

## **The 2015 Duke Child and Youth Well-Being Index (CWI) Report, Including:**

- **Values of the CWI for the Years 1975–2012,**
- **An Updated Estimate of the Index for 2013,**
- **An Initial Estimate of the Index for 2014,**
- **Evidence for the Continuing Validity of the CWI as a Measure of Changes in Child and Youth Well-Being, and**
- **An Analysis of Changes in the CWI and Its Components Since the Great Recession of 2008-2009**

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# Executive Summary

## I. Overview

**Each year, the Child and Youth Well-Being Index Project at Duke University publishes a report on a comprehensive measure of how children are faring in the United States.**

The resultant **National Child and Youth Well-Being Index (CWI)** is based on a composite of **28 Key Indicators of Well-Being, grouped into seven Quality-of-Life/Well-Being Domains.** These Domains are: Family Economic Well-Being, Safe/Risky Behavior, Social Relationships, Emotional/Spiritual Well-Being, Community Engagement, Educational Attainment, and Health.

**This year's report includes:**

- **calculated values of the CWI for each of the years from 1975, the base year of the Index, to 2012;**
- **an updated estimate of the CWI for 2013** based on observed values of Key Indicators that have become available since last year's report;
- **an initial estimate of the CWI for 2014** based on those observed values of the Key Indicators for 2014 that are currently available, along with projections of the other Key Indicators;

**and highlights:**

- **evidence of the continuing validity of the CWI as a measure of changes in child and youth well-being; and**
- **changes (increases, decreases, stability) in the CWI, its 7 Well-Being Domains and 28 Key Indicators since the Great Recession of 2008-2009.**

## II. Major Findings

### **The Overall, Composite Child and Youth Well-Being Index (CWI):**

- **Both the updated estimate of the CWI for 2013 and the preliminary estimate for 2014 are substantially above the low point of the Index in 2009, which was at the depth of the impact of the Great Recession on child and youth well-being.**
- **Even so, this recent upturn has not yet reached the CWI levels of 2006, 2007, and 2008, before the Great Recession negatively impacted the CWI values.**
- **The long-term trend in the CWI is indicative of a small overall improvement in the 38 years since the 1975 base year of the Index.**
- **By comparison, medium-term changes in the CWI over the past 20 years show substantial improvements from low points in 1993-1994.**
- **Since 2002, the CWI has exhibited the imprint of the economic expansions and contractions of the first decade of the 21st century, especially the Great Recession of 2008–2009.**

### **The Continuing Validity of the CWI as a Measure of Changes in Child and Youth Well-Being:**

- **There is a striking similarity of trends over time of the CWI, which is based on objective statistical time series of social indicators, and the only continuous empirical data on trends in the subjective well-being of children and youth in American society across the past four decades.**
- **Because the CWI summarizes changes over time in a large array of conditions of life of children and youths, including non-economic as well as economic conditions, it succeeds in capturing trends in youths' satisfactions with life in both the short-term and the longer-term.**

### **Impacts of the Great Recession on Child and Youth Well-Being:**

- **The Great Recession was a period of large scale reduction in U.S. economic production and consumption over 18 months from December 2007 to June 2009.**
- **The negative impacts of the Great Recession, for which 2008 was the first full calendar year, on overall child and youth well-being, as measured by the CWI, were lagged, that is, not occurring until 2009.**

- **These negative impacts continued for three additional years, 2010, 2011, and 2012 with a recovery in 2013 and 2014 that approached the pre-Great Recession levels of 2006 and 2007.**
- **The Great Recession had negative direct impacts on the parental employment and income Key Indicators of the Family Economic Well-Being Domain that began in 2008 and lasted four additional years 2009, 2010, 2011, and 2012.**
- **The Great Recession also had second-order, indirect effects on other Key Indicators. Some of these effects were beneficial to child and youth well-being, such as those reducing violent crime victimization and offending and increasing post-high school educational attainment rates; others, such as reductions in pre-school enrollment rates, were detrimental to child and youth well-being.**

# The National Child and Youth Well-Being Index (CWI), 1975–2014<sup>1</sup>

## I. A Brief Overview

The *Child and Youth Well-Being Index (CWI)*<sup>2</sup> is an evidence-based<sup>3</sup> composite measure of trends over time in the quality of life of America’s children from birth up to the 18<sup>th</sup> birthday.<sup>4</sup> The CWI tracks changes in the well-being of children annually compared to 1975 base-year values.

The CWI is designed to address the following questions:

- On average, how did child and youth well-being in the U.S. change since 1975?
- Did child well-being improve or deteriorate?
- By approximately how much?
- In which Domains of Well-Being?

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<sup>1</sup> The geographical focus of the CWI in this Report is the U.S., that is, the nation as a whole; the conceptual framework and methodology of the CWI also has been applied at the level of the 50 U.S. states (see O’Hare, William P., Mark Mather, Genevieve Dupuis, Kenneth C. Land, Vicki L. Lamb, and Qiang Fu 2013 “Analyzing Differences in Child Well-Being Among U.S. States.” *Child Indicators Research* 6(June):401-413) and to regions within the states (see Lee, Joonkoo, Vicki L. Lamb, and Kenneth C. Land 2009 “Composite Indices of Changes in Child and Youth Well-Being in the San Francisco Bay Area and the State of California, 1995-2005.” *Child Indicators Research* 2(December):353-374).

<sup>2</sup> In previous years, the Foundation for Child Development, which has funded the development and research of the CWI, also managed the release of the Annual CWI Reports. Accordingly, the CWI previously was known as the Foundation for Child Development Child and Youth Well-Being Index (FCD-CWI). Beginning with the 2014 Annual CWI Report, the release of the CWI is managed by the Center for Child and Family Policy at Duke University. Thus, for consistency with the previous branding of the Index, it now can be termed the Duke Center for Child and Family Policy Child and Youth Well-Being Index (DCCFP-CWI). Since this label is too long, for simplicity we term it the Duke CWI for short.

<sup>3</sup> The CWI is evidence-based in two senses. First, the Index is based on statistical time series of empirical data on the Key Indicators. Second, the Domains of Well-Being and the choices of the Key Indicators within each Domain are based on decades of studies of well-being, including both quantitative and qualitative research on the well-being of children, adolescents, teenagers, and young adults. See Land, Kenneth C., Vicki L. Lamb, and Sarah Meadows 2012 “Conceptual and Methodological Foundations of the Child and Youth Well-Being Index.” Pp. 13-28 in Land, Kenneth C. (ed.) 2012 *The Well-Being of America’s Children: Developing and Improving the Child and Youth Well-Being Index*. New York: Springer.

<sup>4</sup> Or, as stated using Census/demographic notation, ages 0 to 17 at last birthday. Some of the Key Indicators in the CWI use slightly higher or slightly lower upper bounds, because of the age intervals in which the Indicators are reported. Our analyses, however, have found that the main focus of the CWI—the measurement of trends over time—is not greatly affected by these small differences in upper-age boundaries.

The CWI, a composite index based on data from 28 Key Indicators, is computed and updated annually. Observed data on 26 of the 28 Key Indicators are currently available through the year 2012; observations are available on 22 of the 28 Key Indicators for 2013, and on 11 of the 28 Key Indicators for 2014. The remaining Indicators are projected by use of statistical time series and demographic projection models.<sup>5</sup> Accordingly, this report includes the calculated values of the CWI for the years 1975–2012, an update of the CWI estimate for 2013, and an initial estimate of the CWI for 2014.

The objective of the CWI is to give a view of changes over time in the overall well-being of children and youth in the United States.<sup>6</sup> The composite Index, an equally-weighted average<sup>7</sup> of its seven Quality-of-Life/Well-Being Domains, provides a sense of the direction of change in overall well-being, as compared to the 1975 base year of the indicators. For this reason, the focus of the Index is not primarily on specific Indicators, but rather on the way in which they interact and change over time.

**As a composite index of changes over time, the most important information to be found in the CWI is in the direction of change in Key Indicators and Well-Being Domains: Are the indices up and thus indicative of overall improvements? Down and thus indicative of deterioration? Flat and thus indicative of little or no change?**

Children and youth live unique lives; each experiences a range of social conditions at different points. The Index comprises Key Indicators associated with different stages of the first two decades of life. Different Indicators capture children and youth at different stages of life. During the early childhood years, for example, PreKindergarten enrollment is an Indicator of early schooling participation, while the violent crime victimization rate is indicative for ages 12–17.

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<sup>5</sup> For a description of the autoregressive integrated moving average (ARIMA) models used to project each individual Key Indicator time series, see pp. 70-71 in Land, Kenneth C. (ed.) 2012 *The Well-Being of America's Children: Developing and Improving the Child and Youth Well-Being Index*. New York: Springer.

<sup>6</sup> The basic CWI that is the subject of this report is focused on the population of all American children and youth. As part of our research on child well-being, however, we also have studied time trends in the CWI for children classified by race/ethnicity, family income levels, and immigrant status (see pp. 29-76 and 77-120 of Land, Kenneth C. (ed.) 2012 *The Well-Being of America's Children: Developing and Improving the Child and Youth Well-Being Index*. New York: Springer). These studies generally show that, when the overall CWI changes (increases, decreases) by 1 unit, the CWI for children from African-American and Hispanic families and from families in the lowest quintile of the income distribution correspondingly changes (increases, decreases) by 1.5 to 2 units. That is, children from African-American and Hispanic families and from families in the lowest quintile of the income distribution, on average, benefit more than the total child and youth population when the CWI increases and are negatively affected more than the total child and youth population when the CWI decreases. Part of the reason for these multipliers being larger than 1 is that children from white and Asian families and from families in the upper parts of the income distribution generally fare better on the well-being outcomes measured by the CWI and have less to gain during periods of overall increasing child well-being than those from other race/ethnic groups and at lower levels of the family income distribution.

<sup>7</sup> On equal-weighted averages for well-being indices as statistical estimators, see Appendix A.

