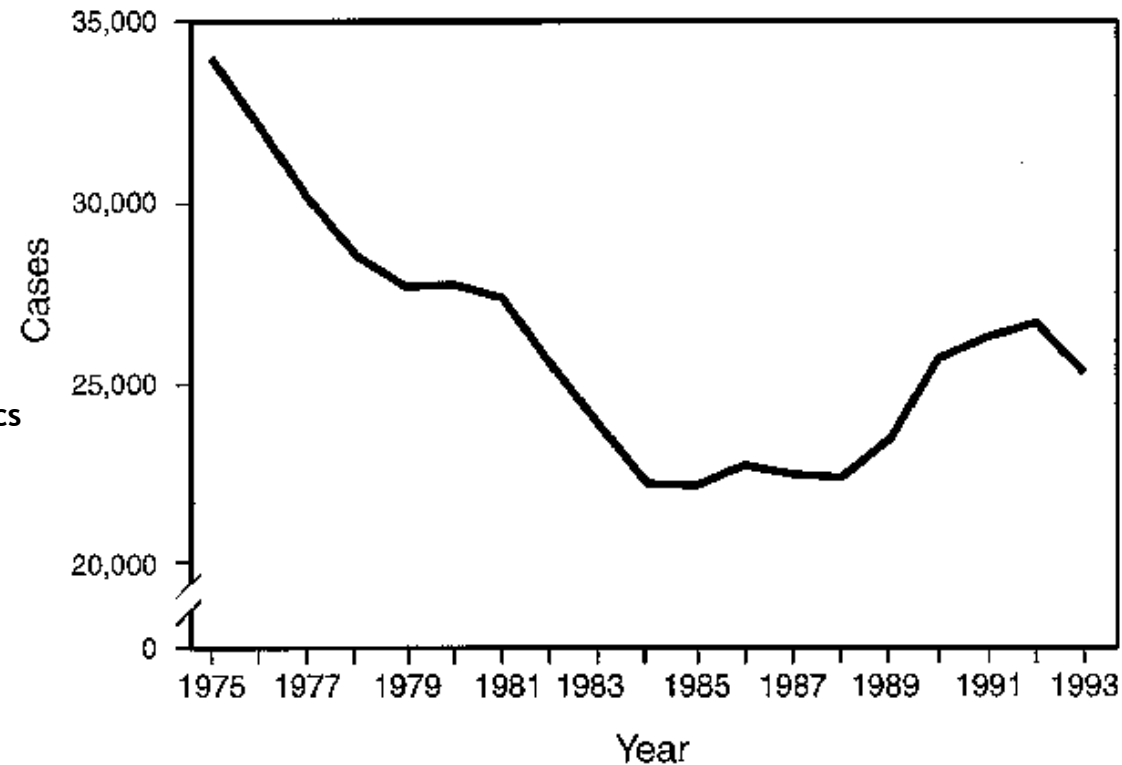
†Adapted from Armstrong GL, Conn LA, Pinner RW. Trends in infectious disease mortality in the United States during the 20th century. *JAMA* 1999;281:61–6.

§American Water Works Association. Water chlorination principles and practices: AWWA manual M20. Denver, Colorado: American Water Works Association, 1973.

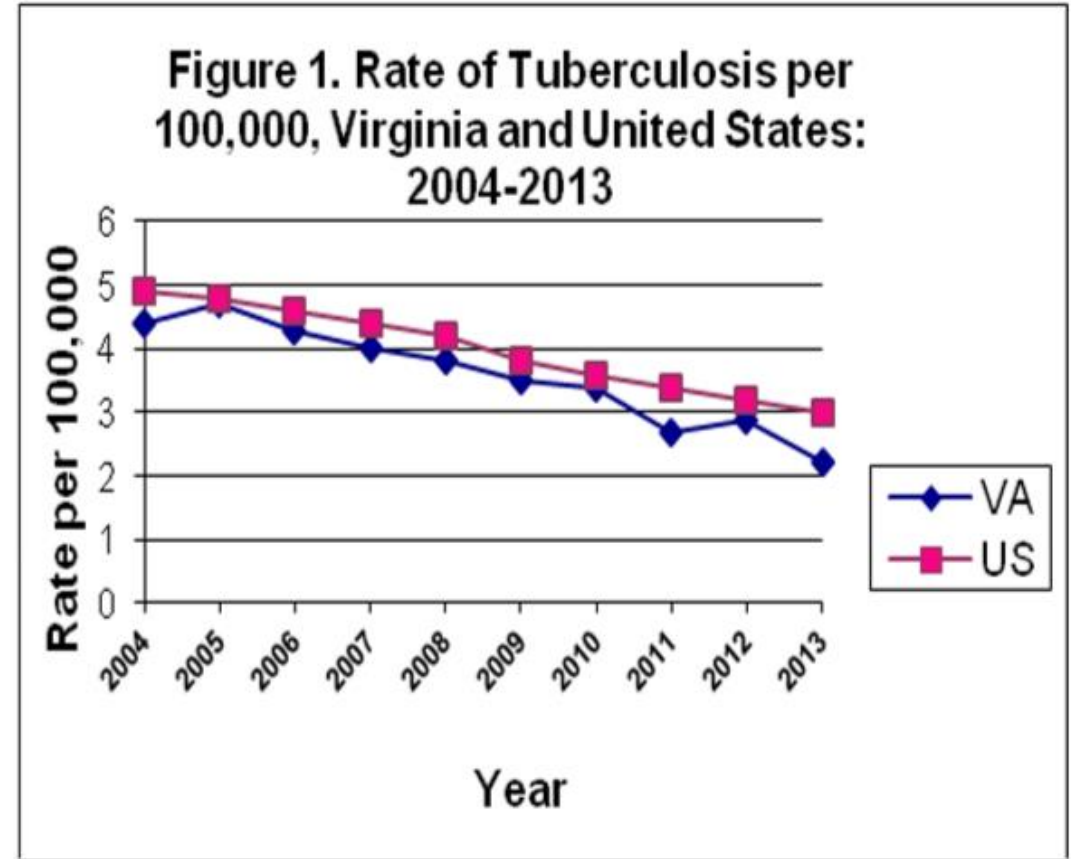


<http://www.masslocalinstitute.org/onlinecourses/publichealthhistory/>

FIGURE 1. Number of reported tuberculosis cases — United States,* 1975–1993



*Comprises the 50 states, the District of Columbia, and New York City.



