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**0-3 Conference - CEA White Paper**



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0-3 - CEA White Paper  
*Elena Kagan*

April 3, 1997

MEMORANDUM FOR: FRANK RAINES, DIRECTOR  
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OFFICE OF THE FIRST LADY

FROM: JANET YELLEN *JY*

Attached is a draft of a CEA whitepaper on the benefits of programs targeted to very young children. We are hoping to release it just prior to the White House Conference on Early Childhood Development.

If you have any comments, please get them to me by COB on Monday, April 7.

Thank you for your help.

Attachment

cc: *Ten Klein*  
*Pauline Aarnathy*  
*Nicole Rabner*  
*+ return*

## The First Three Years: Investments that Pay

### *Introduction*

Experiences during early childhood can make a crucial difference for the rest of the child's life. Health problems ranging from frequent colds to cerebral palsy can be prevented by appropriate nutrition and care for pregnant and nursing mothers, and for their infants. Often very small investments -- like immunization for polio or home-based smoking cessation programs -- yield large benefits.

The time from conception through early childhood does not just present a series of avoidable health problems, but also opportunities to nurture a child's emotional and intellectual development. Nurturing and stimulating a child in the first years of its life can promote emotional health and prepare the young for the challenges posed by school and later life.

Ultimately, parents bear the responsibility for raising their children. The government cannot require parents to spend time holding, feeding, and talking to their small children. Through legislation like the Family and Medical Leave Act (FMLA), however, the government helps provide the opportunity for parents to take time off from work to spend with their newborn children. Similarly although the government does not forbid pregnant mothers from smoking, it can take steps to reduce this behavior by providing information on the dangers smoking poses to the development of their children. More broadly, government supported programs like the Human Capital Initiative. (See Box 1.) leverage government resources into knowledge that can be used by parents, educators, and doctors to help children flourish.

For many families, however, these policies are not enough. For example, without government assistance, pregnant mothers in poverty and children growing up in poor families lack the resources needed for appropriate nutrition and medical care. Programs like the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provide foods, nutrition education, and access to health services for low-income women during and after pregnancy and to their children through five years of age. The Vaccines for Children (VFC) program is helping to ensure that 90 percent of all two-year-olds are fully vaccinated by the year 2000. These programs make an enormous difference in the future of children and may save money, in the long-run, by permanently improving the health of children.

### *Why are the First Three Years So Important?*

In recent years, researchers have made large strides towards understanding the process of early development. Scientists investigating brain development have discovered biological mechanisms that help to explain what psychologists and educators have long known: the first three years are pivotal. Recent evidence suggests that the flurry of brain-building activity that begins in the womb and continues at a rapid clip through a child's early years is affected more by experience than was previously thought. This experience in turn is dependent not only on the

### Box 1. The Human Capital Initiative

An important building block of the Administration's efforts to support the well-being of young children is the Human Capital Initiative, an ambitious research program examining the effects of families, schools, communities, and the workplace on the formation of human capital. The Initiative was launched by leading professional associations in the behavioral sciences in the early 1990s and was endorsed by the Clinton Administration and Congress in 1994, with funding provided through the National Science Foundation. The goal of the Initiative is to apply a growing multi-disciplinary knowledge base to the challenges confronted by families and children so as to create an environment where all American children can grow up to become healthy, educated, productive, and successful citizens.

Research funded through the Human Capital Initiative funds has the potential to inform policy and support services for young children. For example, a psychologist at the University of Pittsburgh is exploring the role of social relationships at home in promoting early academic success among at-risk children; two economists at the University of California at Los Angeles are examining the efficacy of early intervention programs in achieving long-term educational and social benefits; a University of Michigan anthropologist is investigating the principles used by young children to organize knowledge and the determinants of young children's social stereotypes; a University of Iowa psychologist is studying conscience development in the first four years of life with the goal of developing a general model of early conscience formation; a University of California psychologist is examining the mathematical competencies that children bring to their earliest preschool experiences.

The social and behavioral sciences have made important contributions to our understanding of what makes our society successful in raising children to become healthy and productive citizens. The Human Capital Initiative is a multi-disciplinary research effort to fill gaps in our knowledge and to inform the actions taken on behalf of children.

physical health and emotional well-being of the child but also on the mother's health before birth.

Links between brain *activity* and brain *structure* are becoming more and more evident to scientists. When children are deprived of a stimulating environment early in life, their brains may not develop to their full potential. More specifically, scientists have identified several "windows" of time when different areas of the brain are developing and children are best able to learn particular behaviors or skills. Of course, these windows do not open and close abruptly,

and improvements are still possible after the window has passed. Still, understanding how and when the brain develops helps adults target resources to children at the most effective times.

### Early Interventions Have Big Payoffs

Family income is an important contributor to children's well-being. Low-income children are at greater risk of virtually every adverse outcome: for example, they are more likely to experience stunted growth, suffer learning disabilities, sustain injuries, have low educational achievement, and exhibit extreme behavioral problems. Low-income children are 1.2 to 2.2 times more likely than the average child to be low birthweight (less than 5 lb 8 oz), and they are 1.3 times more likely to die during infancy. They are about twice as likely to have physical or mental disabilities and at least 3 times more likely to be hospitalized for injuries.<sup>1</sup> Family income seems to be a significant contributor to the well-being of children primarily because of the resources it makes available: medical care, nutrition, parental advice on child development, quality child care, and preschool, for example.<sup>2</sup>

A growing body of research, much of it supported by the Federal government, from sociologists, doctors, and educators, as well as economists has examined the effect of investments -- goods or services like immunizations that are costly during childhood yet save money in the future -- on children. In the language of economists such interventions contribute to the stock of "human capital" -- which includes ideas, knowledge, education, training, and problem-solving skills that make people productive contributors to economic activity. The literature finds that investments in young children can have big payoffs for families, for government, and for society. (See Box 2.) Investments can reduce the need for more-costly measures later in life and lead to increased productivity.

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<sup>1</sup>Children's Defense Fund, *Wasting America's Future*, Washington, DC., 1994: 62.

<sup>2</sup> A recent study finds that income during the first five years of life has larger impacts on outcomes than that during any other time of childhood (Greg Duncan, Wei-Jun Yeung, and Jeanne Brooks-Gunn, "Does Poverty Affect the Life Chances of Children?", *American Sociological Review*, forthcoming).

## Box 2. Evaluating Investments in Children

Investments in children have the potential for substantial and lasting benefits. However, not all interventions will be equally successful, so it is important to evaluate the gains from specific programs. Ideally, such evaluations involve experimental designs whereby individuals willing to participate in the intervention are randomly assigned to the "treatment" group, who participate in the program, and the "control" group, who do not. The two groups are then carefully monitored for a substantial period of time to see if individuals receiving the treatment have superior outcomes.

Random assignment can be done by the toss of a coin, for example, or using computerized randomization procedures. The treatment can be anything from receiving food stamps to attending a pre-school program. The key advantage of random assignment is that the treatment and control groups are likely to have similar characteristics, increasing the confidence that any observed difference in outcomes is due to the intervention. In the absence of such an experimental design, participants typically chose to enroll in the program while nonparticipants choose not to. (In some cases, program administrators decide who is allowed to enroll.) This nonrandom selection may result in difficult-to-observe differences between participants and nonparticipants.

Unfortunately, randomized experiments are often expensive and have small sample sizes, limiting their use in evaluating programs. Therefore, social scientists have developed a variety of alternative methods of measuring the effects of interventions. Most importantly, statistical techniques are used to account for observable differences between participants and nonparticipants such as income, education, and family status. Researchers also increasingly attempt to obtain information from natural experiments, where participation in the intervention is largely unrelated to individual characteristics or preferences. For instance, cross-state differences in Medicaid eligibility have recently been used to examine how this program affects the health of children.