The overall CWI includes the following 28 Key Indicators, organized into seven Quality-of-Life/Well-Being Domains that have been found in many social science studies to be related to an overall sense of subjective well-being or satisfaction with life.<sup>8</sup> Each Domain represents an important area that affects quality of life:

*Family Economic Well-Being Domain*<sup>9</sup>

1. Poverty Rate (All Families with Children Ages 0–17)
2. Secure Parental Employment Rate (All Families with Children Ages 0–17)
3. Median Annual Income (All Families with Children Ages 0–17)
4. Rate of Children with Health Insurance (All Families with Children Ages 0–17)

*Safe/Risky Behavior Domain*<sup>10</sup>

1. Teenage Birth Rate (Ages 10–17)
2. Rate of Violent Crime Victimization (Ages 12–19)<sup>11</sup>
3. Rate of Violent Crime Offenders (Ages 12–17)
4. Rate of Cigarette Smoking (Grade 12)<sup>12</sup>
5. Rate of Binge Alcohol Drinking (Grade 12)
6. Rate of Illicit Drug Use (Grade 12)

*Social Relationships Domain*

1. Rate of Children in Families Headed by a Single Parent (All Families with Children Ages 0–17)
2. Rate of Children Who Have Moved Within the Last Year (Ages 1–17)

*Emotional/Spiritual Well-Being Domain*

1. Suicide Rate (Ages 10–19)<sup>13</sup>
2. Rate of Weekly Religious Attendance (Grade 12)
3. Percent Who Report Religion as Being Very Important (Grade 12)

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<sup>8</sup> See footnote 2. Some Key Indicators can be assigned to more than one Well-Being Domain, but, for purposes of Domain-Specific and Overall Index construction, each is included in only one Domain.

<sup>9</sup> The label “Material Well-Being” has also been used for this Domain.

<sup>10</sup> The label “Safety/Behavioral Concerns” has also been used for this Domain.

<sup>11</sup> The upper age limit of 19 is used for this indicator, as the data series for this Key Indicator are not available for ages 12–18 separately.

<sup>12</sup> The Monitoring the Future (MTF) Project is the source of time series data for five of the Key Indicators (Rates of Cigarette Smoking, Binge Alcohol Drinking, and Illicit Drug Use in this Domain, as well as Rate of Weekly Religious Attendance and Percent Who Report Religion as Being Very Important in the Emotional/Spiritual Well-Being Domain). The MTF Project originally began as the High School Senior Survey in 1975, with surveys of national samples of seniors (modal age 18) in U.S. high schools taken in the spring of the academic school year. Samples of 8<sup>th</sup> graders (modal age 14) and 10<sup>th</sup> graders (modal age 16) were added in 1991. In studies of time series of MTF data on these five Key Indicators, we have found substantial covariation over time among the 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> grade responses. For this reason, and because the 12<sup>th</sup> grade data extend back to the principal base year of the CWI Project, 1975, we use the 12<sup>th</sup> grade time series as data for these five Key Indicators.

<sup>13</sup> The upper age limit of 19 is used for Suicide Rate (Emotional/Spiritual Domain) as well as Mortality Rate and Rate of Obese Children and Adolescents (Health Domain), as these data series are not available for an upper age limit of 18.

*Community Engagement Domain*<sup>14</sup>

1. Rate of Persons Who Have Received a High School Diploma (Ages 18–24)<sup>15</sup>
2. Institutionally Disconnected Youth Rate (Ages 16–19)<sup>16</sup>
3. Rate of PreKindergarten Enrollment (Ages 3–4)
4. Rate of Persons Who Have Received a Bachelor’s Degree (Ages 25–29)<sup>17</sup>
5. Rate of Voting in Presidential Elections (Ages 18–24)<sup>18</sup>

*Educational Attainment Domain*

1. Reading Test Scores (Averages of Ages 9, 13, and 17)
2. Mathematics Test Scores (Average of Ages 9, 13, and 17)

*Health Domain*

1. Infant Mortality Rate
2. Low Birth Weight Rate
3. Mortality Rate (Ages 1–19)
4. Rate of Children with Very Good or Excellent Health (Ages 0–17, as reported by parents)
5. Rate of Children with Activity Limitations due to Health Problems (Ages 0–17, as reported by parents)
6. Rate of Obese Children and Adolescents (Ages 6–19)

Appendix A briefly describes the Methods of Index Construction for the CWI. Sources for time series data on the Key Indicators are presented in Appendix B.<sup>19</sup>

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<sup>14</sup> This Domain includes participation in educational, economic, and political institutions. The labels “place in community” and “community connectedness” also have been used for this Domain in previous CWI Reports.

<sup>15</sup> Since some youth are delayed in completing the requirements for high school diplomas or General Education Equivalent (GED) degrees, a higher upper age limit is used for this Key Indicator series.

<sup>16</sup> The rate of those ages 16 to 19 who are not working and not in school. The upper age limit of 19 is used for this Indicator, as the data series is not available for an upper age limit of 18.

<sup>17</sup> Similarly to the use of a higher age limit for the high school diploma Key Indicator, a higher age limit is used for this series, in order to index trends in commitment to, and participation in, higher education institutions.

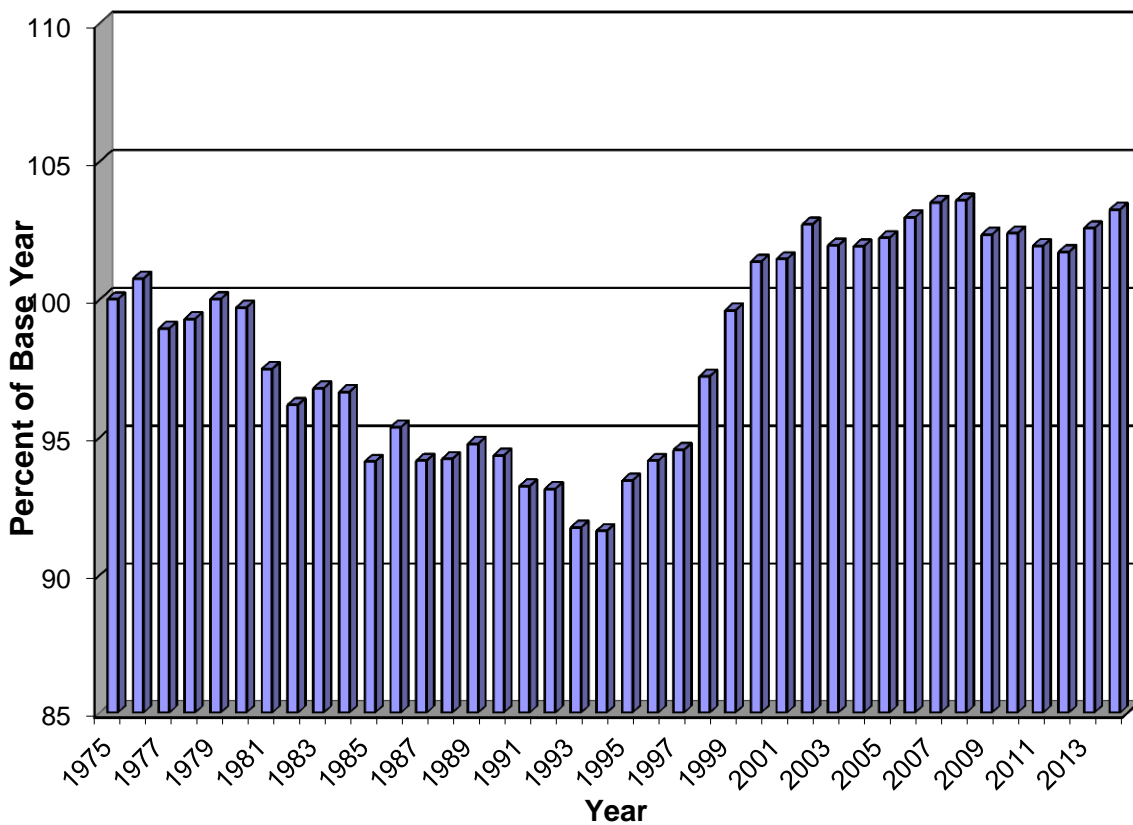
<sup>18</sup> Since the legal voting age for presidential elections is 18, ages 18–24 are used to represent trends in youth voting behavior.

<sup>19</sup> Those Key Indicators that do not directly measure outcomes for children and youth are proxy Indicators of the same. For instance, data are not available on direct measure of the poverty status of children, only on the poverty status of families that have children up to age 18. However, it is not strained to infer that a child living in a family whose income falls below the poverty line has a poverty-level economic well-being. Thus, the poverty status of the family is used as a proxy Indicator for the poverty status of the child.



## II. Annual Update of the Overall National Child and Youth Well-Being Index (CWI) and Its Seven Domain-Specific Component Indices

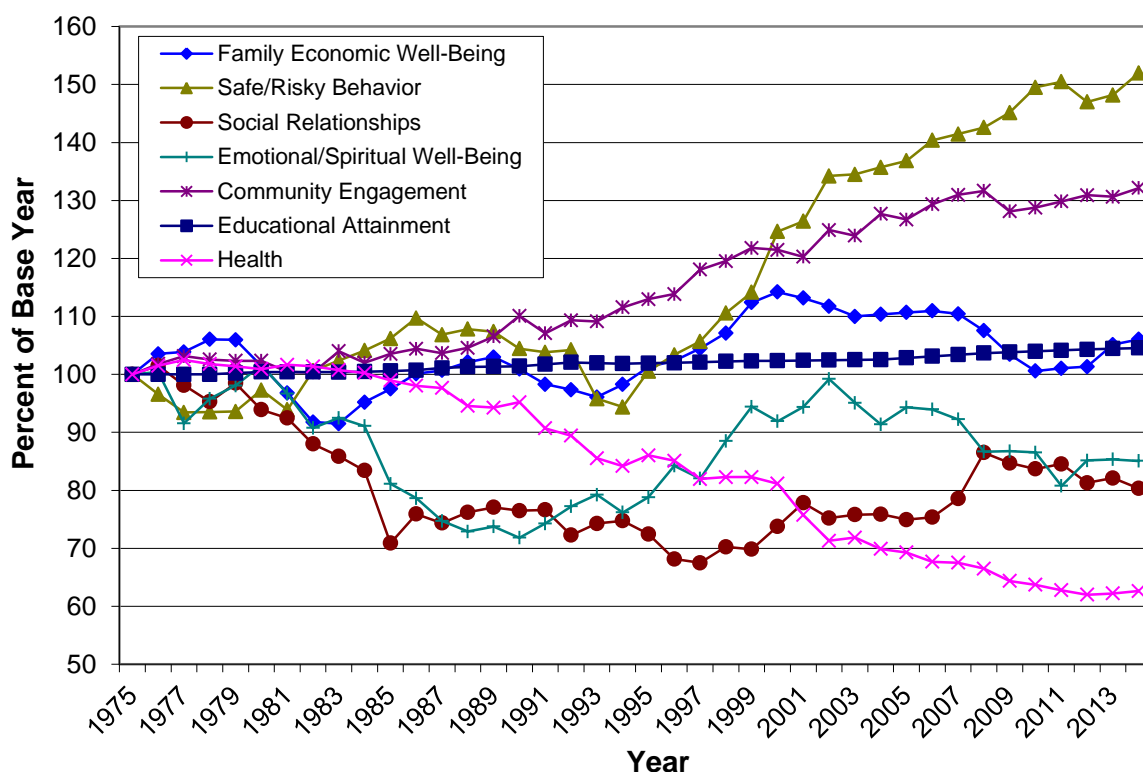
Each year, we report the updated values of the overall CWI through the most recent year. **Figure 1 charts annual percentage changes since 1975 in the overall composite CWI, with the value of the CWI in the base year 1975 set equal to 100.**<sup>20</sup> For all Key Indicators and Domain Indices of the CWI, a numerical value above 100 indicates an improvement in overall child and youth well-being, as compared to 1975 base-year values. For example, an Index value of 102 would indicate, on average across all Key Indicators and Domains, a two percent improvement in well-being compared to the values of the Indicators and Domains in 1975, whereas an Index value of 97 would indicate a deterioration of three percent compared to 1975 values.



