2013

NATIONAL Child and Youth Well-Being Index (CWI)

The Foundation for Child Development

The Foundation for Child Development is a national private foundation. Our mission is to harness the power of research to ensure that all children benefit from early learning experiences that affirm their individual, family, and community assets, fortify them against harmful consequences arising from economic instability and social exclusion, and that strengthen their developmental potential.

Kenneth C. Land, Project Coordinator

Kenneth C. Land, Ph.D., is the John Franklin Crowell Professor of Sociology and Demography 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 150 research articles, and numerous 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.

Executive Summary

I. Overview

Each year, the **Foundation for Child Development** and the **Child and Youth Well-Being Index Project at Duke University issue 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 highlights:

- **long-term trends in the CWI, in its seven Domains, and in its 28 Key Indicators, 1975–2012.**

Specifically, this year's report includes:

- **Calculated values of the CWI for each of the years from 1975, the base year of the Index, to 2010**;

- An **updated estimate of the CWI for 2011** based on observed values of Key Indicators that have become available since last year's report;

- An **initial estimate of the CWI for 2012** based on those observed values of the Key Indicators for 2012 that are currently available, along with projections of the other Key Indicators; and

- A review of long-term trends in the seven Domains and 28 Key Indicators of the CWI, highlighting: 1) each Domain and Indicator's beginning value in 1975 (or the earliest year for which data are available), 2) ending values in 2012, and 3) high and low values with the corresponding years in which these occurred.

II. Major Findings: Trends in the National Child and Youth Well-Being Index, 1975–2012

The major trends that can be drawn from the 2013 CWI Update include:

- **The overall composite CWI shows little change for the years 2010–2012.**

- **Overall, the predominant long-term trend in the CWI indicates the recent values are just above 100, indicating little overall improvement compared with the base year, 1975.**

- **Family Economic Well-Being had a decade-long decline, further negatively impacted by the 2008–2009 Great Recession.** The decline was due to a number of Key Indicators, including increases in child poverty and decreases in secure parental employment and median family income.

- **The years 2011 and 2012 show slight improvement in Family Economic Well-Being;** however, values for 2010 (97.95), 2011 (98.25), and 2012 (99.7) are all lower than the base year, 1975. Thus, all of the improvements in the economic well-being of families with children under the age of 18 over the past 37 years have been lost.

- **The Safe/Risky Behavior Domain continues to show improvement, with a much higher Index value of 151.4 in 2012.** Since the 1990s there have been large declines in the Key Indicators, including: teenage births (which declined, from 1991–2011, from 20.1 to 7.9 per 1,000); violent crime victimizations (which declined, from 1994–2010, from 121.3 to 26.9 per 1,000); and violent crime offending (which declined, from 1993–2010, from 51.9 to 9.5 per 1,000).

- **Children and youth are more connected to their community and social institutions.** Considerably higher increases in college graduation rates and PreKindergarten enrollment rates, in addition to modest increases in high school graduation rates, have fueled the continued increase in the Community Engagement Domain.

- **There is slight improvement in Educational Attainment over the 37 years of study.** The combined index of reading and mathematics test scores has risen from 100 in 1975 to 104.3 in 2012.

- **The Social Relationships Domain fell from 1976 (101.5) to 1997 (67.5), primarily due to increases in the rate of children living in single-parent families.** In the years since 1997, the index values have fluctuated, but have not reached the 1975 base value; at 81.3, the 2012 value was still considerably lower than the base value.

- **An increasing trend of suicide rates for children and youth ages 10–19 during the late-1980s, as well as a decline in religious participation, led to large declines in the Emotional/Spiritual Well-Being Domain.** In the 2000s this Domain declined again, due to decreases in spiritual connections for 12th graders. The 2012 Index value is 83.3, well below the 1975 base line.

- **The Health Domain has declined from 1975–2009 primarily due to increases in the proportion of children and youth that are obese.** There have been modest improvements since 2009; however the Domain in 2012, at 66.1, is considerably lower than the base line value.

The National Child and Youth Well-Being Index (CWI), 1975–2012

I. A Brief Overview

The *Child and Youth Well-Being Index (CWI)* is an evidence-based[1] composite measure of trends over time in the quality of life of America's children from birth up to the 18th birthday.[2] 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?

