

2008 Special Focus Report: Trends in Infancy/Early Childhood and Middle Childhood Well-Being, 1994-2006

The Foundation for Child Development Child and Youth Well-Being Index (CWI) Project

A composite index of trends in the well-being of America's children and youth.

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Executive Summary

Background

The Foundation for Child Development's Special Focus Report, "Trends in Infancy/Early Childhood and Middle Childhood Well-Being, 1994-2006," presents the first wide-ranging picture of how children in their first decade of life are faring in the United States. It is the first report to look comprehensively at the overall health, well-being and quality of life of America's youngest children – from birth through eleven-years-old, and to track and compare child well-being across three primary stages of development – early childhood, middle childhood, and adolescence.

Every year, the Foundation for Child Development (FCD) releases its "Child Well-Being Index" (CWI), an analysis that measures the well-being of children from birth to age 17. Over the past several years, this index has shown substantial improvements in overall well-being for children and adolescents from 1994 to 2002, followed by a relatively stable period since 2002. Because of rapid improvements in well-being for adolescents over this time period, however, in *teen-specific* areas such as declining rates of violent crime victimization, smoking-drinking-illicit drug use, and teen childbearing, FCD asked whether these trends were largely responsible for the overall positive trend of the Index.

FCD commissioned Kenneth Land, of Duke University, to develop this "Special Focus" report to take a deeper look at the well-being of children *specifically in early* (from birth to age 5) *and middle* (ages 6-11) *childhood* by looking at indicators specific to those age ranges. The report seeks to answer the fundamental questions: "*How well are our youngest children doing?*" and, "*Are we doing all that we should to better their quality of life and set the groundwork for future success?*" The report addresses these questions by specifically drawing out the findings for these age groups over traditional CWI indicators, as well as looking at new indicators that have not traditionally been part of the CWI – such as rates of prenatal care, whether a parent had dinner with their child every day, whether children have TV rules, and whether they recognize all letters by age five.

The resulting analysis of trends over time yields the following conclusions:

- **Overall improvements in the well-being index are reflected across all age groups** – infant/early childhood, middle childhood and adolescence. Each age group follows very similar positive trends from 1994-2002.
- **The Health Domain overall is on a dramatic decline, dragged down by rising obesity rates and the number of babies born at low birth weight.** Research has linked the latter to an increase in delayed childbearing among women and the use of fertility drugs that make multiple births with lower birth weights more likely. The prevalence of obesity among children ages 6-11 is nearly four times what it was in the 1960s; for children ages 2-5, it is three times more.
- **Some areas of health show steady improvement**, driven by declining infant and child death rates (attributed to better prenatal and health care, nutrition, and seat-belt laws), rates of mothers smoking during pregnancy, blood lead poisoning and increased vaccinations.

- **Safety is on the rise:** The rate of children from birth to eleven who are victims of homicide has decreased dramatically; for children ages 6-11, that number has been cut in half. The percentage of 6th grade children who report feeling unsafe or fearful of attack or harm at school or to and from school is also down.
- **Educational attainment also on the rise:** This domain is showing good progress driven by the dramatic increase in the number of children ages 4-6 enrolling in full-day kindergarten. What's more, the report found that more parents are reading to their children daily and setting rules for TV watching. Performance on standardized math and reading test scores among 9-year-olds has improved over the 12-year period.
- **Family economic well-being is likely to decline in years ahead.** While this indicator has been holding steady, if trends in job loss, the housing finance crisis and rising inflation that have characterized 2007 to the present day persist, they are likely to drive down this key economic indicator for children of all ages.

Analysis

These findings suggest that it is important to invest in children's well-being from as early as birth to prepare children on the path to success throughout their lives. The report also underscores the critical balance between good policy and good parenting. Effective policymaking includes safety requirements on playgrounds and in lead poisoning control. As the nation examines strategies for reducing childhood obesity, policies that guide school lunch menus and exercise are likely to play an important and influential role in outcomes.

Methodology

This Special Focus report is an evidence-based measure of 25 key national indicators across six quality-of-life domains over the years 1994-2006. Indicators of well-being were examined for three age groups: 1) Infancy/early childhood (from birth to age 5); 2) Middle childhood (ages 6-11); and 3) Adolescence (ages 12-17).

The indicators were grouped into six domains of well-being/areas of social life used in FCD's annual CWI: Health, Economic Well-being, Educational Attainment, Safety and Behavioral Concerns, Social Relationships, and Community Connectedness. Data sources include the U.S. Census, Centers for Disease Control and Prevention, National Center for Education Statistics, and other vital statistics and sample surveys.

Trends in Infancy/Early Childhood and Middle Childhood Well-Being, 1994-2006

Introduction

The Foundation for Child Development Child and Youth Well-Being Index (CWI) Project issues an annual update on trends in the overall quality of life of America's children and youth. This focus report compliments the annual update.

In previous years, the CWI Special Focus Report has centered on a specific domain or set of indicators associated with the composite U.S. Child Well-Being Index, such as educational attainment or safety and behavioral concerns, or on international comparisons. This year's report zooms in on trends in indicators of well-being for two childhood age groups – the infancy/early childhood ages (0 to 5) and middle childhood ages (6-11) – and makes comparisons with corresponding trends for the adolescence age group (12-17) over roughly the past decade from 1994 to 2006.

Because of rapid improvements in well-being for adolescents/teenagers over this 12-year time period, as indexed for example by declining rates of violent crime victimization, smoking-drinking-illicit drug use, and teenage child-bearing, these comparisons are highly salient. That is, it is possible to infer that all or most of the improvements in the overall CWI that we have previously reported are due to these dramatic improvements in well-being indicators for adolescents and that not much has correspondingly improved for the younger childhood ages.

We assembled data series on about 25 indicators of outcomes for each of these three age groups for which data series are available for the study of trends over the years 1994 to 2006. In the health area, we also assembled data series on a key health risk factor and several indicators of access to and use of services. The indicators with the ages for which they are available are listed in Appendix A, and their sources are listed in Appendix B. Appendix C contains a brief description of the methods of construction of the age-specific composite CWIs.

Research Questions

This report is organized around four questions:

Trends in Age-Specific Composite Well-Being Indices: First, do our composite indices of infancy/early childhood and middle childhood well-being show improvements since the mid-1990s? Or have improvements in well-being been concentrated only or primarily among adolescents?

Trends in Domain-Specific Composite Indices for the Childhood Ages: Second, how do trends vary among the six domains/areas of social life or well-being of the seven domains that comprise the CWI for which indicators time series are available for the infancy/early childhood and middle childhood age groups? These six domains are *Family Economic Well-Being*, *Social Relationships* (to family and peers), *Health, Safety/Behavioral Concerns*, *Educational Attainment*, and *Community Connectedness* (to educational, economic, and political institutions). Have some of these domains improved more than others? Have some deteriorated?

Good News Trends—Specific Indicators: Third, are there any particular indicators of well-being for the infancy/early childhood and middle childhood ages that trend toward substantially good news since the mid-1990s? That is, are there indicators for which improvements are notable?

Areas of Concern—Specific Indicators: Fourth, correspondingly, are there any particular indicators that are trending negatively since the mid-1990s? That is, are there indicators that have deteriorated?

Trends in Age-Specific Composite Well-Being Indices

Figure 1 contains graphs of trends in the composite Child and Youth Well-Being Indices for the three age groups studied:

- infancy/early childhood (ages 0 to 5),
- middle childhood (ages 6-11)
- adolescence (ages 12-17)

for the 12 years from 1994 to 2006.¹ The composite CWIs reported in the figures use 100 as the index value for the base year 1994 with subsequent values indicating percentage changes from the base year value. Values higher than 100 indicate improvement and values below 100 indicate deterioration of trends. Each of the composites is based on the more than 20 indicators of well-being outcomes for each age group. The indicators are defined in Appendix A, sources of data are identified in Appendix B, methods of composite index construction are described in Appendix C, and additional decisions and sensitivity analyses are given in Appendix D.²

Figure 1 provides information with which to address our first research question. Specifically, it shows that improvements in child and youth well-being across the 12 years from 1994 to 2006 have indeed benefited the infancy/early childhood and middle childhood ages as well as the adolescent ages.³ That is, it is not the case that improvements in well-being have been concentrated only among adolescents while well-being has remained stagnant for the younger age groups. Indeed, the graphs of changes in our age-specific composite CWIs in Figure 1, which we regard as based on the most reliable indicator series available, suggest that improvements in overall well-being have been on the same order of magnitude for all three age groups.

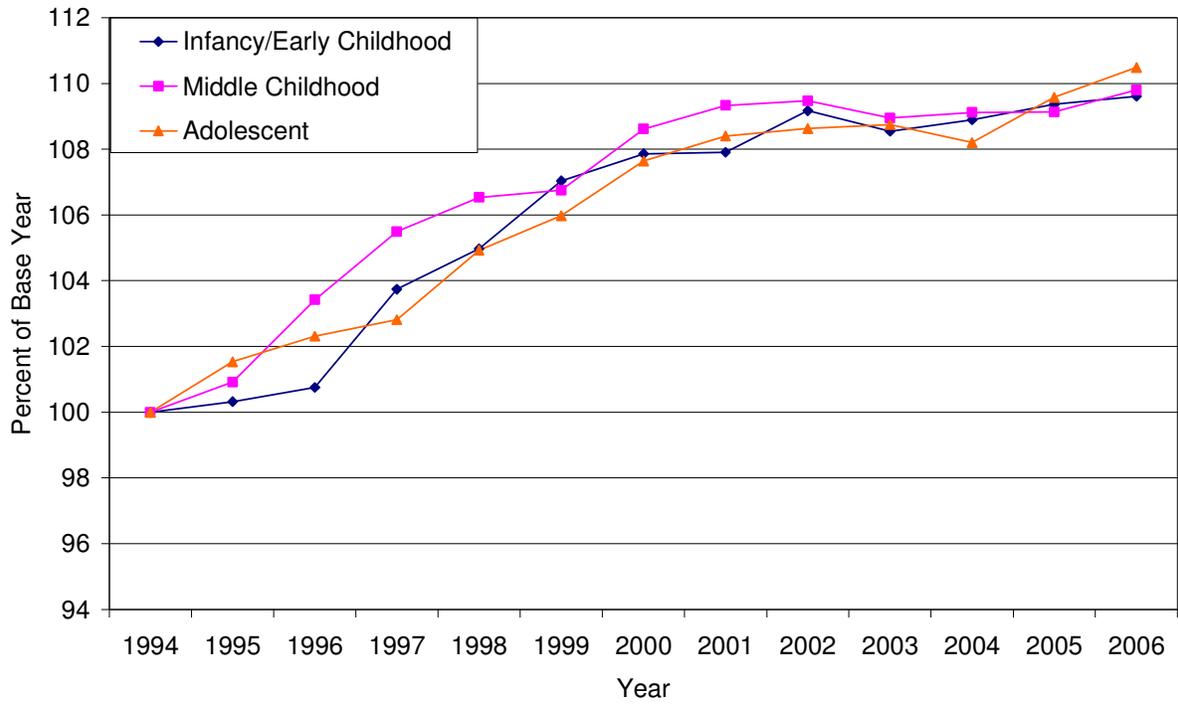
¹ For each of these three referent age groups, some indicators of well-being are available only for subsets of the referent ages and in some cases the ages for which data are available span somewhat longer age groups. But, in all cases, the referent age groups are the target ages and most indicators pertain thereto. Also, some indicators are not available on an annual basis and some do not date back to 1994 or extend to 2006. For non-annual data series that began before 1994, we have interpolated or imputed values of the indicators for the missing years. For data series beginning after 1994, we include the series in the year the data are available. For data series that do not extend to 2006, we have projected the indicators forward.