**Figure 1: Child Well-Being Index, 1975-2014**

<sup>20</sup> The specific annual numerical values of the overall CWI, from which Figure 1 is constructed, are provided in Appendix C.

As stated in the Overview of the CWI in Section I, the overall, composite CWI has seven Domains-of-Well-Being Indices: Family Economic Well-Being, Safe/Risky Behavior, Social Relationships, Emotional/Spiritual Well-Being, Community Engagement, Educational Attainment, and Health. To help interpret the changes in the overall CWI in Figure 1, Figure 2 charts annual percentage changes since 1975 in these seven domain-specific indices, with their values in the base year 1975 set equal to 100.



**Figure 2. Domain-Specific Summary Indices, 1975-2014**

Trends in the overall, composite CWI (Figure 1) and in its domain-specific indices (Figure 2) give a sense of changes in child and youth well-being in the *long-term* (since the base year 1975), in the *medium-term* (the past couple of decades), and in the *short-term* (the last few years, which will be discussed separately in Section IV). The long-term and medium-term time frames yield a historical perspective, as values of the Index for the 1980s and early 1990s pertain to individuals who were children at that time but are part of today’s parental cohorts.

*Over the long-term of 39 years (1975–2014), Figure 1 shows that the CWI has had periods of both deterioration and improvement.* Through the late-1970s, the CWI oscillated at levels near the 1975 base year value of 100; it then shows a decline beginning in 1980 and ending in 1994 with a value of 91.60. Previous annual CWI reports have shown the roots of this decline in the economic recession of the early 1980s (which negatively affected the Family Economic Well-Being Domain Index; see Figure 2); in changing family structures (toward more single-

parenting; see the Social Relationships Domain Index in Figure 2); in an upturn in risky behavior (especially increases in teenage childbearing, illicit drug use, and violent crime victimization and offending; see the Safe/Risky Behavior Domain Index in Figure 2); and in the beginnings of the trend towards an increasing prevalence of obese children (which negatively impacted the Health Domain Index; see Figure 2).

***In the medium-term of the past 20 years from 1994 to 2013, the CWI increased through the late-1990s, reaching a peak of 102.71 in 2002.*** Previous annual CWI reports have shown that this period of increase was associated with the rapidly expanding economy of the late-1990s (see the Family Economic Well-Being Index in Figure 2), the stabilization of family structures (see the Social Relationships Domain Index in Figure 2), and downturns in risky behavior (see the Safe/Risky Domain Index of Figure 2).

Since 2002, the Index has oscillated at or near this peak, with values of 102.97 in 2006, 103.50 in 2007, and 103.58 in 2008. In the most recent years, the Index values are 101.94 in 2011, 101.71 in 2012, with an updated estimate of 102.58 in 2013, and an initial estimate of 103.25 for 2014. The CWI since 2002 exhibits the imprint of the economic expansions and contractions of the first decade of the 21<sup>st</sup> century, especially the Great Recession of 2008–2009. Values of the CWI and its components for the years since the Great Recession are discussed in detail in Section IV.

As evident from Figure 1, the long-term trend in the CWI, taking into account the improvements in some Well-Being Domains and Key Indicators and deteriorations in others, yields values of the Index in the most recent years 2011, 2012, and 2013 slightly above the 100 base year value. In other words, ***the predominant long-term trend in the CWI is indicative of a small overall improvement in 38 years.*** By comparison, ***medium-term changes in the CWI over the past 20 years show substantial improvements, from 91.6 in 1994 to 102.58 in 2013,*** largely due to the recovery from the declines of the late-1980s/early-1990s as noted above.

### **III. The Continuing Validity of the CWI as an Index of Changes in Child and Youth Well-Being**

In Section I, we remarked that the construction and content of the Child and Youth Well-Being Index, its seven Domains of Well-Being, and its 28 time series of Key Indicators are based on much prior social indicators/quality-of-life/well-being research. As an Index number, there are two possible perspectives that can be held with respect to the CWI. First, it can be viewed as a summary of percentage changes over time in the numerical values of its Key Indicators and Domain Indices. Second, the Index can be viewed as both that and as an indicator of changes over time in the actual overall well-being of children and youths in American society across the past four decades.

The question of whether the second perspective has validity has been previously addressed in our research by assessing what is termed the external validity of the CWI as a well-being trends indicator.<sup>21</sup> The basic idea of such an external validity test is that, while the structure and composition of the CWI is based on a body of prior research on the domains of life that have been found to be associated with individual's assessments (including those of children and youths) of their well-being (their subjective levels of happiness or satisfaction with their lives overall), the CWI is based only on time series of statistical indicators of objective conditions and does not directly incorporate data on subjective assessments. Accordingly, a comparison of trends over time in the CWI with trends in such subjective assessments can be conducted. If such a comparison shows similar trends, this lends credibility of the CWI as a child and youth well-being trends indicator; if not, then it may well summarize the percentage changes in the Key Indicators and Domain Indices but variations over time in this composite number do not necessarily correspond to corresponding variations in subjective well-being assessments. Suffice it to say that this is a strong external validity criterion for the CWI.

To construct such a test, we compare trends in the CWI with trends in responses to an overall life satisfaction question asked annually of a large national sample of U.S. high school seniors (12<sup>th</sup> graders) since 1975 as part of the Monitoring the Future (MTF) project. Specifically, the MTF question, administered annually to 12th graders since 1975, is of the conventional global satisfaction with life form: "How satisfied are you with your life as a whole these days?"<sup>22</sup> The answer range is a seven-point Likert rating scale: Completely Dissatisfied, Quite Dissatisfied, Somewhat Dissatisfied, Neither Satisfied or Dissatisfied, Somewhat Satisfied, Quite Satisfied,

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<sup>21</sup> See Land, Kenneth C., Vicki L. Lamb, Sarah O. Meadows, and Ashley Taylor 2007 "Measuring Trends in Child Well-Being: An Evidence-Based Approach." *Social Indicators Research* 80(January):105-132; Land, Kenneth C. (ed.) 2012 *The Well-Being of America's Children: Developing and Improving the Child and Youth Well-Being Index*. New York: Springer.

<sup>22</sup> This is the only nationally representative continuous time series of data on responses to a subjective well-being question for the U.S. population of children and youths. Since 1991, the MTF project also has included national samples of 8<sup>th</sup> and 10<sup>th</sup> graders. The overall life satisfaction question is not asked of these respondents. As noted above in footnote 12, in studies of time series of the five Key Indicators from the MTF project included in the CWI, we have found substantial covariation over time among the 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> grade responses. Hence, it is likely that variations over time in the life satisfaction question responses from the 12<sup>th</sup> graders are reflective of variations in the well-being of 8<sup>th</sup> and 10<sup>th</sup> graders, some of whom are younger siblings of the 12<sup>th</sup> graders, as well.

and Completely Satisfied. For comparisons with the CWI, we first combined the last two response categories to calculate the percent of the 12th graders who respond that they either are Quite or Completely Satisfied in each year from 1975 to 2013. Next, because the annual MTF data are based on samples and the annual CWI is based on averages of numerous population and statistical averages, the latter varies more smoothly from year to year. Accordingly, in order to smooth out the MTF series to show its primary temporal trends, we applied three-point moving averages to the series two times.

Figure 3 displays a graph of the resulting comparison of trends in the CWI with those of smoothed data on overall life satisfaction for High School Seniors from the Monitoring the Future Study. This graph replicates and extends to a recent year the findings of our earlier studies – that is, it shows a striking similarity of trends over time of the CWI, which is based on objective statistical time series of social indicators, and the only continuous empirical data on trends in the subjective well-being of children in American society across the past four decades (the correlation of the two series is 0.84, which implies that they share about 70 percent of their over-time variance).

