

## **An Examination of Preventable Cost Factors in West Virginia's High Risk Families With Young Children**

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### **Abstract**

*This paper reviews major studies related to costs of child maltreatment and health conditions that can be partially mitigated by preventive programs including research-based In-Home Family Education programs. Three cost factors are reviewed in some detail using data available within West Virginia. These factors include:*

- *Direct costs to the state related to child protective services and juvenile facilities,*
- *Costs associated with low birth weight babies, and*
- *Costs associated with the failure to fully immunize young children.*

*Current costs associated with these three cost factors alone are estimated at \$250 million dollars per year within West Virginia and the trend for all three of these cost factors is one of increasing direct and indirect costs over recent years. Projected trends in future years are examined and a cost of failure analysis is used to demonstrate how investments in preventive programs can potentially save public dollars that would otherwise be expended.*

*Recent evidence related to the effectiveness of In-Home Family Education programs in addressing the cost factors reviewed is also cited. At an average cost of \$2,000 per family served, further investment in these programs is a cost effective strategy to address increasing public expenditures and produce a net savings of state dollars over time.*

### **Introduction and Review of Cost-Benefit Studies**

A number of studies have been conducted in recent years that document the direct and indirect costs associated with child maltreatment, low birth weight babies, poverty, deprivation of early learning experiences, and other factors addressed by In-Home Family Education programs. A 2007 study by the Center for Business and Economic Research at the University of Alabama concluded that total costs associated with child abuse and neglect to Alabama taxpayers exceeds half a billion dollars each year (\$520,800,290).<sup>1</sup>

A similar analysis in Wisconsin estimated the total costs in that state to be \$789 million. A study conducted in Michigan fifteen years ago concluded that the cost of child maltreatment and inadequate prenatal care was \$823 million per year (\$990 million in 2006 dollars).<sup>2</sup> In Colorado the estimated annual cost was calculated in 1995 at \$402 million (\$540.5 million in 2006 dollars).<sup>3</sup>

Another carefully controlled research study concluded that the costs of home visiting services provided to at-risk families with young children could be totally offset by savings in other types of government services within four years.<sup>4</sup>

An additional major study of the effects of adverse childhood experiences on health and behavioral outcomes of later life appears to indicate that these costs that have been attributed to abuse and neglect are probably low estimates. The study has been supported by the Centers for Disease Control and Prevention and Kaiser Permanente and has been ongoing in recent years. This longitudinal study confirms that abuse, neglect, and other traumatic stressors during childhood have long term effects with very real financial costs. The study has demonstrated that stress during childhood is directly related to increased risk for a number of chronic health problems, substance abuse, smoking, unintended pregnancies, depression and other debilitating conditions during childhood and later in life.<sup>5</sup>

It is clear from the research cited above and other studies that there are substantial direct and indirect costs to taxpayers when high risk families with young children are not supported and strengthened. Based on the estimates calculated in the four states referenced above, the cost to each taxpayer of that state every year ranges from \$275 in Michigan to \$385 in Alabama.<sup>6</sup> We should expect a cost to West Virginia taxpayers within this range and likely close to, or exceeding the Alabama estimate given the similar rates of family poverty present in the two states.<sup>7</sup>

## **Methodology**

The methodology used by other states to estimate the direct and indirect costs of child maltreatment is generally based on national studies and application of those same methods would provide similar results in West Virginia. These reports generally consider a very broad range of short-term costs in government funded programs as well as longer-term societal costs attributable to child abuse and neglect. These costs include those associated with child welfare, juvenile justice, and mental health services; healthcare costs; remedial and special education; adult criminality; and a range of indirect costs such as lost productivity and lost taxes.

Instead of replicating these estimates for West Virginia, this report will look at several specific conditions and circumstances of young children within families receiving In-Home Family Education services that are known to result in short and long term public expenditures if not ameliorated early in the child's life. We will look at the recent trends in West Virginia associated with three specific cost factors known to be positively influenced by In-Home Family Education programs. These factors are:

- Child maltreatment and poor parenting skills
- Low birth weight babies
- Failure to immunize against childhood disease

A “cost of failure” approach will be used to analyze increasing trends associated with these specific risk factors. We can then demonstrate how increased investments in preventive services including In-Home Family Education programs can impact increasing public expenditures in future years and save dollars over time.

