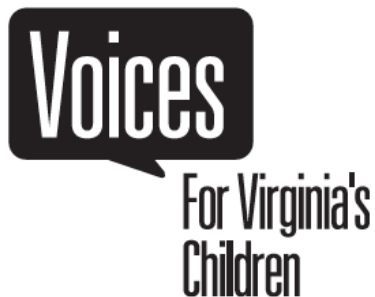


# **KIDS COUNT ON THE EASTERN SHORE OF VIRGINIA**

By Dr. William P. O'Hare



## Executive Summary

This report summarizes the well-being of children living on the Eastern Shore of Virginia. The Eastern Shore of Virginia is comprised of Accomack and Northampton counties and each county is examined separately in this report.

The goals of the report include:

- 1) increasing public awareness about the well-being of children on the Eastern Shore;
- 2) making statistical data related to children on the Eastern Shore more easily available to child advocates, political leaders, and others for decision making, grant-writing and other related activities; and
- 3) stimulating actions to improve the well-being of children on the Eastern Shore of Virginia.

The report focuses on 24 statistical indicators of child well-being drawn from economics, health, education and family/community spheres. These involve measures such as child poverty, infant mortality rates, high school graduation and the percent of children living in single-parent families. The measures used here have been widely used in other studies. For each indicator, the value of the indicator is provided for Accomack and Northampton counties and these counties are compared to all other counties in Virginia.

With few exceptions, the children growing up on the Eastern Shore trail the children in most of the other counties in Virginia. On every dimension of child well-being examined here (Economics, Health, Education and Family/Community environment) children on the Eastern Shore are ranked near the bottom of all counties in Virginia. Of the 24 statistical indicators examined here, there was only one measure where children in both counties on the Eastern Shore were better than the statewide figure (school-age children with a disability). Northampton County was also better than the state figure for child abuse and neglect.

When a statistical index was constructed based on combining multiple measures of child well-being, the two counties on the Eastern Shore were near the bottom of the distribution. Out of 133 counties (and independent cities) in Virginia, Accomack County ranked 123rd and Northampton County ranked 125<sup>th</sup> on overall child well-being.

High quality preschool and early life experiences are identified as one of the most promising avenues to improve the well-being of children on the Eastern Shore. Numerous studies have found high quality early life experiences provide benefits that last through school into adult life. This approach to improving the lives of children had a strong evidence base and bipartisan support.

## 1. Introduction

While it may sound trite to say “children are the future” it is widely believed that the extent to which children today grow up to be productive workers, supportive spouses and parents as well as engaged and knowledgeable citizens will shape our future. In that context, this report examines the well-being of children on the Eastern Shore of Virginia (Northampton and Accomack Counties). The purpose of this report is to provide a detailed and comprehensive picture of child well-being on the Eastern Shore of Virginia using the best available data.

The goals of the report include:

- 3) increasing public awareness about the well-being of children on the Eastern Shore;
- 4) making data related to children on the Eastern Shore more easily available to child advocates, political leaders, and others for decision making, grant-writing and other related activities; and
- 5) stimulating actions to improve the well-being of children on the Eastern Shore of Virginia.

This report is modeled after the national KIDS COUNT report, which has been produced by the Annie E. Casey Foundation every year since 1990 (The Annie E. Casey Foundation 2015, O’Hare 2013). Like the national KIDS COUNT report, this report uses the best up-to-date statistics to create a balanced and relatively comprehensive picture of children on the Eastern Shore. It relies on the most recent statistical data available from government sources such as the U.S. Census Bureau, the Virginia Department of Education, and the Virginia Department of Health. The report draws heavily on the data provided by the KIDS COUNT in a Virginia project located at Voices for Virginia’s Children, in Richmond, Virginia, and available at [www.vakids.org](http://www.vakids.org).

The indicators used in this report are all commonly used measures of child well-being and they all come from reliable government statistical agencies. Most of the indicators used here have appeared in a number of other reports on child well-being (U.S. Federal Interagency Forum on Child and Family Statistics 2014; The Annie E. Casey Foundation, 2015; Land et al 2001; UNICEF 2007; Organizations for Economic Development and Cooperation 2009). Appendix A provides more detailed information about the sources for the statistical indicators used in this report.

The report uses a comparative perspective by examining the well-being of children on the Eastern Shore relative to the well-being children in other localities in Virginia, and the state of Virginia as a whole. For many of the data points provided here, the meaning may not be immediately apparent in isolation. For example, those who do not work in the field probably do not know if an infant mortality rate of eight is good or bad. The data only become

meaningful when compared to the same measures from other places. The report employs this comparative perspective in three ways.

First, the well-being of children in the two counties on the Eastern Shore is compared to that of all the other localities in Virginia. Ranks are assigned to each county on each indicator of well-being. There are several cities in Virginia that are treated much the same as counties and often referred to as county equivalents. For the remainder of this report counties and county equivalents are called localities. There are 133 such counties or county equivalents in Virginia, so rankings generally range from 1 (best) to 133 (worst). In a few cases data were not available for all localities so the rankings do not extend to 133.

Second, data for the Commonwealth of Virginia as a whole are also provided as a point of reference.

Finally, this report compares the well-being of children in Accomack and Northampton to other counties in Virginia based on a composite of indices of the child well-being in each of four critical dimensions. A composite index of child well-being is constructed for each of the four domains and for the overall well-being of children at the county level. More information about the methodology used to construct the indices are provided in Appendix B.

This report treats children and families in a holistic way by looking at indicators from a variety of fields and across the developmental trajectory. It does not just look at one dimension of child well-being like health or education, it includes measures for all major dimensions of child well-being and it includes data on children from birth through young adulthood.

The indicators of child well-being used here capture the most important forces shaping the lives of children such as income and poverty, health, family structure, education, and parental employment. O'Hare and Guttierrez (2012) examined several studies that use a comprehensive index of child well-being and found the most common domains used in constructing indices of child well-being were income, health, and education. Many researchers use indicators of family and community as well (The Annie E. Casey Foundation 2015). The analysis presented here contains indicators from all of these domains of well-being.

The indicators used in this study possess five important attributes:

1. They reflect a wide range of factors affecting the well-being of children (such as health, adequacy of income, and educational attainment).
2. Each indicator reflects a conceptually relevant dimension of child well-being.
3. Each indicator is relatively easy to understand and unambiguous in its interpretation.
4. They reflect experiences across a range of developmental stages—from birth through early adulthood.

5. The indicators are comparable across localities in Virginia permitting legitimate comparisons.

In Section 2, background information for assessing child well-being on the Eastern Shore is provided. Basic demographic data is provided to give context to the measures of child well-being shown later in the report. For most of the statistical indicators used in this report, data are not available for Blacks and Hispanics separately for all the localities, but it is important to recognize that overall statistics often mask important differences among groups. Evidence about such differences is provided in Section 2.

In Section 3, detailed data on the well-being of children in Accomack and Northampton Counties are provided. The well-being of children is shown separately for four different categories or domains of child well-being: Economics, Health, Education, and Family/Community Well-Being.

In Section 4, key indicators of child well-being are used to construct a comprehensive composite index of child well-being for all counties and independent cities in Virginia. The two counties on the Eastern Shore are assessed in terms of the overall index as well as indices for each of the four domains outlined in Section 3, namely, Economics, Health, Education and Family/Community. This provides the most complete picture of child well-being in Accomack and Northampton Counties and compares these two counties to other localities in a comprehensive way.