The CWI, a composite index based on data from 28 Key Indicators, is computed and updated annually. **Observed data on 28 of the 28 Key Indicators are currently available for the year 2010; observations are available on 22 of the 28 Key Indicators for 2011 and on 10 of the 28 Key Indicators for 2012. The remaining Indicators are projected by use of statistical time series models.**[3] Accordingly, this report includes the calculated values of the CWI for the years 1975–2010, an update of the CWI estimate for 2011, and an initial estimate of the CWI for 2012.

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. The composite Index, an equally-weighted average[4] of the 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 Indicators and 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. During the early childhood years, for example, PreKindergarten enrollment is an Indicator

---

1 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 studies of the well-being of children, adolescents, teenagers, and youth adults. See Kenneth C. Land, Vicki L. Lamb, and Sarah Meadows, "Conceptual and Methodological Foundations of the Child and Youth Well-Being Index," *The Well-Being of America's Children: Developing and Improving the Child and Youth Well-Being Index*, (New York: Springer, 2012): 13–28.

2 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.

3 For a description of the autoregressive integrated moving average (ARIMA) models used to project each individual Key Indicator time series, see Kenneth C. Land, ed., The Well-Being of America's Children: Developing and Improving the Child and Youth Well-Being Index, (New York: Spring, 2012): 70–71. of Land et al. 2012

4 On equal-weighted averages for well-being indices as statistical estimators, see Appendix A.

of early schooling participation, while the violent crime victimization rate is indicative for ages 12–17.

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.[5] Each Domain represents an important area that affects quality of life:

Family Economic Well-Being Domain[6]
1. Poverty Rate (All Families with Children Ages 0–18)
2. Secure Parental Employment Rate (All Families with Children Ages 0–18)
3. Median Annual Income (All Families with Children Ages 0–18)
4. Rate of Children with Health Insurance (All Families with Children Ages 0–18)

Safe/Risky Behavior Domain[7]
1. Teenage Birth Rate (Ages 10–17)
2. Rate of Violent Crime Victimization (Ages 12–19)[8]
3. Rate of Violent Crime Offenders (Ages 12–17)
4. Rate of Cigarette Smoking (Grade 12)[9]
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—18)
2. Rate of Children Who Have Moved Within the Last Year (Ages 0–18)

Emotional/Spiritual Well-Being Domain:
1. Suicide Rate (Ages 10–19)[10]
2. Rate of Weekly Religious Attendance (Grade 12)
3. Percent Who Report Religion as Being Very Important (Grade 12)

Community Engagement Domain[11]
1. Rate of Persons Who Have Received a High School Diploma (Ages 18–24)[12]
2. Rate of Youth Not Working and Not in School (Ages 16–19)[13]
3. Rate of PreKindergarten Enrollment (Ages 3–4)
4. Rate of Persons Who Have Received a Bachelor's Degree (Ages 25–29)[14]
5. Rate of Voting in Presidential Elections (Ages 18–24)[15]

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 0–18, as reported by parents)
5. Rate of Children with Activity Limitations due to Health Problems (Ages 0–18, 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[16]:

---

10 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.

11 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.

12 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.

13 The rate of those 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.

14 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.

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

16 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)

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.**[17] 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 3 percent.

Trends in the overall, composite CWI give a sense of changes in child and youth well-being both in the short-term (the last few years) and the long-term (since the base year 1975). The latter time frame yields a historical perspective, as values of the Index for the late 1970s and early 1980s pertain to individuals who were children at that time but are part of today's parental cohorts.