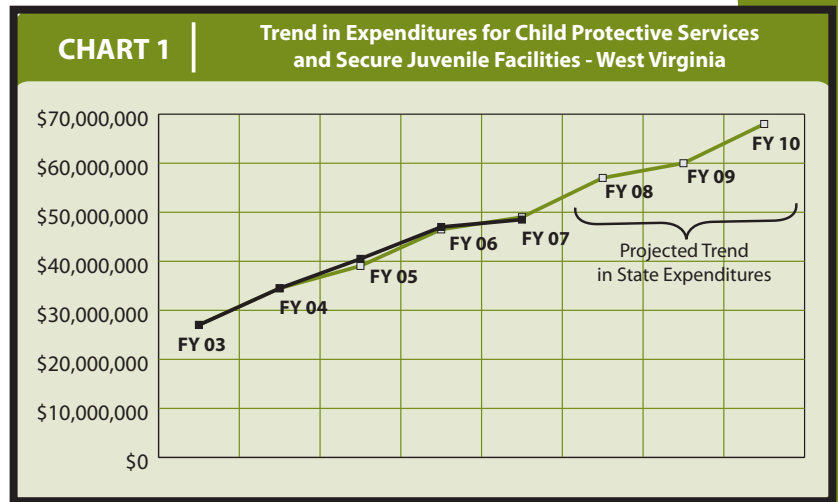
## **Direct Costs Associated with Key Risk Factors in West Virginia**

### **Child Protective Services and Juvenile Facilities**

Recent trends in state expenditures directly related to child maltreatment and poor parenting are reflected in an increasing trend in state expenditures for child protective services and juvenile services.

These state appropriations support child protective services workers and the construction and operation of juvenile detention and correctional facilities. State expenditures for these specific services over the past five years are shown in Chart 1<sup>8</sup>.

The actual expenditures are shown in black for the years FY 2003 through FY 2007 and the five year trend is projected through FY 2010<sup>9</sup>. As can be seen in the chart, if the trend in spending for these services continues to increase at the same rate the state will be spending \$65 million for these specific services by 2010. The increasing expenditures over the past five years as well as the projected \$17 million over the next three years may be thought of as a direct cost of failure to prevent child maltreatment and poor parenting.



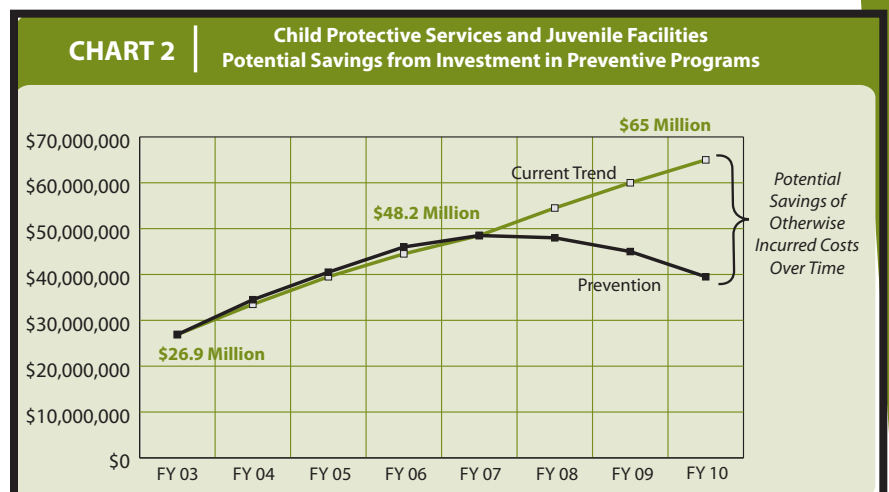
## How In-Home Family Education Programs Affect Child Maltreatment and Parenting

In-Home Family Education programs can significantly impact the increasing trend in costs for these services over time. These programs strengthen protective factors in families that are known to reduce the risk of child maltreatment and increase parenting skills<sup>10</sup>.