In Section 5, the report turns to the topic of what can be done to improve the well-being of children on the Eastern Shore. While there are many ideas, programs, and policies that have been suggested to improve the lives of children, this report looks at one: the value of good early care and preschool programs.

In Section 6, a short summary of the major findings from the study is provided. This report fits neatly into a broader stream of reports on the well-being of children. The use of statistical indicators to measure and monitor the well-being of children has been growing steadily over the past few decades (O'Hare 2014a; O'Hare and Guttierrez 2012; Fernandes et al 2012; Lamb and Land 2013; Pollard and Lee 2002; Skocpol & Dickert 2001; O'Hare 2006; Brown et al 2002; Brown & Botsko 1996; Brown. et al 2008; Brown & Moore 2007; Stagner et al 2008; U.N, Innocenti Research Centre, Save the Children UK 2012; U.S. Federal Interagency Forum on Child and Family Statistics 2014; Child Development Foundation 2014; he Annie E. Casey Foundation 2014; O'Hare et al 2013; Bradshaw and Richardson 2009). This report is also similar to several recent publications that focus on sub-state differences in child well-being (Hur and Testerman 2012; Kentucky Young Advocates 2015; Colorado Children's Campaign 2012; Advocates for Children of New Jersey 2015). This report builds on that stream of research and reporting by

using statistical indicators of child well-being to examine the status of children on the Eastern Shore of Virginia.

## 2. Background

To provide some context for understanding the data on child well-being, this report provides a demographic overview of the counties on the Eastern Shore of Virginia. Table 2.1 shows the total population of Accomack and Northampton Counties and population growth since 2010 based on the most recent population estimates from the U.S. Census Bureau. The 2010 population figures reflect the April 1, 2010 Census date, and the 2015 figures reflect July 1, 2015 population estimates from the U.S. Census Bureau.

Table 2.1 Eastern Shore Demographics: Total Population and Population Growth

	Accomack County	Northampton County	Virginia
Total Population 2010	33,164	12,389	8,001,024
Total Population 2015	32,973	12,155	8,326,289
Change 2010 to 015	-191	-234	325,265
Percent Change in Total Population from 2010 to 2015	-0.6	-1.9	4.1

Source: U.S. Census Bureau

The 2015 total population of Accomack County is a little under 33,000 and that of Northampton County is just over 12,000. Perhaps more importantly, the population in both counties has declined since the 2010 Census while the population for the state as a whole has increased by 4 percent since 2010.

Table 2.2 shows the age structure for the two counties on the Eastern Shore as well as the state of Virginia. The age structure for both counties on the Eastern Shore is relatively similar, but both are strikingly different than the state as a whole with respect to the share of the population that are in the working ages (18 to 64) or elderly (age 65 +). About one-fifth of the population in both Eastern Shore counties is children (under age 18) and about 6 percent is preschoolers (under age 5). These figures are not very different than the state figures.

Table 2.2. Age Structure of the Eastern Shore Population: 2013

	Accomack County	Northampton County	Virginia
	Percent of Total Population	Percent of Total Population	Percent of Total Population
Population Under Age 18	21	20	23
Population Under Age 5	6	6	6
Population Age 18 to 64 (Working Age Population)	58	57	64
Population Age 65 or Older	21	24	13

Source: U.S. Census Bureau

However, both Accomack and Northampton Counties have a disproportionately large share of elderly and a disproportionately low share of the working-age population compared to the state as a whole. In Accomack County, 21 percent of the population is over age 65. The figure is 24 percent in Northampton County, compared to only 13 percent statewide. On the other hand, the share of the Accomack and Northampton County populations in what is often called the working age range (18 to 64) is about 6 to 7 percentage points below the statewide figure.

One implication of the age structure is that there is a relative dearth of adults who are likely to have children in the public school system (those in the working ages) and an over-representation of adults unlikely to have children in school (the elderly).

### Differences by Race and Hispanic Origin Status

Table 2.3 shows the race and Hispanic origin status of the child population on the Eastern Shore. The table includes data for the preschool population (ages 0 to 4) and all children (age 0-17). The data are from the 2010 U.S. Decennial Census.

In the way the Census Bureau and the federal government measure race and ethnicity, 'Hispanic origin status' is a different category than 'race' that includes groups like whites, blacks, Asian and American Indians. Therefore, for comparative purposes, it is important to look at whites that are not Hispanic in order to identify the majority group.

Both counties on the Eastern Shore have a disproportionately high share of black (African-American) and Hispanic children compared to the state of Virginia as a whole. In the simplest terms, Non-Hispanic white children are the majority of statewide child population, but not in

Accomack or Northampton Counties. In both Accomack and Northampton Counties, blacks are a larger percent of the child population than Hispanics, but both groups make up substantial shares of the population.

Table 2.3. Summary of Racial Demographics in Accomack and Northampton Counties from the 2010 Census

Groups	Under Age 5 (Percent of Total)			Under Age 18 (Percent of Total)		
	Accomack County	Northampton County	Virginia	Accomack County	Northampton County	Virginia
Non-Hispanic White	41	37	54	48	43	57
Non-Hispanic Black or African American	32	39	20	32	39	21
Hispanic or Latino	22	19	13	16	13	11
Other	5	5	13	4	5	11

Source: U.S. Census Bureau, 2010 Decennial Census, Summary File 1.

Most of the individual measures of child well-being used here are not available for African-Americans or Hispanics at the county level. Further, even when data are available for these groups, the figures are often unreliable because they are based on small samples or a small number of events. Nonetheless it is important to recognize that measures for all children often mask differences among groups.

Data in Table 2.4 show the indicator values for racial and Hispanic minorities and Non-Hispanic white children for Virginia and the United States. The data are taken from a 2014 report by the Annie E. Casey Foundation (The Annie E. Casey 2014a), which provided this kind of data for every state. The data in Table 2.4 shows African-American children in Virginia trail their Non-Hispanic White counterparts on all ten of the measures and Hispanic trail Non-Hispanic Whites on nine of the ten measures.

Although the data do not allow us to address racial disparities in child well-being on the Eastern Shore, the data in Table 2.4 strongly suggests that black and Hispanic children are less likely to be doing as well as their Non-Hispanic white counterparts.



Table 2.4 Child Well-Being Indicators by Race and Hispanic Origin for Virginia and the United States

	NON-HISPANIC BLACK OR AFRICAN AMERICAN	HISPANIC OR LATINO	NON-HISPANIC WHITE	NON-HISPANIC ASIAN PACIFIC ISLANDER	NON-HISPANIC AMERICAN INDIAN ALASKA NATIVE	TOTAL
<b>Baby Born at Normal Birthweight, 2011</b>						
United States	87%	93%	93%	92%	92%	92%
Virginia	88%	94%	93%	91%	S	92%
<b>4th Graders Who Scored At or Above Proficient in Reading, 2013</b>						
United States	17%	19%	45%	51%	22%	34%
Virginia	23%	25%	51%	65%	S	43%
<b>8th Graders Who Scored At or Above Proficient in Math, 2013</b>						
United States	14%	21%	44%	60%	21%	34%
Virginia	15%	25%	47%	64%	S	38%
<b>Averaged Freshman Graduation Rate (AFGR), 2009-10</b>						
United States	66%	71%	83%	94%	69%	78%
Virginia	71%	76%	85%	100%	85%	81%
<b>Females Ages 15 to 19 Who Delay Childbearing Until Adulthood, 2010</b>						
United States	89%	88%	96%	98%	87%	93%
Virginia	91%	91%	96%	99%	S	95%
<b>Children Ages 0 to 17 Who Live With A Householder With At Least A High School Degree, 2010-12</b>						
United States	85%	63%	93%	88%	83%	85%
Virginia	87%	70%	94%	94%	89%	90%
<b>Children Ages 0 to 17 Who Live In Two-Parent Families, 2010-12</b>						
United States	31%	56%	72%	81%	42%	62%
Virginia	37%	61%	76%	87%	65%	65%
<b>Children Ages 0 to 17 Living Above 200% of Poverty, 2010-12</b>						
United States	35%	36%	69%	68%	36%	55%
Virginia	45%	51%	76%	77%	65%	66%
<b>Children Ages 0 to 17 Who Live In Low Poverty Areas (poverty &lt;20%), 2007-11</b>						
United States	50%	57%	86%	84%	51%	74%
Virginia	72%	88%	92%	96%	S	87%
<b>S = estimates unreliable</b>						