² In addition to outcomes, two domains have indicators that measure risk factors and access to services, (Health Domain) or home environment (Educational Attainment Domain). For the age group composite CWI calculations we only use outcome indicators in each domain.

³ As noted in the next section, the CWI groups indicators into seven domains of well-being. But, for the two youngest age groups, no indicator series are available for the Emotional/Spiritual Well-Being. Therefore, for purposes of comparisons across the three age groups in Figures 1 and 2 the Adolescent CWI was reduced to the same six domains of well-being as used in the two younger age groups and recomputed correspondingly.

We now study in more detail the trends for the two younger age groups, which is the main focus of this report.

Figure 1. Infancy/Early Childhood, Middle Childhood, and Adolescent Composite Well-Being Indices, 1994-2006



Trends in Domain-Specific Composite Indices for the Infancy/Early and Middle Childhood Ages

Figures 2 and 3 contain graphs of trends in the composite Domain-Specific Indices for the infancy/early childhood and the middle childhood age groups, respectively. Recall again that the composite CWI is based on indicators of well-being that are organized into seven domains or areas of social life that have been found to occur repeatedly in numerous studies of subjective well-being, including studies of children and youth, as affecting levels of happiness and/or satisfaction with life:

- Family Economic Well-Being
- Social Relationships (to family and peers)
- Health
- Safety/Behavioral Concerns
- Educational Attainment
- Community Connectedness (participation in educational, economic, and political institutions)
- Emotional Well-Being

For the present study, time series data are available for the two youngest age groups only for the first six of these seven domains. The specific indicators for which time series are available for use in the present study to measure outcomes in each of these domains of well-being are identified in Appendix A.

Our second research question focuses attention on how trends over 1994 to 2006 vary among these seven domains of well-being for each of the focal age groups. Figures 2 and 3 provide information to address this question. In particular, these figures show:

- ✓ First, there is more variability in the domain-specific trends over time for the middle childhood ages than for the infancy/early childhood ages—the spans between the highest and lowest domain indices spread out more widely in recent years for the former than for the latter age group. This is primarily due to the large increase in Safety/Behavioral Concerns for the middle childhood ages, which reflects declines in the rates of child homicide (ages 5-9) and the percent of 6th graders feeling unsafe at school over the period.
- ✓ Second, the Family Economic Well-Being indices, which are based on indicators of poverty, secure parental employment, and health insurance coverage, show the impact of the economic expansion of the late-1990s followed by peaks in the early-2000s, declines to low points in 2003, and very slight increases in 2004-2006.
- ✓ Third, for the infancy/early childhood ages, the Health Domain index shows roughly stable levels until the most recent years, whereas the middle childhood Health Domain index begins a steady decline in 1999. The lack of increases in both age groups is due to an increasing proportion of overweight children.
- ✓ Fourth, for the infancy/early childhood ages, the Community Connectedness Domain index shows considerable increases over the 1994-2006 period. This primarily is due to increasing rates of participation in early childhood care centers, preschool programs, and kindergarten.

- ✓ Fifth, for both age groups, there are slight improvements in the Educational Attainment domain indices.

Figure 2. Infancy/Early Childhood Well-Being by Domains, 1994-2006

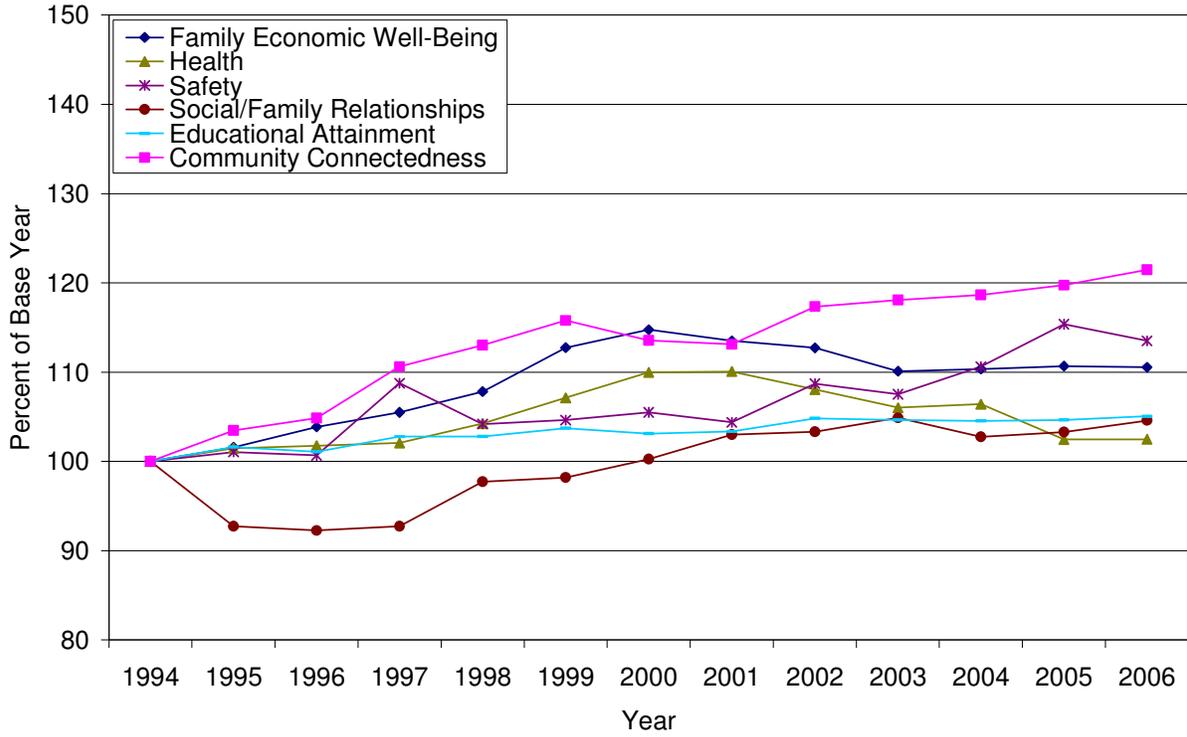
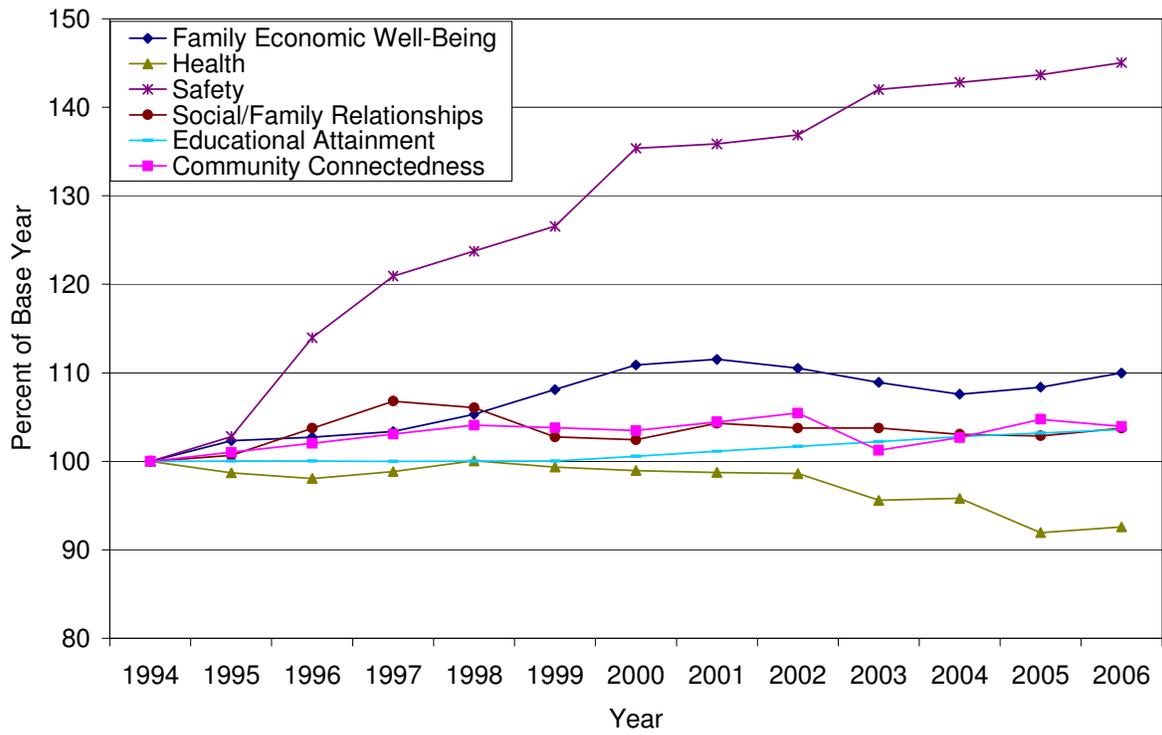


Figure 3. Middle Childhood Well-Being by Domains, 1994-2006



Good News Trends—Specific Indicators

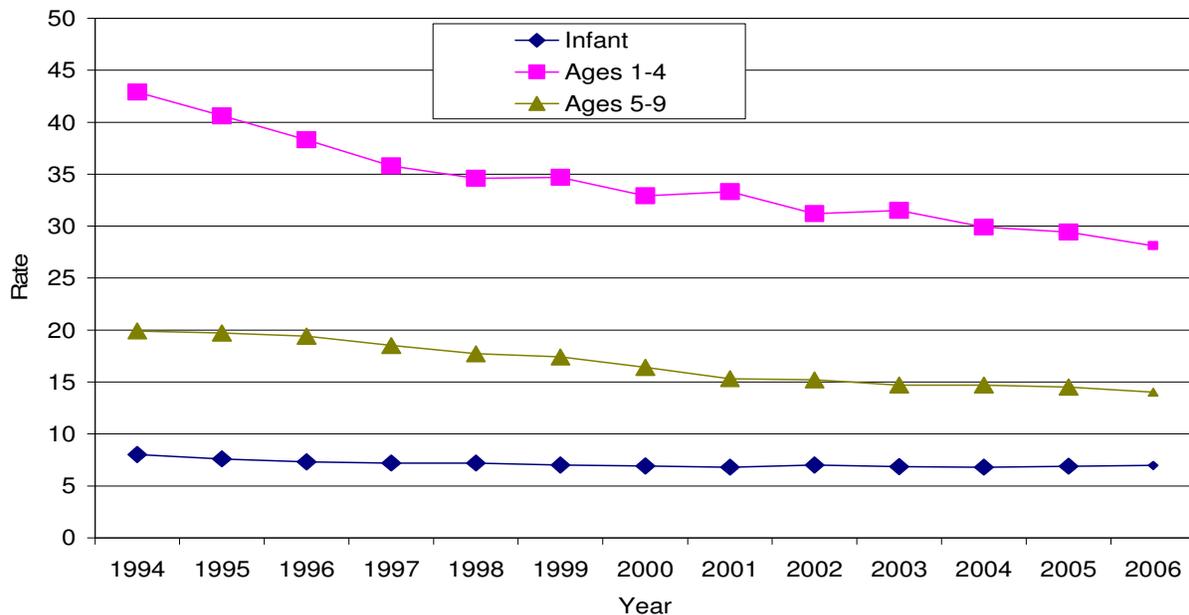
Beyond the recent improvements in overall well-being for the infancy/early childhood and middle childhood ages and the examination of how specific domains have changed, we now turn to the question of whether there are any particular indicators of well-being for which there is substantially good news regarding trends since the mid-1990s? That is, are there indicators for which improvements are notable?