### Families Face Many Obstacles

Families face many challenges in making these important investments in young children. For example,

- **The share of families with both parents working outside the home has risen rapidly. In 1995, both parents were employed in more than 70 percent of married-couple families with children, an increase from roughly 60 percent in 1980.<sup>3</sup>**

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<sup>3</sup> Annual Demographic Files of the Current Population Survey (March), Department of Commerce, U.S. Bureau of the Census

- **Many families are single-parent households.** In 1995, more than 20 percent of families were single-parent households, compared to 13 percent in 1965.<sup>4</sup>
- **Some children are without health insurance.** From 1989 to 1995, the percent of children without private insurance increased over a quarter, from 26.4 percent to 33.9 percent.<sup>5</sup> When including publicly provided insurance, a total of 9.8 million children are uninsured (13.8 percent of all children), including 3.3 million under age 6.<sup>6</sup> Surprisingly, nearly nine out of ten uninsured children have at least one parent who works.<sup>7</sup>
- **Crime and instability are prevalent.** Evidence suggests that many young children are exposed to violence, particularly in large cities. In one survey, 47 percent of children were reported to have heard gunshots in their neighborhood, and 1 in 10 children witnessed a shooting or knifing before age 6.<sup>8</sup>
- **Many families with children live in poverty.** About 16 percent of all families with children under the age of 18 were in poverty in 1995, up from 12 percent in 1970. Of female headed families with children, the poverty rate in 1995 was 42 percent.<sup>9</sup>

Because families are facing these obstacles, they often need help providing their young children's needs. The Federal government has many programs that provide services to young children (see Table 1 for important examples), some of which are discussed later. State and local governments also have a variety of programs.

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<sup>4</sup>Ibid.

<sup>5</sup>Ibid.

<sup>6</sup>Ibid.

<sup>7</sup>*The State of America's Children Yearbook*, Children's Defense Fund, 1997.

<sup>8</sup>Taylor, L., B. Zuckerman, V. Harik, and B. Groves, "Witnessing Violence by Children and their Mothers", *Journal of Developmental and Behavioral Pediatrics* cited in *Starting Points*, Carnegie Corporation of New York: 17.

<sup>9</sup> Annual Demographic Files of the Current Population Survey (March).

Table 1. Selected Government Programs That Assist Children

Program	Year Of Enactment	Number Served	Annual Expenditure	Average Benefit
<b>Income Support Programs</b>				
Temporary Assistance for Needy Families (TANF)	1996	4.9 million families	\$22 billion	\$377 per family
Earned Income Tax Credit (EITC)	1975	18.9 million tax returns	\$26.5 billion	\$1,404 per return
Child and Dependent Care Tax Credit	1954	6.2 million tax returns	\$2.8 billion	\$445 per tax return
Exclusion for Employer-Provided Dependent Care	1981		\$775 million	
<b>Health and Nutrition Programs</b>				
Medicaid	1965	17.2 million children	\$18.0 billion for children	
Food Stamp Program	1964	28.0 million (13.7 million children)	\$25.7 billion for children and adults	\$71 per month per individual
Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)	1972	6.9 million women and children	\$3.5 billion in federal payments	\$30 per month per family
<b>Early Childhood Programs</b>				
Child Care and Development Fund	1996		\$2.0 billion	
Social Services Block Grant	1975		\$2.7 billion	
Head Start	1964	750,696	\$3.5 billion	\$4,345 per child

Note: The year cited varies by program. Sources: TANF-based on 1995 FY AFDC numbers, *1996 Green Book*; EITC-estimated 1996 FY, Department of the Treasury; Child and Dependent Tax Credit-estimated 1996 FY, *1996 Green Book*; Exclusion for Employer-Provided Dependent Care-1996 FY, *President's Budget of the United States Government, FY 98*; Medicaid-1995, Annual Statistical Supplement, 1996, Social Security Bulletin; Food Stamp Program-1995 FY, *1996 Green Book* and U.S. Department of Agriculture; WIC-1995 FY, *1996 Green Book*; Child Care and Development Fund-1997 FY proposal, *President's Budget of the United States Government, FY 98*; Social Services Block Grant-1996 FY, *President's Budget of the United States Government, FY 98*; Head Start-1995 FY, *1996 Green Book*. Devaney, Barbara et al.

### *Improving Children's Physical Health*

Physical health is essential to a child's growth and development and is influenced by the interaction of a complex set of factors including nutrition, access to medical care, and the environment. Investments in health are important throughout life, but some of the most important and long-lasting of these occur before birth and during the first three years of life. Maternal nutrition, lifestyle, and medical care during pregnancy have a serious impact on the health and development of infants and children. Poor habits or deficient health care during pregnancy can inhibit a child's development and may lead to "failure to thrive." Many of these effects last a lifetime and some may even result in death.<sup>10</sup> For example, smoking during pregnancy has been linked to 19 percent of low birthweight births.<sup>11</sup> Similarly, fetal alcohol syndrome is associated with a variety of birth defects and health disorders.<sup>12</sup>

In 1995, 7 percent of babies born in the United States were considered low birthweight.<sup>13</sup> Low birthweight babies often require expensive medical attention early in life and may subsequently suffer from a variety of physical, emotional, and intellectual problems.

- Nearly two-thirds of neonatal deaths and about 60 percent of deaths in the first year of life were low birthweight babies.<sup>14</sup>
- Health care costs in the first year of life for low birthweight infants are, on average, \$15,000 higher than those for normal weight babies, and elevated medical expenditures continue throughout early childhood.<sup>15</sup>
- Cerebral palsy occurs 25 times more often in low birthweight children; and these children also have higher incidences of deafness, blindness, epilepsy, chronic lung disease, learning disabilities, and attention deficit disorder.<sup>16</sup>

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<sup>10</sup>The Future of Children Staff, "Analysis", *The Future of Children*, Vol. 2, No. 2, Winter 1992: 7-24.

<sup>11</sup>J. Kleinman, and J.H. Madans, "The Effects of Maternal Smoking, Physical Stature, and Educational Attainment on the Incidence of Low Birth Weight", *American Journal of Epidemiology*, Vol. 121, 1985: 832-55.

<sup>12</sup>E.M. Ouellette, H.L. Rosett, N.P. Rosman, and L. Weiner, "Adverse Effects on Offspring of Maternal Alcohol Abuse During Pregnancy", *New England Journal of Medicine*, Vol. 297, No. 10, 1977: 528-30.

<sup>13</sup>Harry M. Rosenberg, et al. "Births and Deaths in the United States, 1995", *Monthly Vital Statistics Report*, Vol. 45, No. 3 (S)2, October 4, 1996: 2.

<sup>14</sup>S. Nigel Paneth, "The Problem of Low Birthweight", *The Future of Children*, Vol. 5, no. 1, Spring 1995.

<sup>15</sup>Eugene M. Lewitt, Linda Schuurman Baker, Hope Cormon, and Patricia H. Shiono, "The Direct Cost of Low Birth Weight", *The Future of Children* 5, No. 1, Spring 1995.

<sup>16</sup>S. Nigel Paneth, "The Problem of Low Birth Rate".

- Children who were low birthweight babies are more likely to repeat a grade in school and are about 50 percent more likely to be enrolled in some type of special education program.<sup>17</sup>

Prenatal care is believed to play a key role in the development of healthy children, largely through the prevention of low birthweight. According to the recommendations of the American College of Obstetricians, prenatal care should include three basic components: early and continuous risk assessment, health promotion, and when necessary medical and/or psychological intervention.

- Adequate prenatal care is associated with reductions in low birthweight births and lengthened duration of gestation, with some evidence that prenatal care is most effective in reducing the probability of low birthweight among high-risk women.<sup>18</sup>
- One careful study finds that prenatal care is a particularly cost-effective method of reducing neonatal mortality, when compared to alternative interventions such as the use of neonatal intensive care.<sup>19</sup>
- We know less about which aspects of prenatal care are most beneficial.<sup>20</sup> Some experts have concluded that standard prenatal care visits do little to reduce low birthweights but that three specific areas of prenatal care are likely to have an impact: cessation of smoking, nutrition of the malnourished, and medical care.<sup>21</sup>

The proportion of women receiving prenatal care in the first trimester of pregnancy rose substantially during the 1970s, leveled off in the early 1980s, and then increased again during the early 1990s (from 71 percent in 1990 to 86 percent in 1995).<sup>22</sup> Poor women and minorities are significantly less likely to receive early and comprehensive prenatal care. The receipt of prenatal services is closely linked to the availability and affordability of high-quality medical care, which we turn to next.