Source: KIDS COUNT, The Annie E. Casey Foundation

NA = not available

## **Migrant Families on the Eastern Shore**

The counties on the Eastern Shore of Virginia differ from many of the other localities in the state because they experience an influx of migrant farmworkers and their families every year. Children in migrant farmworker families are among the most vulnerable children in our society. Data for the children in these families are included in some of the data sources used here, but they are not fully reflected in all the data. For example, if the household where a migrant farmworker family is living is selected to be in the American Community Survey, they are included in the survey if they are staying at the housing unit for two months or more. On the other hand, most of the Standard of Learning (SOL) tests given by the state of Virginia are given in the Spring, when most migrant farmworkers families have not yet arrived on the Eastern Shore. The exact number of children in migrant farmworker families is difficult to ascertain but the migrant Head Start program in Cheriton reports more than 140 participants from June to October.

### **3. Measuring Child Well-Being on the Eastern Shore**

In this section of the report, a broad set of measures related to the well-being of children on the Eastern Shore are presented. The results are presented in four sections: 1) Economics, 2) Health, 3) Education, and 4) Family and Community.

As stated earlier, a comparative perspective is employed here in a couple of ways for each indicator. First, on each measure of child well-being, the values for the two Eastern Shore counties are compared to those of all the other localities in Virginia and a rank is assigned to each locality for each measure. A rank of 1 is considered best in this report. Second, the statewide figure for each measure is provided so readers can compare the values for each of the two counties to the comparable statewide figure. For every indicator the ratio of the local figure to the state figure is provided to make it easier to see the relationship between the counties and the state results. A ratio above 1 indicates the locality is doing worse than the state and a ratio below 1 indicates the locality is doing better than the state (except for figures on income).

#### **3.1 Economic Indicators**

Economic or material well-being is typically thought of as one of the most important dimensions or domains of child well-being. Several economic measures which reflect child well-being are shown in Table 3.1. Many of these measures are highly correlated and perhaps even redundant, but all are presented here to provide a more detailed portrait of economic child well-being in Accomack and Northampton Counties. In Section 4, a balanced subset of indicators is used to produce an index of overall child well-being.

Table 3.1 Economic Indicators of Child Well-Being for Accomack and Northampton Counties and Virginia

		Accomack	Northampton	Virginia
Percent Aged 0-17 Below Poverty	Rate	31	36	15
	Local/State Ratio	2.1	2.4	
	Rank	115	123	
Percent Aged 0-4 Below Poverty	Rate	36	47	17
	Local/State Ratio	2.1	2.8	
	Rank	110	124	
Percent Aged 5-17 Below Poverty	Rate	30	30	14
	Local/State Ratio	2.1	2.1	
	Rank	112	115	
Percent of Age 0-17 Under 50% of Poverty	Rate	20	15	8
	Local/State Ratio	2.5	1.9	
	Rank	118	102	
Percent of Age 0-17 Under 200% of Poverty	Rate	65	54	34
	Local/State Ratio	1.9	1.6	
	Rank	109	81	
Median Household Income 2014	Figure	\$38,390	\$36,822	\$64,923
	Local/State Ratio	0.6	0.6	
	Rank	105	115	
Median Income of Families with Children Under Age 18 in Household	Figure	\$42,364	\$50,040	\$76,610
	Local/State Ratio	0.6	0.7	
	Rank	107	80	
Percent of Children living in Households Where No one Worked in Previous 12 Months	Rate	9	10	5
	Local/State Ratio	1.8	2.0	
	Rank	95	106	
Percent of Occupied Housing Units with Related Children Under age 18 that are Rental Units	Rate	47	45	36
	Local/State Ratio	1.3	1.3	
	Rank	111	105	

For all the rankings a rank of "1" is considered best.

Rankings are based on unrounded data.

See Appendix A for detailed description of indicators and sources of data.

While there is some variation in how measures of economic well-being of children in Accomack and Northampton Counties compare to the rest of Virginia, generally the values indicate that children living on the Eastern Shore are not doing as well economically as children in other parts of Virginia. For nearly all the measures shown here, the two focal counties are in the bottom half of the ranking and all are worse than the comparable statewide figure.

Poverty is one of the most widely used indicators of child well-being because children growing up in poverty have worse outcomes on almost every measure of well-being. For example, they drop out of school at a higher rate, they are more likely to become a teenage parent, and they are more likely to abuse drugs or alcohol (Mayer 1997, Table 3.1).

The data shown here are based on the official poverty measure as determined by the U.S. Office of Management and Budget. The official poverty level of children is reported every year by the U.S. Census Bureau. To determine poverty status, the family income is compared to a set of thresholds that vary by family size and composition. In 2014, a family of two adults and two children was considered poor if their income was below \$24,008 (U.S. Census Bureau, 2015, page 43).

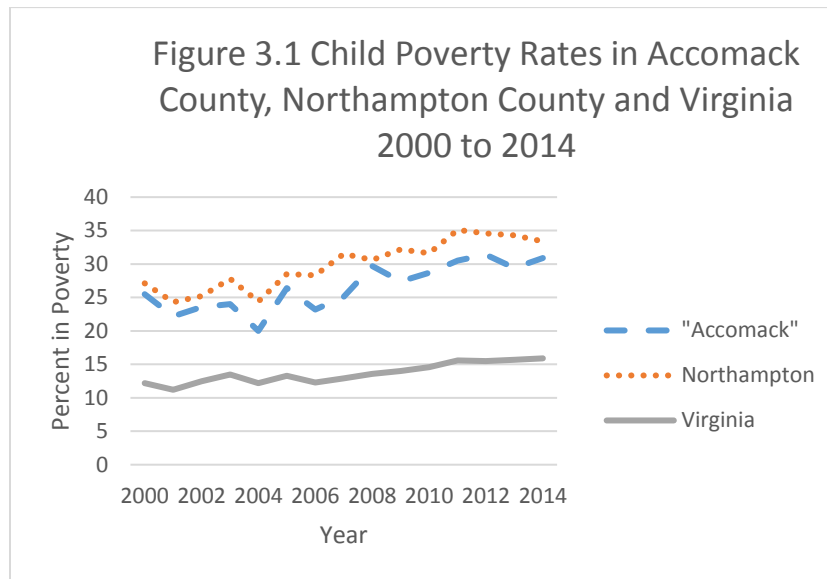
Data in Table 3.1 show the child poverty rates in Accomack and Northampton Counties are much higher than the average in Virginia. The child poverty rate is 31 percent in Accomack County and 36 percent in Northampton County. Both counties are double the statewide figure of 15 percent. When the child poverty rates in Accomack and Northampton Counties are compared to other localities in Virginia, they are near the bottom of the rankings.