The answer is that there are several indicators for which notable improvements have been recorded for the period from the mid-1990s to 2006. We review these here.

Declining Infant and Child Mortality

First, an important outcome indicator of the overall health and care of infants and children is the mortality rate – and the news for trends in mortality rates is good. Figure 4 exhibits these trends for the years 1994-2005 with projections for the year 2006. The most dramatic improvements have occurred for the early childhood ages 1-4, specifically from a rate of 42.9 deaths per 100,000 in 1994 to 29.4 in 2005, a decline of about one-third. For the ages 5-9, with already lower rates, the improvement was somewhat less dramatic but still evident, dropping from 19.9 in 1994 to 14.5 in 2005, a 27 percent decline. While the scale of the graph appears to indicate little improvement for the youngest age group, infants, even here there has been a decline, from a range of 7.5 to 8 deaths per 1,000 live births in the earliest years to 6.9 in the most recent years. All in all, trends in these indicators are good news. There are, of course, many factors that have contributed to these trends, from better health care and nutrition to the mandatory use of car safety seats and safer playgrounds.

Figure 4. Infant, Early Childhood, and Middle Childhood Mortality Rates, 1994-2006



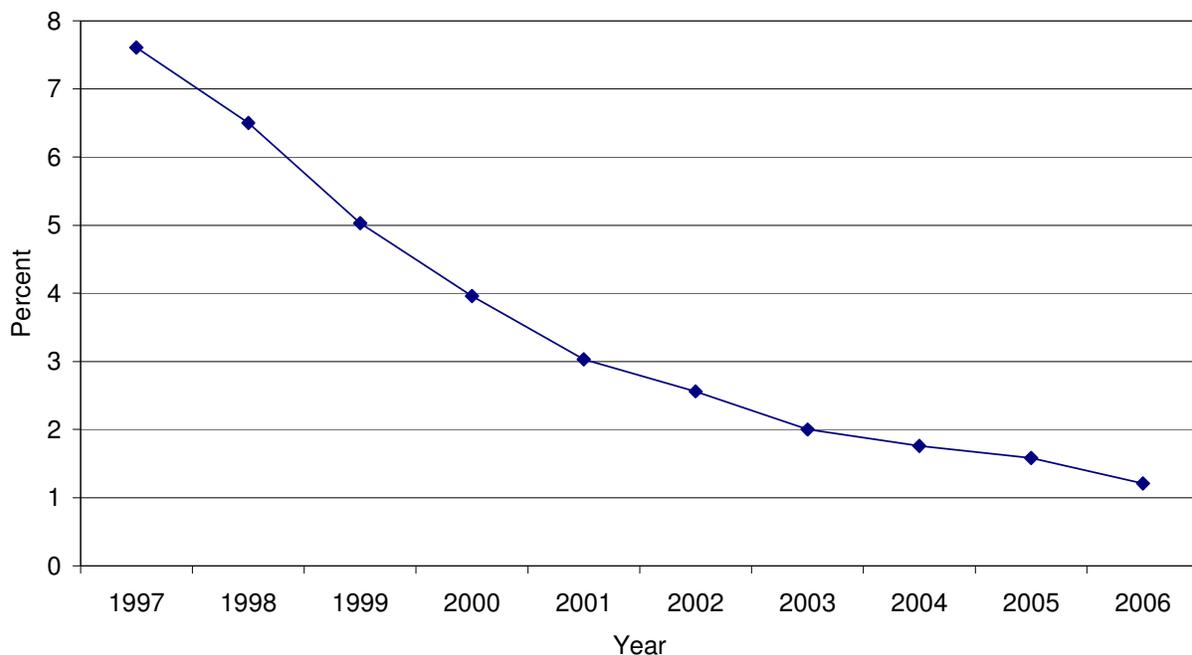
Declining Blood Lead Poisoning

A related health indicator that shows good news trends is the dramatic decline in the prevalence of children with elevated blood lead levels – specifically, with blood lead levels at or above 10 micrograms of lead per deciliter of blood, levels that are classified as lead poisoning and that can produce substantial physical, neurological, motor, and cognitive impairments. Studies have shown an inverse association between blood lead levels and children’s IQ and other developmental outcomes due to the deleterious effect of lead on central nervous system development in young children.

Figure 5 shows the trend recorded in the percentage of children ages 0 to 6 with elevated blood lead levels for the years 1997-2006. It can be seen that the rate of decline over this period was rapid – from 7.61 to 1.21, an 84 percent decline.

This good trend is due to policies on the elimination of lead from many commercial products in the U.S., from gasoline to paint. It does not imply, however, that vigilance with respect to lead exposure can be relaxed, as highly publicized incidents in 2007 of the presence of lead in toys imported from China make clear. It also does not mean that elevated blood lead levels are no longer a concern pertaining to the health of children. For even though the prevalence of highly elevated blood lead levels in children has declined substantially in recent decades, the percentage of children with blood lead levels in the moderate range of 5 to 10 micrograms per deciliter, a range that is considered to be potentially health impairing, remains significantly nonzero due to lead in older homes and in the environment. Research indicates that these lower lead levels can have negative health effects for children as well.

Figure 5. Percentage of Children Under Six Years Old with Elevated Blood Lead Levels, 1997-2006

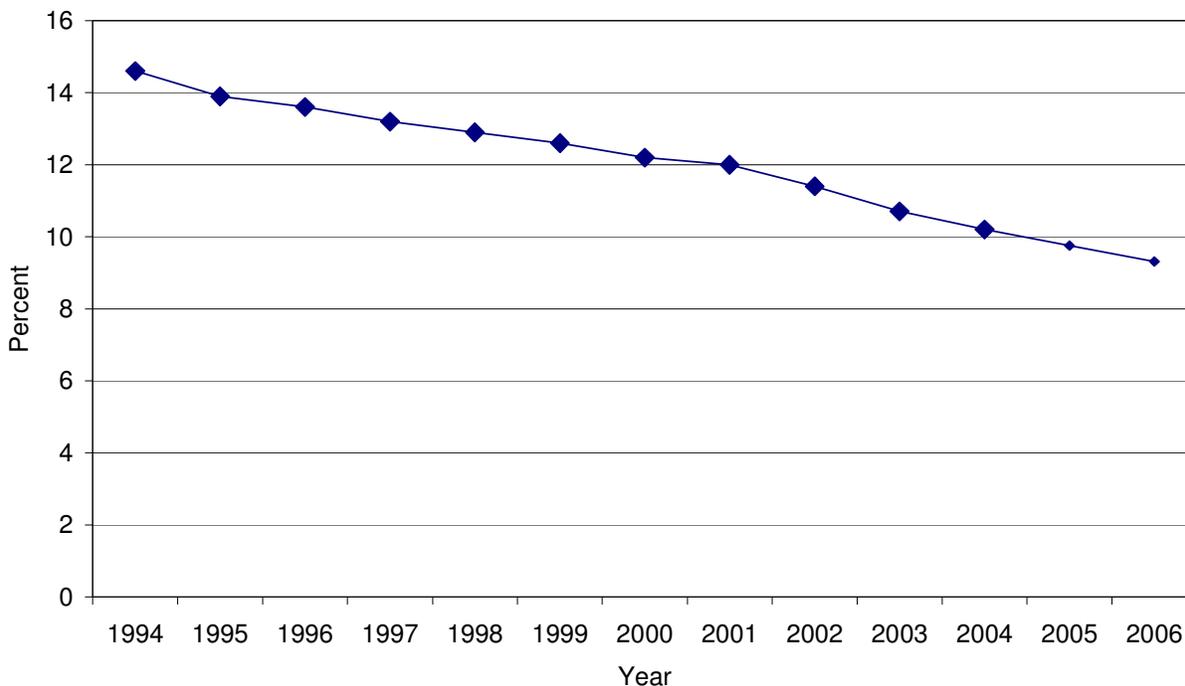


An Improving Risk Factor—Mothers Smoking During Pregnancy

In the presence of the foregoing substantial overall improvements with respect to the mortality rates of children and infants, we also cite improving trends in an indicator not of well-being outcomes for children but of a risk factor that relates to their health, especially in infancy and early childhood. This indicator is the percentage of total births to mothers who smoked tobacco products during pregnancy, shown in Figure 6. This percentage declined from 14.6 in 1994 to 10.2 in 2004, a 30 percent decline, which we project to continue to decline.

The negative health consequences for infants and young children of smoking by their mothers have been well documented – including obstetric complications, premature and low birth weight babies, increased colic, delayed gross and fine motor coordination, and Sudden Infant Death Syndrome (SIDS). More long-term effects on children include a higher risk for cognitive, academic, and behavioral problems as well as adverse health outcomes, such as reduced lung function. Thus, the declines recorded in Figure 6 are likely an important direct component of the improvements in the overall health of infants and children as noted above in the mortality rate charts. More generally, if the smoking prevalence indicator is taken as indicative of mothers' concerns for health habits and other behaviors that impact the health of their children, then the declines seen in Figure 6 are likely indicative of improvements in many aspects of maternal childcare that contribute to the well-being of infants and children.