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<sup>17</sup> Ibid,

<sup>18</sup> Institute of Medicine, *Preventing Low Birthweight*, Ch. 6, Washington D.C.: National Academy Press, 1985.

<sup>19</sup> T.J. Joyce, H. Corman, and M. Grossman, "A Cost-Benefit Analysis of Strategies to Reduce Infant Mortality", *Medical Care*, Vol. 26, No. 4, April 1988: 348-60. Although not a full benefit-cost analysis, this research finds that the costs of providing the prenatal care are more than offset by reductions first year hospital and medical expenses resulting from averting low birthweights.

<sup>20</sup> Institute of Medicine, *Preventing Low Birthrate*.

<sup>21</sup> Greg R. Alexander, and Carol C. Korenbrot, "The Role of Prenatal Care in Preventing Low Birth Weight", *The Future of Children*, Vol 5, No. 1, Spring 1995: 103-20.

<sup>22</sup> Harry M. Rosenberg "Births and Deaths in the United States, 1995".

## Medical Care

Since 1965, the Medicaid program has provided health insurance for poor families. In 1995, nearly 30 percent of children under 6 were covered by Medicaid.<sup>23</sup> Eligibility used to be closely tied to participation in the Aid to Families With Dependent Children (AFDC) program; however, beginning in the middle 1980s, states were permitted and then subsequently required to extend eligibility to other groups of children and pregnant women. All pregnant women and children up to the age of 6 living in households with incomes up to 133 percent of the Federal poverty line are now eligible for Medicaid. All children in poverty born after September 30, 1983 are also eligible, with the result that by 2002 all children (aged 18 and under) in poverty will be eligible for the program.

Pregnant women receive special services under Medicaid including "enhanced" prenatal programs that cover specialized services such as nutritional counseling and health education in many states. Children covered by Medicaid are eligible for a wide variety of services including inpatient and outpatient hospital services, physician services, x-ray services and many others. In addition, under the Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program, States are required to provide screening, diagnosis, and treatment services to Medicaid-eligible children (and are required to pay for treatment of conditions identified during EPSDT screens, even if these services would not otherwise be covered). Since 1993, States have been entitled to receive vaccines, free of charge, from the Federal government, for Medicaid-eligible and some other categories of children.<sup>24</sup>

- A recent national study concluded that expanded Medicaid eligibility has reduced the incidence of low birthweight babies and infant mortality.<sup>25</sup>

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<sup>23</sup>U.S. Bureau of the Census, Department of Commerce, *Children's Health Care*, Washington D.C.

<sup>24</sup> The Federal government also provides funding for a variety of other programs serving women and young children. These include matching funds for services delivered in public health settings and funds provided to community and migrant health centers under the Community and Migrant Health Center Program. For a review of these programs see Ian T. Hill, "The Role of Medicaid and Other Government Programs in Providing Medical Care for Children and Pregnant Women" *The Future of Children*, Vol 2, No. 2, Winter 1992.

<sup>25</sup> Janet Currie, and Jonathan Gruber, "Saving Babies: The Efficacy and Cost of Recent Changes in the Medicaid Eligibility of Pregnant Women", *Journal of Political Economy*, Vol. 104, No. 6, December 1996: 1263-96. However, the health effects of the Medicaid expansions are not unambiguous. Studies of Medicaid expansions in Tennessee and Massachusetts failed to uncover improvements in prenatal care, birthweight, or neonatal mortality (see J.S. Haas, et al., "The Effect of Providing Health Coverage to Poor Uninsured Pregnant Women in Massachusetts" *Journal of the American Medical Association*, Vol. 269, No. 1, January 1993: 87-91 and J.M. Piper, W.A. Ray, and M.R. Griffin, "Effects of Medicaid Eligibility Expansion on Prenatal Care and Pregnancy Outcome in Tennessee", *Journal of the American Medical Association*, Vol. 264, No. 17, November 1990: 2219-23.

- The Medicaid expansions have significantly increased the probability that children have at least one physician visit per year, as is recommended by pediatric guidelines. As a result, child mortality rates have declined.<sup>26</sup>

## Nutrition

Adequate nutrition during pregnancy and the early years is another important investment to ensure children's health. Poor nutrition during this important time can have profound and lasting effects on a child's health.

- Pregnant women with poor nutrition are more likely to have low birthweight babies and children with poor nutrition often lack concentration and energy, experience dizziness, headaches, ear infections and frequent colds.<sup>27</sup>
- Iron deficiency can impede the development of problem-solving skills, motor coordination, attention, concentration, as well as long-term cognitive development.<sup>28</sup>
- Stunted growth, an indicator of poor nutrition, is associated with lower scores on tests of academic ability, even after controlling for socioeconomic characteristics.<sup>29</sup>

The Federal government has two programs that help to ensure good nutrition for low-income pregnant women and young children: the **Food Stamps Program** and the **Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)**. WIC is targeted specifically to pregnant women, infants, and young children at nutritional risk. WIC provides supplemental foods, nutrition education, and access to health services for low-income women during and after pregnancy and to their children through five years of age. Almost 7.4 million women, infants, and children participated in WIC in FY 1997, and the program had a budget of \$3.9 billion.<sup>30</sup> WIC has had important benefits for women and young children (see Box 3).

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<sup>26</sup> Currie, Janet and Jonathan Gruber, "Health Insurance Eligibility, Utilization of Medical Care and Child Health", *Quarterly Journal of Economics*. Vol. 5, May 1996.

<sup>27</sup>Ernesto Pollitt, "Developmental Impact of Nutrition on Pregnancy Infancy, and Childhood: Public Health Issues in the United States" in Norman W. Bray (ed) *International Review of Research in Mental Retardation*, Vol. 15, Academic Press, 1988; Barbara H. Kehrer and Charles M. Wohlin, "Impact of Income Maintenance on Low Birth Weight: Evidence from Gary Experiment," *Journal of Human Resources* Vol. 14, No. 4, 1979; and Food Research and Action Center, *Community Childhood Hunger Identification Project: A Survey of Childhood Hunger in the United States*, Washington, D.C. 1991, all cited in *Wasting America's Future*, Children's Defense Fund.

<sup>28</sup> Children's Defense Fund, *Wasting America's Future*: 15.

<sup>29</sup> Ibid.

<sup>30</sup> Office of Management and Budget, *Budget of the United States Government, Fiscal Year 1998: Analytical Perspectives*, Washington D.C.: U. S. Government Printing Office, 1997.

- Participation in WIC is associated with higher probabilities of receiving adequate prenatal care, greater probabilities of receiving advice on nutrition, breast-feeding, and substance use, higher average birthweights, and reduced incidence of low birthweight and premature births.<sup>31</sup>
- WIC participation is associated with lower rates of infant and neonatal mortality, even after accounting for differences in the use of prenatal care, possibly due to improved nutrition.<sup>32</sup>
- Participation in WIC reduces the incidence of iron-deficiency anemia among infants.<sup>33</sup>
- WIC participants are more likely to comply with nutritional guidelines for 4 to 6 month old infants than are nonparticipants.<sup>34</sup>
- One widely cited study found that every dollar spent on WIC for pregnant women saves \$1.77 to \$3.13 in Medicaid costs for new mothers and infants in the first 60 days of life.<sup>35</sup>

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<sup>31</sup>Anne Gordon, and Lyle Nelson, "Characteristics and Outcomes of WIC participants and Nonparticipants: Analysis of the 1988 National Maternal and Infant Health Survey", mimeo, Mathematica, March 1995.

<sup>32</sup>Barbara Devaney, and Allen Schirm, "Infant Mortality Among Medicaid Newborns in Five States: The Effects of Prenatal WIC Participation", mimeo, Mathematica Policy Research, Inc., May 1993.