In addition to looking at the poverty rate for all children (ages 0 to 17), I also look at poverty among preschoolers (ages 0 to 4) and school-age children (ages 5 to 17) separately. While typically these two rates are correlated across counties, the correlation of the poverty rate among preschoolers to the poverty rate in the school-age population across the localities of Virginia is  $+0.68$  which is not as high as one might expect. In addition, the poverty rate for preschoolers is almost always higher than for school-age children, so only showing data for the entire child population masks the higher poverty rate for younger children.

Among preschoolers, the poverty rate in Accomack County is 36 and in Northampton County it is 47. Both are well above the statewide figure of 17 percent. While the 47 percent estimate for preschool poverty in Northampton County is the best estimate available, it is based on a small sample and should be viewed cautiously. Again, rankings for the Eastern Shore counties relative to other localities in Virginia show children on the Eastern shore near the bottom of the distribution.

For school-age children, poverty rates are 30 percent in both Accomack County and Northampton County. The poverty rates for the two counties are well above the state rate for this age group (14 percent) and the rankings relative to other localities in Virginia are poor.

Figure 3.1 shows the yearly child poverty rates for each of the two counties on the Eastern shore and Virginia from 2000 to 2014. (Note the poverty data used for Figure 3.1 to reflect change over time come from different sources than the data used in Table 3.1). A couple of points are evident in Figure 3.1.



First, the child poverty rates on the Eastern Shore counties are consistently higher than the state rate by a large margin. This shows that the poverty data in Table 3.1 is not an outlier or random event. The same gap between child poverty on the Eastern Shore and the rest of the state is seen over the entire period examined in Figure 3.1.

Second, the child poverty rates in the two counties have increased somewhat since 2000, and the gap between the child poverty rates on the Eastern Shore and the state as a whole has widened. Between 2000 and 2014, the child poverty rate increased by 5 percentage points in Accomack County, 6 percentage points in Northampton County, and 4 percentage points statewide in Virginia. So the gap between the Eastern Shore and the rest of the state has been slowly growing over the past 15 years. In 2000, the gap between the state child poverty rate and the child poverty rate in the two counties was 13 and 15 percentage points. By 2014, the gap was between 15 and 18 percentage points.

The child poverty rate does not tell the whole story. Depth of poverty is reflected in the share of children living in families with incomes that are less than half of the poverty threshold. This amounts to an income of less than \$12,004 for a family of four in 2014.

Analysts often refer to families with incomes below half of the poverty threshold as living in “deep poverty” or “extreme poverty.” Statewide, 8 percent of children in Virginia are living in families with incomes less than 50 percent of the poverty line, but the figures are much higher for the Eastern Shore. The share of children below 50 percent of the poverty line is 20 percent in Accomack and 15 percent in Northampton--roughly twice the percentage seen statewide.

It is also important to look at families that are just above the poverty line. These families are often called “near poor” or “low-income.” They are identified here as families that have incomes less than 200 percent of the poverty line (about \$45,000 for a family of four). Children in these families may not be as disadvantaged as those in poverty, but these families often live paycheck-to-paycheck and one setback, like an unexpected car repair or a medical emergency, can be a major obstacle. In Accomack and Northampton Counties, more than half of all children live in low-income families (65 percent in Accomack and 54 percent in Northampton). This is well above the statewide number of 34 percent.

The high child poverty rate for Eastern Shore counties is not surprising when one examines household income in the two focal counties. Median household incomes in 2014 as measured by the U.S. Census Bureau are \$38,390 for Accomack County and \$36,822 for Northampton County, compared to a statewide figure of \$64,923 (see Table 3.1).

However, the median incomes in the paragraph above include many families and households that do not have children. Median family incomes of families with children in Accomack (\$42,364) and Northampton (\$50,040) are much lower than the statewide figure of \$76,610. This underscores the importance of looking at economic data for families with children separately from all families or households in a locality.

A relatively high percentage of families with children in Accomack and Northampton have no one in the household who is working regularly. Note that much of this data was collected during difficult economic times (from 2010 to 2014), but since that was true of all the other localities in Virginia as well, the data are comparable across localities.

Data in Table 3.1 show that the percentage of families with children who had no one in the household who had worked in the previous twelve months was 9 percent in Accomack and 10 in Northampton. Both figures are about double the statewide rate of 5 percent. It should be noted that in addition to the families where no one worked at all, many families had one or more persons working temporarily or part-time. The families with no one working at all in the past 12 months should be seen as the tip of the iceberg in terms of under-employment.

Research shows that under-employment is generally higher in rural areas like the Eastern Shore (O'Hare and Savage 2007).

Conceptually, it is important to make a distinction between income and wealth. Wealth represents assets that can be drawn on when needed, for example, for a medical emergency or an unexpected car repair. There are very few measures of family wealth available for local areas, but for most families, equity in a house is their major asset or form of wealth. Generally, children living in families that own their own home have an economic advantage over those who do not. Equity in a home is an asset that can be used to help it through economic difficulties such as sudden loss of a job or an unexpected car repair.

Homeownership among families with children is relatively low on the Eastern Shore. In the Census Bureau nomenclature, housing units are either owner-occupied or renter-occupied. To keep the directionality of measures consistent, the percentage of children living in renter-occupied houses is shown in Table 3.1.

For families with children, 47 percent are renter-occupied in Accomack and 45 percent in Northampton. The statewide figure is 36 percent. To the extent that home-ownership provides an avenue for acquiring wealth and an economic cushion to overcome economic difficulties, families with children on the Eastern Shore trail those elsewhere in the state.

Of course, home values are also important in terms of wealth. The home values in the two counties examined here are substantially lower than the statewide figure. According to the Census Bureau's American Community Survey, the median home value is \$152,000 in Accomack and \$162,500 in Northampton compared to a state figure of \$243,500 (U.S. Census Bureau, 2016b).

A couple of caveats are required here. The home value figures provided above are the homeowners' perceptions of what their house is worth. Homeowners may have inaccurate perceptions of the worth of their home. Also, the figures on home values include all houses, even those that do not house children. Nonetheless, the data suggest that homeownership in the two focal counties is not as economically rewarding as it is in other localities.

Homeownership is not only a reflection of economic status. Often, it connotes a degree of civic investment or participation as well. For example, homeowners typically have more of an investment in local institutions, such as schools, than do renters.

In summary, there are some variations across counties and indicators, but generally the economic conditions facing families and children in Accomack and Northampton Counties are more challenging than those facing families and children in most other communities in the state.

### 3.2 Health Indicators

Good health is critically important for child development. For example, children who grow up with good health are better able to pay attention and perform better in school. Moreover, recent evidence indicates that good healthcare as a young child has important benefits as an adult (Campbell et al 2015). Table 3.2 shows several indicators related to children’s health.

For the data related to births shown in Table 3.2, it should be noted that the birth reflects where the mother was living at the time of the birth and not the place where the birth occurred. For example, if a woman from Northampton County went to a hospital in Virginia Beach for delivery of her child, that birth would still be recorded as a Northampton County birth.