Figure 6. Percent of Total Births to Mothers Who Smoked During Pregnancy, 1994-2006

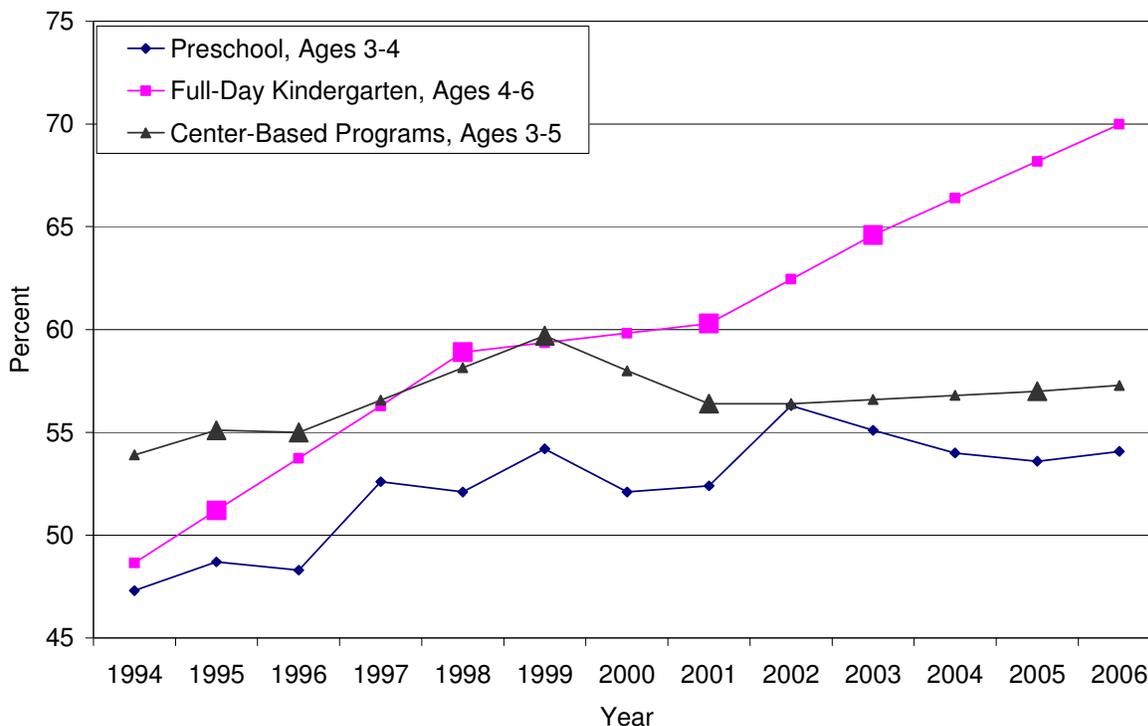


Children Ages 4-6 Enrolled in Full-Day Kindergarten

Focusing on the preschool ages, we next highlight the good news trend in the percent of children ages 4-6 enrolled in full-day kindergarten. Trends in this indicator are shown in Figure 7 along with those for two related indicators, the percent of children ages 3-4 enrolled in preschool programs and the percent ages 3-5 in center-based early childhood care and education programs. All three of these percentages are indicative of the exposure of children in early childhood to educational programs that provide for intellectual stimulation. This has been shown to improve outcomes for educational attainment in middle childhood. Many pre-kindergarten and kindergarten programs are designed to encourage and provide stable learning environments that can produce more positive scholastic and psychosocial outcomes by preparing students for elementary school and providing them with the skills necessary to succeed. There is growing research that this is a critical time in a child's scholastic and cognitive development.

Of these three indicators of early childhood participation in community childcare and educational institutions, it can be seen that the percent enrolled in full-day kindergarten shows the most improvement over the time period, from 51.2 in 1995 to 64.6 in 2003, a 26 percent increase that is projected to show further increases for 2004 to 2006. By comparison, the rate of increase in the percent of children enrolled in preschool programs shows an increase of about 14 percent over the years 1994-2006.

Figure 7. Preschool, Center-Based Early Childhood Care, and Full-Day Kindergarten Enrollment Rates, 1994-2006

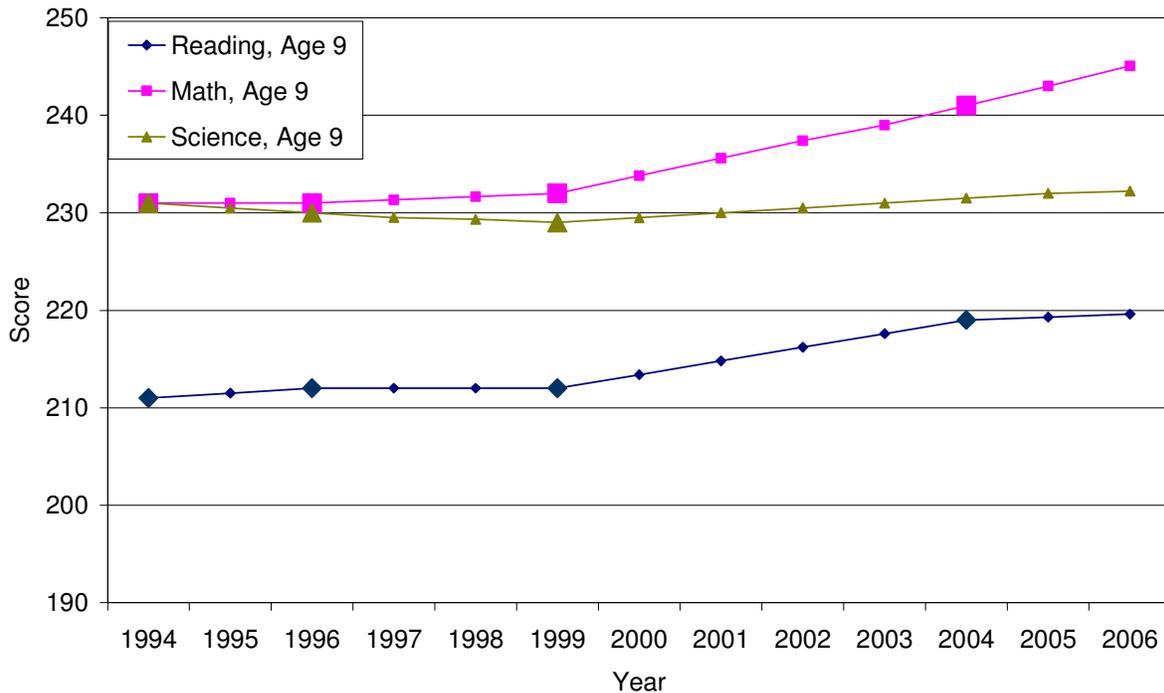


Standardized Mathematics and Reading Test Scores

The increasing percent of preschool children attending pre-kindergarten and kindergarten classes in the 1990s may be affecting the achievement of nine-year olds on standardized tests. The National Assessment of Educational Progress (NAEP) is a national periodic assessment of U.S. students' knowledge and abilities, covering a number of different ages and subjects. The long-term trend tests use the same testing instruments and procedures to evaluate students' abilities in mathematics, reading, and science. Figure 8 presents the results of the tests for age 9.

The trends in Figure 8 indicate improvements in mathematics and reading after 1999, which corresponds with the increase in enrollments in pre-kindergarten programs for 3-4 year olds in the early 1990s, a trend that was first noted in the 2006 CWI annual report. Unfortunately the science scores declined slightly between 1994 and 1999, and increase only modestly after that time.

Figure 8. National Assessment of Educational Progress Test Scores for Reading, Mathematics and Science Skills (with Interpolated Values for Missing Years), 1994-2006

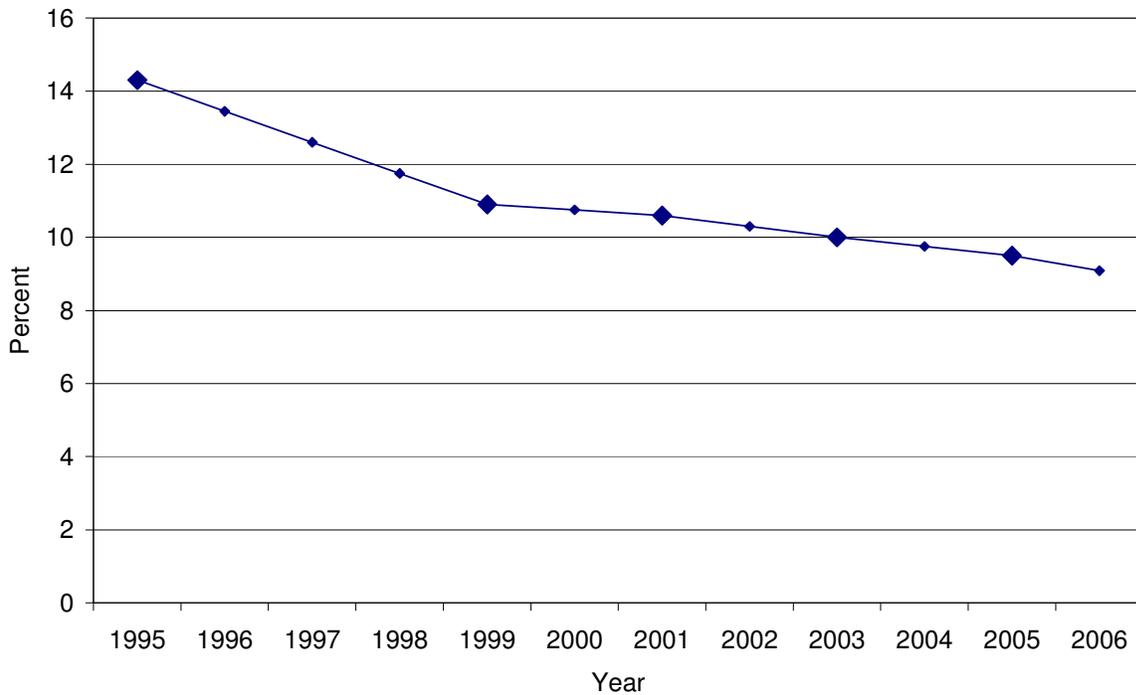


Declining Fear of Attack or Harm

For the middle childhood ages 6-11 group, one indicator that shows a good trend is exhibited in Figure 9, namely, the percent of students who feel unsafe in the sense of fearing attack or harm at school or on the way to or from school. The data points for this indicator are not annual and pertain only to students in the 6th grade. But this indicator likely taps into trends in fear for students in surrounding ages as well. It shows a decline from 14.3 percent in 1995 to 9.5 percent in 2005, a decrease of about one-third.

Clearly, feeling safe at school or traveling to and from school is important to the well-being of children and a key factor in their ability to concentrate on learning. In an era when incidents of child violence against other children on school buses, on playgrounds, or in neighborhoods occasionally appear in the news or on popular Internet websites, the trend shown in Figure 9 is all the more important and reassuring.