Long-Term Changes in Values of the CWI, 1975–2012
Over the long-term view of 37 years (1975–2012), the CWI shows periods of both deterioration and improvement. Through the late 1970s, the CWI oscillated at levels near the base year value of 100, then shows a decline beginning in 1980 and ending
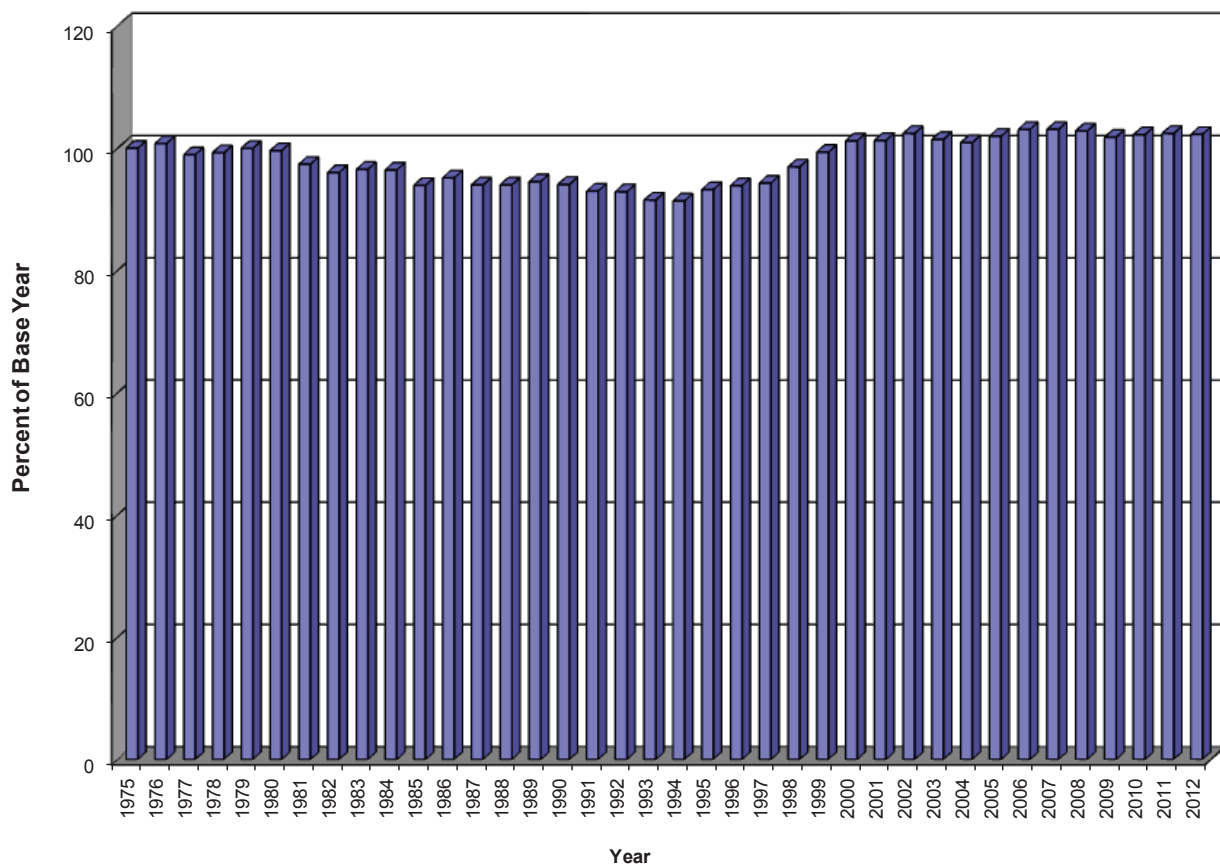

Figure 1: Child Well-Being Index, 1975-2012

---

17 The specific annual numerical values of the overall CWI, from which Figure 1 is constructed, are provided in Appendix C.

in 1994 with a value of 91.37. 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); in changing family structures (toward more single-parenting); in an upturn in risky behavior (especially increases in teenage childbearing, illicit drug use, and violent crime victimization and offending); and in the beginnings of the trend towards an increasing prevalence of obese children (which negatively impacted the Health Domain).

After 1994, the CWI increased through the late 1990s, reaching a peak of 102.4 in 2002. Previous annual CWI reports have shown that this period of increase was associated with the rapidly expanding economy of the late-1990s the stabilization of family structures, and downturns in risky behavior. Since 2002, the Index has oscillated at or near this peak, with a value of 102.2 in 2010 and an initial estimate of 102.26 for 2012 (note, both are less than the 2002 value). The CWI for this most recent period exhibits the imprint of the economic expansions and contractions of the first decade of the 21st century, especially the Great Recession of 2008–2009.

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 2010, 2011, and 2012 just above the 100 base year 1975. In other words, the predominant long-term trend in the CWI is indicative of little overall improvement in 37 years.