Table 3.2 Health Indicators of Child Well-Being for Accomack and Northampton Counties and Virginia

		Accomack	Northampton	Virginia
Infant Mortality Rate (Deaths Under Age 1 per 1000 Births)	Rate	10.6	9.4	6.6
	Local/State Ratio	1.6	1.4	
	Rank	106	96	
Percent Low Birthweight	Rate	9	10	8
	Local/State Ratio	1.2	1.3	
	Rank	89	100	
Percent of Children Age 5-17 with a Disability	Rate	4	2	5
	Local/State Ratio	0.8	0.4	
	Rank	43	10	
Percent Without Care During the First Trimester of Pregnancy	Rate	39	21	17
	Local/State Ratio	2.3	1.2	
	Rank	128	75	
Percent of Children Without Health Insurance	Rate	10	10	6
	Local/State Ratio	1.6	1.9	
	Rank	126	124	
Teen Birthrate Aged 15-17	Rate	16	22	11
	Local/State Ratio	1.5	2	
	Rank	89	110	
Teen Birthrate Aged 18-19	Rate	83	96	44
	Local/State Ratio	1.9	2.2	
	Rank	97	114	

For all the rankings a rank of “1” is considered best.  
See Appendix A for detailed descriptions of indicators and sources of data.  
Rankings are based on unrounded data.



Infant mortality is often taken as a sign of the overall health of a community or a society. Since the first year of life is more precarious than later years of childhood, negative social conditions (such as poverty and an unhealthy physical environment) have a bigger impact on newborns. The number of children who die before their first birthday is reflected in the infant mortality rate, defined as the number of deaths to persons less than 1 year-old per 1,000 live births during the year.

Children born to families with fewer advantages are more likely to experience serious health problems at an early age. For example, according to results of a study conducted in the mid-nineties, the infant mortality rate for children born into poor families was shown to be more than 50 percent higher than that for children born into families with incomes above the poverty line (Kiely 1995). The link between poverty and infant mortality partially explains why the infant mortality rate is high in Accomack and Northampton Counties.

The infant mortality rates for children in Accomack and Northampton Counties are extremely high when compared to other localities or the state as a whole. The infant mortality rates seen in Accomack (10.6) and Northampton (9.4) are well above the statewide value (6.6), and both Eastern Shore counties rank among the worst localities on this measure. (Note there were three localities – Bath, Highland and Rappahannock Counties- that had no infant deaths during the five-year period examined here. Rather than treat this as missing data they were included in the analysis).

Babies weighing less than 2,500 grams (about 5.5 pounds) at birth have a high probability of experiencing developmental problems. Therefore, the percent ‘low-birth weight babies’ category reflects a group of children who are likely to have problems as they move through the growth stages. The percent of children born with low birth weight (less than 5.5 pounds or 2,500 grams) often reflects the health of mothers. As with the infant mortality rate, the low birth weight is often seen as a reflection of broader problems.

Some of the risks faced by low birth weight babies have been captured in data linking information from birth and death certificates. Although low birth weight babies were only 7.6 percent of all births in 1999, they accounted for nearly 66 percent of infant deaths that year. One study (The Annie E. Casey Foundation 2000) reported the risk of dying during the first year of life for low birth weight babies (60.5 deaths per 1,000 births) is 24 times that for babies of normal birth weight (2.5 deaths per 1,000 births).

The share of births that were low birth weight was 9 percent in Accomack and 10 in Northampton compared to 8 percent statewide. Both counties rank poorly on this measure (see Table 3.2).

The infant mortality rate and percent low birth weight both indicate that many children in the two focal counties do not get off to a good start in life and their life trajectories are compromised from the beginning.

The share of school-age children (ages 5 to 17) with a disability is shown in Table 3.2. The rate of children with a disability was 4 percent in Accomack and 2 in Northampton compared to 5 percent statewide. The measure of disability used here is constructed by the U.S. Census Bureau and includes anyone who believes they have one of the disabilities below:

1. With a hearing difficulty
2. With a vision difficulty
3. With a cognitive difficulty
4. With an ambulatory difficulty
5. With a self-care difficulty

The information about a disability is self-reported (or parent reported) so it is not the same as a physician's or medical diagnosis. Nonetheless, the measurement procedures are consistent across all the localities in the state. (Note – Bath County had zero children age 5 to 17 identified as disabled, but Bath was not treated as missing data and was included in the analysis.) The relatively low disability rate for school-age children on the Eastern Shore is puzzling, but readers are reminded that the figures are based on a small sample and should be viewed cautiously.

The rate at which pregnant women lack prenatal care in the first three months is higher in Accomack and Northampton Counties than it is statewide. Table 3.2 shows 39 percent of pregnant women in Accomack did not get care in the first trimester, compared to 21 percent in Northampton. Statewide, the figure was 17 percent. The relative lack of timely prenatal care in Accomack and Northampton counties may be related to the relatively higher rates of infant mortality there.

Table 3.2 shows 10 percent of children in Accomack and Northampton Counties lack health insurance, compared to 6 percent statewide. Recall this data was collected from 2010 to 2014, so it may not reflect recent efforts to expand health insurance coverage that produced a woodwork effect ensuring more families were enrolled.

National research indicates that the health care received by children without health insurance is typically not as good as the health care received by those children with health insurance (Families USA 2006; Rand Corporation 2006). However, that national generality may not hold true for children on the Eastern Shore because all residents of the Eastern Shore have access to the services of Eastern Shore Rural Health system.

Teenage childbearing is a risk factor because it often diminishes the opportunities of both the infant and the young mother. Births to females under age 18 are often troublesome because most of these young mothers are unmarried and have not completed high school. Eight to 12 years after birth, a child born to an unmarried, teenage, high school dropout is 10 times as likely to be living in poverty as a child born to a mother with none of these three characteristics (The Annie E. Casey Foundation 1993).

Most teen mothers are unmarried and research shows that children born to single mothers “are twice as likely to drop out of high school, twice as likely to have a child before age twenty, and one and one-half times as likely to be ‘idle’—out of school and out of work—in their late teens and early twenties.” (Sandefur and McLanahan 1994). Thus, babies born to young teens reflect a group of children who will be at risk to have to overcome high odds to thrive (Child Trends 2015).

The teen birth rates for the Eastern Shore are much higher than other localities. Birthrates are defined as the number of births per 1000 females in an age group. The birth rates for females age 15-17 are 16 in Accomack and 22 in Northampton compared to 11 statewide. For females age 18 and 19, the birth rates are 83 in Accomack and 96 in Northampton. Statewide the figure is 44. In short, teen births rates on the Eastern Shore are roughly twice those found statewide.

In summary, measures of health show children in Accomack and Northampton Counties generally have poorer health than children in most other localities in Virginia.

### **3.3 Education Indicators**

How well a child does in school plays a critical role in his or her life trajectory. In 2014, the mean income for individuals in Virginia without a high school degree was \$20,542 compared to \$50,450 for those who completed college (U.S. Census Bureau 2015a).

Table 3.3 shows four education well-being measures for children in Accomack and Northampton Counties. The measures reflect experiences from preschool through high school.

Table 3.3. Education Indicators of Child Well-Being for Accomack and Northampton Counties and Virginia

		Accomack	Northampton	Virginia
Percent of 3-4 Year-Olds Not in School	Rate	67	67	52
	Local/State Ratio	1.3	1.3	
	Rank	100	101	
Percent of Kindergartners Failing PALS-K (129 Localities Ranked)	Rate	16	11	13
	Local/State Ratio	1.2	0.8	
	Rank	89	42	
Percent of 3rd Graders Failing SOL Reading Test	Rate	30	37	23
	Local/State Ratio	1.2	1.6	
	Rank	103	124	
Percent of 9th Graders Who Do Not Finish High school in 4 Years (129 Localities Ranked)	Rate	14	21	11
	Local/State Ratio	1.3	1.9	
	Rank	89	125	

For all the rankings a rank of “1” is best.