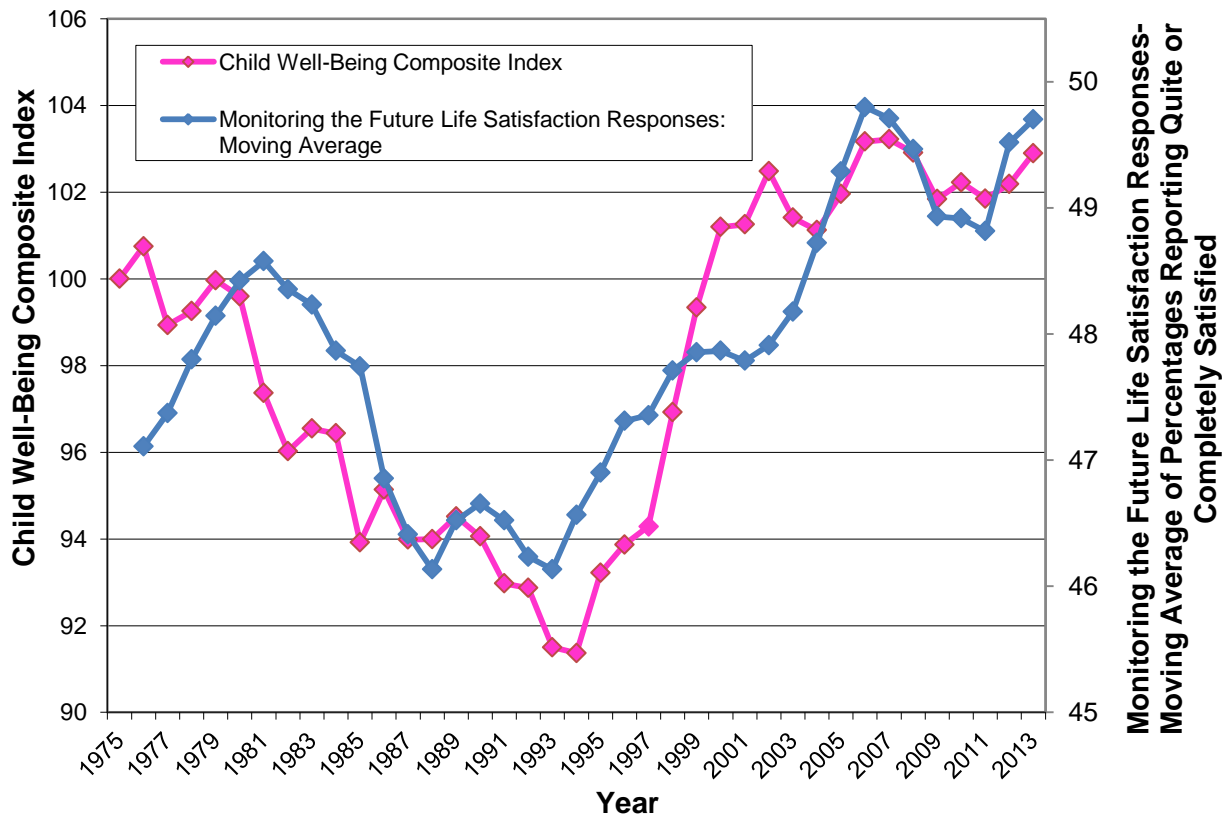


Figure 3. CWI and Smoothed MTF Life Satisfaction Trend, 1976-2013

In brief, the CWI passes this updated external validity assessment. That is, this assessment shows the remarkable continuing validity of the CWI as an index of changes over time in child and youth well-being.

How can this be interpreted? In the quality-of-life/well-being research literature, there has been a long-standing discussion of the so-called *happiness-income paradox*.<sup>23</sup> This paradox states that *over the long-term*—usually a period of 10 years or more—happiness does not increase as a country’s income rises. Research on this paradox also generally finds that, *in the short-term*, happiness and income go together, i.e., happiness tends to fall in economic contractions and rise in expansions.

These findings are consistent with the general body of research on subjective assessments of well-being to the effect that such assessments are affected by conditions of life other than economic conditions, a body of research on which the CWI has built. Correspondingly, as the comparisons of trends over time in Figure 3 show, trends in the CWI “go together” with both short-term trends in economic conditions (more about this in Section IV) and longer-term trends in other conditions of life of children and youths in American society – that is, *because the CWI summarizes changes over time in the social conditions of life of children and youths, including non-economic as well as economic conditions, it succeeds in capturing trends in satisfactions with life in both the short-term and the longer-term*. While this facilitates an understanding of the co-variation over time illustrated in Figure 3, the key takeaway is that it exists and has been replicated up to a recent year.

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<sup>23</sup> See Easterlin, Richard A., Laura Angelescu McVey, Malgorzata Switek, Onnicha Sawangfa, and Jacqueline Smith Zweig 2010 “The Happiness-Income Paradox Revisited.” *Proceedings of the National Academy of Sciences* 107:22463–22468.

## **IV. Recovery of Child and Youth Well-Being from the Great Recession?**

The Great Recession was a period of large scale reduction in U.S. economic production and consumption over 18 months from December 2007 to June 2009 according to the National Bureau of Economic Research, the official arbiter of U.S. recessions.<sup>24</sup> Considering only full calendar years, we now are some five years post the Great Recession (2010, 2011, 2012, 2013, and 2014). And with time series on a number of the Key Indicators of the CWI through 2014, we can pose and address the questions:

- What impacts did the Great Recession have on child and youth well-being as measured by the CWI, its Domain-Specific Indices, and its Key Indicators?
- For how long?
- And does the CWI and its Key Indicators show evidence of a recovery from those negative impacts in the most recent years?

### **Effects of the Great Recession on Overall Child and Youth Well-Being**

Commencing with the overall, composite CWI (see Figure 1 in Section II), it is evident that negative impacts of the Great Recession were lagged, that is, not occurring until 2009. The specific numerical values of the CWI (see Appendix C) shown graphically in Figure 1 from 2006 to our updated estimate for 2013 and initial estimate for 2014 are: 2006-102.97, 2007-103.5; 2008-103.58, 2009-102.34, 2010-102.39, 2011-101.94, 2012-101.71, 2013-102.58, and 2014-103.25. In brief:

- ✓ The peak values of the CWI reached in recent years were 103.5 in 2007 and 103.58 in 2008.
- ✓ The CWI series then began a decline to lower levels in the four years 2009, 2010, 2011 and 2012, followed by increases to an updated estimate of 102.58 in 2013 and an initial estimate of 103.25 in 2014—which is above the Index value for 2006.
- ✓ In sum, with respect to overall child and youth well-being, as measured by the CWI, there was a substantial lagged negative impact of the Great Recession that began in 2009 and continued for four years through 2012, followed by a recovery in 2013 and 2014 to values near those of 2007 before the Great Recession—thus indicating that it took six years for the Index to recover from the negative impact of the Great Recession

### **Effects of the Great Recession on Well-Being Domains**

A takeaway message from the foregoing analysis of the composite CWI is that the impacts of the Great Recession on U.S. child and youth well-being were lagged by about a year, from 2008 (the first full calendar year of the Great Recession) to 2009.

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<sup>24</sup> <http://www.nber.org/cycles.html>, accessed November 11, 2015.

The Domain-Specific graphs shown in Figure 2 of Section II provide some initial insight for this:

- ✓ The Family Economic Well-Being Index began to show a slight decline from its value in 2006 to 2007 followed by larger declines in 2008 and 2009 to a low point in 2010; it then slightly increased in 2011 and 2012 followed by larger increases in 2013 and 2014. In brief, the Family Economic Well-Being clearly shows the imprint of the Great Recession in 2008 and 2009.
- ✓ However, this is counterbalanced by smaller negative impacts in some other Domain-Specific Indices that did not begin until 2009: In particular, the Community Engagement and Emotional-Spiritual Well-Being Domain Indices did not show negative impacts until 2009.
- ✓ And two Domain-Specific Indices had countervailing increases—the Social Relationships Domain Index increased in 2007 and 2008, and the Safe/Risky Behavior Domain Index increased from 2007 through 2011.

To probe more deeply into these Domain-Specific impacts of the Great Recession on child and youth well-being, we next examine several CWI Key Indicators.

### **Direct Impacts of the Great Recession—Family Economic Well-Being Key Indicators**

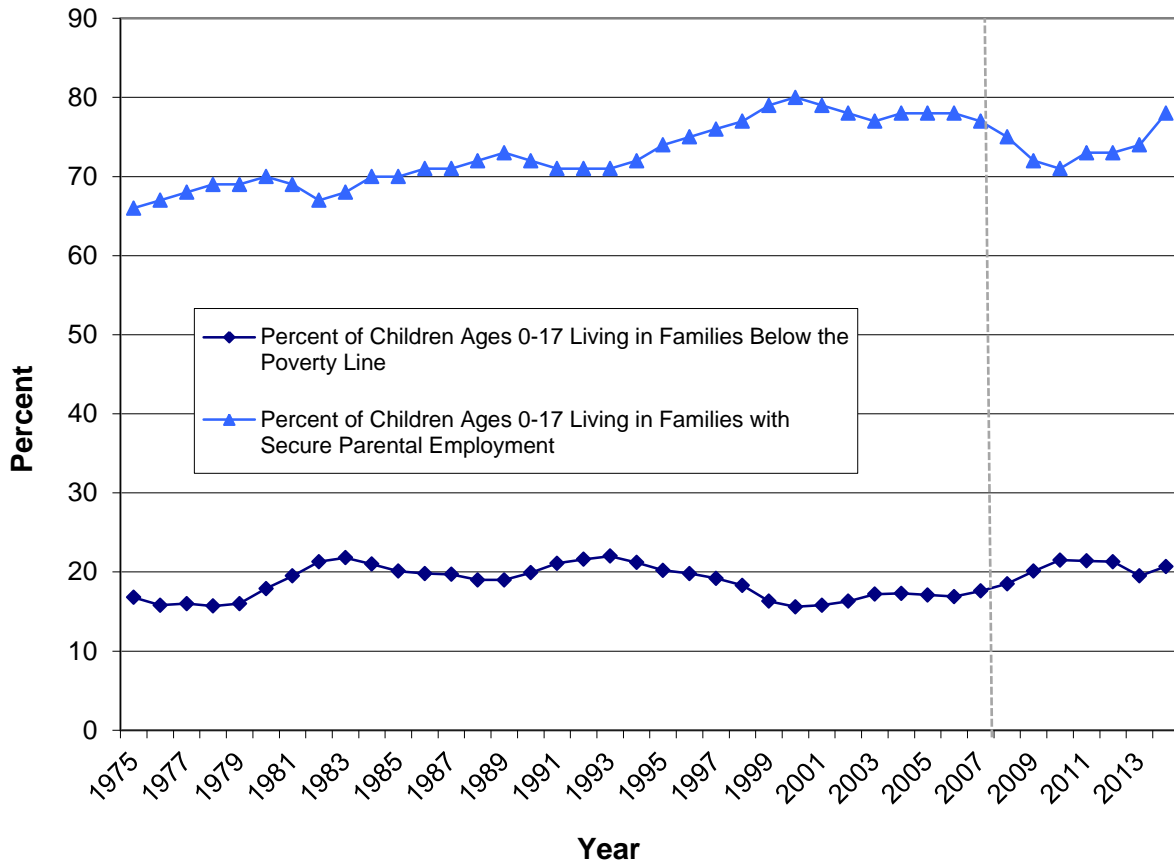
The CWI includes four Key Indicators (see Section I) of the economic well-being of the family contexts of children and youths. Figure 4 shows charts of trends over time for two of these Key Indicators—the poverty rate (percent of children ages 0-17 living in families below the official (Census Bureau) poverty line) and the secure parental employment rates (percent of children ages 0-17 living in families with at least one parent employed full-time, year-round). As an aid to visualizing the impact of the Great Recession, Figure 4 has a vertical dashed line through the values of the Key Indicators in its first full year, 2008.<sup>25</sup>

These two Key Indicators are directly impacted by economic contractions—as the economy deteriorates into a recessionary period, some parents experience job losses and/or less than full-time employment. This is clearly evident in 2008 through 2012, with some recovery in 2013 and 2014. For 2014, the poverty rate series shows a slight increase, even though the economy was improving. Our analysis of related time series indicates that the increase in poverty could be due to an increased rate of single-parenting (both female- and male-headed) in 2014 as the economy improved. It is likely some parental couples deferred separation/divorce during the depths of the Great Recession (and thus cushioned the impact of the Great Recession on Child and Youth Well-Being through the Single-Parent Key Indicator of the Social Relationships Domain Index of the CWI).