Short-Term Changes in Values of the CWI for 2008-02012

The past five years, 2008–2012, were a turbulent time for our nation, with the impacts of the Great Recession in 2008–2009 and the slow recovery in 2010–2012. For these most recent years, Figure 1 shows that:

- **The CWI decreased by 0.26 percent, from 103.09 in 2007 to 102.83 in 2008.**

- **The CWI further decreased to 101.79 for 2009.**

- **For 2010, the CWI slightly increased to 102.20.**

- **In the following years, the CWI shows partially projected values of 102.4 in 2011 and 102.26 in 2012.**

In sum, these recent annual numerical changes in the CWI indicate that the declines of 2008–2009 did not continue in the three most recent years. However, the annual changes for 2010, 2011, and 2012 are not statistically significant, and indicate no substantial short-term improvements in overall child and youth well-being.

III. Long-Term Changes in the Well-Being Domains and Key Indicators

The CWI can alert us to recent changes and emerging trends in overall child and youth well-being. We also can study long-term trends and cycles in the seven Well-Being Domains and the 28 Key Indicators across the decades. That is the objective of the present section of this year's report. For each Well-Being Domain and each Key Indicator, we display graphs of the corresponding series from 1975 to 2012. Boxes in the graphs indicate the values of the series in 1975, in 2012, and in the years in which the values were both highest and lowest.[19]

---

18 For 2011, 6 of the 28 Key Indicators are projected; for 2012, 18 of the 28 Key Indicators are projected. See Appendix A, Table A-1.

19 Blank data points indicate the values are estimated rather than observed. In most cases, values for the time series of Key Indicators are estimated only for the last year (2012) or for the last two years (2011 and 2012). In a few cases where the measured values of a Key Indicator occurs only once every few years rather than annually, annual values are estimated by linear interpolation between the observed data points.

The Family Economic Well-Being Domain and Its Key Indicators

For 2012, the Family Economic Well-Being Domain Index value, of 99.7, was slightly lower than its 1975 value (as a reminder, all Indices are initiated in 1975, the base year, at a value of 100). This indicates that **all of the improvements in the economic well-being of families with children under the age of 18 over the past 37 years have been lost** (see Figure 2). The high point of this Index was 113 in 2000; the low point was 89.9 in 1983.
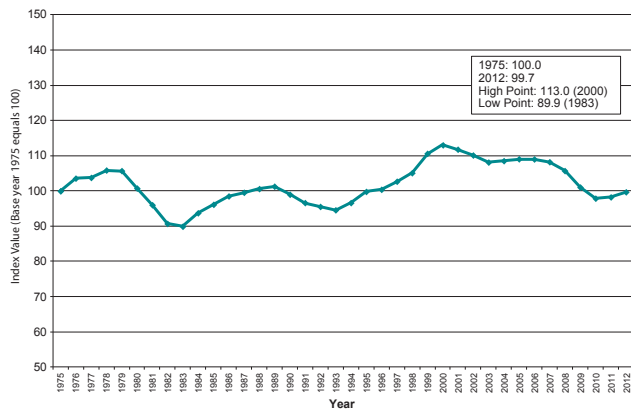

Figure 2: The Family Economic Well0-Being Domain, 1975-2012

Figure 3 contains the time series for the child poverty rate, the first Key Indicator in the Family Economic Well-Being Domain.[20] This rate begins at 16.8 percent in 1975 and ends at a substantially higher 21.3 percent in 2012. Its high point was 22 percent in 1993 and its low point was 15.6 percent in 2000.[21]
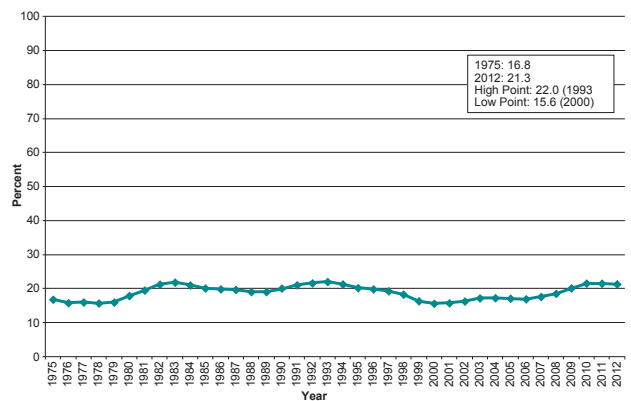
Figure 3: The Child Poverty Rate (Percent of Children Ages 0 to 18 Living in Families Below the Poverty Line), 1975-2012