Rankings are based on unrounded data.

See Appendix A for detailed description of indicators and sources of data.

In general, children who attend some kind of preschool enter kindergarten in a better position to succeed in school. Data in Table 3.3 show the percent of 3- and 4-year-olds in Accomack and Northampton Counties who DO NOT attend some type of school. The rate is 67 percent in both Accomack and Northampton, but the statewide figure is 52 percent.

Data in Table 3.3 show the percent of students in Accomack and Northampton Counties who DO NOT meet the PALS Kindergarten standards. PALS K is defined as “... a measure of children’s knowledge of several important literacy fundamentals: phonological awareness, alphabet recognition, concept of word, knowledge of letter sounds and spelling. PALS-K provides a direct means of matching literacy instruction to specific literacy needs and provides a means of identifying those children who are relatively behind in their acquisition of these fundamental literacy skills.” (KIDS COUNT Website). Statewide, 13 percent do not pass the PALS-K test but the figures are 16 percent in Accomack and 11 percent in Northampton.

It is widely believed that reading by the end of third grade is a key indicator of future educational success (The Annie E. Casey Foundation 2010), as the focus up to third grade is on learning to read, but the curriculum after that point requires proficient reading to be able to learn.

The data in Table 3.3 show that the percent of third graders in each of the Eastern Shore Counties that fail the third grade Standard of Learning reading test is higher than the state figure of 23 percent. In Accomack it was 30 percent and in Northampton is was 37 percent.

Teens who drop out of high school are less likely to achieve financial success in life. As America moves further into the 21st century, when advanced skills and technical knowledge will be required for most good-paying jobs, the prospects for those who have not completed high school will be even more dismal.

Graduating from high school in a timely fashion is often the key to education and employment success. Table 3.3 shows that statewide, 11 percent of students did not graduate in four years compared to 14 percent in Accomack County and 21 percent in Northampton County.

In summary, children on the Eastern Shore trail their counterparts across the state of Virginia in terms of educational well-being.

### **3.4 Family and Community Indicators**

The well-known phrase, “It takes a village to raise a child,” reflects the widespread belief that children depend on adults outside their family to provide a nurturing and supportive environment. The Family and Community well-being measures shown in Table 3.4 reflect a broad range of conditions that impact the lives of children. Supportive families, institutions, and communities contribute a great deal to child development. In this section some of the measures that reflect the strengths of families and communities are examined.

A high percent of adults (age 25 and above) in Accomack and Northampton Counties have not graduated from high school. Lack of a high school degree is linked to poverty and unemployment. Moreover, one study (O’Hare et al 2013) found the level of adult education was one of the best predictors of child well-being at the state level.

Table 3.4 Family and Community Indicators of Child Well-Being for Accomack and Northampton Counties

		Accomack	Northampton	Virginia
Percent of Adults Without a High School Degree	Rate	21	21	12
	Local/State Ratio	1.8	1.8	
	Rank	103	99	
Percent of Children Under Age 18 Living with Only One Parent	Rate	40	44	31
	Local/State Ratio	1.3	1.4	
	Rank	89	105	
Income Inequality (Ratio of the 80th percentile income over 20th percentile income)	Rate	5.4	7.0	4.8
	Local/State Ratio	1.1	1.5	
	Rank	124	133	
Rate of child abuse and neglect (founded number per 1,000 children)	Rate	8.9	1.0	3.3
	Local/State Ratio	2.7	0.3	
	Rank	121	12	

For all the rankings a rank of “1” is considered best.

Rankings are based on unrounded data.

See Appendix A for detailed description of indicators and sources of data.

In each of the focal counties the share of adults without a high school degree is much higher than the state measure. Note that this measure is for all adults, not just parents. In both Accomack and Northampton Counties, 21 percent of adults did not have a high school degree, which is much higher than the stateside figure of 12 percent. To the extent that well-educated adults can help school children, children on the Eastern Shore are at a distinct disadvantage.

The U.S. Census Bureau (2014) reports the poverty rate for children in married-couple families is 6 percent compared to 43 percent for children living in single-parent families. A large share of children in Accomack and Northampton Counties live in single-parent families.

Table 3.4 shows that the percent of children in Accomack and Northampton Counties living in single-parent families was much higher than the state average. Statewide, 31 percent of children are living in single-parent families compared to 40 percent in Accomack County and 44 percent in Northampton County.

Income inequality has been posited as an important factor in community life so it is examined here in the context of Accomack and Northampton Counties. The measure of income inequality used here is the ratio of the income at the 80<sup>th</sup> percentile to the income at the 20<sup>th</sup> percentile. The bigger the ratio the more income inequality there is in a county. Income inequality is higher in the counties of the Eastern Shore than statewide. The measure of income inequality in Accomack was 5.4 and it was 7.0 in Northampton County, which is the highest in the state. The statewide ratio is 4.8.

The rate of child abuse and neglect is measured as the number of substantiated cases per 1000 children. The rate of child abuse and neglect is 8.9 in Accomack and 1.0 in Northampton. The statewide figure is 3.3 cases of substantiated child abuse or neglect per 1,000 children. The unusually low rate in Northampton may be related to the relatively small population there combined with the fact that the events are relatively rare. It should be noted that often times child abuse and neglect data are not collected consistently across states and localities, so differences should be viewed cautiously.

In summary, the adults and community institutions that are critical for supporting the positive development of children are typically not as well-positioned in the two focal counties as they are in most other communities in Virginia.

#### **4. Overall Child Well-Being**

A child well-being index combines multiple indicators of child well-being across many dimensions into a single comprehensive measure. Construction of an index of child well-being is a useful way to operationalize or measure the concept of child well-being and a comprehensive composite index is one of the most efficient ways to communicate overall patterns and trends (Organisation for Economic Development and Cooperation, 2008).

Preparing an overall comprehensive composite index of child well-being is helpful for several reasons. Combining individual indicators into an overall index can help reduce the impact of random error, outliers, missing data, or other mis-measurement problems in individual indicators. Because individual indicators may have significant errors, combining multiple statistical indicators into broader measures of child well-being helps minimize the impact of problems with any one indicator. Also, for many audiences an index provides a more concise and understandable portrayal of child well-being than a collection of data tables for individual measures. An index helps one quickly determine which groups or which geographic areas are doing better and which are doing worse in terms of comprehensive child well-being (Organisation for Economic Development and Cooperation, 2009). These qualities may explain why the number of researchers using composite indices of child well-being is growing rapidly (O'Hare and Guttierrez, 2012; Fernandes et.al. 2012; Lamb and Land 2013).

The methodology used to construct an index in this report, often referred to as the Standard Scores Method, is one that has been widely used by others (Bradshaw and Richardson, 2009, The Annie E. Casey Foundation, 2015; O'Hare et al 2013). All indicator values are translated into standardized scores (sometimes called z-scores) then the standardized scores for all indicators are averaged for each county to provide an overall index score. More details about the methodology are provided in Appendix B.

A subset of the indicators presented in Section 3 was used to calculate this index. This was done to provide balance and avoid duplications or redundancy. For example, there are more economic measures than health or education measures. If all the measures shown in Section 3 were included in an index, it would give the economic dimension more weight or importance than the health or education dimension.