Figure 9. Percentage of 6th Grade Students who Feared Attack or Harm at School or on the Way to and from School, 1995-2006

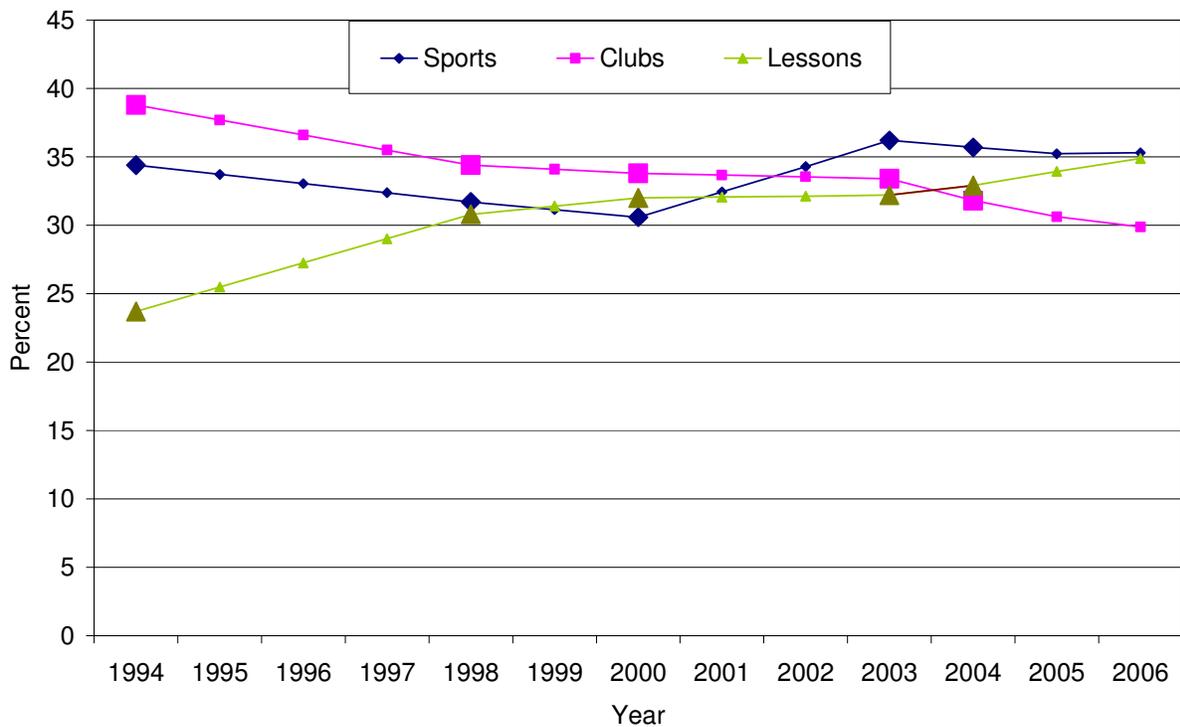


Increases in Extracurricular School-Related Lessons

As a final good news trend in the middle childhood group, we cite the trend in the percent ages 6-11 participating in extracurricular activities in the form of lessons shown in Figure 10. This percent increased by about one-third from 23.7 in 1994 to 32.9 in 2004. Also reported in the figure are the corresponding percents participating in extracurricular sports and clubs.

The trends shown in Figure 10 indicate that the percent participating in extracurricular sports has remained relatively constant while the percent participating in clubs has declined slightly. Thus, the increase in the percent participating in extracurricular lessons may have increased at the expense of participation in clubs.

Figure 10. Percent Ages 6-11 Participating in Specific Extracurricular Activities, 1994-2006



Areas of Concern—Specific Indicators

In addition to good news trends for the years 1994-2006 in the well-being at infancy/early childhood and middle childhood, there are some of our indicators that merit attention as indicative of potential trouble spots or areas of concern.

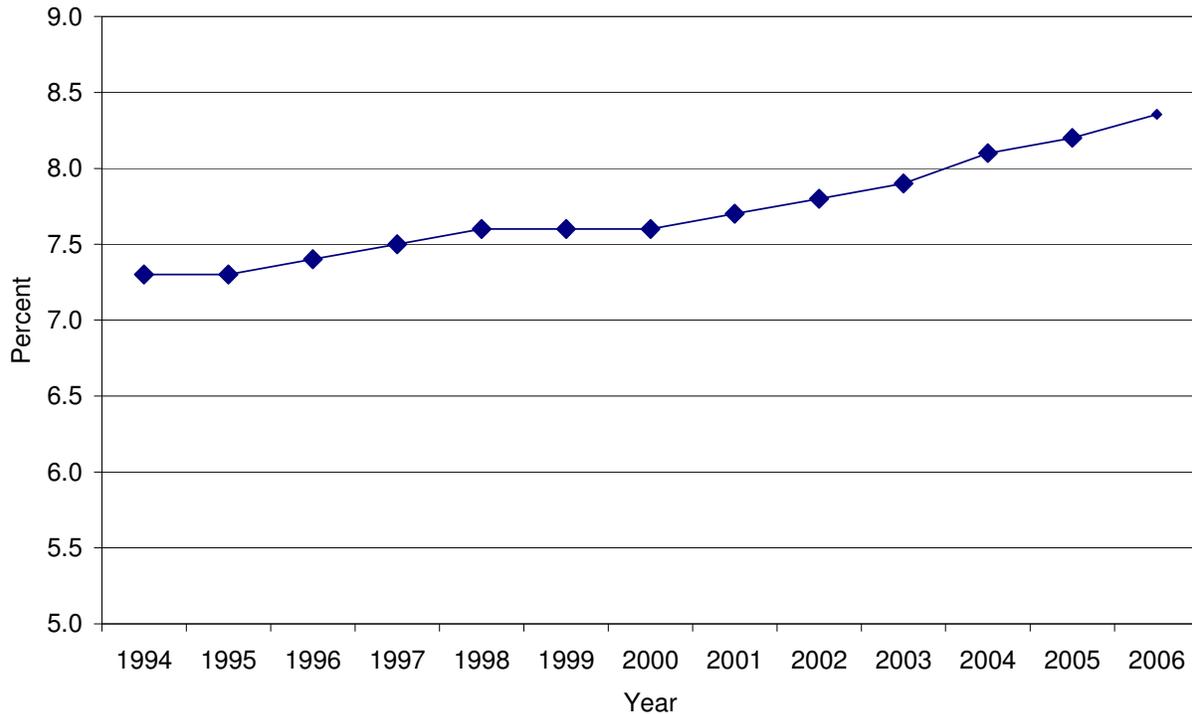
Increasing Prevalence of Low Birth Weight Babies

One of these, the rising percent of babies that are of low birth weight, is shown in Figure 11. This percent rises from 7.3 in 1994 to 8.2 in 2005, a 12.3 percent increase.

This rise in the prevalence of low birth weight babies has been linked in research studies to delayed childbearing ages among working mothers and the associated use of fertility-enhancing drugs to increase the likelihood of pregnancy. The drugs in turn make multiple births with lower birth weights per child more likely.

This raises a concern because low birth weight has been linked in epidemiological research to increased risk for developmental problems in cognition and neuromotor functioning, disabilities, hyperactivity, school and behavioral problems, and lower academic achievement. Research also has associated low birth weight with long-term health effects including increased rates of chronic conditions and other health problems for children in later years.

Figure 11. Low Birth Weight Rates, 1994-2006



Increasing Prevalence of Overweight Children

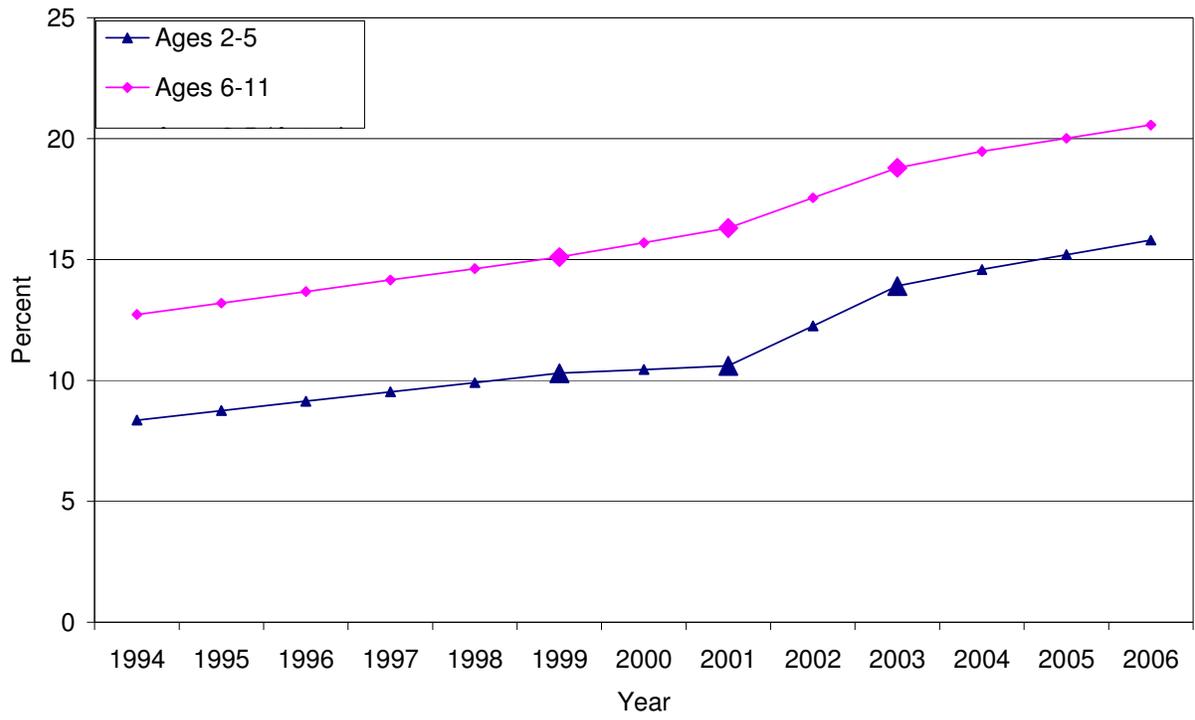
Another area of concern for the well-being of children in contemporary American society—an area of concern that was signaled in the first annual CWI Report in 2004 and that has been very much in the news in subsequent years—is the historically unprecedented rise in the prevalence of overweight children. Figure 12 shows the trends for ages 2-5 and 6-11 based on National Center for Health Statistics (NCHS) data from the periodic National Health and Nutrition Examination Survey (NHANES)

It can be seen that the percent of children ages 6-11 reported in 1999 was 15.1 and 18.8 in 2003, where 1999 and 2003 are the centers of the years over which the respective NHANES surveys were taken. The corresponding percents for the ages 2-5 are 10.3 and 13.9. We have interpolated the values for the years between the surveys and projected beyond the most recent one, because these surveys are conducted only periodically with several years interspersed in between.

To interpret the numbers, note that the NCHS uses baseline charts of Body Mass Indexes (BMIs) specific to each sex and single-year-of-age that were computed from the first NHANES surveys in the 1960s. The BMIs for each age and sex that defined the upper 5 percentiles of the BMI distributions—the overweight tail of the distributions—in those 1960s baseline surveys then are used to calculate the percent overweight estimates in subsequent NHANES surveys.