<sup>33</sup> Barbara Devaney, Marilyn Ellwood, and John Love, "Programs that Mitigate the Effects of Poverty On Children", *The Future of Children*, Vol. 7, No. 2, Summer/Fall 1997, forthcoming.

<sup>34</sup> Anne Gordon, and Lyle Nelson, "Characteristics and Outcomes of WIC participants and Nonparticipants: Analysis of the 1988 National Maternal and Infant Health Survey". However, not all of the nutritional measures are favorable. In particular, WIC participants are less likely to breast-feed their babies. This may occur partly because infant formula is provided to WIC participants. In addition, some mothers may be referred to WIC because they are feeding their infants improperly. The reduction in breast-feeding rates may be reversible, however, with some evidence that WIC participants who are given advice to breast-feed do so more frequently than income-eligible non-participants (U.S. Department of Agriculture, *The WIC Breast-feeding Report: The Relationship of WIC Program Participation to the Initiation and Duration of Breast-feeding*, Alexandria VA, September 1992).

<sup>35</sup> U.S. Department of Agriculture -- Food and Nutrition Service. *A Study of the Savings in Medicaid and Indigent Care for Newborns from Prenatal Participation in the WIC Program*, Washington, D.C., 1990.

### Box 3. The Effects of Prenatal WIC Participation

In an effort to improve the health of newborns, WIC provides nutrition, health care, and social service referrals to low-income pregnant women (and to children aged 5 and under). Participants typically receive vouchers to purchase specific types of foods (milk, cheese, eggs, infant formula, cereals, and fruit or vegetable juices) valued at an average of around \$30 per month, in addition to the services mentioned above.

To study the effect of this prenatal program on birth outcomes and Medicaid costs, Mathematica Policy Research, Inc. undertook a study for the United States Department of Agriculture in five States: Florida, Minnesota, North Carolina, South Carolina, and Texas. Mothers included in the study participated in Medicaid and gave birth to around 105,000 infants in 1987 or 1988. To analyze the effect from WIC, birth outcomes and Medicaid costs of WIC participants were compared to those of WIC nonparticipants. Statistical techniques were used to control for observable differences between the WIC participants and nonparticipants. (However, the two groups probably differ in ways which were not observed by the researchers, which could explain some of the differences in observed outcomes discussed below.)

WIC participants were only one-third to one-half as likely as nonparticipants to have received inadequate prenatal care. Participation in the program was also associated with an increase in birthweights (averaging between 51 and 117 grams), a lower incidence of pre-term births, and a longer gestational age. Medicaid costs were also lower for WIC participants. Every dollar spent on the prenatal WIC program was associated with savings in Medicaid costs during the first 60 days after birth of \$1.77 to \$3.13 for newborns and mothers and from \$2.84 to \$3.90 for newborns only. (These benefit-cost ratios are calculated assuming that the two groups are identical, once the observable characteristics are controlled for.)

### Smoking Cessation

In 1993, an estimated 16 percent of pregnant women in the United States smoked.<sup>36</sup> The harmful effects of smoking on fetal development and child development are well-documented. Programs designed to convince women to quit smoking during pregnancy may be an exceptionally effective means of helping children.

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<sup>36</sup> Harry M. Rosenberg, et al. "Births and Deaths in the United States, 1995", p. 89.

- A pregnant woman who smokes less than a pack a day is 53 percent more likely than a nonsmoker to have a low birthweight baby; a woman smoking more than a pack a day is 130 percent more likely to do so.<sup>37</sup>
- The elimination of smoking during pregnancy could prevent about 10 percent of perinatal deaths and about 35 percent of low birthweight births.<sup>38</sup>
- A baby born to a smoking mother is more likely to experience longer-term problems as well, including higher risks of neurological abnormalities, poorer verbal skills (at age 48 months), and reduced fertility in women.<sup>39</sup>

Smoking cessation programs for pregnant women, often administered through public clinics or home-visiting programs (discussed below) are generally inexpensive and likely to be especially cost-effective. Again, the cost-savings are most often associated with reductions in low birthweight babies. Since these programs are inexpensive, they do not have to achieve exceptionally high quit rates to recover costs.

- The cost of providing smoking cessation programs to the 350,000 pregnant smokers seen in public health clinics would be about \$1.75 million. A quit rate of 12 percent (well within the range of rates achieved by these programs) would save \$12 for every \$1 spent.<sup>40</sup> One study of a home-based smoking cessation program costing \$11.75 per patient found that for every \$1 spent on the program, almost \$3 were saved.<sup>41</sup>
- Smoking-cessation programs aimed specifically at pregnant women are more effective and have a lower cost per quit than programs using generic material.<sup>42</sup>

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<sup>37</sup>Select Committee on Children, Youth, and Family, "Opportunities for Success: Cost-Effective Programs for Children, Update, 1990", 101st Congress, 2nd Session, Washington D.C.: U.S. Government Printing Office, 1990: 131.

<sup>38</sup> Department of Health and Human Services, *The Health Benefits of Smoking Cessation, A report of the Surgeon General, 1990*, cited in "Opportunities for Success: Cost-Effective Programs for Children, Update, 1990", p. 132.

<sup>39</sup>"Select Committee on Children, Youth, and Family, *Opportunities for Success: Cost-Effective Programs for Children, Update, 1990*".

<sup>40</sup>J. Mayer, et al., "Health Promotion in Maternal and Child Health Care" in *Universal Maternity Care: A Description for Ensuring Access*, edited by J. B. Kotch et al., Washington, D.C.: American Public Health Association.

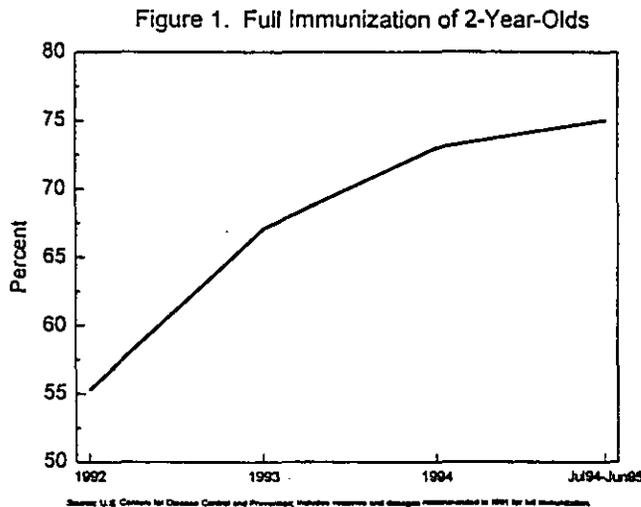
<sup>41</sup>Ibid.

<sup>42</sup>R.A. Windsor, et al., "A Cost Effective Analysis of Self-Help Smoking Cessation Methods for Pregnant Women," *Public Health Reports*, Vol. 103, 1988.

## Childhood Immunizations

Childhood immunizations play an important role in preventing diseases such as polio, measles, rubella, diphtheria, and mumps. Prior to the approval of the measles vaccination in 1963, for example, about 500,000 cases of measles were reported each year, killing 400 to 500 people per year. By 1983, the number of cases of measles had dropped to a record low of 1,497. The widespread use of vaccines has reduced the peak-level incidence of the disease in the United States by at least 95 percent.<sup>43</sup> In addition to securing the health of those immunized, vaccines can indirectly protect those who do are not vaccinated (i.e., lower disease risk for all individuals).

Immunizations represent a particularly appropriate area for government involvement



since the provision of immunizations provides great health and economic savings. In 1993, President Clinton signed the Comprehensive Childhood Immunization Initiative that created the Vaccines for Children (VFC) program to help uninsured, Medicaid-eligible children get vaccinated. This initiative promoted the Administration goal that 90 percent of all two-year-olds should be fully vaccinated by the year 2000. VFC provides all recommended vaccines free of charge to clinics and doctors in all 50 States who provide services to uninsured and Medicaid-covered children. In response to

this initiative, the percent of all 2-year-olds who were fully immunized increased from 55 percent in 1992 to 75 percent in 1994-1995. (See Figure 1.) This increase in immunization rates is correlated with the 35 percent decrease in cases of preventable diseases per 100,000 children under 5 from 1993 to 1996.<sup>44</sup>

- The Centers for Disease Control and Prevention estimate that every \$1 spent on the Diphtheria vaccine saves nearly \$30 in future direct and indirect savings – which includes savings from work loss, death, and disability; every \$1 spent on the Measles, Mumps, and Rubella vaccine saves over \$20.<sup>45</sup>

<sup>43</sup>Center for Disease Control and Prevention, CDC Immunization Information Document #240010, Centers for Disease Control and Prevention, March 9, 1995.