The list of indicators used in the index is shown in Table 4.1. I use four indicators from each of the four domains to give relatively equal weight to each domain in the final index.

Table 4.1 Indicators Used for Index

<b>ECONOMICS</b>
Percent of Children Age 0-17 Living Below Poverty
Median Income of Families with Children Under Age 18 in Household
Percent of Children Living in Household in Which No one Has Worked in the Previous 12 Months
Percent of Occupied Housing Units with Related Children Under Age 18 that are Rental Units
<b>HEALTH</b>
Infant Mortality Rate
Percent Low Birthweight
Percent of Children Aged 5-17 With a Disability
Percent of Children Aged 0 to 17 Without Health Insurance
<b>EDUCATION</b>
Percent of 3-4-Year-Olds Not in School
Percent of Kindergartners Failing PALS-K
Percent of 3rd Graders Failing SOL Reading Test
Percent of 9th Graders Who Do Not Finish High School Within 4 Years
<b>FAMILY AND COMMUNITY</b>
Percent of Adults Without a High School Degree
Percent of Families Under Age 18 Living with a Single Parent
Income Inequality (Ratio of the 80th Percentile Income over 20th Percentile Income)
Rate of Child Abuse and Neglect (Founded Number per 1,000 Children)

Table 4.2 shows the results of the index construction. In each case the index value is converted into a county ranking to make the results more meaningful. Recall that a higher-ranking value represents worse child well-being. In other words, a rank of 1 is better than a rank of 100. There is an index ranking presented for each of the four domains as well as an overall index. There is some variation across the domains, but rankings for Accomack and Northampton Counties are all in the bottom half of the ranking. Only two of the sub-indices (Health for Accomack and Northampton and Counties) are lower than 100 in the rankings.



Table 4.2 Accomack and Northampton Counties Ranked on Four Dimensions of Child Well-Being and Overall Child Well-Being

	Economics	Health	Education	Family and Community	Overall Rank
Accomack	108	96	110	123	123
Northampton	119	91	125	120	125

Another way to think about the situation of children in Accomack and Northampton Counties is to note that of the 133 localities in Virginia, 122 are better than Accomack County and 124 are better than Northampton County in terms of child well-being.

### 5. Implications and Discussion

The data presented in this report make it clear that many children growing up on the Eastern Shore can use more support and assistance. There is no shortage of ideas about what should be done to help children. Many publications provide a host of ideas about how to improve the welfare of children (First Focus 2015; First Focus 2015; Karoly et al 2005; Sawhill 2003). This section of the report focuses on high quality preschool and early life experiences for three reasons:

- 1) The evidence about the efficacy of high quality early care and learning is clear and convincing.
- 2) There are a large number of model programs one can replicate or modify.
- 3) There appears be strong bi-partisan support for expanding preschool support, which makes this idea more promising than some other ideas.

Numerous studies have shown that high quality preschool experiences pay large dividends (Schweinhart, et al 2006; Dickens et al 2006; Olds, et al 1999). The Perry Preschool Study, The Abecedarian Project, and others have shown that an investment in high quality preschools pays back \$7-8 dollars for each dollar invested in things like less money for incarceration, more taxes from working adults, and lower welfare costs.

Nobel Prize-winning economist James Heckman (2007) is among the many researchers who support investing in children. After studying numerous early education programs, Dr. Heckman (2007, page 45) provides this simple conclusion. “The bottom line conclusion, invest early in children – and don’t stop.” Dr. Heckman notes that attending a high quality preschool increases odds of graduating from high school and going to college, avoiding welfare dependency and involvement in the criminal justice system, and increased workforce participation.

After examining numerous preschool programs, Dr. Arthur Rolnick (2003) formerly head of the Minneapolis Federal Reserve Bank notes that early investment in children yields a 16 percent return on each dollar invested. General Colin and Alma Powell (Powell and Powell 2007) also add their voices to those calling for a bigger investment in young children.

In December 2015, a bipartisan group of scholars from the left-leaning Brookings Institution and the right-leaning American Enterprise Institute (American Enterprise Institute/Brookings 2015) concluded that good preschool and early learning is a fundamental building block of any anti-poverty program. In their words, "... the federal government and states should build on the recent bipartisan reauthorization of the Child Care and Development Block Grant to continue to improve the quality of child care for low-income working parents."

The bi-partisan nature of support for early interventions is reflected in the fact that a few months ago the Republican members of the Virginia House of Delegates indicated that preschool was one of the issues that was high on their education agenda and expansion of preschool programs was in the budget President Obama submitted to Congress a few months ago.

In addition to high quality preschool programs, there are a number of other programs that help support good early development in children. For example, programs that provide in-home assistance to new mothers and mothers-to-be have proven to be effective in many places. A Nurse-Family Partnership pilot program undertaken in Elmira, New York, Memphis, Tennessee, and Denver, Colorado, which was subjected to rigorous investigation found several positive outcomes for children (Stevens and English 2016, page 27).

In some ways, the Eastern Shore is ahead of other parts of Virginia in terms of helping young children get off to a good start in life. For example, the Eastern Shore of Virginia is one of only three sites in the state to have a Nurse-Family Partnership like the one outlined above (Nurse-Family Partnership 2012).

In addition, Northampton County is the only locality in the state that provides universal preschool for all 4-year-olds (Northampton County Public Schools 2016). The fact that

Northampton County is the only county in the state that has universal Pre-K suggests there is the political will to invest resources to improve outcomes for young children.

In addition, the Smart Beginnings Eastern Shore organization provides an emerging infrastructure for building on the programs that already exist (Smart Beginnings Eastern Shore (2016). The time seems ripe for the community to expand their commitment to help young children thrive.

Good quality preschools and early care are good for children, good for the community, and in the long run good for taxpayers. Clearly, efforts should be made by policy makers on the Eastern Shore to invest in programs that will assure that all young children on the Eastern Shore have access to quality childcare and pre-school programs.

## **6. Summary and Conclusions**

Examination of multiple aspects of child well-being on the Eastern Shore of Virginia show children there typically trail children in other parts of Virginia on a host of measures. The disadvantaged position of children on the Eastern Shore was observed in terms of economic status, health, education and family/community measures.

Ideas about programs, policies and activities to help children are not lacking. It is important for adults living on the Eastern Shore to find the best programs, policies and activities for the context here, and to develop the political will to implement those choices.

The data presented here will probably not be too surprising to people on the Eastern Shore, although perhaps Eastern Shore residents may not have fully understood how they compare to other parts of Virginia in terms of child well-being. Hopefully, by providing the quantitative measures shown here, leaders will be able to argue more persuasively that children on the Eastern Shore are among the neediest in the state and deserve more support. When leaders and child advocates seek funding and support for children on the Eastern Shore, they can use this report to make the case with strong statistical evidence.

Our hope with this report is to elevate children on the public agenda, and stimulate more discussion about children on the Eastern Shore with a focus on improving their well-being.