Well Being Components: Data Driven

Statewide focus on agreed upon well-being metrics for Virginia - metric alignment

Specific focus on metrics that quantify Virginian's investment in children's well being = *Strong Start*

Other metrics focused on:

- Health/Disease Burden (Mortality, Morbidity metrics)
- Cost Burden

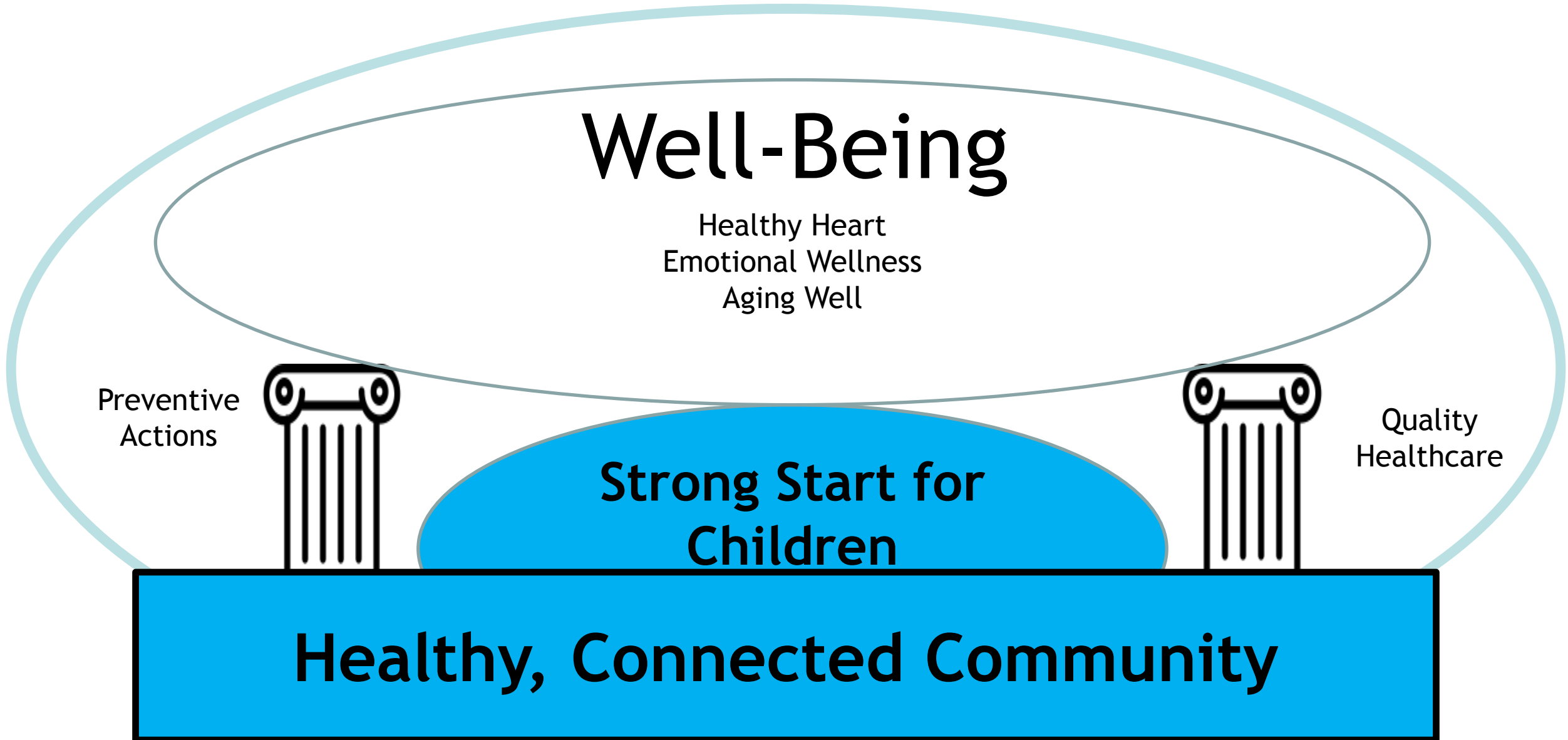
Well Being Components: Process/System Design

Standardized Local/Regional Community Health Assessment

Design a process of coordinated action resulting from assessments/metrics and informed by evidence

Continual evaluation and reevaluation to ensure improvement in health and well being