<sup>44</sup>Children's Defense Fund, 1997. *The State of America's Children*, 1997.

<sup>45</sup>U.S. Department of Health and Human Services, Center for Disease Control and Prevention, National Immunization Program.

- Every \$1 spent on polio vaccines is estimated to save \$10.<sup>46</sup>

## Home Visiting

Services are often particularly effective when provided to families in their own homes. The goals of home visiting programs vary considerably. For example, some programs link families with other social services while others assess the safety of the home. Many other programs help parents set goals and make plans, encourage healthy habits, and answer questions about pregnancy, childbirth, and child-rearing. Home visits are often made during pregnancy and through the first 1 to 2 years after birth. The more successful programs typically continue after the child is born and employ a comprehensive approach that addresses many of the goals previously mentioned.<sup>47</sup>

More than 4,000 programs in the United States use Home Visiting to provide health, social, or educational services to families, sometimes in conjunction with organized child care programs. Although the Federal government has no coordinated effort for home-visiting programs, the Department of Health and Human Services and the Department of Education fund various programs for families with young children. The Head Start program (discussed below) administers one of the largest home-based programs, mostly to children in rural areas who would have difficulty participating in center-based care. In 1990, 24 states used Medicaid funds to provide prenatal care through home-visiting programs.<sup>48</sup> Because they are varied in both goals and approach, evaluating home visiting programs as a whole is difficult.

Many studies have linked home visiting programs to reductions in the incidence of low birthweight babies, to child abuse and neglect, and to improvements in prenatal care, IQ scores, and child development. The studies differ widely, however, in their assessments of these programs, in part due to immense heterogeneity in the intensity, scope, and focus of the interventions. Understanding the differences in the effects of program specifics is necessary for guiding policy.

- Home visiting programs aimed at persuading pregnant women to stop smoking are found to decrease the risk of low birthweight babies.<sup>49</sup>

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<sup>46</sup>U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, *Justification of Appropriation Estimates for Committee on Appropriations, FY 1991* cited in "Opportunities for Success: Cost-Effective Programs for Children, Update, 1990": 57.

<sup>47</sup>U.S. General Accounting Office, *Home Visiting*, HRD-90-83, July 1990: 3.

<sup>48</sup>*Ibid.*

<sup>49</sup>David Olds, and Harriet Kitzman, "Review of Research on Home Visiting for Pregnant Women and Parents of Young Children", *The Future of Children*, Vol. 3, No. 3, Winter 1993: 86

- Studies of Philadelphia's and Baltimore's home visiting programs suggest that the programs reduced medical costs associated with low birthweights by more than the cost of the programs.<sup>50</sup>
- In a South Carolina study where "resource mothers" visited pregnant teens in rural areas, program participants showed significant improvements in prenatal care attendance, WIC enrollment, and well-child visits.<sup>51</sup>
- A study of home visiting programs for mothers of premature, low birthweight babies showed that the intervention improved IQ scores at age 3.<sup>52</sup>
- The Prenatal Early Intervention Program (PEIP) resulted in positive effects for children -- fewer emergency room visits and fewer reports of child abuse, for example -- as well as for mothers who were more likely to complete schooling, gain employment, have fewer subsequent children, and delay the birth of additional children.<sup>53</sup>
- A "randomized" experiment examining the effect of a home-visiting program in Elmira, New York revealed substantial reductions in government expenditures during the first four years of life for low-income families (see box 4).<sup>54</sup> The major sources of the cost-savings included reduced transfer payments (from AFDC, Food Stamps, and Medicaid), as well as reduced expenditures by Child Protective Services. Among low-income participants, the cost savings during the first four years of life alone, modestly exceeded program expenditures.

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<sup>50</sup> Mayer et al., "Health Promotion in Maternal and Child Health Care" in *Universal Maternity Care: A Description for Ensuring Access*, edited by J. B. Kotch et al., American Public Health Association, Washington, D.C. cited in "Opportunities for Success: Cost-Effective Programs for Children, Update, 1990": 145.

<sup>51</sup> Henry C. Heins, "Social Support in Improving Perinatal Outcome: The Resource Mothers Program", *Obstetrics and Gynecology*, Vol. 70, No. 2, August 1987.

<sup>52</sup> The Infant Health and Development Program, "Enhancing the Outcomes of Low Birth Weight, Premature Infants", *Journal of American Medical Association*, Vol. 263, No. 22, June 1990 cited in "Opportunities for Success: Cost-Effective Programs for Children, Update, 1990", pp: 143.

<sup>53</sup> Mayer et al., "Health Promotion in Maternal and Child Health Care": 145.

<sup>54</sup> David L. Olds, Charles Henderson, Charles Phelps, Harriet Kitzman, and Carole Hanks, "Effect of Prenatal and Infancy Nurse Home Visitation on Government Spending", *Medical Care*, Vol. 31, No. 2, 1993.

#### **Box 4. The Elmira, NY, Home Visitation Program**

Home visiting is thought to improve pregnancy and early childhood outcomes. In the late 1970s and early 1980s, a randomized experiment was conducted in Elmira, a semirural county located in upstate New York, to study the effect of home visiting on health and social outcomes. This study included 400 teenage, unmarried, or poor women who were pregnant for the first time. The women were randomly assigned into four different groups providing some combination of health screenings, free transportation to health providers, and home visits during pregnancy, or home visits from pregnancy through the child's second birthday. In the most intensive intervention, nurses visited once every two weeks during pregnancy and then once every two to six weeks thereafter (with decreasing frequency over time).

In the Elmira intervention, home visitation was found to decrease smoking and improve diets and, for some groups, to reduce the frequency of low birthweight or pre-term deliveries. Participants were also likely to make use of WIC and to attend childbirth education classes. The home visits also increased the partner's interest in the pregnancy and his attendance in the delivery room.

Program costs were compared with changes in government expenditures during the first four years of the child's life. For low income families (but not for their higher income counterparts) the measured benefits of frequent home visitation outweighed the costs -- costs averaged around \$6000 (1996 dollars), while the savings were over \$6,300. The savings resulted from decreased payments in AFDC, Food Stamps, Medicaid, and Child Protective Services, and increased maternal employment. Almost one-third of the savings (among low-income families) was due to the reductions in the number of subsequent pregnancies. This study may underestimate the gains from the program since neither savings after age 4 nor nonmonetary benefits in the earlier period are taken into account.<sup>55</sup>

#### **Lead Abatement**

Lead ingestion is hazardous to all people but is particularly dangerous for young children because they absorb lead more readily than do adults and because the developing nervous systems of children are more susceptible to the effects of lead. At high levels, lead can cause coma, convulsions, and death. At lower levels, it is associated with reduced intelligence, reading and learning disabilities, impaired hearing, and slowed growth. Many of the harmful effects of elevated levels of lead in the blood are irreversible and result in substantial financial and human costs.

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<sup>55</sup> David L. Olds, et al., "Effect of Prenatal and Infancy Home Visitation on Government Spending".

Restrictions on the use of lead in gasoline, paint, and solder (used in making food cans and water pipes) reduced blood lead levels for children under 6 by more than 75 percent during the 1980s.<sup>56</sup>

But progress in decreasing blood lead levels has slowed and high levels are frequently found among low-income households, nonwhites, inner city residents, and persons living in older homes.<sup>57</sup> Current efforts focus on reducing exposures to lead-based paint and lead-contaminated dust, which are believed to be the main sources of excess blood lead levels in children. Although few studies have estimated the costs and benefits for such programs, the evidence suggests that the benefits of some abatement efforts may considerably exceed the costs.