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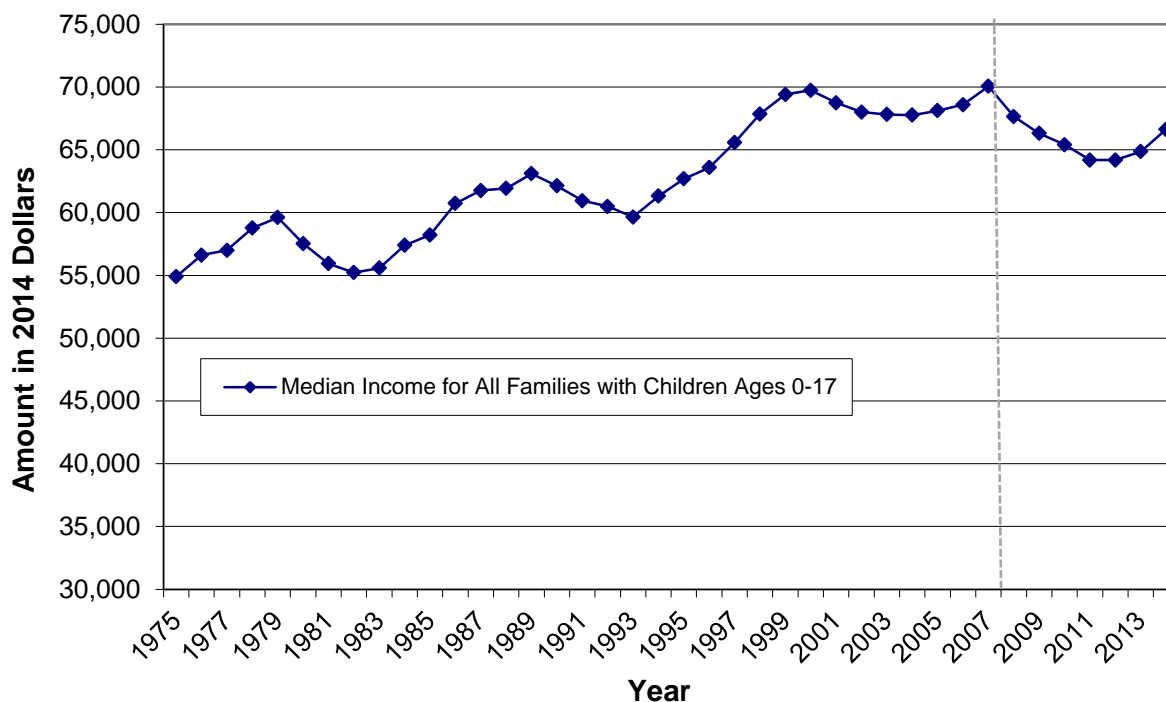
<sup>25</sup> This visual aid will be included in all of the subsequent Key Indicator charts.





**Figure 4. Poverty and Secure Parental Employment Rates, 1975-2014**

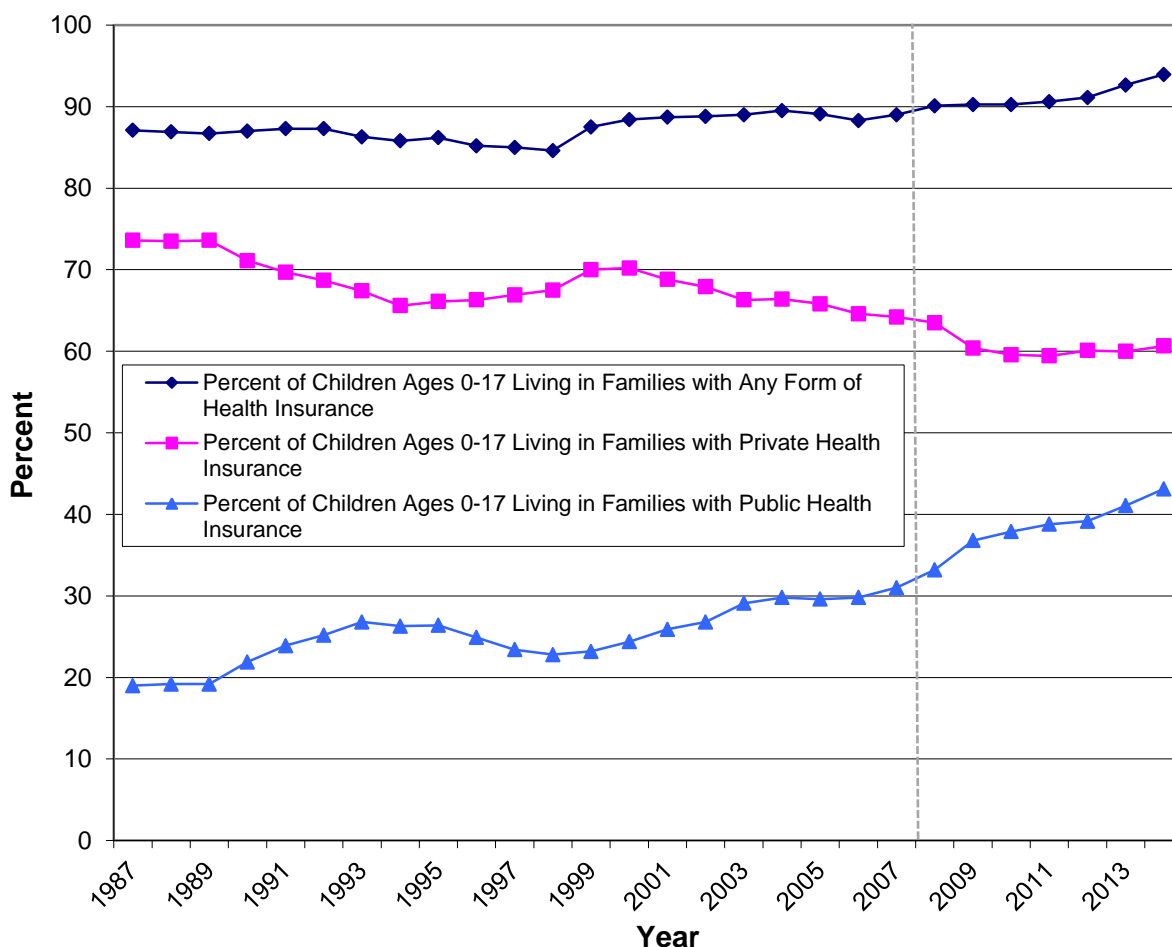
Figure 5 displays the chart of trends over time of the third of our Key Indicators of Family Economic Well-Being—median annual income (the 50th percentile or mid-point/average of the distribution) for all families with children ages 0-17 in 2009 dollars. Again, the negative impact of the Great Recession is evident beginning in 2008 and extending through 2012. This is followed by a recovery in 2012 and 2013. The slight decline that follows in 2014 is related to the increase in single parenting in 2014 noted in the previous paragraph.



**Figure 5. Median Annual Income for All Families with Children Ages 0-17, 1975-2014**

This median annual income for families with children chart also shows the peaks at the heights of the economic expansions of the past two decades—\$69,741 in 2000 and \$70,057 in 2007—as compared to \$66,632 in 2014 (which may not be the peak for the post-Great Recession economic expansion). Indeed, the median annual income for families with children in 2014 not only is well below that of the years 2000 and 2007, it is less than twelve hundred dollars higher than the \$63,093 in 1989 at the height of the economic expansion of the 1980s. With American expectations that incomes will rise over time, especially on a generational time scale of some 25 years—that “our children will be better off than we are”—this chart drives home a source of concerns felt by many about whether economic conditions for families will continue to improve.

Figure 6 contains the fourth of our Key Indicators of Family Economic Well-Being, the percent of children ages 0-17 living in families with any form of health insurance for the years 1987 (the first year this indicator was available) to 2014. This chart shows a steady increase from 2007 through (89 percent) through 2013 (92.65 percent). In the absence of this increasing trend, the downturn in the Family Economic Well-Being Index during the Great Recession and its after-years shown in Figure 2 (of Section II) would have been even greater.



**Figure 6. Rates of Children Living in Families with Health Insurance, 1987-2014**

To further interpret the trend in overall health insurance coverage, Figure 6 also includes disaggregated charts for the percentages of children living in families with private and public health insurance. These charts show that the trend since the year 2000 has been for the share of families with some form of private health insurance to decline while that for public health insurance has increased. As we have noted in previous CWI Annual Reports, the notable increases in the percentages with public health insurance shown in Figure 6 during the years 2000 to 2003 and 2007 to 2010 are largely due to expansions in the State Children’s Health Insurance Program (SCHIP, commonly abbreviated as CHIP). This program was created in 1997 to provide federal matching funds to states for health insurance to families with children and was designed to cover uninsured children in families with incomes that are modest but too high to qualify for Medicaid. The most recent increases in the percentages with public health insurance for 2013 and 2014 in Figure 6 are due both to an expansion of CHIP and the implementation of the 2010 Affordable Care Act. In short, the expansion of public forms of health insurance coverage for families with children helped to cushion the negative impacts of the Great Recession on the economic well-being of children.