Framework for Well-Being in Virginia



Well-Being

Healthy Heart
Emotional Wellness
Aging Well

Preventive
Actions

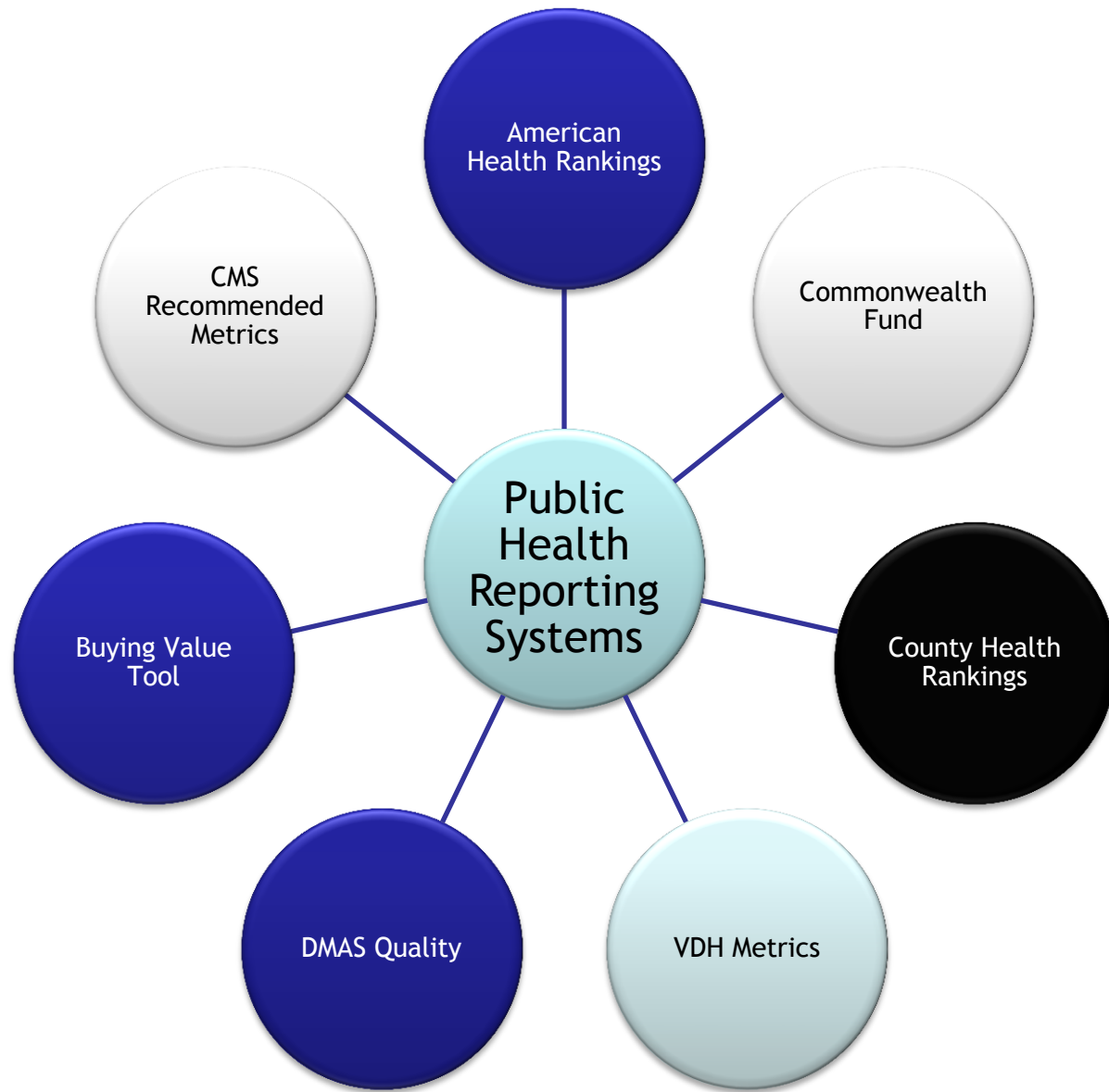


Quality
Healthcare



**Strong Start for
Children**

Healthy, Connected Community



**Analyzed 500+
of the most
commonly
utilized
metrics to
define
population
health**

Sample Analysis: American Health Rankings - Virginia Ranking By Metric

Metric Name	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Avg. Rank	
Underemployment Rate																	5	3	6	7	10	10	9	11	8	
Drug Deaths																						7	8			8
Motor Vehicle Deaths	8	5	8	5	4	4	7	4	10	9	6	14	8	9	10	10	12								8	
Unemployment Rate, August	10	14	13	13	13	14	12	11	4	4	1	7	9	5	4	5	4	7	8	5	10	10			8	
Unemployment Rate, Annual																						8	9	12	10	
Median Household Income	8	8	6	6	8	8	16	14	8	10	12	11	8	9	4	9	10	6	8	7	6	6			9	
Cholesterol Check							7	7	7	7	14	14	12	12	14	14	9	9	10	10	12	12	11	11	11	
Personal Income, Per Capita	12	12	12	13	12	12	15	15	15	14	12	12	11	9	9	8	7	7	8	8	8	8	7	7	8	11
Children in Poverty	14	14	8	8	2	13	13	26	28	2	13	3	5	5	17	9	12	14	15	16	12	4	11	7	11	
Diet, Fruit & Vegetables								16	16	12	12	13	13	10	11	11	10	10	14	14	7	7			12	
Early Prenatal Care																					14	12			13	
Poor Physical Health Days											5	1	21	40	13	14	9	14	12	15	8	15	9	20	14	
Primary Care Physicians																12	12	12	13	14	15	16	15	15	14	
Youth Smoking																							14		14	
Violent Crime	17	15	17	16	16	16	14	15	16	17	17	16	14	15	16	16	17	17	11	10	7	6	5	4	14	
Prenatal Care	15	13	13	16	11	13	15	16	9	8	8	8	9	13	30	19	20	20	18	20					15	
Dental Visit, Annual											13	13	13	26	26	15	15	15	15	11	11	4			15	
Obesity - Youth																							15		15	
Limited Activity Days	31	31	24	24	12	13	10	7	10	13	7	4	18	18	10	22									16	
All Determinants	21	16	14	11	9	19	13	21	20	9	10	13	12	18	17	16	16	18	17	20	22	15	19	18	16	
High Cholesterol																						16	20	20	19	
Low Health Status							16	26	10	19	13	19	21	21	16	18	18	16	21	12	23	20	23	28	19	
Dentists																							19		19	
Heart Attack																	24	29	13	20	21	10	16	24	20	
Suicide																							19	10	15	
Physical Activity								27	27	14	14	20	17	26	22	24	10	18	17	18	14	22	19		19	
Physical Inactivity								27	27	14	14	20	17	26	22	24	10	18	17	18	14	22	19	22	19	
Percent of Dollars for Public Health													5	19	35										20	
Stroke																	26	3	19	26	9	23	33	33	22	
Binge Drinking									27	27	19	19	15	21	19	19	14		17	21	16	25	21	17	20	
Teen Birth Rate				20	18	22	18	23	22	20	24	22	23	20	22	21	22	19	20	19	17	15	14	12	20	
Occupational Fatalities	29	29	27	27	18	14	12	12	12	20	21	21	20	18	17	20	29	25	22	19	19	19	12	20	20	
Preventable Hospitalizations												23	24	23	24	24	23	21	21	17	15	17	18	19	21	
Pertussis																							21		21	
Poor Mental Health Days											27	27	36	40	14	18	20	26	8	9	25	14	10	12	20	
Cardiac Heart Disease																	35	34	19	17	9	23	12		21	

Metric Name	1990 Edition	1991 Edition	1992 Edition	1993 Edition	1994 Edition	1995 Edition	1996 Edition	1997 Edition	1998 Edition	1999 Edition	2000 Edition	2001 Edition	2002 Edition	2003 Edition	2004 Edition	2005 Edition	2006 Edition	2007 Edition	2008 Edition	2009 Edition	2010 Edition	2011 Edition	2012 Edition	2013 Edition	Avg. Rank	
Obesity	9	9	12	12	29	13	25	22	24	29	23	13	25	39	20	24	28	25	18	21	16	20	35	24	21	
Overall	22	21	21	20	22	23	22	23	23	19	21	23	22	23	21	23	20	20	21	21	22	23	22	26	22	
Support for Public Health Care	22	15	16	16	14	12	26	23	24	19	23	30	31	35											22	
Lack of Health Insurance-Annual											24	20	17	25	21	27	21	21							18	22
Infectious Disease	18	17	18	17	16	16	20	18	19	18	22	23	24	27	30	30	30	29	27	28	27	15	32			23
Premature Death	24	23	24	25	24	21	23	23	21	24	25	26	21	23	23	22	22	21	21	21	23	22	22	22	21	23
Immunization-Children																								23		23
Smoking	42	19	19	21	10	30	24	34	34	25	12	16	23	36	23	25	25	21	14	11	32	30	22	23	24	
High School Graduation	24	25	29	28	30	30	32	30	18	17	22	19	19	15	35	41	26	18	18	31	29	23	20	20	25	
Income Disparity	27	39	17	21	34	24	5	26	23	26	32	25	35	20	13	12	38	22	38	24	32	31	30	33	26	
Lack of Health Insurance	24	21	39	39	32	23	19	24	22	18	20	47	35	47	22	22	23	22	29	26	16	20	21	18	26	
Heart Deaths	25	25	27	29	29	29	29	28	27	27	25	28	26	26												27
High Blood Pressure							30	30	37	37	23	23	28	28	24	24	34	34	25	25	16	16	28	28	27	
Cardiovascular Deaths-Race Adjusted	27					31	30	30	29	29	30	29	27	26	25	25	25	26	26							28
Diabetes																25	19	21	25	22	22	50	38	35	29	
Immunization Coverage							28	23	35	28	26	39	25	38	8	32	5	21	30	40	42	28	33		28	
All Outcomes	28	28	28	28	28	28	28	28	28	28	30	30	30	30	29	29	28	30	27	25	31	26	27	28	28	
Chlamydia																					34	28	24			29
Total Mortality	28	27	25	25	27	30	31	30	31	32	30	32	32	28	26	29										29
Salmonella																								29		29
Vegetables																								29	29	29
Low Birthweight				32	29	34	28	29	35	31	27	32	28	31	28	24	29	30	24	25	33	29	24	23	29	
Preterm Birth				35	33	38	38	34	41	40	36	35	30	28	24	23	25	23	24	18	21	13	25	23	29	
Cardiovascular Deaths	30	30	31	32	31	31	32	32	31	31	30	30	30	29	28	27	28	28	28	27	27	27	24	26	29	
Cancer Deaths-Race Adjusted	33	34	28	32	33	32	32	32	31	30	29	28	30	29	29	29	30	26	26							30
Fruits																								31	31	31
Cancer Deaths	38	37	34	34	36	35	35	33	33	30	32	29	31	30	31	30	30	27	29	28	31	31	31	29	32	
Infant Mortality	33	34	34	38	40	39	36	35	25	27	33	30	25	29	31	33	32	31	30	32	32	31	30	35	32	
Per Capita Public Health Spending													21	36	42											33
Air Pollution														33	35	34	33	34	35	34	33	32	28	25		32
Immunization-Adolescents																							35			35
Public Health Funding													40	40	37	38	38	80	9	21	30	31	28	28		35
Disparity in Health Status																							39			39
Geographic Disparity																44	43	43	41	41	39	39	40	40		41