A 2007 survey of families served by six In-Home Family Education programs providing services in southern West Virginia documents increases in the protective factors associated with reduced risk of child abuse and neglect over the time the family participates in the program. The survey data also provides evidence of increased knowledge and use of good parenting practices among families participating in these In-Home Family Education programs for one year or longer<sup>11</sup>.

Chart 2 (illustrative only) describes how state funds can be saved over time by reversing the current trend in state expenditures related to child maltreatment and poor parenting.

The black line (labeled Prevention) illustrates a declining trend in costs for child protective services and juvenile facilities and the gap between the projected trend (green line) and the amount represented by increased preventive services (black line) represents a very real potential for savings in future costs.



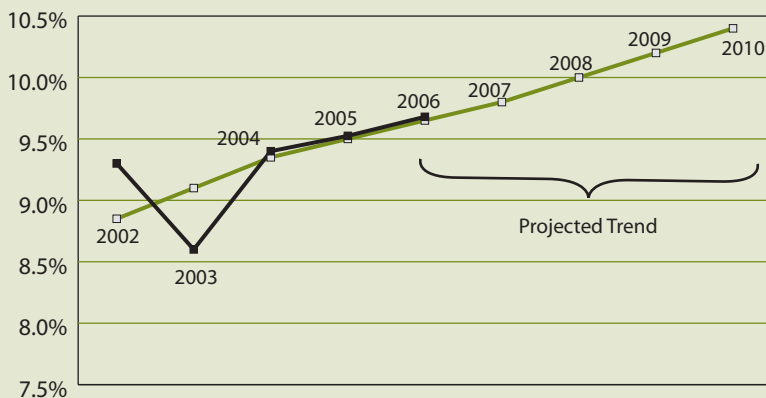
## Direct In Patient Hospital Costs of Low Birth Weight Babies

Low birth weight babies are significantly more at risk for chronic health and development problems including cerebral palsy, brain damage, lung and liver disease, and learning disabilities.<sup>12</sup> Aside from these long term health care risks, immediate costs related to low birth weight infants are incurred through hospital stays to stabilize respiratory and other problems attributable to low birth weight. Data compiled by the West Virginia Health Care Review Authority (2006) documents an average cost for initial hospital based care for low birth weight infants of \$78,589 per case. Even more costly are hospital stays for newborns of very low birth weight (under 1,000 grams) at an average cost of \$246,988.<sup>13</sup> Much of this cost attributed to low birth weight is borne by publicly funded programs. Over fifty percent of all births in West Virginia are funded by the Medicaid program.<sup>14</sup>

One of the primary health risk behaviors for low birth weight babies is smoking while pregnant. Data compiled by the WV Bureau for Public Health documents over 40% of Medicaid covered pregnant women smoked during their pregnancy (350% higher than the national average)<sup>15</sup>, and health officials in the state estimate that over 50% of low birth weight in the state is attributable to smoking while pregnant.

CHART 3

Percent Low Birth Weight Babies  
West Virginia



Unfortunately, the percentage of low birth weight deliveries in West Virginia is increasing. Chart 3 shows this trend over the last five years for which data is available (2002 through 2006) and projects the trend through 2010. The black line is the actual trend over the five year period and the green line is the projected trend based on the five most recent years of data. For FY 2005 there were 1,984 low birth weight births. At an average hospital cost of \$78,000 the total cost associated with low birth weight babies that year exceeds \$154 million. Based on the recent trend, by 2010 this cost will increase to over \$168 million.