- The Department of Housing and Urban Development recently estimated that the costs of proposed regulation requiring lead abatement in all federally-owned housing with lead hazards above a certain level would be around \$450 million and that the benefits would be between \$500 million and \$1.5 billion.<sup>58</sup>

### *Improving the Emotional Well-Being of Children*

Emotional well-being in early childhood plays a critical role in allowing individuals to develop their full potential. Emotionally healthy children enter school with the ability to communicate with their peers and their teachers; confidence in their ability to make friends; confidence in themselves; knowledge of socially acceptable behavior; motivation to learn; and interest in activities. Because these children are prepared to enter school, their early educational experience can be fruitful, enjoyable, and productive. Emotional health lays the foundation for children to realize their talents and capabilities.

To ensure emotional health, children need daily nurturing and guidance from trustworthy and caring adults. In the first years of life, children need love and care from adults who listen and respond to their needs. Infants are dependent upon adults for touching, rocking, feeding, and warming. In addition, stimulation through reading and talking is needed.<sup>59</sup> This nurturing care develops the basic trust that allows children to feel confident about entering the world. Without nurturing care, infants grow up feeling helpless and scared, leading to problems later in life.

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<sup>56</sup> U.S. Department of Housing and Urban Development, "Regulatory Impact Analysis of the Proposed Rule on Lead-Based Paint", July 7, 1996.

<sup>57</sup> Ibid.

<sup>58</sup> Ibid.

<sup>59</sup> Carnegie Corporation of New York, *Starting Points: Meeting the Needs of Our Youngest Children*: 9.

## Parental Care During The First Months of Life

The experiences of the first months of life are critical for both emotional and physical development. Substantial interactive parental contact during the earliest months is believed to help babies form secure and loving attachments with adults, to ensure confidence and competence, and to aid in establishing the basic trust necessary for psychological development throughout life.<sup>60</sup> For this reason, as well as to allow ample time for mothers to recover from childbirth and to permit parents to adapt to the changes surrounding the birth or adoption of a child, many experts believe that several months of parental leave play an important role in promoting healthy infant development.<sup>61</sup>

The desire to spend time at home in the earliest months of an infant's life has become more difficult to fulfill, as a larger proportion of young children are raised by single parents and as more women work. Even when employed, most new mothers typically take some time off work to care for their babies.<sup>62</sup> However, this often creates tensions between the demands of the workplace and those of the home. To support families in their efforts to strike a workable balance between these competing demands, President Clinton signed the **Family and Medical Leave Act (FMLA)** into law in 1993. The FMLA grants 12 weeks of job-protected leave to new parents with qualifying employment histories working for covered employers.<sup>63</sup> By providing employed parents with the time to nurture their newborn and to develop their parenting skills, this legislation fosters good parenting skills and infant trust. The evidence suggests that the law has played a positive role in helping parents balance work and home needs.

- During the 18-month period ending in the summer of 1995, approximately 17 percent of workers took time off work for a reason covered by the legislation.<sup>64</sup>
- The FMLA provided these benefits without imposing large costs on employers. Over 90 percent of covered establishments reported that the FMLA had no noticeable effect on their business performance or growth and larger percentages of these employers indicated

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<sup>60</sup> Ibid.

<sup>61</sup> E.F. Zigler and M. Frank (eds.), *The Parental Leave Crisis: Toward A National Policy*. New Haven: Yale University Press, 1988.

<sup>62</sup> Jacob A. Klerman and Arleen Leibowitz, "The Work-Employment Decision Among New Mothers", *Journal of Human Resources*, Vol. 29, Spring 1994: 277-303, show that 73 percent of employed women with one month old infants and 41 percent of employed women with two month olds were on leave from their jobs, rather than working, during the 1986-1988 period.

<sup>63</sup> For further details on the FMLA, see Ruhm, Christopher J., "Policy Watch: The Family and Medical Leave Act", *Journal of Economic Perspectives*, forthcoming, Spring 1997.

<sup>64</sup> U.S. Department of Labor, Commission on Family and Medical Leave, *A Workable Balance: Report to Congress on Family and Medical Leave Policies*, Washington, D.C. U.S. Department of Labor 1996.

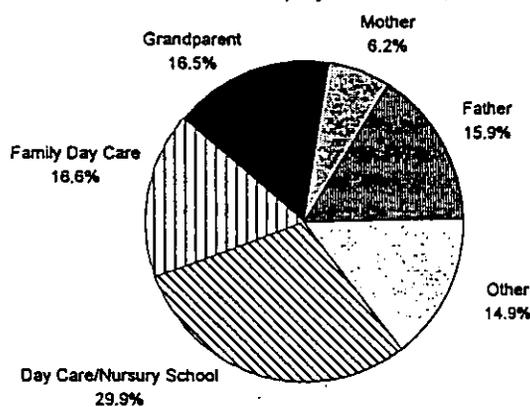
positive rather than negative effects on employee productivity, turnover, and career advancement.<sup>65</sup>

### Quality Child Care for Infants and Toddlers

The emotional well-being of infants and toddlers is promoted by their having close and stable relationships with a small number of adults in safe and intimate settings. Traditionally, these have been provided by parents, particularly mothers, who stayed at home with their children. However, as women increasingly work outside the home and more children grow up in single parent households, full-time parental care is becoming less and less typical.

Accompanying this trend is the increased use of child-care outside the home. In 1993, about 30

Figure 2. Child Care Arrangements for Children Under 5 in Families With Employed Mothers, 1993



Source: Table C1, U.S. Department of Commerce, Bureau of the Census.

percent of children under 5 in employed-mother families were cared for in organized facilities, only 13 percent in 1977. (See Figure 2.) Children in poor families with employed mothers were only two-thirds as likely to receive care in organized facilities as were children in non-poor families.

Another option for care outside the home is family day care -- care by nonrelatives in another home -- which accounts for an additional 17 percent of the care received by children under 5 with working mothers.<sup>66</sup> Among these child care facilities, a bewildering array of options

exist with respect to environment, cost, hours spent per week and per day, and services, along with considerable uncertainty regarding the quality of the services provided. Nonetheless, this care received outside the home can be rewarding for children.<sup>67</sup>

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<sup>65</sup> David Cantor, et al., "The Impact of the Family and Medical Leave Act: A Survey of Employers", mimeo, Westat Inc., Rockville, MD, October 1995.

<sup>66</sup> Tabulations from the Survey of Income and Program Participation, U.S. Bureau of Census, Department of Commerce.

<sup>67</sup> Early childhood programs can affect children positively or negatively, depending on the quality of the care. Quality care is best measured by the warmth and interaction between the provider and the child, but assessing these dimensions is necessarily a subjective, timely, and expensive exercise. As a result, researchers and regulators tend to focus on more easily observable specific structural measures, such as child-teacher ratios, group sizes, and staff training, which may also play a role. The available evidence suggests that changes in these structural factors have the potential to improve the quality of child care if they are accompanied by broader changes in the way child care is delivered, with smaller benefits if they occur in isolation.

- Children who receive care in quality centers tend to be less distracted, and more task-oriented, considerate, happy, and socially competent in elementary school. They are also more likely to be assigned to gifted programs and make better academic progress.<sup>68</sup>
- Children enrolled in high-quality programs are more self-confident, proficient in language, and advanced in cognitive development. Poor quality childcare programs risk the development of poor school skills and may lead to heightened aggression.<sup>69</sup>
- The Syracuse University Family Development Research Program provided extensive childcare, in addition to home visiting, health and nutrition resources. The program, which served 108 low-income families with children aged 0 to 5, decreased the number, severity, and chronicity of juvenile justice problems.<sup>70</sup>
- Participation in Project CARE, an intensive combination of center-based and home-based intervention and health care, which serves children beginning at birth, is associated with significant increases in measured intelligence.<sup>71</sup>

Quality child care has important payoffs in terms of increasing emotional well-being and school readiness but the care received by many children is inadequate. For example, more than one-third of classrooms surveyed in the National Child Care Staffing study were rated less than "minimally adequate" and only 12 percent received a score which met or exceeded the standard associated with "good" classroom practices.<sup>72</sup> Scattered evidence from several studies suggests that disadvantaged families, as well as those who are more psychologically or economically

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<sup>68</sup> See Love, John M., Peter Z. Schochet, Alicia Meckstroth, "Are They In Any Real Danger? What Research Does -- And Doesn't -- Tell Us About Child Care Quality and Children's Well-Being", mimeo, Mathematica Policy Research, May 1996.