Criteria

National

1. Can it be compared easily to other national benchmarks?

Numbers

2. Does it impact a significant number of Virginians?

Cost

3. ROI Analyses Possible?

Timely

4. Is it timely?

Health
Team

5. Can a majority of the community help impact the outcome?

CMS

6. Does it fit in the CMS SIM Parameters?

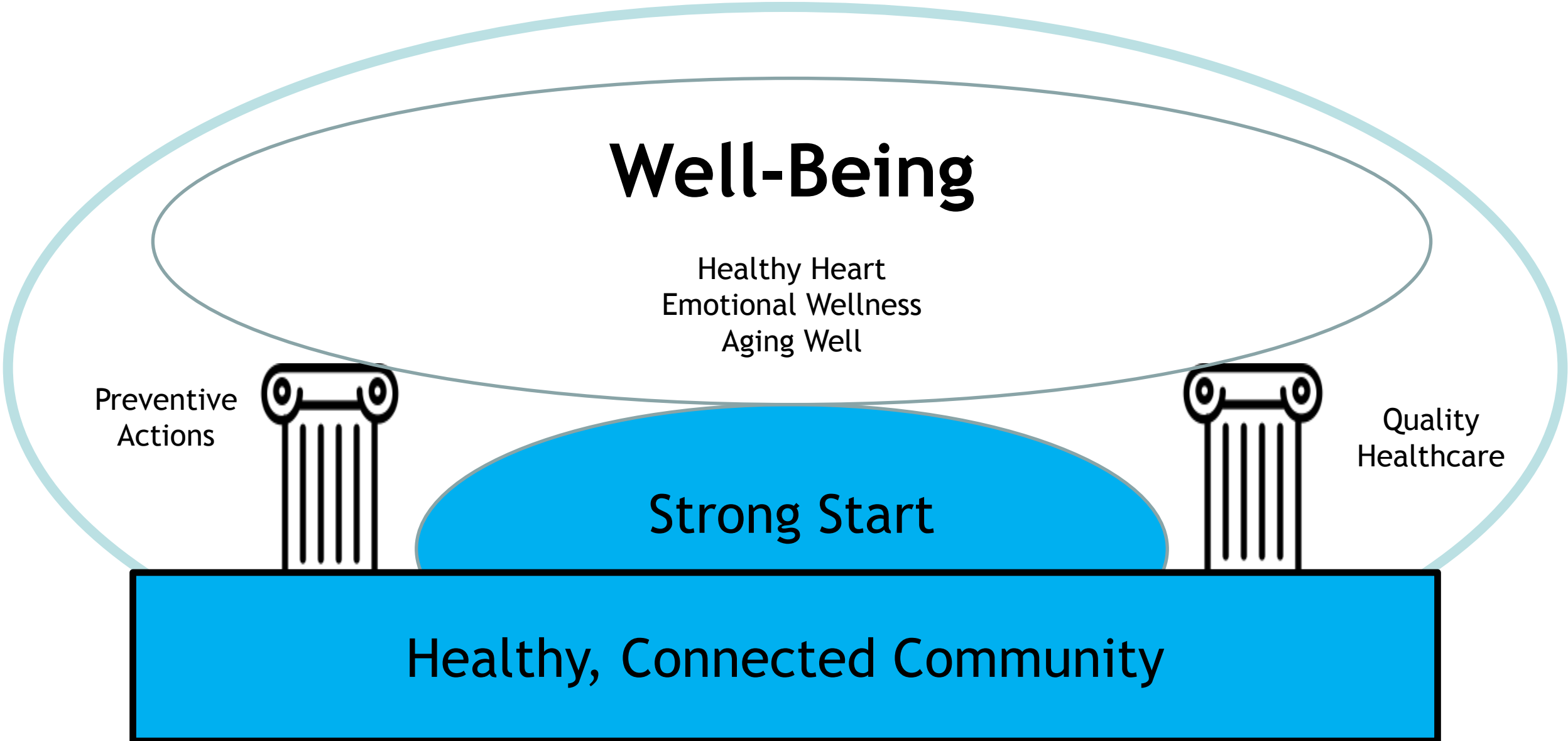
Impact

7. Can we improve performance in this area and have a positive impact?

Aligning Metrics With SIM and DMAS Quality Metrics

Primary Categories	HEDIS Measures of Priority In Virginia Medicaid Medallion 3.0 Contract	CMS SIM Suggested Population Level Measures
•Access To Healthcare	Cervical Cancer Screening, Breast Cancer Screening , Adult Access to Preventive/ Ambulatory Health Services	Access to Healthcare, Percentage of respondents aged 50-75 who reported colorectal test
•Diabetes	Comprehensive Diabetes Care (all indicators)	Percentage of Adults (aged 18 years or older) with Diabetes Having Two or More A1c Tests in the Last Year
•Heart Health	Controlling High Blood Pressure	Taking medicine for high blood pressure among adults > 18
•Hospitalizations		
•Immunizations	Childhood Immunization Status (Combo 3)	Adults aged 65+ who have had a flu shot within the past year; Youth: Estimated vaccination coverage with individual vaccines and selected vaccination series
•Infant & Child Health	Timeliness of Prenatal Care, Postpartum Visit, Well Child Visits in First 15 Months, 3rd, 4th, 5th & 6th Years, Adolescent Well Care Visits	Percent of Live Births < 2500g
•Mortality Metrics		
•Obesity		Adult Weight Classification by BMI, Youth: Students who were > 95th Percentile for BMI,
• Quality Health & Mental Days	Use of Appropriate Medications for People with Asthma, Follow Up care for Children Prescribed ADHD Medication, Antidepressant Medication Management, Follow- Up After Hospitalization for Mental Illness	Health Related Quality of Life-Physically and Mentally Unhealthy Days In the Past Months
•Sexually Transmitted Infections		Stage 3 (AIDS) at the the time of diagnosis of HIV infection among persons aged 13 years and older, HIV Viral suppression at most recent viral load test among persons 13 years and older
•Tobacco Use	Medical Assistance With Smoking and Tobacco Use Cessation	Four Level Smoking Status, Percent of Smokers Who Have Made a Quit Attempt In The Past Year, Legislation - Smoke free Indoor Air, Youth: Smoked cigarettes on at least one day in the last 30 days