## Second-Order Impacts of the Great Recession on Child and Youth Well-Being

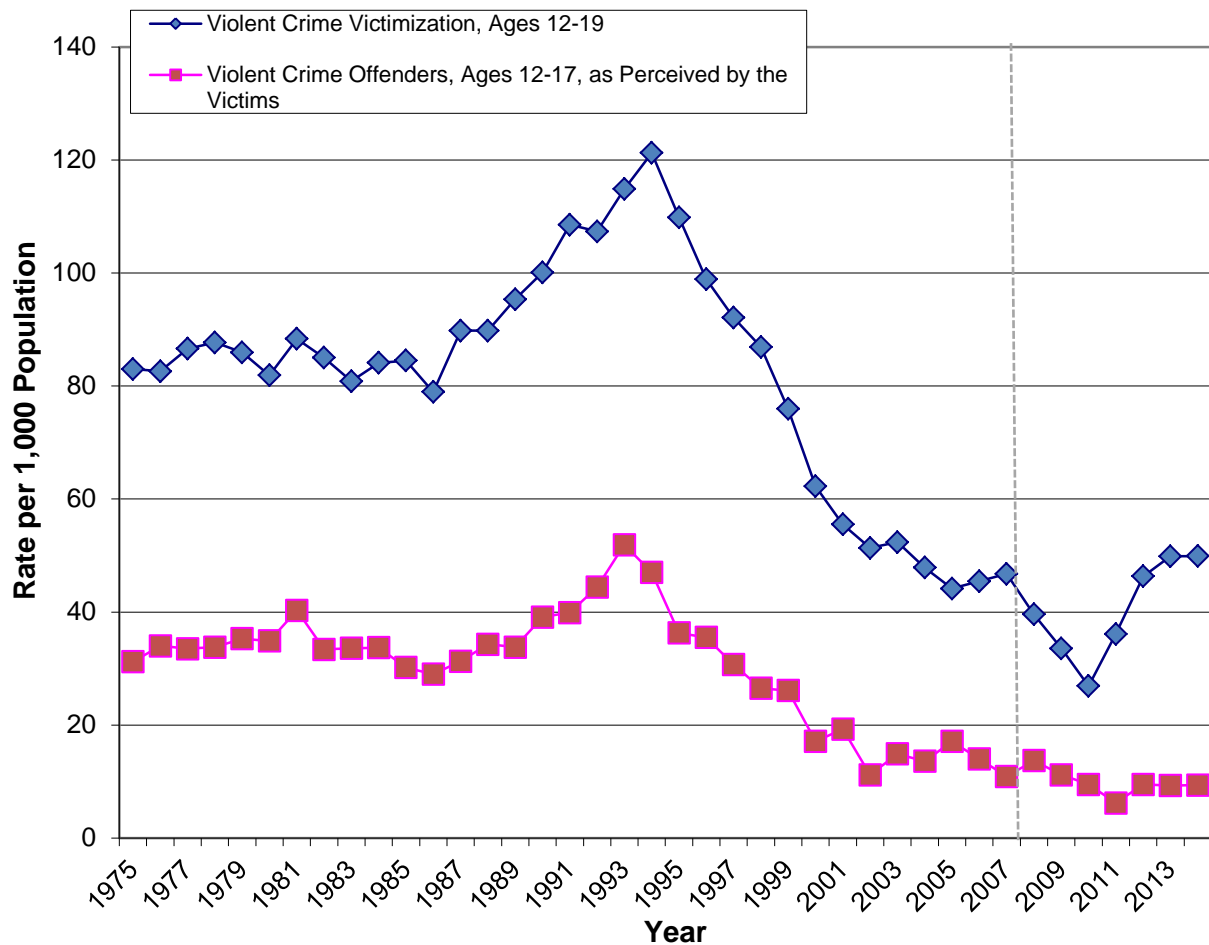
The effects of a macroeconomic recession of the magnitude and duration of the Great Recession on the overall well-being of children and youths are not limited to direct effects on the economic well-being of their families. Research has clearly established over the past 50 years that well-being is multi-dimensional and that substantial changes in one dimension of well-being can affect other dimensions. These effects may be termed second-order, indirect impacts.<sup>26</sup> In this section, we highlight five Key Indicators in the Safe/Risky Behavior and Community Engagement Well-Being Domains for which there is clear visually identifiable evidence of secondary impacts of the Great Recession.

Figure 7 contains the first two of these Key Indicators, the Violent Crime Victimization Rate, Ages 12-19, and the Violent Crime Offender Rate, Ages 12-17 (as perceived by victims), each rate per 1,000 population in these ages. As we have observed in previous CWI Annual Reports, these two time series have shown huge declines since their peaks in 1993-1994—on the order of a 60 percent decline in the victimization series and a 70 percent decline in the offender series. Of interest in the present analysis, however, is the decline both series show during the Great Recession and the upturns in the most recent years. Specifically, the Violent Crime Victimization series shows rates below its 2007 value (46.75 per 1,000) for the 2008, 2009, 2010, and 2011 years followed by increases in 2012, 2013, and 2014 that are near or above the 2007 value. And the Violent Crime Victimization has values for 2009, 2010, and 2011 that are well below its 2008 rate followed by slightly increased rates in 2012 and 2013 that nonetheless do not reach the pre-Great Recession level of 2008. These downturns followed by the increases are consistent with decreased rates of exposure of children and adolescents to the risk of violent crime victimization during the Great Recession followed by increases with recovery therefrom.<sup>27</sup>

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<sup>26</sup> The detection and analysis of “secondary impacts” has been a key part of the modern field of social indicators since its founding some 50 years ago with the publication of Bauer, Raymond A. (Ed.) 1966 *Social Indicators*. Cambridge, MA: MIT Press. The chapters of this volume were motivated by an American Academy of Arts and Sciences project to detect and anticipate the second-order consequences of the space program, specifically the effort to launch a manned space flight to the moon and back, for American society.

<sup>27</sup> Crime opportunity theory emphasizes that in order for predatory violent and property crimes to occur there must be a concurrence in space and time of three element—motivated offenders and suitable targets (individuals, property) in the absence of capable guardians (see, e.g., Wilcox, Pamela, Kenneth C. Land, and Scott A. Hunt 2003 *Criminal Circumstance: A Dynamic Multi-Contextual Criminal Opportunity Theory*. Chicago: Aldine de Gruyter Publishing Company; Wilcox, Pamela, Brooke Miller Gialopsos, and Kenneth C. Land 2013 “Multilevel Criminal Opportunity.” Pp. 579-601 in F. T. Cullen and P. Wilcox (eds.), *The Oxford Handbook of Criminological Theory*. New York: Oxford University Press). During the Great Recession, not only did children and adolescents have less financial resources from their parents to purchase material goods (e.g., electronic devices) and to expose themselves and such goods to the risk of criminal victimization, but they likely spent more time in their domiciles which reduced their exposure to potential offenders and within proximity of their parents who thus served as capable guardians.

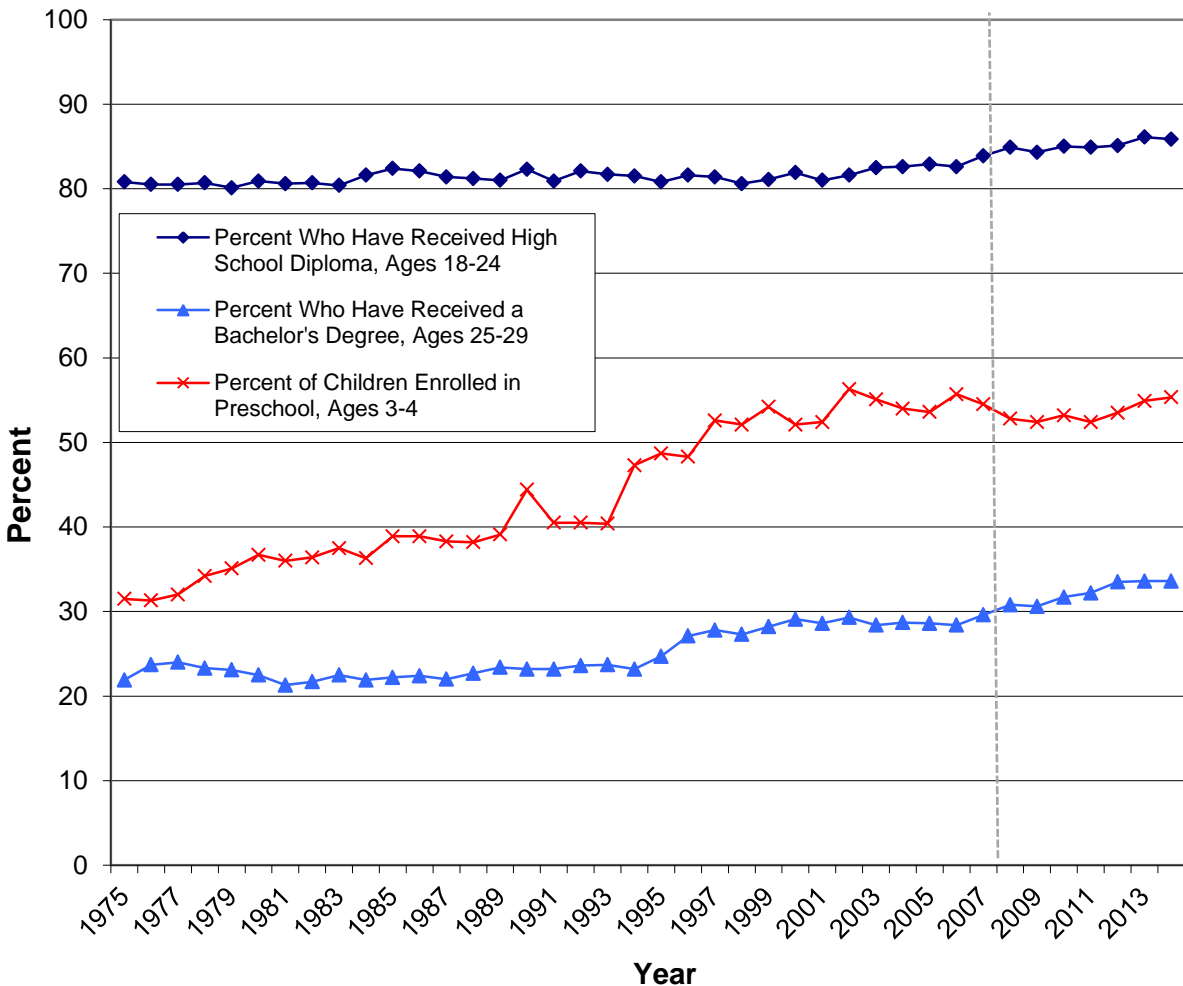


**Figure 7. Violent Crime Victimization and Offender Rates, 1975-2014, with Offender Rate Projected for 2014**

Figure 8 displays three Key Indicators in the Community Engagement Well-Being Domain of the CWI—the percent of children ages 3-4 enrolled in preschool, the percent ages 18-24 who have received a high school diploma, and the percent ages 25-29 who have received a bachelor’s degree. All three are indicative of involvement in educational institutions from early childhood to young adulthood. Since the cognitive skills, knowledge of subject matters, and work habits that are acquired in schooling institutions are strongly and increasingly connected to individuals’ quality of life and well-being in the post-industrial, globalized, and digitized world of the 21<sup>st</sup> century, trends in these indicators are very important. How were they impacted by the Great Recession?