Thus, in 2003, the most recent year for which data are available, the prevalence of children ages 6-11 who are overweight is nearly 4 times the prevalence in the baseline NHANES survey of the 1960s. The corresponding numbers for ages 2-5 are about 3 times the prevalence in the baseline survey. These are dramatic increases in the prevalence of overweight children in American society from one generation to the next. The importance of this trend for the health and well-being of children is difficult to exaggerate. Increases in body mass during the childhood ages are associated with many deleterious outcomes, not only during the childhood ages, but through adulthood as well. Overweight children have greater risks for contracting type-2 diabetes, and often exhibit elevated risk factors associated with cardiovascular disease, such as elevated cholesterol and triglyceride levels and high blood pressure readings.

Figure 12. Early and Middle Childhood Overweight Rates, 1994-2006



Conclusions

This Special Focus Report yields the following conclusions:

- Our age-specific composite well-being indices show that improvements in child and youth well-being across the 12 years from 1994 to 2006 have benefited the infancy/early childhood and middle childhood ages as well as the adolescent ages. The composite well-being indices for the three groups follow very similar trends.
- There is more variability in the domain-specific trends over time for the middle childhood ages because of great improvements in the Safety/Behavioral Domain and declines in the Health Domain due to increased rates of overweight children.
- The Family Economic Well-Being Domain for both age groups follows similar trends based on national economic expansions and declines.
- Among the indicators studied, there are several that show improving or good news trends from 1994 to 2006, including declining infant and early childhood mortality rates, declining prevalence of blood lead poisoning, declining rates of mothers who smoke during pregnancy, increasing enrollments of children ages 4-6 enrolled in full-day kindergarten, increasing scores on mathematics and reading tests, declining rates of 6th graders who fear attack or harm in school or on the trip to and from school, and increases in rates of participation in school-related extracurricular lessons.
- On the other hand, indicators for two areas of concern show negative trends. These are the increases in the prevalence of low-birth weight babies and in the prevalence of overweight children.

A Looming Concern: All of the foregoing findings pertain to trends over the years from 1994 to 2006. During 2007 and 2008, major headlines herald the housing finance crisis, rising inflation (especially for gasoline, other energy, and food), and, in early 2008, increasing job losses. It is likely that these macroeconomic problems will impact a number of indicators of Family Economic Well-Being for families with children and adolescents. If this period of economic duress is sufficiently deep and long, it also will impact public finances and, through that, publicly financed childcare, health, and education programs. Thus, it is entirely possible that data on child and youth well-being for 2007 and 2008 will show some retreat from levels reached in the mid-2000s.

Acknowledgements and Contact Information

The **Foundation for Child Development Child and Youth Well-Being Index Project** at Duke University is coordinated by Kenneth C. Land, Ph.D., John Franklin Crowell Professor, Department of Sociology and Center for Demographic Studies, P.O. Box 90088, Duke University, Durham, NC 27708-0088 (e-mail: kland@soc.duk.edu). Other researchers involved in the project include Vicki L. Lamb, Ph.D. (North Carolina Central University and Duke University), Sarah O. Meadows, Ph.D. (Princeton University), and Hui Zheng, M.A. (Duke University). The Project is supported by grants from the Foundation for Child Development (<http://www.fcd-us.org/>). We especially acknowledge the support and encouragement of Ruby Takanishi, President, and Fasaha Traylor, Senior Program Officer, Foundation for Child Development. We also thank Kristin A. Moore, Ph.D. and Brett Brown, Ph.D. of Child Trends, Inc. (<http://www.childtrends.org>) and Donald Hernandez, Ph.D. of the State University of New York at Albany for invaluable advice and assistance in this project.

On the Web: More information about the CWI, its construction, and the scientific papers and publications on which it is based can be found on the World Wide Web:

<http://www.soc.duke.edu/~cwi/>

Appendix A

Age-Specific Indicators of Child and Youth Well-Being*

Domain	Indicator	Infancy/Early Childhood Ages or Availability of Indicator	Middle Childhood Ages or Grade of Indicator	Adolescent Ages or Grade of Indicator
<i>Family Economic Well-Being Domain</i>				
	Poverty Rate ¹	0-5	6-17	12-17
	Secure Parental Employment ²	0-5	6-17	
	Health Insurance Coverage ³	0-5	6-11	12-17
<i>Health Domain</i>				
--- Risk Factors	<i>Mother Smoking During Pregnancy⁴</i>	√		
--- Access to and Use of Services	<i>No Usual Health Care⁵</i>	0-4	5-17	
	<i>Vaccination⁶</i>	19-35 months		
	<i>Unmet Dental Need⁷</i>	2-4	5-11	12-17
	<i>With a Dental Visit Last Year⁸</i>	2-4	5-11	12-17
	<i>Late or No Prenatal Care⁹</i>	√		
--- Outcomes	Low Birth Weight ¹⁰	√		
	Infant Mortality Rate ¹¹	√		
	Mortality Rate ¹²	1-4	5-9	10-19
	Overweight Rate ¹³	2-5	6-11	12-19
	Subjective Health (as reported by their parents) ¹⁴	0-4	5-11	12-17
	Activity Limitation (as reported by their parents) ¹⁵		5-11	12-17
	<i>Elevated Blood Lead¹⁶</i>	0-6		
	<i>Asthma¹⁷</i>	0-4	5-10	12-17
	<i>Learning Disability^{18**}</i>	3-4	5-11	12-17
	<i>ADHD^{19**}</i>	3-4	5-11	12-17
<i>Safety Domain</i>				
	<i>Feel Unsafe at School²⁰</i>		6 th grade	7-12 th grade
	<i>Homicide Rates²¹</i>	0,1-4	5-9	
	<i>Child Maltreatment²²</i>	2-5	6-9	
	Teenage Birth Rate ²³			10-17
	Violent Crime Victimization ²⁴			12-19
	Violent Crime Offenders ²⁵			12-17
	Cigarette Smoking ²⁶			12 th grade
	Alcohol Drinking ²⁷			12 th grade
	Illicit Drug Use ²⁸			12 th grade

<i>Social/Family Relationships Domain</i>				
	Residential Mobility ²⁹	1-4	5-9	10-17
	Changes of School ³⁰		6-11	12-17
	Single Parenthood ³¹	0-5	6-11	12-17
	Parent Had Breakfast with Child Every Day ³²	0-5	6-11	12-17
	Parent Had Dinner with Child Every Day ³³	0-5	6-11	12-17
<i>Education Attainment Domain</i>				
---Home Environment	Read to Every Day ³⁴	3-5		
	TV Rules ³⁵	3-5	6-11	12-17
--- Outcomes	Recognize All Letters ³⁶	3-5		
	Count 20 or Higher ³⁷	3-5		
	Write Names ³⁸	3-5		
	Read or Pretend to Read ³⁹	3-5		
	Have 3-4 Skills ⁴⁰	3-5		
	Read ⁴¹		9	13 & 17
	Math ⁴²		9	13 & 17
	Science ⁴³		9	13 & 17
<i>Community Connectedness Domain</i>				
	Preschool Attendance ⁴⁴	3-4		
	Kindergarten ⁴⁵	4-6		
	Early Childhood Center Care ⁴⁶	3-5		
	Extracurricular Activity: Sports ⁴⁷		6-11	12-17
	Extracurricular Activity: Clubs ⁴⁸		6-11	12-17
	Extracurricular Activity: Lessons ⁴⁹		6-11	12-17
	Missing 3+ days ⁵⁰		4 th grade	8 th grade
	Not Working and Not in School ⁵¹			16-19

Note:

* Indicators that are not part of the basic Child and Youth Well-Being Index that is updated and reported annually are bolded. And all indicators in this report are age-specific, whereas many of those contained in the basic CWI cover the entire age range from 0 through the teen ages.

** Learning disability and ADHD belong to both health and education domains. But in order to avoid double counting, we put them in the health domain.

√ means indicator available.

¹ Poverty rate: percent of children living in families below the poverty line.

² Secure parental employment: percent of children living in families with at least one parent working full-time year-round

³ Health insurance coverage: rates of children living in families with any type of health insurance.

⁴ Mother smoking during pregnancy: percent of total births to mothers who smoked during pregnancy.

⁵ No usual health care: percentage of children with no usual source of health care.

⁶ Vaccination: vaccinations of children 19-35 months of age.

⁷ Unmet dental needs: percentage of children ages 2 to 11 with unmet dental needs.

- ⁸ With a dental visit last year: percentage of children ages 2 to 11 with a dental visit in the past year.
- ⁹ Late or no prenatal care: percent of all births to mothers receiving late or no prenatal care.
- ¹⁰ Low birth weight: percentage of infants with low birth weight.
- ¹¹ Infant mortality rate: number of deaths before age 1 per 1,000 live births.
- ¹² Child and adolescent mortality: number of deaths per 100,000 children ages 1-19.
- ¹³ Overweight: percentage of children whose weight is over the 95th percentile for their age and sex.
- ¹⁴ Subjective health: percent of children with very good or excellent health (as reported by their parents).
- ¹⁵ Activity limitation: percent of children with activity limitations due to health reasons (as reported by their parents).
- ¹⁶ Elevated blood lead: percentage of children under six years old with elevated blood lead levels. Elevated blood lead levels are defined as blood lead levels equal to or greater than 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$).
- ¹⁷ Asthma: percentage of children ages 0 to 10 with current asthma.
- ¹⁸ Learning disability: percentage of children ages 3 to 11 reported to have ever been diagnosed by a school or health professional as having a learning disability.
- ¹⁹ ADHD: percentage of children ages 3 to 11 who have been diagnosed by a doctor or health professional as having attention deficit hyperactivity disorder.
- ²⁰ Feel unsafe at school: percentage of 6th grade students who feared attack or harm at school or on the way to and from school.
- ²¹ Homicide: homicide rates per 100,000 for infants under 1 year and children ages 1 to 9.
- ²² Child Maltreatment: percent of children who are victims of child maltreatment.
- ²³ Teenage birth rate: number of births per 1,000 girls ages 10-17.
- ²⁴ Violent crime victimization: violent crime victims per 1000 persons ages 12 to 19. Violent crimes included are homicide, rape, robbery, and both simple and aggravated assault.
- ²⁵ Violent crime offenders: rate of serious crimes perpetrated by youth ages 12–17 per 1000.
- ²⁶ Cigarettes: 12th-grade students who reported smoking cigarettes in the previous 30 days.
- ²⁷ Alcohol: 12th-grade students who reported having five or more alcoholic beverages in a row in the past 2 weeks.
- ²⁸ Drugs: 12th-grade students who have used illicit drugs in the previous 30 days.
- ²⁹ Residential mobility: rate of children who have moved within the last year.
- ³⁰ Change of school: rate of children who changed schools within the last year.
- ³¹ Single parenthood: percent of children living in single-parent families.
- ³² Parent had breakfast with child every day during a typical week last month (percent).
- ³³ Parent had dinner with child every day during a typical week last month (percent).
- ³⁴ Percentage of children ages 3 to 5 who were read to every day in the last week by a family member.
- ³⁵ TV rules: percent with all three types of family television rules including which programs, how early or late, and how many hours children are allowed to watch television.
- ³⁶ Percentage of 3- to 5-year-old children not yet enrolled in kindergartens that recognize all letters.
- ³⁷ Percentage of 3- to 5-year-old children not yet enrolled in kindergartens that can count to 20 or higher.
- ³⁸ Percentage of 3- to 5-year-old children not yet enrolled in kindergartens that can write their name.
- ³⁹ Percentage of 3- to 5-year-old children not yet enrolled in kindergartens that read or pretend to read.
- ⁴⁰ Percentage of 3- to 5-year-old children not yet enrolled in kindergartens that have 3-4 skills.
- ⁴¹ Standardized test scores from the National Assessment of Education Progress (NAEP).
- ⁴² Standardized test scores from the National Assessment of Education Progress (NAEP).
- ⁴³ Standardized test scores from the National Assessment of Education Progress (NAEP).
- ⁴⁴ Percentage of children ages 3-4 enrolled in preschool programs.
- ⁴⁵ Percentage of kindergartners enrolled in a full-day kindergartens
- ⁴⁶ Percentage of children ages 3 to 5 who are enrolled in center-based early childhood care and education programs.
- ⁴⁷ Percentage of children participating in specified extracurricular activity: sports.
- ⁴⁸ Percentage of children participating in specified extracurricular activity: clubs.
- ⁴⁹ Percentage of children participating in specified extracurricular activity: lessons.
- ⁵⁰ Percentage of students in 4th grade who reported missing 3 or more days of school in the previous month.
- ⁵¹ Percentage of adolescents ages 16-19 not working and not in school.