<sup>69</sup>Suzanne W. Helburn and Carollee Howes, "Child Care Cost and Quality", *Future of Children*, Vol. 6, No. 2, Summer/Fall 1996: 62-63. However, these studies frequently do not fully control for differences in family background characteristics, which could affect the outcomes analyzed.

<sup>70</sup> Hirokazu Yoshikawa, "Long-Term Effects of Early Childhood Programs on Social Outcomes and Delinquency", *Future of Children*, Vol. 5, No.3, Winter 1995: 59.

<sup>71</sup>Donna Bryant, and Kelly Maxwell, "The Effectiveness of Early Intervention for Disadvantaged Children", *The Effectiveness of Early Intervention*, 1997.

<sup>72</sup>First name Whitebook, et al. *Who Cares? Child Care Teachers and the Quality of Care in America: A Final Report: National Child Care Staffing Study*, Berkeley, CA: Child Care Employee Project, 1989, as cited in John Love et. al. "Are They In Any Real Danger? What Research Does -- And Doesn't -- Tell Us About Child Care Quality and Children's Well-Being".

stressed, are more likely to enroll their children in child care arrangements that are of relatively low quality.<sup>73</sup>

For many families, cost represents a substantial barrier to obtaining quality child care.<sup>74</sup> The Federal government plays an important role in alleviating this financial burden. In 1994, the GAO identified over 90 child care and early childhood development programs administered by 11 federal agencies.<sup>75</sup> Since 1980, federal support has doubled, and for low-income families, support has almost tripled.<sup>76</sup>

- One of the largest Federal child care assistance programs is the **Child and Dependent Care Tax Credit**. This program, which began in 1954 and cost an estimated \$2.7 billion in FY 1997, provides a tax credit to taxpayers who work or are seeking work and have a qualifying dependent (e.g. a child under the age of 13). Parents can receive a credit of up to \$2,400 per year for one qualifying dependent and \$4,800 for two or more qualifying dependents.<sup>77</sup>
- Under the newly established **Child Care and Development Fund**, the Federal government has made \$2.8 billion available to States for FY 1997. This program, authorized by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996, will assist low-income families and those transitioning on and off welfare to obtain child care so that they can work or attend training/education. This program brings together four Federal child care subsidy programs and allows States to design a comprehensive, integrated service delivery system to meet the needs of low-income working families. This program represents an increase in child care funding of nearly \$600 million for States over FY 1996.<sup>78</sup>

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<sup>73</sup> Love, John M., Peter Z. Schochet, Alicia Meckstroth, "Are They In Any Real Danger? What Research Does -- And Doesn't -- Tell Us About Child Care Quality and Children's Well-Being".

<sup>74</sup> Average weekly child care costs were \$74 in 1993 for families that purchased care, with substantially higher expenditures for wealthy than poor households. (L. Casper, "What Does It Cost To Mind Our Pre-schoolers?", Current Population Reports, Series 70-52, Washington, D.C., The U.S. Bureau of Census.

<sup>75</sup> U.S. General Accounting Office, *Early Childhood Programs: Multiple Programs and Overlapping Target Groups*, HEHS-95-4FS, Washington, D.C. October 1994.

<sup>76</sup> D.S. Phillips, ed. *Child Care for Low-Income Families: Summary of Two Workshops*, Washington, D.C.: National Academy Press, 1995.

<sup>77</sup> House Committee on Ways and Means, *The 1996 Green Book*, 104th Congress, 2nd session: 199; Office of Management and Budget, *Analytical Perspectives, Budget of the United States Government, Fiscal Year 1998*, 643.

<sup>78</sup> Department of Health and Human Services, Administration for Children and Families.

- One of the main purposes of the **Social Services Block Grant** is preventing neglect, abuse, or exploitation of children and adults. Some of this funding goes to child care services in almost all states.<sup>79</sup>
- Since 1981, employees have generally been allowed to receive an **Exclusion For Employer-Provided Dependent Care** from their gross income on their tax return. The exclusion is limited to \$5,000 per year with an exception for a married taxpayer filing separately who is limited to \$2,500. The cost of this provision is an estimated \$830 million in FY 1997.<sup>80</sup>
- The 1994 expansions to the Head Start program (discussed below) included a set-aside for establishing **Early Head Start**, which is targeted at low-income families with children under 3 and pregnant women. Early Head Start employs a “two-generation” approach that is designed to serve parents and children simultaneously. The program provides intensive health and nutrition services during the prenatal period and for the first three years of the child’s life. In fiscal year 1996, 4 percent of the Head Start Grant (\$143 million) was set-aside for Early Head Start and, during the 1996 calendar year, Early Head Start grants were awarded to 74 localities across the nation. These programs will serve 7,100 infants and toddlers and their families, many of whom live in public housing developments.<sup>81</sup> Randomized experiments are being conducted to allow accurate evaluation of the success of Early Head Start.

## Early Education

Children need stimulation and interaction to develop motivation, inquisitiveness, acceptable social behavior, and self-confidence. Early education programs for children aged 3 to 5 help children develop these positive traits, and preschool enrollment has risen substantially. (See Figure 3.) The programs vary dramatically on many dimensions -- hours per day and days per week, the type of curriculum, services included, and cost. Some programs incorporate health care by encouraging immunizations, hearing and vision screenings, and home visiting.

Much of the literature on the effects of compensatory preschool finds that the programs initially increase IQ scores but that the effect fades over time.<sup>82</sup> Consequently, it is frequently asserted that pre-school has no permanent effect on cognitive outcomes. However, research

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<sup>79</sup>House Committee on Ways and Means, *The 1996 Green Book*, pp. 651.

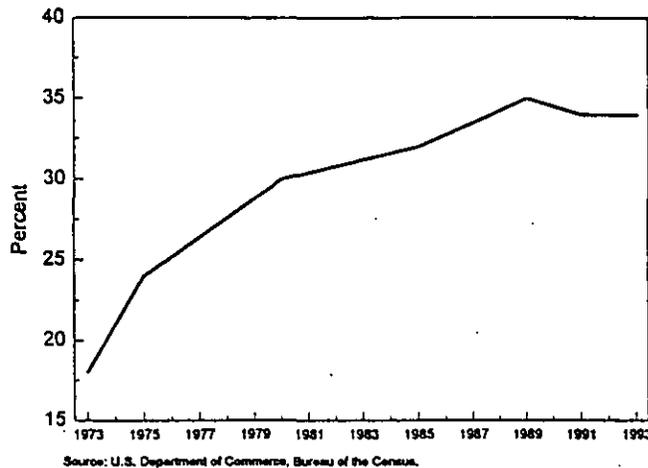
<sup>80</sup> House Committee on Ways and Means, *The 1996 Green Book*; Office of Management and Budget, *Analytical Perspectives, Budget of the United States Government, Fiscal Year 1998*.

<sup>81</sup>Department of Health and Human Services, Fact Sheet, “Improving Head Start: A Success Story”, November 5, 1996.