To begin with, the percent of children ages 3-4 enrolled in preschool had a long-term increasing trend to a peak of 56.3 percent in 2002. After a decline in the years 2003 to 2005, it then had another peak 55.7 percent in 2006 before going into a decline associated with the Great Recession for the years 2007 to 2011, which likely was related to cutbacks in the funding of

preschool programs from reduced public sector funds. It then shows a recovery for the years 2012 to 2014 with a projected value of 55.34, which is near but does not exceed the 2006 value. By comparison, the percent ages 18-24 who have received a high school diploma has had a fairly long-term rising trend since 2001. Even so, this indicator shows a slight decline from 84.9 in 2008 to 84.3 in 2009 followed by increases to about 86 percent in 2013 and 2014. The effects of the Great Recession on the percent ages 25-29 who have received a bachelor’s degree shows yet a different temporal trend—one of steady increases from 29.6 percent in 2007 to 33.6 in 2013 and 2014, as the economic slowdown of the Great Recession reduced the attractiveness of entering the labor force for jobs as compared to continuing in higher education institutions to completion of bachelor’s degrees and beyond. This is the opposite of the impact of the expanding Internet-expansion-fueled economy of 1998 when students were attracted away from completion of their bachelor’s degrees by enticing job opportunities.



**Figure 8. Enrollment and Schooling Attainment Rates, 1975-2013 with Projections for 2014**

In summary, as might be expected, the Great Recession had direct negative impacts on the employment and income Key Indicators of the Family Economic Well-Being Domain that began

in 2008. These negative impacts lasted four additional years 2009, 2010, 2011, and 2012 followed by a slow recovery in 2013 and 2014 that generally did not reach pre-Great Recession levels. The Great Recession also had second-order, indirect effects on other Key Indicators. Some of these effects were beneficial to child and youth well-being, such as those on violent crime victimization and offending and on post-high school educational attainment rates; others such as reductions in pre-school enrollment rates were detrimental thereto.

## Acknowledgements and Contact Information

The **Child and Youth Well-Being Index Project** at Duke University is coordinated by Kenneth C. Land, Ph.D., Department of Sociology and Center for Child and Family Policy, Duke Box 90088, Duke University, Durham, NC 27708-0088 (e-mail: [kland@soc.duke.edu](mailto:kland@soc.duke.edu)). The Project is supported by a grant from the Foundation for Child Development (<http://www.fcd-us.org/>).

Dr. Land is a Faculty Fellow in the Center for Child and Family Policy, Research Professor in the Social Science Research Institute, and John Franklin Crowell Professor of Sociology and Demography Emeritus at Duke University. He has conducted extensive research on contemporary social trends and quality-of-life measurement, social problems, demography, criminology, organizations, and mathematical and statistical models and methods for the study of social and demographic processes. He is the co-author or co-editor of eight books, more than 200 research articles and book chapters. Dr. Land has been elected a Fellow of the American Statistical Association, the Sociological Research Association, the American Association for the Advancement of Science, the International Society for Quality-of-Life Studies, and the American Society of Criminology.

Other researchers involved in the Project include Vicki L. Lamb, Ph.D. (Professor, North Carolina Central University and Duke University), and Emma Zang, M.A. (Doctoral Student, Public Policy and Sociology, Duke University).

**On the Web:** More information about the CWI, its construction, and the scientific papers and publications on which it is based can be found online at: <http://www.soc.duke.edu/~cwi/>



## **Appendix A**

# **Conceptual Foundation, Methods of Construction, and Indicator List for the CWI**

### **Conceptual Foundation**

The National Child and Youth Well-Being Index (CWI) is based on more than four decades of research on social indicators and well-being/quality-of-life research on children, youth, and adults. This research has established that overall well-being/life quality is multidimensional. This research is the foundation on which the CWI is based.<sup>28</sup>

### **Methods of Construction**

Annual time series data (from vital statistics and sample surveys) were assembled on 28 national-level Indicators in seven Quality-of-Life Domains: *Family Economic Well-Being, Safe/Risky Behavior, Social Relationships, Emotional/Spiritual Well-Being, Community Engagement, Educational Attainment, and Health*. These seven Domains have been well-established, having recurred time after time in more than 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 youth.

To calculate the CWI, each of the time series of the Indicators is indexed by a base year (1975). 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 than 100 in subsequent years means the social condition measured has improved, while a value less than 100 in subsequent years means the social condition has deteriorated.

The 28 indexed Key Indicator time series then are grouped into the seven Domains of Well-Being by equal weighting to compute the Domain-Specific Index values for each year. The seven Domain-Specific Indices then are grouped into an equally-weighted CWI 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 index, and with a high degree of consensus in the population, an equal weighting strategy is privileged in the sense that it will achieve the greatest

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<sup>28</sup> See Land, K. C., Lamb, V. L., and Mustillo, S. K., 2001, "Child and Youth Well-Being in the United States, 1975-1998: Some Findings from a New Index." *Social Indicators Research*, 56, (December):241-320; Land, K. C., Lamb, V. L., Meadows, S. O., and Taylor, A., 2007, "Measuring Trends in Child Well-Being: An Evidence-Based Approach," *Social Indicators Research*, 80 (January):105-132; Land, K. C. (ed.), 2012, *The Well-Being of America's Children: Developing and Improving the Child and Youth Well-Being Index*. New York: Springer.

level of agreement among the members of the population. In statistical terminology, the equal-weighting method is a *minimax estimator*.<sup>29</sup>

The CWI builds on a base of subjective well-being empirical research in both identifying which Domains of Well-Being to measure and assigning Indicators to those Domains. It can therefore be viewed as an *evidence-based measure of trends in averages of the social conditions encountered by children and youth in the United States across recent decades*.

**Table A-1. Twenty-Eight Key Indicators of the National CWI.**<sup>a</sup>

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*Family Economic Well-Being Domain*

1. Poverty Rate (All Families with Children)
2. Secure Parental Employment Rate
3. Median Annual Income (All Families with Children)
4. Rate of Children with Health Insurance

*Safe/Risky Behavior Domain*

1. Teenage Birth Rate (Ages 10–17)<sup>°</sup>
2. Rate of Violent Crime Victimization (Ages 12–19)
3. Rate of Violent Crime Offenders (Ages 12–17)<sup>°</sup>
4. Rate of Cigarette Smoking (Grade 12)
5. Rate of Binge Alcohol Drinking (Grade 12)
6. Rate of Illicit Drug Use (Grade 12)

*Social Relationships Domain*

1. Rate of Children in Families Headed by a Single Parent
2. Rate of Children Who Have Moved Within the Last Year (Ages 1–17)

*Emotional/Spiritual Well-Being Domain:*

1. Suicide Rate (Ages 10–19)<sup>°</sup>
2. Rate of Weekly Religious Attendance (Grade 12)<sup>°</sup>
3. Percent Who Report Religion as Being Very Important (Grade 12)<sup>°</sup>

*Community Engagement Domain*

1. Rate of Persons Who Have Received a High School Diploma (Ages 18–24)<sup>°</sup>
2. Institutionally Disconnected Youth Rate (Ages 16–19)
3. Rate of PreKindergarten Enrollment (Ages 3–4)<sup>°</sup>
4. Rate of Persons Who Have Received a Bachelor's Degree (Ages 25–29)<sup>°</sup>
5. Rate of Voting in Presidential Elections (Ages 18–20)<sup>°</sup>

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<sup>29</sup> See Michael R. Hagerty and Kenneth C. Land, “Constructing Summary Indices of Quality of Life: A Model for the Effect of Heterogeneous Importance Weights,” *Sociological Methods and Research*, 35 (May, 2007): 455–496.

*Educational Attainment Domain*

1. Reading Test Scores (Ages 9, 13, and 17) <sup>e</sup>
2. Mathematics Test Scores (Ages 9, 13, and 17) <sup>e</sup>

*Health Domain*

1. Infant Mortality Rate <sup>c</sup>
2. Low Birth Weight Rate <sup>c</sup>
3. Mortality Rate (Ages 1–19) <sup>c</sup>
4. Rate of Children With Very Good or Excellent Health (as reported by parents) <sup>b</sup>
5. Rate of Children With Activity Limitations Due to Health Problems (as reported by parents) <sup>b</sup>
6. Rate of Obese Children and Adolescents (Ages 6-19) <sup>d</sup>

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Notes:

<sup>a</sup> Unless otherwise noted, indicators refer to children ages 0–17.

<sup>b</sup> Projected for 2013 and 2014.

<sup>c</sup> Projected for 2014.

<sup>d</sup> 2013 and 2014 values are held approximately constant at the 2011-2012 levels until new data are available.

<sup>e</sup> Reported data for 2008 and 2012; interpolated for 2009-2011 and 2013-2014.