Appendix B

Data Source for Age-Specific CWI Indicators

Child Poverty	U.S. Bureau of the Census, Current Population Survey, Annual Social and Economic Supplement. http://pubdb3.census.gov/macro/032007/pov/toc.htm
Secure Parental Employment	U.S. Bureau of the Census, Current Population Survey. Available from Forum on Child and Family Statistics. http://childstats.ed.gov/americaschildren/tables/econ2.asp
Health Insurance	U.S. Bureau of the Census, Housing and Household Economic Statistics Division, unpublished tabulations from the March Current Populations Surveys, Washington, DC: U.S. Bureau of the Census. Special tabulation by Federal Intra-agency Forum. http://www.census.gov/hhes/www/hlthins/historic/hihist3.html
Mother Smoking During Pregnancy	Centers for Disease Control and Prevention, National Center for Health Statistics, Health United States and National Vital Statistics Reports. http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_08.pdf
No Usual Health Care	Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey. Available from Federal Forum on Child and Family Statistics. http://www.childstats.gov/americaschildren/tables/hc2.asp?popup=true
Vaccination	Centers for Disease Control and Prevention, National Center for Health Statistics, Health United States, and National Immunization Program. http://www.cdc.gov/vaccines/stats-surv/nis/data/tables_2006.htm
Unmet Dental Needs	Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey. http://www.cdc.gov/nchs/data/series/sr_10/sr10_231.pdf
With a Dental Visit Last Year	Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey. http://www.cdc.gov/nchs/data/series/sr_10/sr10_227.pdf
Late or No Prenatal Care	Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics Reports. http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_06.pdf
Low Birth Weight	CDC, National Center for Health Statistics, National Vital Statistics System, National Vital Statistics Report. http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_06.pdf
Infant Mortality Rate	CDC, National Center for Health Statistics, National Vital Statistics System, National Vital Statistics Report. http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_10.pdf
Child and Adolescent Mortality	CDC, National Center for Health Statistics, National Vital Statistics System, Leading Causes of Death. http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_10.pdf
Overweight	CDC, National Center for Health Statistics, Health United States, and National Health and Nutrition Examination Survey (NHANES), www.cdc.gov/nchs/data/hus/tables/2003/03hus069.pdf Data for 1999-2000, 2001-2002, and 2003-2004 from C.L.Ogden et al., (2006) JAMA, 295(13): 1549-1555.
Subjective well-being	CDC, National Center for Health Statistics, National Health Interview Survey, http://www.cdc.gov/nchs/data/series/sr_10/sr10_231.pdf
Activity Limitation	CDC, National Center for Health Statistics, National Health Interview Survey. Available from Federal Forum on Child and Family Statistics. http://www.childstats.gov/americaschildren/tables/health4.asp
Elevated Blood Lead	Centers for Disease Control and Prevention. Surveillance data for elevated blood lead levels among children-in the United States, 1997-2006. http://www.cdc.gov/nceh/lead/surv/stats.htm
Asthma	Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey. Available from Forum on Child and Family Statistics. http://www.childstats.gov/americaschildren/tables/health6b.asp
Learning Disability	Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey. Available from the Child Trends Databank. http://www.childtrends.databank.org/indicators/65LearningDisabilities.cfm

ADHD	Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey. Available from the Child Trends Databank. http://www.childtrends.databank.org/tables/76_Table_1.htm
Feel unsafe at school	Departments of Education and Justice, Indicators of School Crime and Safety. Available from the Child Trends Databank. http://www.childtrends.databank.org/tables/38_Table_1.htm
Homicide	Centers for Disease Control and Prevention, National Center for Health Statistics. Health United States, and National Vital Statistics Reports. http://www.cdc.gov/nchs/products/pubs/pubd/nvsr/nvsr.htm
Child Maltreatment	U.S. Department of Health and Human Services, Administration on Children, Youth, and Families, Child Maltreatment. http://www.acf.hhs.gov/programs/cb/pubs/cm05/cm05.pdf
Teen Birth	CDC, National Center for Health Statistics, National Vital Statistics System. National Vital Statistics Reports. http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_06.pdf
Violent Crime Victimization	U.S. Department of Justice, Bureau of Justice Statistics, National Crime Victimization Survey and FBI Supplementary Homicide Reports. www.ojp.usdoj.gov/bjs/glance/tables/vagetab.htm
Violent Crime Offenders	U.S. Department of Justice, Bureau of Justice Statistics, National Crime Victimization Survey. http://www.ojp.usdoj.gov/bjs/
Smoking, Drinking and Drug	Monitoring the Future Study, Institute for Social Research, University of Michigan: Ann Arbor, MI. www.monitoringthefuture.org/data/data.html ,
Residential Mobility	U.S. Bureau of the Census, Series P-20, Geographic Mobility, Washington, D.C.: US Bureau of the Census. http://www.census.gov/population/www/socdemo/migrate.html
Changes of School	U.S. Bureau of the Census, Survey of Income and Program Participation (SIPP). http://www.census.gov/population/socdemo/well-being/2004_detailedtables/04tabD17.xls
Single Parent Families	U.S. Bureau of the Census, Current Population Reports, Marital Status and Living Arrangements, Annual Reports. http://www.census.gov/population/socdemo/hh-fam/cps2006/tabC2-all.xls
Parent Had Breakfast/Dinner with Child Every Day	U.S. Bureau of the Census, Survey of Income and Program Participation (SIPP). http://www.census.gov/population/socdemo/well-being/2004_detailedtables/04tabD07.xls
Read to Every Day	U.S. Department of Education, National Center for Education Statistics, National Household Education Surveys Program (NHES). Available from Forum on Child and Family Statistics. http://www.childstats.gov/americanchildren/tables/ed1.asp
TV Rules	U.S. Bureau of the Census, Survey of Income and Program Participation (SIPP). http://www.census.gov/population/socdemo/well-being/2004_detailedtables/04tabD11.xls
Readiness Skills (Recognize Letter, Write Name, Count, Read, Skill)	National Center for Education Statistics, National Household Education Survey, 1993 and 1999. Home Literacy Activities & Signs of Children's Emerging Literacy. http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2000026
Reading, Math and Science	U.S. Department of Education Statistics, National Assessment of Education Progress (NAEP). http://nces.ed.gov/nationsreportcard
Preschool Enrollment	U.S. Department of Education, National Center for Education Statistics, Digest of Education Statistics and Bureau of the Census, Current Population Survey. http://www.nces.ed.gov/programs/digest/d07/tables/dt07_006.asp
Kindergarten	U.S. Department of Education, National Center for Education Statistics, The Condition of Education. Current Population Survey. Available from the Child Trend Databank, http://www.childtrends.databank.org/tables/102_Table_1.htm
Early Childhood Center Care	U.S. Department of Education, National Center for Education Statistics, The Condition of Education. http://nces.ed.gov/programs/coe/
Extracurricular Activity: Sports, Clubs and Lessons	U.S. Bureau of the Census, Survey of Income and Program Participation (SIPP) http://www.census.gov/population/socdemo/well-being/2004_detailedtables/04tabD13.xls
Missing 3+ days	U.S. Department of Education, National Center for Education Statistics. "Student Absenteeism." The Condition of Education 2006. http://nces.ed.gov/programs/coe/2006/section3/table.asp?tableID=480
Not Working and Not in School	U.S. Bureau of Labor Statistics, Current Population Surveys. Available from Forum on Child and Family Statistics. http://www.childstats.gov/americanchildren/tables/ed5a.asp

Appendix C

Methods of Construction of the Age-Specific CWIs

Annual time series data (from vital statistics and sample surveys) were assembled on about 25 national-level indicators in six quality-of-life domains: *Family Economic Well-Being, Health, Safety/Behavioral Concerns, Educational Attainment, Community Connectedness, and Social Relationships*. These six domains of quality of life have been well-established as recurring time after time in over three decades of empirical research in numerous subjective well-being studies. They also have been found, in one form or another, in studies of the well-being of children and youths. The indicators used in the construction of the Child and Youth Well-Being Index (CWI) for each of the three age groups studied are identified in Appendix A.

To calculate the CWIs, each of the time series of the indicators is indexed by a base year (1994). The base year value of the indicator is assigned a value of 100 and subsequent values of the indicator are taken as percentage changes in the CWI. The directions of the indicators are oriented so that a value greater (lesser) than 100 in subsequent years means the social condition measured has improved (deteriorated).

The indexed Key Indicator time series then are grouped into the six domains of well-being by equal weighting to compute the domain-specific Index values for each year. The six domain-specific Indices then are grouped into an equally-weighted Child and Youth Well-Being Index value for each year. The CWI Project uses an equal-weighting strategy for constructing its composite indices for two reasons. First, it is the simplest and most transparent strategy and can easily be replicated by others. Second, statistical research done in conjunction with the CWI Project has demonstrated that, in the absence of a clear ordering of the indicators of a composite index by their relative importance to the composite and on which there is a high degree of consensus in the population, an equal weighting strategy is privileged in the sense that it will achieve the greatest level of agreement among the members of the population. In statistical terminology, the equal-weighting method is a *minimax estimator*. See Hagerty Michael R. and Kenneth C. Land, 2007 “Constructing Summary Indices of Quality of Life: A Model for the Effect of Heterogeneous Importance Weights,” *Sociological Methods and Research*, 35(May): 455-496.

Since it builds on the subjective well-being empirical research base in its identification of domains of well-being to be measured and the assignment of indicators to the domains, the CWI and the associated age-specific CWIs can be viewed as *well-being-evidence-based measures of trends in averages of the social conditions encountered by children and youth in the United States across recent decades*.