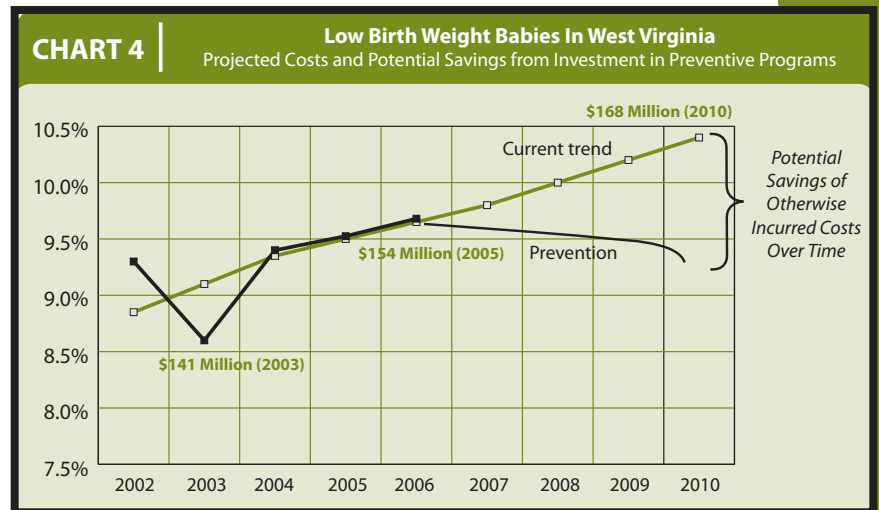
## How In-Home Family Education Programs Affect the Prevalence of Low Birth Weight

Low birth weight is a risk factor that can be positively impacted by In-Home Family Education programs. These programs help identify women at risk of delivering low birth weight or premature infants and provide opportunities to reduce adverse health risk behaviors.<sup>16</sup> In-Home Family Education programs operating in West Virginia address the issue of smoking while pregnant by working with pregnant women to educate them about the risks of smoking and by encouraging and supporting them to participate in smoking cessation programs. Data collected by the MIHOW programs in West Virginia show a significant decrease in “smoking around newborns” by mothers after only one month of services<sup>17</sup> (88% report “restricting smoking around the baby”).

Research conducted at Vanderbilt University on MIHOW program outcomes in Mississippi found that low birth weight deliveries by MIHOW mothers were at a rate of 7.7%, significantly less than the rate

of 14.3% among a comparison group. The report states: “In West Virginia, low birth weight rates also compare very favorably, with MIHOW babies much less likely to be born at less than 5.5 pounds than West Virginia babies not receiving MIHOW services.<sup>18</sup>

Chart 4 illustrates a potential cost savings in the area of low birth weight if the current trend is reversed. Home visiting services provided by the research-based In-Home Family Education Programs currently operating in West Virginia can significantly contribute to reducing the rate of low birth weight babies and the related costs. Since these programs specifically target high risk mothers who are or may become pregnant, they are an effective strategy to impact the high costs associated with low birth weight deliveries.



A survey of 266 families in southern West Virginia receiving In-Home Family Education services documents a high percentage of high risk births within the families served by the In-Home Family Education programs. 62.5% of the mothers receiving services from the six programs reported having given birth since they began participating in the program and 20.7% reported they were currently pregnant. Almost all (98.2%) of these mothers received prenatal care during the first trimester of pregnancy as compared to 81.5% for all births in West Virginia.<sup>19</sup>

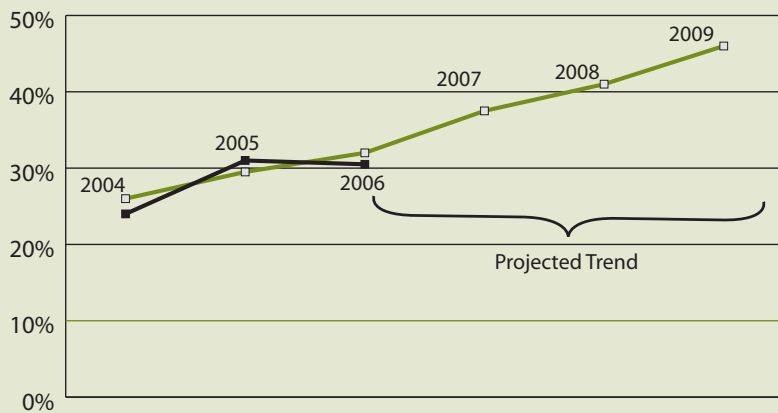
### Costs of Failure to Immunize Young Children

A 2005 study by the U. S. Centers for Disease Control and Prevention published in a professional medical journal documented significant cost savings in both direct costs of disease and indirect costs related to loss of life and loss of productivity when children are not fully immunized.<sup>20</sup> This study concluded that the direct cost of each child not immunized was \$3,236 and the indirect cost was \$12,242.