## Appendix B

### Sources of Data for the National CWI

Child Poverty	U.S. Bureau of the Census, March Population Survey, Current Population Reports, Consumer Income, Series P-60, Washington, D.C.: U.S. Bureau of the Census, <a href="http://www.census.gov/hhes/www/poverty/data/historical/hstpov3.xls">http://www.census.gov/hhes/www/poverty/data/historical/hstpov3.xls</a> , 1975–present
Secure Parental Employment	U.S. Bureau of the Census, March Current Population Survey, Washington, D.C., available from Forum on Child and Family Statistics, <a href="http://www.childstats.gov/americaschildren/tables/econ2.asp?popup=true">http://www.childstats.gov/americaschildren/tables/econ2.asp?popup=true</a> , 1980–2013. <a href="http://www.census.gov/hhes/www/cpstables/032015/pov/toc.htm">http://www.census.gov/hhes/www/cpstables/032015/pov/toc.htm</a> , 2014 (Calculated) Special tabulation from CPS CD 1975–1979.
Median Annual Income	U.S. Bureau of the Census, March Current Population Survey, Historical Income Tables – Families, Washington, D.C.: U.S. Bureau of the Census, <a href="http://www.census.gov/hhes/www/income/data/historical/families/2014/f09AR.xls">http://www.census.gov/hhes/www/income/data/historical/families/2014/f09AR.xls</a> , 1975–present.
Health Insurance	U.S. Bureau of the Census, Housing and Household Economic Statistics Division, unpublished tabulations from the March Current Populations Surveys, Washington, D.C., special tabulation by Federal Intra-agency Forum, <a href="http://www.census.gov/hhes/www/poverty/data/index.html">http://www.census.gov/hhes/www/poverty/data/index.html</a> , 1987–2013. <a href="http://www.census.gov/hhes/www/cpstables/032015/health/toc.htm">http://www.census.gov/hhes/www/cpstables/032015/health/toc.htm</a> , 2014
Infant Mortality	CDC, National Center for Health Statistics, National Vital Statistics System, Monthly Vital Statistics Report (v25–v46), National Vital Statistics Report (v47–v49): Hyattsville, MD: NCHS. <a href="http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_02.pdf">http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_02.pdf</a> , 1975–present..
Low Birth Weight	CDC, National Center for Health Statistics, National Vital Statistics System, Report of Final Natality Statistics, Monthly Vital Statistics Reports (1975–1996), National Vital Statistics Reports (1997–present). Hyattsville, MD: NCHS. <a href="http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_01.pdf">http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_01.pdf</a> , 2013
Child and Adolescent Mortality	CDC, National Center for Health Statistics, National Vital Statistics System, Leading Causes of Death. <a href="http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_02.pdf">http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_02.pdf</a> , 1975–2013.
Subjective Health and Activity Limitations	CDC, National Center for Health Statistics, National Health Interview Survey, Hyattsville, MD: National Center for Health Statistics. <a href="http://www.cdc.gov/nchs">www.cdc.gov/nchs</a> , available from Forum on Child and Family Statistics, <a href="http://www.childstats.gov/">http://www.childstats.gov/</a> , 1984–present..
Obesity	CDC, National Center for Health Statistics, Health United States, 2003 and National Health and Nutrition Examination Survey (NHANES), Hyattsville, MD. <a href="http://www.cdc.gov/nchs/data/hestat/obesity_child_11_12/obesity_child_11_12.pdf">http://www.cdc.gov/nchs/data/hestat/obesity_child_11_12/obesity_child_11_12.pdf</a> , 1975–present..
Teen Births	CDC, National Center for Health Statistics, National Vital Statistics System. Monthly Vital Statistics Reports (1975–1996), National Vital Statistics Reports (1997–2013). Hyattsville, MD: National Center for Health Statistics, <a href="http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_03.pdf">http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_03.pdf</a>
Crime Victimization	U.S. Department of Justice, Bureau of Justice Statistics, National Crime Victimization Survey and FBI Supplementary Homicide Reports. Available from Sourcebook of Criminal Justice Statistics Online, <a href="http://www.bjs.gov/content/pub/pdf/cv13.pdf">http://www.bjs.gov/content/pub/pdf/cv13.pdf</a> 1975- present..
Violent Crime Offenders	US Department of Justice, Bureau of Justice Statistics, National Crime Victimization Survey. <a href="http://www.childstats.gov/americaschildren/tables/beh5.asp?popup=true">http://www.childstats.gov/americaschildren/tables/beh5.asp?popup=true</a> , 1975–2013.
Cigarette Smoking, Binge Drinking, and Illicit Drug Use	The Monitoring the Future Study, Institute for Social Research, University of Michigan: Ann Arbor, MI, <a href="http://www.monitoringthefuture.org/data/data.html">www.monitoringthefuture.org/data/data.html</a> , 1975–present.
Reading and	U.S. Department of Education Statistics, National Assessment of Education Progress (NAEP),

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Mathematics Scores	<a href="http://nces.ed.gov/nationsreportcard">http://nces.ed.gov/nationsreportcard</a> , 1975–present.
High School Completion	U.S. Bureau of the Census, October Current Population Surveys, Washington, D.C.: U.S. Bureau of the Census. <a href="http://www.census.gov/hhes/school/data/cps/historical/TableA-5a.xls">http://www.census.gov/hhes/school/data/cps/historical/TableA-5a.xls</a> 1975–present.
Institutionally Disconnected (Not Working and Not in School)	U.S. Bureau of Labor Statistics, Current Population Surveys, Washington, D.C.: U.S. Bureau of the Census. Available from Forum on Child and Family Statistics, <a href="http://www.childstats.gov/">http://www.childstats.gov/</a> , 1985–present. Special tabulation from CPS CD, 1975–1984.
PreKindergarten Enrollment	U.S. Department of Education, National Center for Education Statistics, Digest of Education Statistics and Bureau of the Census, Current Population Survey, <a href="http://nces.ed.gov/programs/digest/d14/tables/dt14_103.10.asp?current=yes">http://nces.ed.gov/programs/digest/d14/tables/dt14_103.10.asp?current=yes</a> , 1980–present., interpolated years 1976–1979.
Bachelor’s Degree	U.S. Department of Education, National Center for Education Statistics, Condition of Education, <a href="http://nces.ed.gov/programs/digest/d13/tables/dt13_104.20.asp">http://nces.ed.gov/programs/digest/d13/tables/dt13_104.20.asp</a> , 1975–present.
Voting in Presidential Elections	U.S. Bureau of the Census, Current Population Reports, Series P-20, Voting and Registration, Washington, D.C.: U.S. Bureau of the Census, <a href="http://www.census.gov/hhes/www/socdemo/voting/publications/p20/2012/tables.html">http://www.census.gov/hhes/www/socdemo/voting/publications/p20/2012/tables.html</a> , 1975–present.
Single-Parent Families	U.S. Bureau of the Census, Current Population Reports, Marital Status and Living Arrangements, Annual Reports, Table C3, <a href="http://www.census.gov/hhes/families/data/cps2014.html">http://www.census.gov/hhes/families/data/cps2014.html</a> , 1975–present.
Residential Mobility	U.S. Bureau of the Census, Series P-20, Geographic Mobility, Washington, D.C.: U.S. Bureau of the Census, <a href="https://www.census.gov/hhes/migration/data/cps/cps2014.html">https://www.census.gov/hhes/migration/data/cps/cps2014.html</a> , 1975–present.
Suicide	CDC, National Center for Health Statistics, National Vital Statistics System, <a href="http://www.cdc.gov/nchs/nvss/mortality/lcwk1.htm">http://www.cdc.gov/nchs/nvss/mortality/lcwk1.htm</a> , 1975- present..
Church Attendance and Importance	The Monitoring the Future Study, Institute for Social Research, University of Michigan: Ann Arbor, MI. <a href="http://www.monitoringthefuture.org/">http://www.monitoringthefuture.org/</a> 1975–present.

**Appendix C**  
**National Child and Youth Well-Being Index Values,**  
**1975-2012,<sup>30</sup>**  
**with an Updated Estimate for 2013,**  
**and an Initial Estimate for 2014<sup>31</sup>**

Year	CWI	Annual Change in CWI
1975	100.00	0.00
1976	100.75	0.75
1977	98.94	-1.81
1978	99.29	0.35
1979	100.01	0.72
1980	99.70	-0.31
1981	97.48	-2.22
1982	96.17	-1.30
1983	96.77	0.60
1984	96.64	-0.13
1985	94.11	-2.53
1986	95.36	1.25
1987	94.15	-1.21
1988	94.21	0.06
1989	94.76	0.55
1990	94.33	-0.43
1991	93.22	-1.11
1992	93.12	-0.10

<sup>30</sup> Numerical values of the CWI for earlier years are calculated and reported in each annual CWI Report. These values may have slight numerical differences from report to report due to the following factors:

1. Updates in the numerical values of some of the Key Indicator time series. For instance, in the 2012 annual report, the childhood obesity time series is updated with newly-released CDC statistics. Similarly, each year, the median family income series is updated with the most recent inflation-adjusted data from the U.S. Census Bureau, and recent vital statistics, such as teenage birth and mortality rates, are retrieved from preliminary reports issued by the CDC. When the CDC issues final reports one year later, vital statistics are usually adjusted and our indicators are updated accordingly.
2. Changes in the time series statistics. For instance, in the 2011 annual report, we adjusted the activity limitation series so that the age intervals of respondents (0–17) are consistent from 1975 to 2009 and updated the corresponding data from 2004 to 2009.
3. Data on the Political Participation, (ages 18–24), Math Scores, and Reading Scores series are available only every four years. When new data become available, the projected Indicators of these series are updated accordingly.

<sup>31</sup> As of release date, 2 Key Indicators were projected for 2012, 6 Key Indicators were projected for 2013, and 17 Key Indicators were projected for 2014; see Table A-1 in Appendix A.

1993	91.72	-1.40
1994	91.60	-0.12
1995	93.43	1.83
1996	94.15	0.72
1997	94.54	0.39
1998	97.21	2.67
1999	99.60	2.39
2000	101.36	1.76
2001	101.46	0.09
2002	102.71	1.26
2003	101.95	-0.77
2004	101.92	-0.03
2005	102.22	0.30
2006	102.97	0.75
2007	103.50	0.54
2008	103.58	0.08
2009	102.34	-1.24
2010	102.39	0.05
2011	101.94	-0.46
2012	101.71	-0.22
2013	102.58	0.87
2014	103.25	0.67

### Statistical Significance of Changes in the CWI

In studying the year-to-year or period-to-period changes in the CWI time series, questions of statistical significance sometimes arise: Given that the CWI has changed by  $x$  percent from one time period to another, is the change  $x$  statistically significant? One approach to addressing this question is to study the time series fluctuations in the CWI from year-to-year, estimate a standard deviation or error of fluctuations in the time series, and then assess the size of a year-to-year or period-to-period change relative to the estimated standard deviation of the series. To operationalize this procedure, the expected value of the CWI for each year must be calculated. These values then can be subtracted from the observed values, squared, and divided by the length of the time series to estimate the variance. The square root of the estimated variance then can be taken as an estimate of the standard deviation of the CWI series taken as a time series.

We have applied this method using a three-point moving average of the CWI values centered on each year  $t$  as the expected value of the CWI for that year. The resulting estimated standard deviation of the CWI time series, compared to expected values based on three-point centered moving averages, is 0.5. This implies that a year-to-year or period-to-period change of less than 1.0 is not a statistically significant change.