## Appendix A - Detailed Sources of Data

### ECONOMIC INDICATORS

	Time Period Reflected in Data	Source of Data
Percent of Children Aged 0-17 Living Below Poverty ACS	2010-2014	U.S. Census Bureau, American Community Survey 2009-2013 Table B17001
Percent of Children Aged 0-4 Living Below Poverty ACS	2010-2014	U.S. Census Bureau, American Community Survey 2009-2013 Table B17001
Percent of Children Age 5-17 in Families Below Poverty ACS	2010-2014	U.S. Census Bureau, American Community Survey 2009-2013 Table B17001
Percent of Children Aged 0-17 Living Under 50% of Poverty	2010-2014	U.S. Census Bureau, American Community Survey 2009-2013 Table B17024
Percent of Children Aged 0-17 Living Under 200% of poverty	2010-2014	U.S. Census Bureau, American Community Survey 2009-2013 Table B17024
Median Household Income SAIPE 2014	2014	U.S. Census Bureau, Small Area Income and Poverty Estimates Table B19125
Median Income of Families with Children Under the Age of 18 in Household	2010-2014	U.S. Census Bureau, American Community Survey 2009-2013 Table B19125
Percent of Children Living in Households Where No one Has Worked in the Previous 12 Months	2010-2014	U.S. Census Bureau, American Community Survey 2009-2013 Table S2302
Percent of Occupied Housing Units with Related Children Under the Age of 18 That Are Owner Occupied	2010-2014	U.S. Census Bureau, American Community Survey 2009-2013 Table B25012

## EDUCATION INDICATORS

Percent of 3-4 Year-Olds Not in School	2010-2014	U.S. Census Bureau, American Community Survey, Table S1401
Percent of Kindergarteners Who Do Not Meet PALS-K Scores for Kindergarten Readiness Levels	Mean of AY2009-10 to AY 2014-15	Virginia KIDS COUNT
Percent of Children Not Meeting 3rd Grade Standards of Learning in Reading	Mean of 2009 to 2013	Virginia KIDS COUNT
Percent of 9th Graders Who Do Not Finish High School Within 4 Years	Mean of 2010 to 2104	Virginia KIDS COUNT

## HEALTH INDICATORS

Infant Mortality Rate	Mean 2009-2013	Virginia KIDS COUNT
Low Birthweight	Mean 2009-2013	Virginia KIDS COUNT
Children Aged 5-17 With a Disability	2010-2014	U.S. Census Bureau, American Community Survey, Table S1810
Percent Without Care in the First Trimester of Pregnancy	Mean 2009-2013	Virginia KIDS COUNT
Mean Teen Birthrate Aged 15-17	2010-2014	Virginia KIDS COUNT
Mean Teen Birthrate Aged 18-19	2010-2014	Virginia KIDS COUNT
Percent of Children Aged 0 to 18 Without Health Insurance	2013	U.S. Census Bureau, Small Area Health Insurance Estimates

## FAMILY AND COMMUNITY

Percent of Adults (age 25+) Without a High School Degree	2010-2014	U.S. Census Bureau, American Community Survey, 2009-2013, Table B15003
Percent of Children Living in Single-Parent Families	2010-2014	U.S. Census Bureau, American Community Survey, 2009 to 2013, Table B05009
Income Inequality Income Ratio (80th percentile over 20th percentile)	2010-2014	Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute
Rate of Child Abuse and Neglect (founded number per 1,000 children)	Mean 2009-2013	Virginia KIDS COUNT

## Appendix B – Methodological Notes

Many of the measures used here, like all similar measures, may contain some mismeasurement, so small differences between localities should be viewed cautiously. Because of potential measurement errors, I give more weight to the indices that combine several indicators together rather than any individual measure.

For relatively small counties a single-year estimate is sometimes unreliable because it is based on small sample size or a small number of events, like births and deaths. To enhance the reliability and accuracy of statistical indicators of child well-being, I average data over several years. This provides larger samples or bigger numbers of events (such as births or death) upon which the statistics are based. This approach involves a tradeoff between timeliness (using the most recent data available) and reliability, but the increased reliability of the local measures is more important than timeliness. Some indicators showed extensive variation over the years examined while others did not. To maintain consistency across indicators I combined years for nearly all the indicators.

Generally rates are rounded to the nearest whole percentage point to avoid giving a false sense of precision. The period reflected in the various estimates are not exactly the same although almost all reflect conditions from about 2008-2009 to 2013-2014. Almost all of the measures have a large overlap in years, so the mismatch of the periods covered is unlikely to lead to any significant distortion in the findings.

### Index Construction

The methodology used to construct an index in this study, often referred to as the standard scores method, is one that has been widely used by others (Bradshaw and Richardson, 2009, The Annie E. Casey Foundation, 2015; O’Hare et al 2013).

For some measures for some counties, data were not available or did not meet the quality standards for this study. Typically, when indicator values are missing, researchers simply average the values that are available (Organisation for Economic Cooperation and Development 2009). That is the approach taken here.

An equal-weighting strategy is the simplest, most widely used, and most transparent method for combining indicators (Haggerty and Land 2007). The use of equal weighting is widely used for composite indices in other areas of research as well (Booyesen, 2002). An equal-weighting approach is used in this study.

## Standardization

Before individual indicators of child well-being can be combined into an overall index, they must be standardized. Standardization includes standardizing for directionality of indicators and standardizing for different variances among the indicators.

One of the key aspects of building a comprehensive composite index of child well-being is standardizing the indicators used to construct the index so that they can be meaningfully combined (O'Hare 2014b; Organization for Economic Development and Cooperation, 2008).

In this study, directionality was an issue because some indicators were constructed so that higher values reflect more positive outcomes (for example, median household income and percent passing the SOL reading test) and other indicators were constructed so a higher value was negative (for example, the child poverty rate and the percent of children without health insurance). Since the majority of indicators were constructed so that a higher value was negative, those that were constructed the opposite way were transposed. Also, several measures have been inverted to provide a more consistent interpretation across all measures. In other words, a higher value consistently reflects worse outcomes. This was done so that for nearly every measure examined here, a higher value consistently reflects worse child outcomes than a lower value. This issue is sometimes referred to as directionality (O'Hare 2014b). There are a few indicators, like median family income, where this kind of inversion did not make sense.

In the standard-scores method, observed values are standardized to control for different degrees of variability among indicators. If the measures are not standardized, the measures with more variability would count more heavily in the index than those with less variability. For example, the state values for the percent of Black 3-to 5-year-olds in Nursery School, Preschool, or Kindergarten ranges from 37.7 percent to 76.9 percent while the range for percent normal birthweight babies was only 84.1 percent to 90.8 percent. If I simply combine these two percentages, data for the percent of 3-to 5-year-olds in Nursery School, Preschool, or Kindergarten would dominate the resulting sum. Standardizing variables by creating Z-scores allows us to combine indicators in meaningful ways.

For each indicator, standard scores were derived by subtracting the mean value for all counties in Virginia from the observed estimate for a given county and dividing the result by the standard deviation for that distribution of estimates, as shown in formula (1).

(1)

$$z_{sr} = \frac{x_{sr} - \mu}{\sigma}$$

Where;

$Z_s$  = the z-score for a given locality

$X_s$  = value of an indicator of child well-being for a given locality

$\mu$  = the mean across the 133 locality values, and

$\sigma$  = the standard deviation across 133 locality value.

The standardized scores for each indicator are averaged to provide an index value for each locality. A higher value indicates worse outcomes. An index was constructed for each of the four domains using the four indicators shown in Table 4.1 and an overall child well-being index was constructed using all 16 indicators shown in Table 4.1.

One drawback of using an index based on standard scores is that the resulting index values are not always intuitive or easy to interpret. To more clearly show the differences across racial groups and locales, the average z-scores are used to rank localities. Rankings make findings easier to interpret.



## ENDNOTES

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