<sup>82</sup>For a review of the literature see W. Stephen Barnett, “Benefits of Compensatory Preschool Education”, *Journal of Human Resources*, Vol 27, No.2.

examining effects on other outcomes such as educational attainment, behavior, and health status continues to find benefits of preschool. These long-term benefits are believed to be the result of

Figure 3. Preschool Enrollment of 3-4 Year-Olds



entering elementary school with more experiences and advantages. School learning is viewed by many as a “cumulative process” where these early advantages foster later performance.<sup>83</sup>

- A comprehensive review of compensatory preschool education found significant favorable effects on long-term school performance, as measured by grade retention, special education enrollment, and high school graduation.<sup>84</sup>

- Early education programs, in combination with family support programs, have been found to reduce antisocial behavior and delinquency.<sup>85</sup>
- Preschool participants also more likely to receive immunizations.<sup>86</sup>

Particularly noteworthy evidence has been obtained from the Perry Pre-School Study. (See Box 5.) This intervention, which was begun in 1962, randomly assigned 128 3- and 4-year-old children into a treatment or control group. The treatment group received an intensive pre-school program and home visits to the parents.<sup>87</sup> No services were provided to the control group. The study had follow-ups annually from age 3 to 11 and at ages 14, 15, 19, and 27. Favorable outcomes have been observed for the treatment group, relative to the controls, over a variety of dimensions including

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<sup>83</sup>Ibid.

<sup>84</sup>Ibid. The author notes that some of these studies may not have sufficient control groups since they were self-selected or drawn from different populations.

<sup>85</sup>Hirokazu Yoshikawa, “Long-Term Effects of Early Childhood Programs on Social Outcomes and Delinquency”, *Future of Children*, Vol. 5, No. 3, Winter 1995.

<sup>86</sup>Janet Currie and Duncan Thomas, “Can Early Childhood Education Lead to Long Term Gains in Cognition?”, *Policy Options*, forthcoming; R. L. McKey, H. Condelli, H. Ganson, et al., *The Impact of Head Start on Children, Families, and Communities: Final Report of the Head Start Evaluation, Synthesis and Utilization Project*, Washington, D.C.: CSR, Inc, June 1985.

<sup>87</sup>The results of the Perry Pre-School study may not be generalizable to other preschool programs, which generally do not provide the same level of services or monetary investment.

- a significantly higher level of IQ at age 7, school achievement at age 14, schooling, general literacy at age 19, monthly earnings and home ownership at age 27 and significantly lower levels of social service receipt from age 17 to 27 and arrests by age 27.<sup>88</sup>
- These estimated benefits translate into savings from \$4.75 to \$8.75 in future expenditure on special education, public assistance, and crime from every dollar spent on Perry Pre-school.<sup>89</sup>

As with child care for infants and toddler, financial constraints make it difficult for many families, especially those with low incomes, to send their children to pre-school programs. In 1990, only 35 percent of children from poor families attended pre-school versus the 60 percent of children in affluent families.<sup>90</sup> Through the Head Start program, the Federal government plays a key role in assuring that low-income children between the ages of 3 and 5 can receive pre-school education and access to social services which will improve their social competence, learning skills, health and nutrition.

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<sup>88</sup> Lawrence Schweinhart et al., *Significant Benefits*, High/Scope Press, 1993.

<sup>89</sup> Isabel V. Sawhill, "Young Children and Families" in Henry J. Aaron and Charles L. Schultze, editors, *Setting Domestic Priorities*, Washington D.C.: Brookings, 1992, pp. 168; Lawrence Schweinhart et al., *Significant Benefits*:167.

<sup>90</sup> Deanna Gombry, Mary Larner, Donna Terman, Nora Krantzler, Carol Stevenson, and Richard Berman, "Financing Child Care: Analysis and Recommendations", *Future of Children*, Vol. 6, No. 2, Summer/Fall 1990.

### Box 5. The High/Scope Perry Preschool Project

In the 1960s, concern for the intellectual development of young children living in poverty spurred research on the ability of early education programs to break the link between poor school performance and family poverty. The hypothesis was that good preschool would help young children move from the home into the classroom, and thus raise these children's educational ability and attainment.

The High/Scope Perry Preschool Project, which began in 1962, is one of the most notable results of this research. It stands out from other studies because of its design and its longevity. Children living in the predominantly black neighborhood on the South Side of Ypsilanti, Michigan were randomly assigned to either the treatment group, who then attended preschool, or the control group, who then did not attend preschool. A total of 128 African-American children entered the project and 123 completed the preschool years.

The 58 children in the treatment group received a daily 2 ½ hour classroom session during the school year. This program employed roughly 4 teachers for every 5 children. In addition to the classroom session, the children and their mothers received a weekly 1 ½ hour visit in the home from the child's teacher. Over three-quarters of these children attended the classroom session for two years, with the rest attending one year. This intensive preschool program that cost roughly \$7,350 per child per year (1996 dollars). For comparison, Head Start costs roughly \$3,900 per child.<sup>91</sup>

The 123 children completing the program were interviewed annually from age 3 to 11, and at ages 14, 15, 19, and 27. The longevity of this study allows analysis of many long-term effects of the preschool intervention. Overall, the benefits from \$1 spent on the program are dramatic, varying from \$4 to \$8, depending on the economic assumptions. These benefits take the form of decreased future costs of education, crime, and welfare dependence, as well as increased labor market earnings.

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<sup>91</sup>Berrueta-Clement, J.R., Schweinhart, L.J., and Weikart, David, "Lasting School Effects of Preschool Education on Children from Low-Income Families in the United States", *Preventing School Failure: The Relationship Between Preschool and Primary Education*, International Development Research Centre, 1984 cited in Lawrence Schweinhart et al., *Significant Benefits*.

Since Head Start's formation, the program has served over 15 million children and their families. Of the 750,000 children enrolled in fiscal year 1995, two-thirds were 4 year olds and about 13 percent had disabilities.<sup>92</sup> Most programs are center-based but vary in number of days per week and hours per day. However, Head Start currently has slots for only about 40 percent of eligible children. The low participation rates represent a lost opportunity to invest in our children, given the favorable effects of Head Start on future outcomes, and the President has stated the goal of serving one million children by 2002.

- A survey of 72 studies of Head Start concluded that the program had sizable favorable effects on children's cognitive development at the end of the program year.<sup>93</sup>
- A randomized study in four counties revealed that Head Start raised access to health care, the receipt of basic health services, improved diets, and led to better health status.<sup>94</sup> The Head Start participants also had more fully developed and coordinated motor skills.
- An influential study that compared the results for siblings where some participated in Head Start and others did not found that program participation increased test scores significantly for some children and also reduced the probability of being retained in grade.<sup>95</sup>
- Parenting skills have also been found to be positively affected by Head Start in some studies.<sup>96</sup>

### Conclusions

Scientists and educators have identified the first three years of life (and pregnancy) as a time when children have "fertile minds": efforts by parents, care-givers, educators, and government programs to help children during these years are especially fruitful, often for years to come. Because of the long-lasting effects of early investments -- such as the provision of health

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<sup>92</sup>Barbara Devaney, Marilyn Ellwood, and John Love, "Programs That Mitigate the Effects of Poverty on Children".

<sup>93</sup>Barbara Devaney, Marilyn Ellwood, and John Love, "Programs That Mitigate the Effects of Poverty on Children".

<sup>94</sup>Abt Associates Inc, *The Effects of Head Start Health Services: Report of the Head Start Health Evaluation*, Cambridge, MA, 1984.

<sup>95</sup>Janet Currie and Duncan Thomas, "Does Head Start Make A Difference?", *American Economic Review*, June 1995: 359; Currie, Janet and Duncan Thomas, "Can Early Childhood Education Lead to Long Term Gains in Cognition?": 4 and 7.

<sup>96</sup>R.L. McKey, H. Ganson Condelli, et al., *The Impact of Head Start on Children, Families, and Communities: Final Report of the Head Start Evaluation, Synthesis and Utilization Project*. Washington, D.C. CSR, Inc, June 1985.

care and quality child care -- they tend to have big payoffs. They avert the need for more-costly interventions -- such as special education or incarceration -- and contribute to generally happier, healthier, and more productive children, adolescents, and adults.

Parents, of course, play the largest role in meeting the needs of their children. Broad social trends -- such as dual-worker families, single-parent families, crime, and poverty -- make it difficult for many families to provide for these needs. The government can help by providing parents with the opportunity to spend more time with their children and supply information on how to raise physically healthy and emotionally secure children. Some families also require more assistance from the government, including various types of financial support, in order to have the resources necessary to give their children a good start in life.

Families, communities, and the government are making innumerable investments in young children. These investments are important because our youngest children are, in a very real sense, the future of America.