The percentage of children ages 19 to 36 months who are fully immunized has been declining in West Virginia over recent years. After an increase in the immunization rate<sup>21</sup> in 2003 to 76%, 2004 and 2005 saw a decline in the number of children receiving all recommended immunizations. Over 31% of young children were not fully immunized in 2004 and 2005.<sup>22</sup> Chart 5 shows the estimated percentage of young children who were not fully immunized in recent years (black line) and the projected trend if the recent decline in immunization rates should continue into future years (green line).<sup>23</sup>

There are approximately 30,000 children residing in West Virginia within the 19 to 36 month age range. Using the CDC study to estimate the costs attributable to absence of immunization of young children, if 30% of these children are not fully immunized the direct and indirect costs in future years would be \$139 million. Direct costs of disease alone would exceed \$29 million. Some children who may not be fully immunized do receive a portion of the recommended vaccinations however; thus, only some portion of this cost may be applicable. If we assume only 10% of the children

**CHART 5** | % Children Ages 19 to 36 Months Who *Are Not Fully Immunized Against Childhood Diseases*



in the age group on which the immunization data is based are at risk of preventable disease, the cost estimates still exceed \$46 million.

Much of this direct cost is borne by publicly funded healthcare programs and much of the indirect cost results in lost productivity and tax revenues. Thus, failure to assure that young children are fully immunized significantly affects the state budget. Assuming the recent trend would continue until 2010, the cost attributable to not fully immunizing young children is estimated at \$64.4 million.

**CHART 6** | *Costs of Not Fully Immunizing Young Children*



As is the case with the other two cost factors examined in this report, if the declining rate of immunization is reversed through investments in preventive programs, significant future costs can be averted (See Chart 6).

### How In-Home Family Education Programs Affect Immunization Rates

In-Home Family Education programs have been shown to significantly increase immunization rates within families served. Fully immunizing children is one of the many health related outcomes these programs achieve. Findings from the previously mentioned 2007 survey of families served by six In-Home Family Education programs in southern West Virginia indicate a very high rate of immunization among children being served by these programs. Only 2% of the parents surveyed reported that their children were not currently up to date with all recommended immunizations. In addition, 100% of the children served through these in-home programs are enrolled in a health insurance program greatly increasing access to regular preventive health care services.

## Conclusions

Recent trends in West Virginia for the three cost factors reviewed are toward increasing costs in future years unless these trends are reversed through increased preventive interventions. Based on the research presented, the current estimated costs within the areas reviewed approach \$250 million dollars each year.

It is not possible to quantify the full extent to which In-Home Family Education programs operating in West Virginia may influence these costs without conducting a longitudinal controlled study of the children served by these programs over many years. Nevertheless, there is considerable evidence that these programs do improve outcomes within families served and reduce short term and longer term costs that would otherwise be incurred within the cost factors reviewed. The United States Task Force on Community Preventive Services appointed by the Director of the Centers for Disease Control and Prevention (CDC) has conducted a systematic review of published studies and concluded that In-Home Family Education programs (early childhood home visiting services) are effective in reducing child maltreatment in high risk families. High-risk factors considered by the task force include single or young mothers, low income households, and low birth weight babies.

For each of the three cost factors reviewed, In-Home Family Education programs in West Virginia have been shown to reduce bad outcomes by:

- Increasing protective factors known to prevent child maltreatment,
- Building parenting knowledge and skills,
- Reducing the incidence of low birth weight babies, and
- Increasing the number of children who are fully immunized.