Creating a Set of Integrated Metrics



Well-Being

Healthy Heart
Emotional Wellness
Aging Well

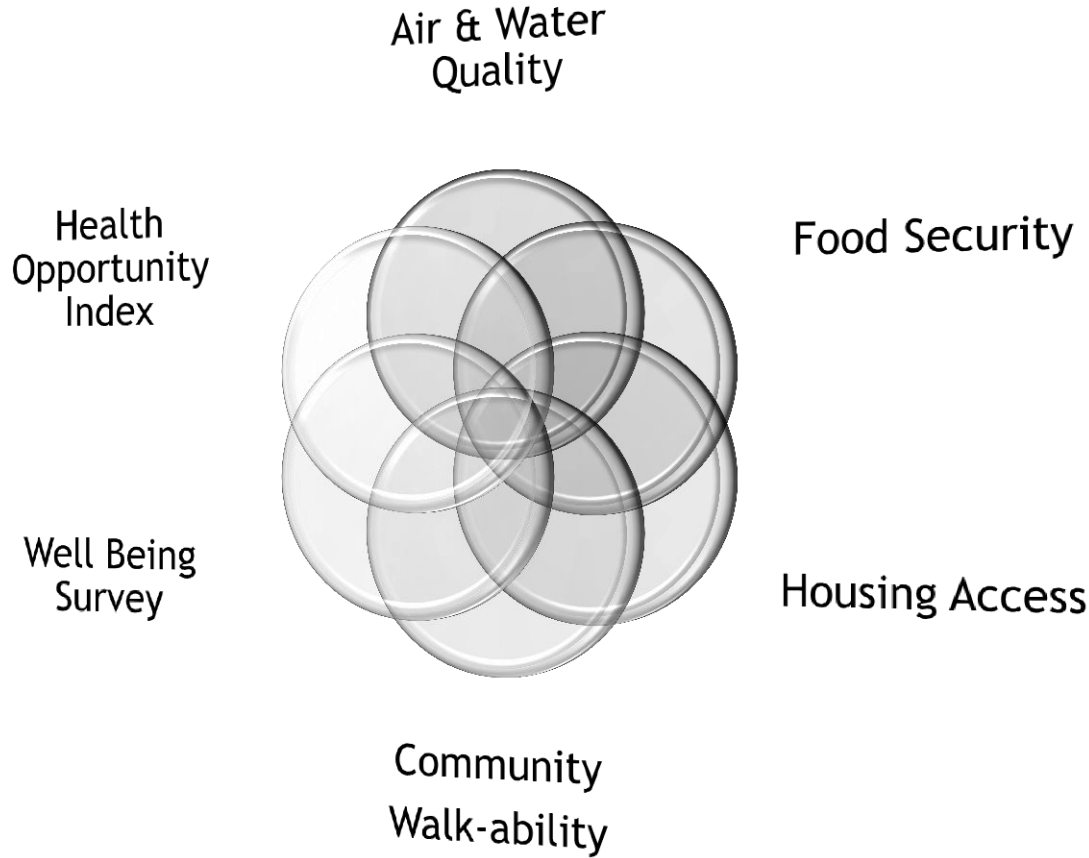
Preventive
Actions

Quality
Healthcare

Strong Start

Healthy, Connected Community

Primary Public Health Metrics: Healthy Connected Community



Healthy Connected Community

NATURAL ENVIRONMENT BUILT ENVIRONMENT SOCIAL ENVIRONMENT

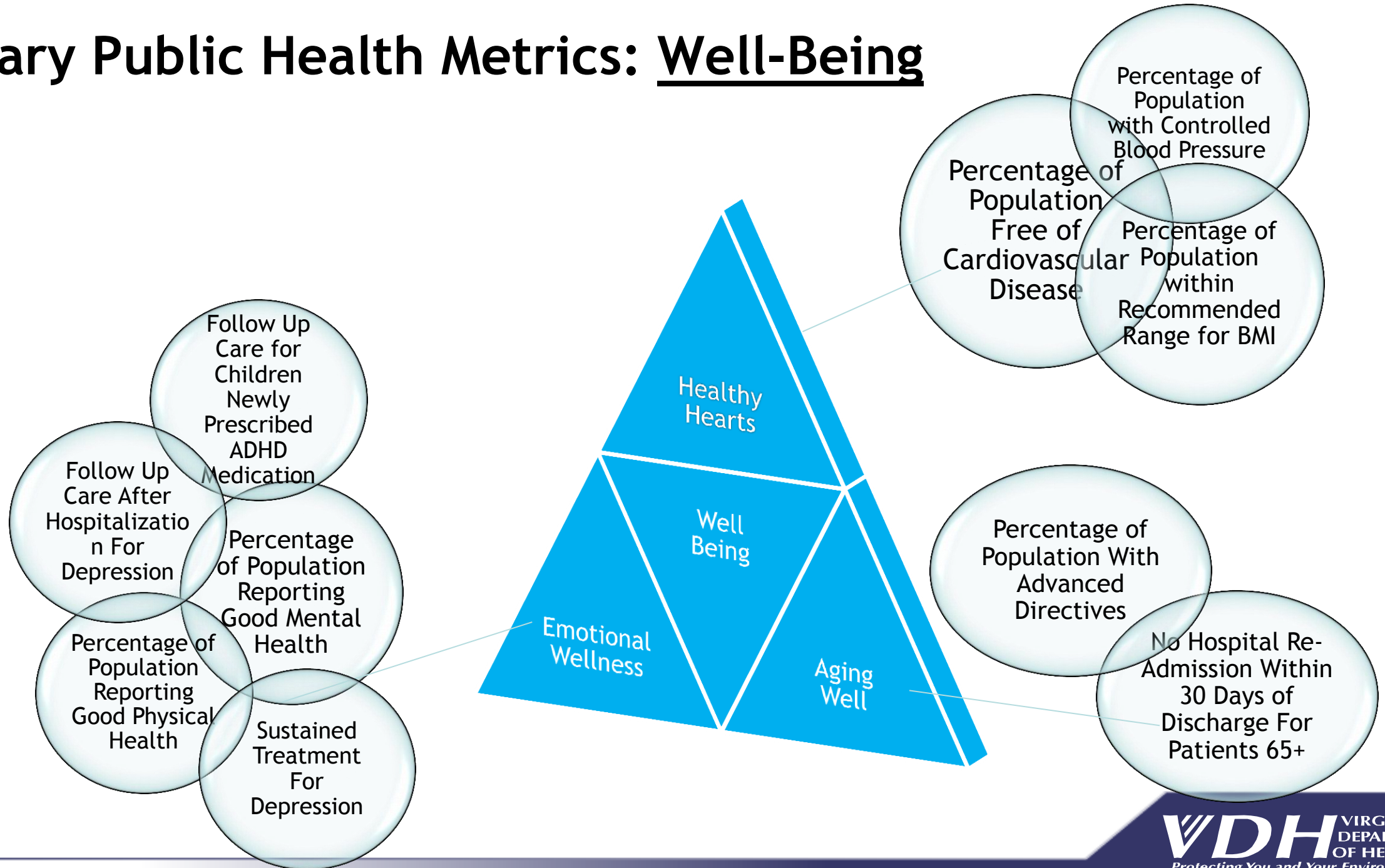
Primary Public Health Metrics: Preventive Actions