Appendix D

Choice of Indicators Excluded, and Sensitivity Analyses of the Age-Specific Composite CWIs

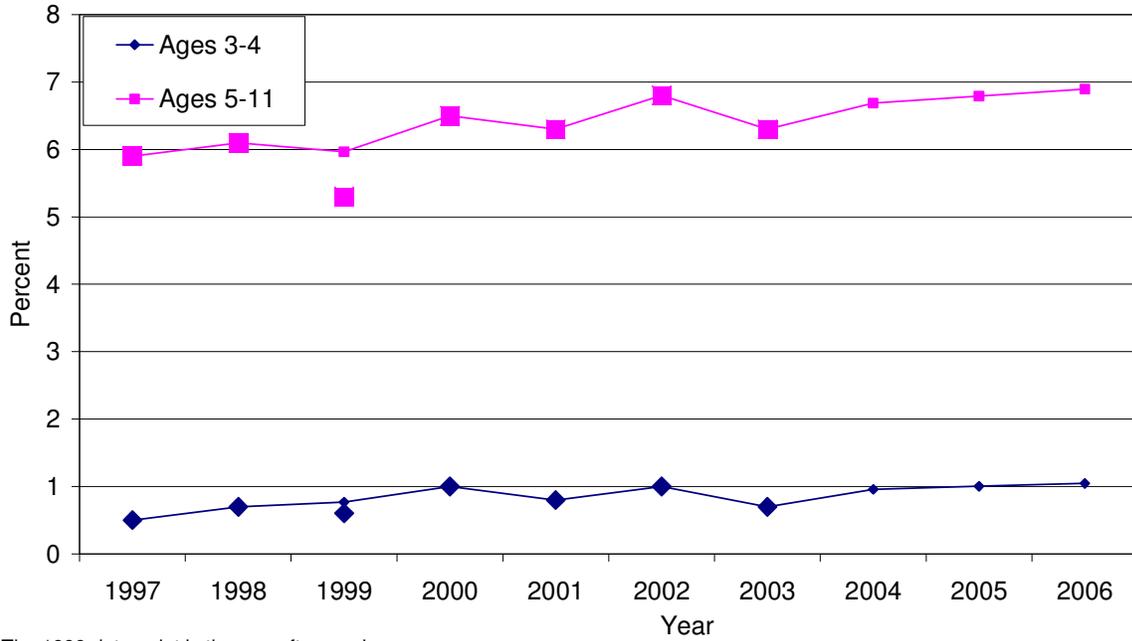
In constructing the age-specific composite CWIs, decisions were made about what indicators to exclude from the composites. This appendix identifies those indicators and describes our studies of the impacts of their inclusion or exclusion.

Time series charts for two indicators that we chose not to include in the composite indices are shown in Figures D-1 and D-2, namely, the percentages of children and youth reported by their parents to ever have been diagnosed by a school or health professional as having (1) a learning disability (LD) or as having (2) attention deficit hyperactive disorder (ADHD) – whereas Figure 2 does not include these two indicators. Diagnoses of these health outcomes may be subject to numerous social influence and desirability factors pertaining to the spread of awareness of these diagnoses. Consequently, estimates of prevalence, and trends therein, are controversial. Thus, we chose not to include these indicator series in our composites. We did, however, study the impacts of including the LD and ADHD series as compared to excluding them. Figure D-3 shows the trends in the age-specific composites and can be compared to Figure 1 in the main text.

The primary impact of inclusion of the LD and ADHD indicator series is on the infancy/early childhood composite indices, particularly after 1999. The 2006 values for the infancy/early childhood composite decline from about 110 in Figure 1 of the main text to about 108 in Figure D-3. By comparison, trends in the composite indices for the middle childhood and adolescence groups are affected little by inclusion or exclusion of the LD and ADHD series.

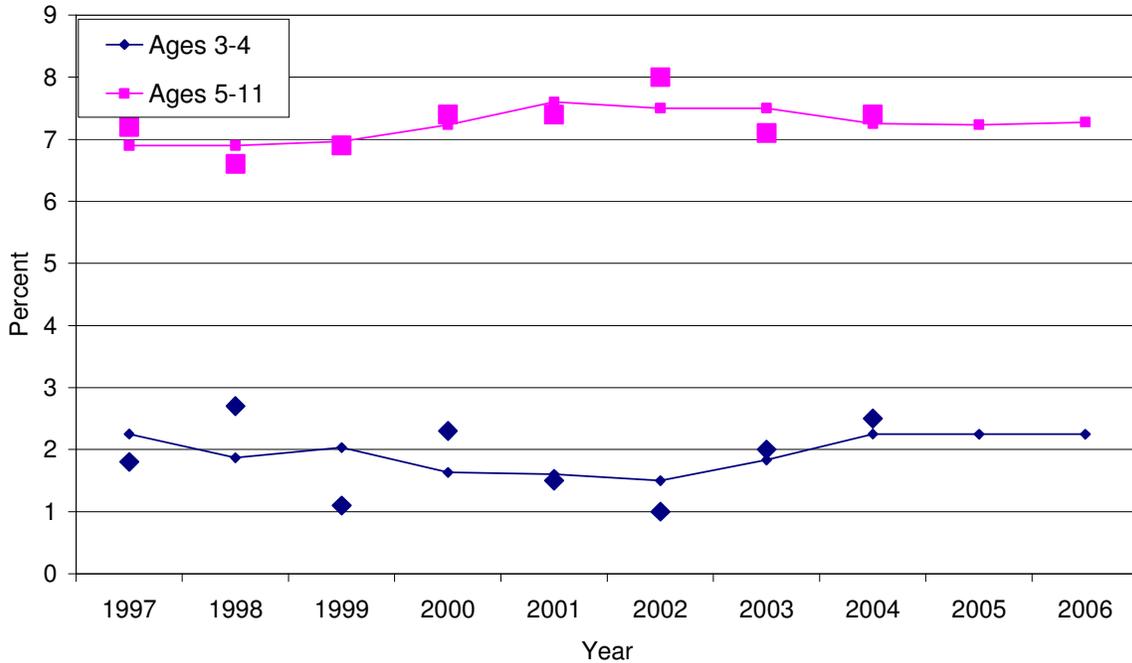
The reason for the larger impact on the infancy/early childhood composite CWI is that the prevalence rate for the ADHD series for the infancy/early childhood age group begins at a much lower level (about 0.5 percent) than does that for middle childhood (about 6 percent). By the end of the series, the infancy/early childhood rate is in the 1 percent range, which is a 100% increase, whereas that for the middle childhood group is in the 6.5 to 7 percent range, which reflects a much smaller increase. Thus, even though the prevalence rate for the ages infancy/early childhood group is small, its impact on the indexed/percentage changes from the base year is large compared to that for the middle childhood group because of a very low base year prevalence rate. For this reason as well as for the controversies surrounding LD and ADHD diagnoses mentioned above, we believe the age-specific composite CWIs in Figure 1 of the main text are more reliable and reflective of changes over the years 1994 to 2006.

Figure D-1. Percentage of Children Ages 3 to 11 who Have Been Diagnosed by a Doctor or Health Professional as Having Attention Deficit Hyperactivity Disorder (ADHD), 1997-2006



* The 1999 data point is the one after moving average

Figure D-2. Percentage of Children Ages 3 to 11 Reported to Have Ever Been Diagnosed by a School or Health Professional as Having a Learning Disability, 1997-2006



* Series after moving average, large symbols are actual data points

Figure D-3. Infancy/Early Childhood, Middle Childhood, and Adolescent Composite Well-Being Indices with Learning Disability and ADHD, 1994-2006

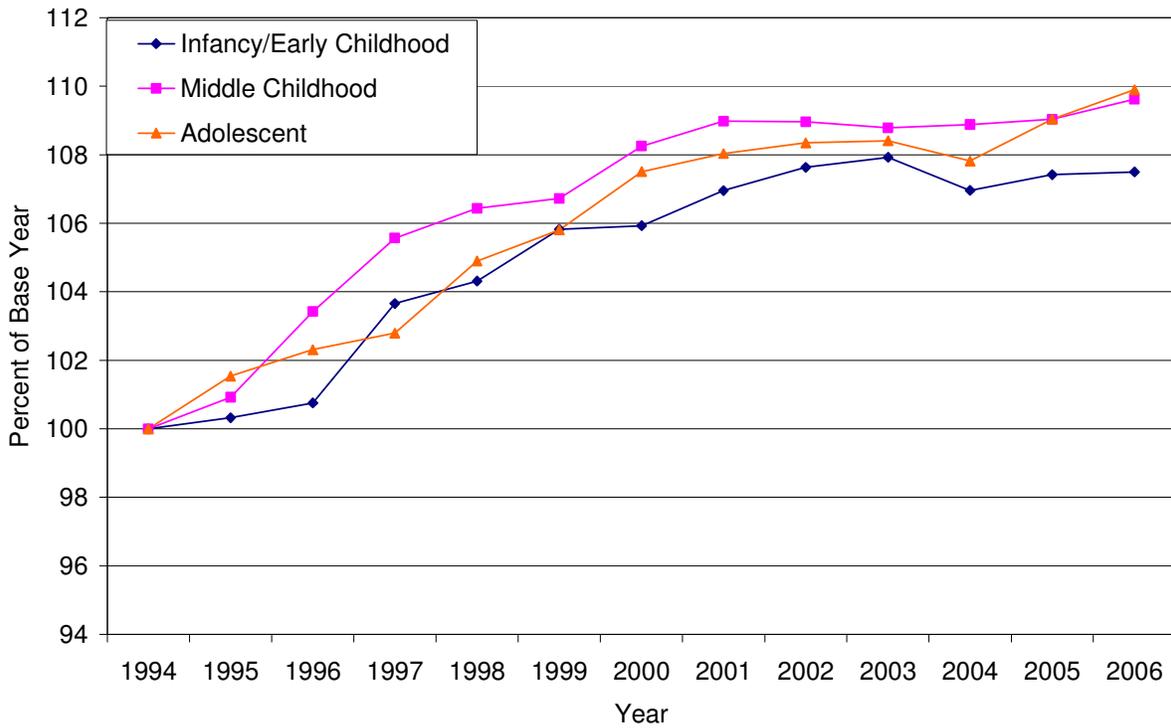


Figure D-4 shows the time trends for another indicator that we chose not to include in our age-specific composite CWIs, the percent of children who are victims of maltreatment. It can be seen from the figure that these time series show considerable, sudden variation from year-to-year that may be related to changes in laws, changes in reporting procedures, and changes in awareness among professionals and citizens. Overall, however, there are not large trends in the positive or negative directions in these two series. Thus, similar to the analyses reported above for LD and ADHD, their inclusion would not have much impact on trends in the overall composite CWIs.

Figure D-4. Percent of Children Who are Victims of Child Maltreatment, 1994-2006