At an average cost of \$2,000 per family per year<sup>25</sup>, the research based In-Home Family Education programs appear to be a cost effective strategy to address the steadily increasing costs related to child maltreatment, poor parenting, low birth weight deliveries, and declining immunization rates.

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- <sup>1</sup> *The Costs of Child Abuse vs. Child Abuse Prevention: Alabama's Experience*, The Center for Business and Economic Research, University of Alabama, April 2007.
- <sup>2</sup> Caldwell, R.A., *The Costs of Child Abuse vs. Child Abuse Prevention: Michigan's Experience*, Michigan Children's Trust Fund, 1992.
- <sup>3</sup> Gould, M.S. and Obrien, T., *Child Maltreatment in Colorado: The Value of Prevention and the Cost of Failure to Prevent*, Center for Human Investment Policy, University of Colorado at Denver, 1995.
- <sup>4</sup> Olds, D.L., Henderson, C.R., Phelps, C., Kitzman, H., & Hanks, C. *Effect of Prenatal and Infancy Nurse Home Visitation on Government Spending*, *Medical Care* 31 (2): 155-174, 1993.
- <sup>5</sup> Adverse Childhood Experiences Study- Major Findings, <http://www.cdc.gov/nccdphp/ace/findings.htm>
- <sup>6</sup> Based on the number of taxpayers actually paying federal taxes after any credits in 1999.
- <sup>7</sup> 12.6% of Alabama families are below the federal poverty level and 12.7% of West Virginia families fall below the FPL. Source- 2006 estimates U.S. Census Bureau.
- <sup>8</sup> Data on budgeted expenditures from the West Virginia State Budget documents FY2003 through FY2007.
- <sup>9</sup> Trend line is projected using linear regression analysis.
- <sup>10</sup> Protective Factors Literature Review - Early Care and Education Programs and the Prevention of Child Abuse and Neglect; Center for the Study of Social Policy, [http://www.cssp.org/doris\\_duke/evidence.html](http://www.cssp.org/doris_duke/evidence.html)
- <sup>11</sup> Partners in Community Outreach, Report of Results and Analysis of Parent Survey Data, September, 2007.
- <sup>12</sup> Healthy Babies: Efforts to Improve Birth Outcomes and Reduce High Risk Births, NGA Center for Best Practices Issue Brief, June 2004
- <sup>13</sup> West Virginia Health Care Review Authority-Data and Public Information, WV inpatient condensed database, 2006
- <sup>14</sup> West Virginia Medicaid Redesign Proposal
- <sup>15</sup> Data from birth certificates compiled by the West Virginia Health Statistics Center, 2005-06.
- <sup>16</sup> Healthy Babies: Efforts to Improve Birth Outcomes and Reduce High Risk Births, NGA Center for Best Practices Issue Brief, June 2004.
- <sup>17</sup> *Selected Outcomes at One Month*, MIHOW Evaluation System, Vanderbilt University Center for Health Services, 2003.
- <sup>18</sup> Clinton, B., Lazarov M., & Smith S.; *Impact of the Maternal Infant Health Outreach Worker Program*, Vanderbilt University Center for Health Services, 2006.
- <sup>19</sup> Partners in Community Outreach Parent Survey (PICOPS), September, 2007.
- <sup>20</sup> Fangjun, F. Santoli, J. Messonnier, M. Yusuf, H. R. Sheffer, A., Chu, S. Rodewald, L. Harpaz, R. *Economic Evaluation of the 7 Vaccine Routine Childhood Immunization Schedule in The United States*, 200; *Pediatric Adolescent Medicine*, Vol. 159, Dec. 2005.
- <sup>21</sup> Based on 4:3:1:3:3:1 immunization series.
- <sup>22</sup> Estimates from the United States National Immunization Survey 2002 through 2006 - Centers for Disease Control and Prevention.
- <sup>23</sup> Trend line is projected using linear regression analysis.
- <sup>24</sup> <http://thecommunityguide.org/violence/viol-int-homevisit.pdf>
- <sup>25</sup> Actual program costs calculated based on total budget expenditures divided by total number of families served.