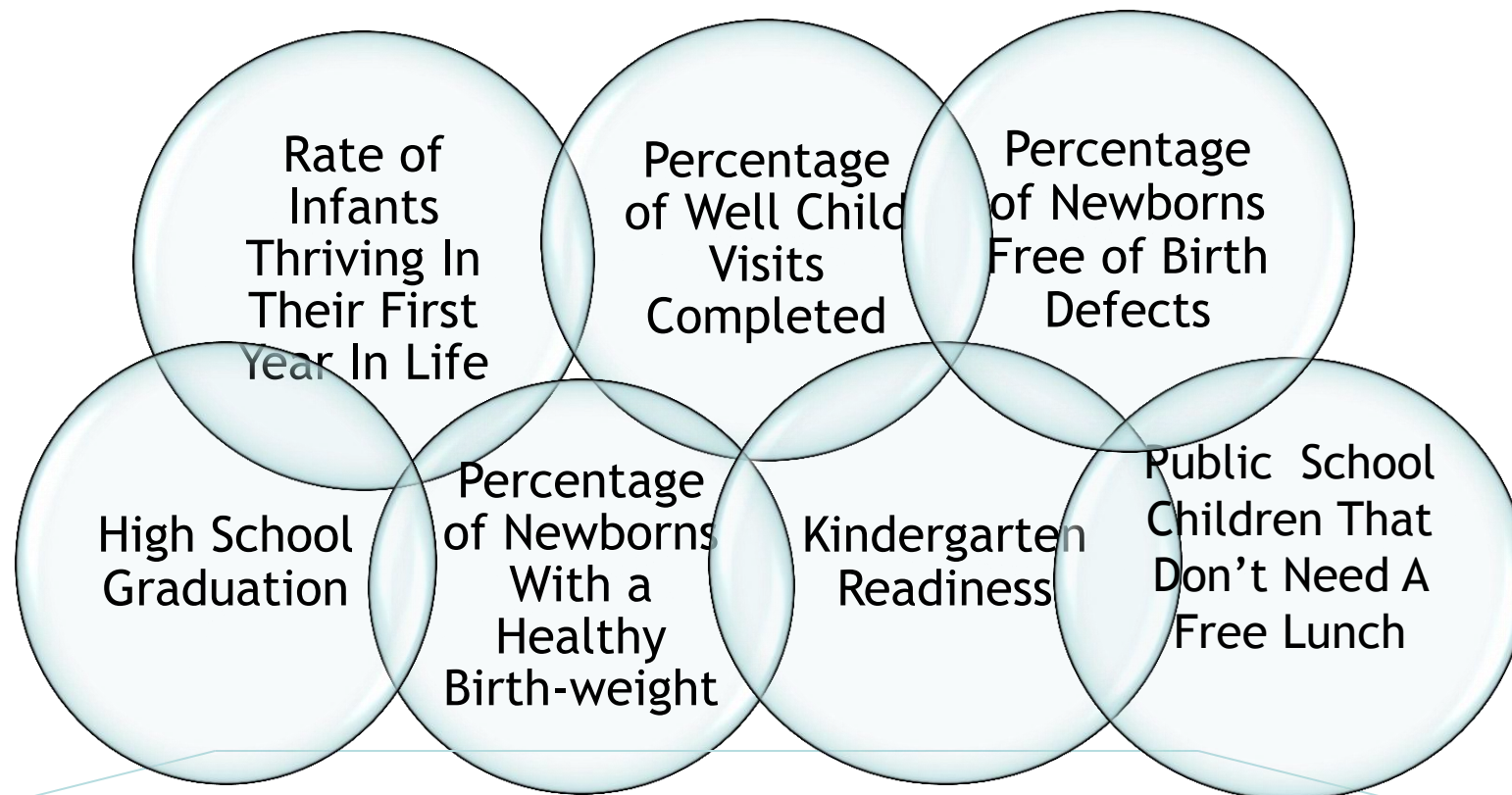
Primary Public Health Metrics: Quality Healthcare



Primary Public Health Metrics: Well-Being



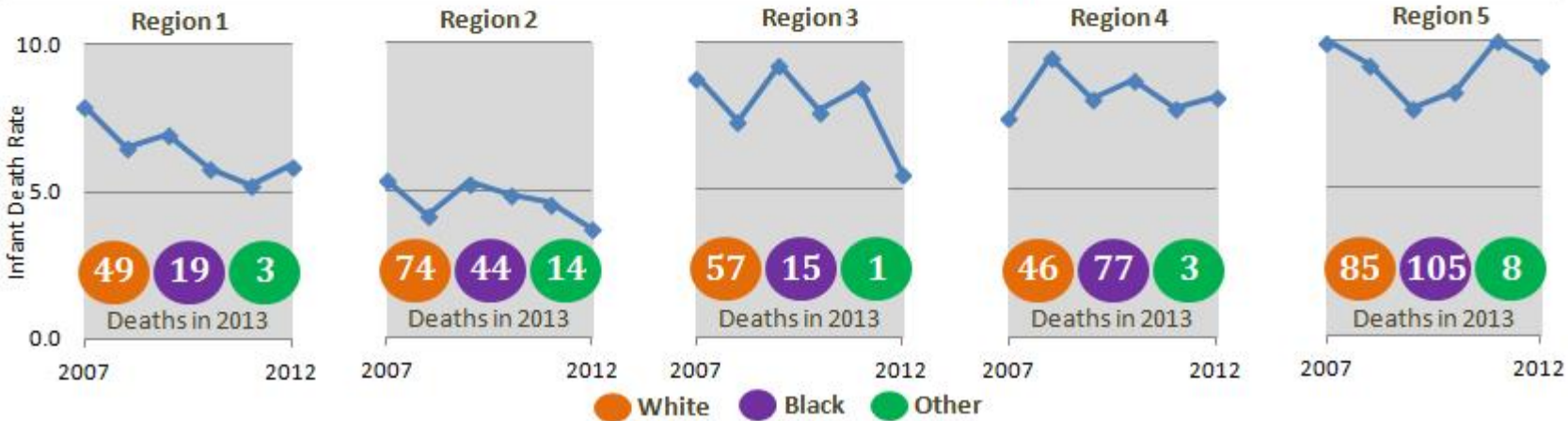
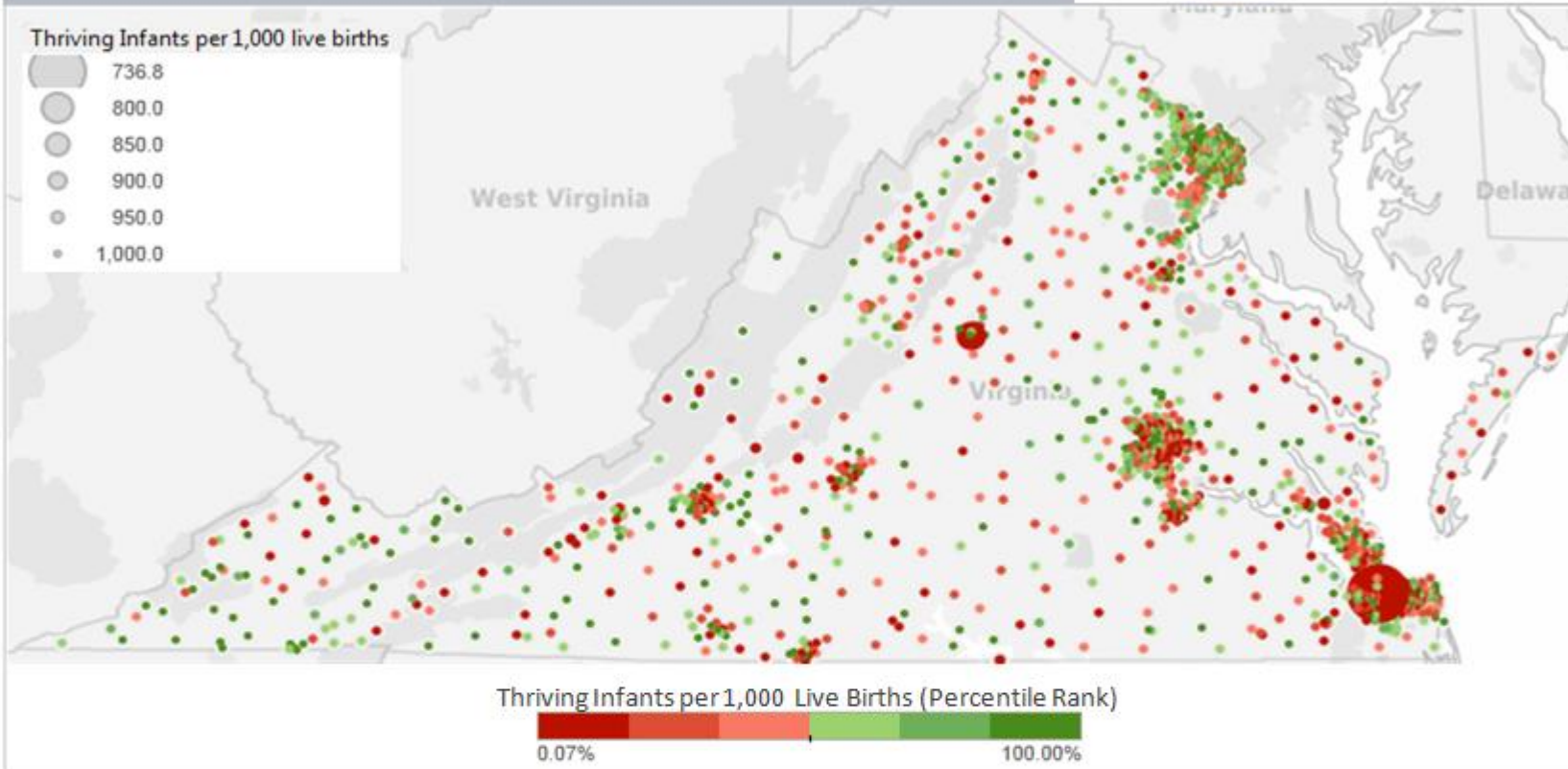
Primary Public Health Metrics: Strong Start





STRONG START: THRIVING INFANTS IN VIRGINIA

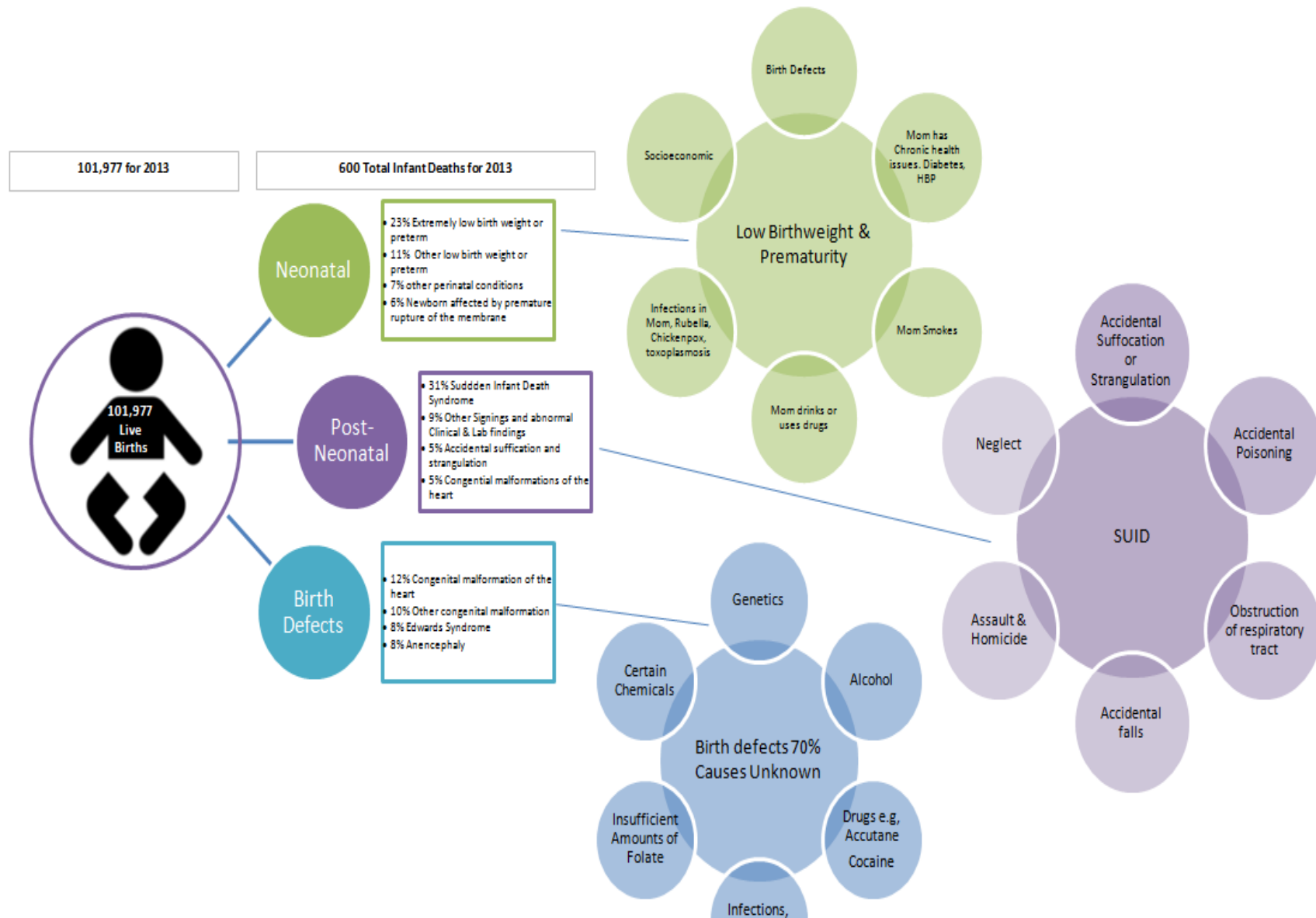
State **31** out of **50**





STRONG START: THRIVING INFANTS IN VIRGINIA

Drivers



**STRONG START: THRIVING INFANTS IN VIRGINIA**

Return on Investment

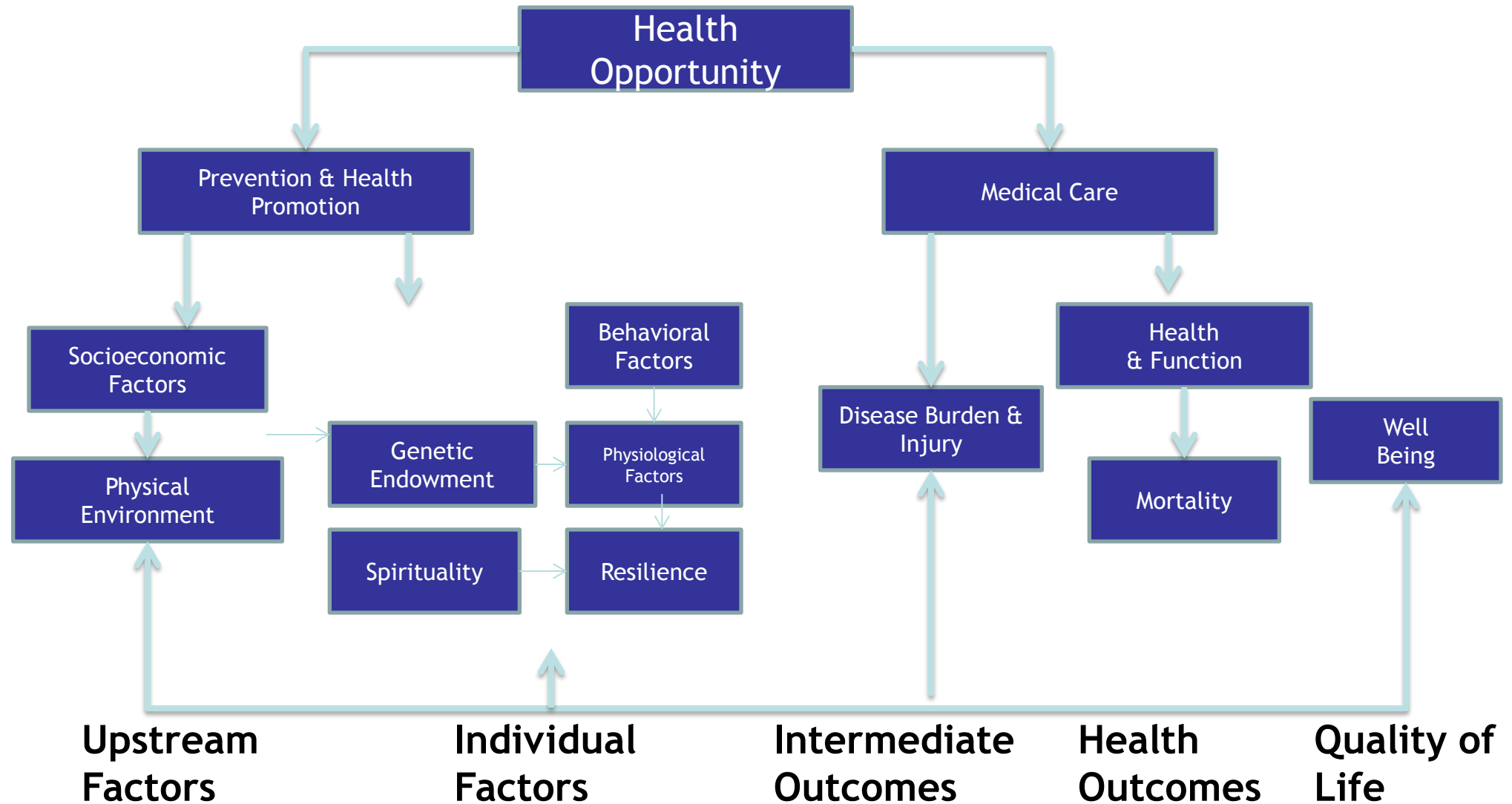
ROI 2.16	BENEFITS \$463,036 COST: \$214,279	REVENUE & OUTCOME CHANGES	IRR 20,278%						
		<table border="1"> <tr> <td>Increased Medicaid Billing at LHD</td> <td style="text-align: right;">\$463,036</td> </tr> <tr> <td>Enrollment at Local Health Departments</td> <td style="text-align: right;">+6,745.0</td> </tr> <tr> <td>Pregnancy Rate</td> <td style="text-align: right;">-7.8</td> </tr> </table>	Increased Medicaid Billing at LHD	\$463,036	Enrollment at Local Health Departments	+6,745.0	Pregnancy Rate	-7.8	
Increased Medicaid Billing at LHD	\$463,036								
Enrollment at Local Health Departments	+6,745.0								
Pregnancy Rate	-7.8								

Data

	Pre-implementation	Implementation	DIFF	TOTAL
Investment Costs				
Staff	\$1,194.79	\$86,126.08	\$84,931.29 ↑	\$87,320.88
Non-Staff (Amortized)	\$56.08	\$104,173.29	\$104,117.21 ↑	\$104,229.37
Non-Staff (Non-Amortized)	\$1,150.00	\$104,000.00	\$102,850.00 ↑	\$105,150.00
TOTAL Investments	\$1,250.88	\$190,299.37	\$189,048.49 ↑	\$191,550.25
TOTAL Investments (Discounted)	\$1,250.88	\$184,771.63	\$183,520.76 ↑	\$186,022.51
Routine Operating Costs				
Staff	\$0.00	\$31,678.90	\$31,678.90 ↑	\$31,678.90
Non-Staff	\$0.00	\$0.00	\$0.00 →	\$0.00
TOTAL Operating Costs	\$0.00	\$31,678.90	\$31,678.90 ↑	\$31,678.90
TOTAL Operating Costs (Discounted)	\$0.00	\$30,758.71	\$30,758.71 ↑	\$30,758.71
Monetary Returns				
TOTAL Outcome Dollars	\$0.00	\$0.00	\$0.00 →	\$0.00
TOTAL Outcome Dollars (Discounted)	\$0.00	\$0.00	\$0.00 →	\$0.00
TOTAL Revenue	\$0.00	\$476,888.00	\$476,888.00 ↑	\$476,888.00
TOTAL Revenue (Discounted)	\$0.00	\$463,035.55	\$463,035.55 ↑	\$463,035.55
TOTAL Monetary Return	-\$1,250.88	\$254,909.73	\$256,160.60 ↑	\$253,658.85
TOTAL Monetary Return (Discounted)	-\$1,250.88	\$247,505.21	\$248,756.09 ↑	\$246,254.34

Staff Time (Hours Worked & Cost/Hour)

Make the Greatest Impact in Triple Aim by Starting Upstream with Children



Adapted from: A Guide To Measure Triple Aim, Institute for Healthcare Improvement 2012

Levels of Prevention

Primary

Secondary

Tertiary

Public Health: Primary Care

Estimated Prevalence of Hypertension United States and Virginia (1999 - 2006)

Hypertension Category	Prevalence in U.S.	Number of Virginians
Diagnosed Hypertension	32.8%	2,103,405
Undiagnosed Hypertension	17.1%	1,096,592
Pre-Hypertension	20.9%	1,340,280
Normal Blood Pressure	29.2%	1,872,544

For Virginia to match current lowest state in the nation: Decrease prevalence by 8 percentage points.

	Current	Goal	Reduction
Number of Virginians with Hypertension	2,103,405	1,539,078	564,328
Total Cost per Year	\$3,551,000,000	\$3,019,000,000	\$532,000,000
Health Care Related Costs per Year	\$3,375,000,000	\$2,885,000,000	\$490,000,000
Absenteeism Related Costs per Year	\$176,000,000	\$134,000,000	\$42,000,000
Total Workdays missed per Year	713,000	521,000	192,000

Examples

Patients With Undiagnosed Hypertension Hiding in Plain Sight

- JAMA November 19, 2014 Volume 312, No 19

Million Hearts initiative



- <http://millionhearts.hhs.gov/index.html>

Summary: Designing a System For Well Being in Virginia

- 1 - Establish a Vision: Virginia as the healthiest state in the nation
- 2- Integrate metrics that cross all spectrums of the health system
- 3 - Living Community Health Assessment
 - Real-time/Visualized data
 - Statewide to local level data
- 4 - Incorporate cost drivers
- 5 - Create a process of accountability that is transparent & actionable at the district level.
- 6- Continuous evaluation