Next, Figure 4 exhibits the time series for the secure parental employment rate, the second Key Indicator in the Family Economic Well-Being Domain. This series begins at 66 percent in 1975 and ends at a substantially higher 74.2 percent in 2012. Its high point was 80 percent in 2000 and its low point was 66 percent in 1975.
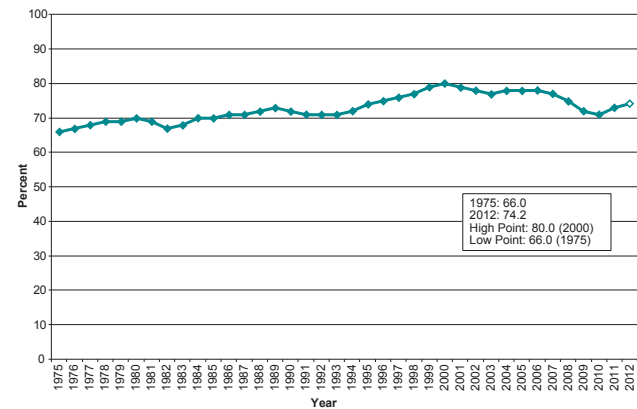

Figure 4: The Secure Parental Employment Rate (Percent of Children Ages 0-18 Living in Families with At Least One Parent Employed Full Time All Year), 1975-2012

Figure 5 shows the time series for the third Key Indicator in the Family Economic Well-Being Domain, the median annual income of families with children ages 0–18 both in 2012 dollars (left axis) and as a percentile indexed to a 1975 base value of 100 (right axis). This series begins at $55,259 in 1975 and ends at $59,984 in 2012; the percentile series shows that this latter value is 8.55 percent higher than 1975. Its high point was $67,597 in 2000 and its low point was $53,295 in 1983.
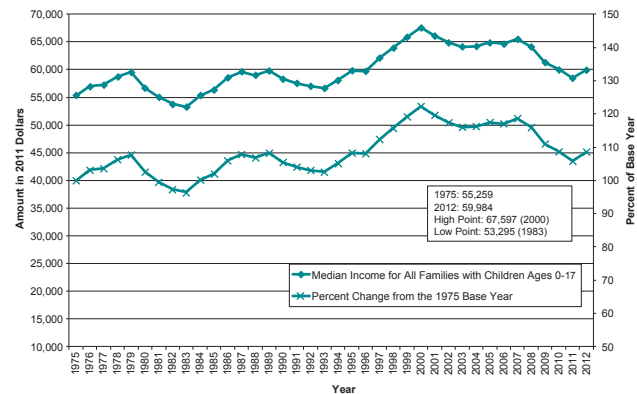

Figure 5: Median Annual Income of Families with Children Ages 0-18 (in 2012 dollars) and in Index Form Showing Percent Change from the 1975 Base Year, 1975-2012

---

20 As for all of the graphs of the Key Indicators, the title of Figure 3 contains a brief statistical definition of the series.

21 Figures 3 and 4 illustrate a point of note for the interpretation of changes in the values of the Key Indicators over time: Depending on the Indicator, a decrease in value may signal either an increase OR a decrease in overall child well-being. For example, in the case of the child poverty rate in Figure 3, a decrease in the time series indicates a lower prevalence of impoverished living conditions for children, which is associated with an increase in child well-being. By comparison, in the case of the secure parental employment rates in Figure 4, a decrease in the time series is indicative of a less stable economic well-being of children's families, which is associated with a decrease in child well-being. In the construction of the CWI, these differences are taken into account by orienting the directions of the Key Indicators 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.

Figure 6 contains the time series for the fourth and final Key Indicator in the Family Economic Well-Being Domain, the Child Health Insurance Coverage. This series begins at 87.1 percent in 1987 and ends at 91.1 percent in 2012. Notably, the 2012 value is this Indicator's high point. Its low point, 84.6 percent, was in 1998.
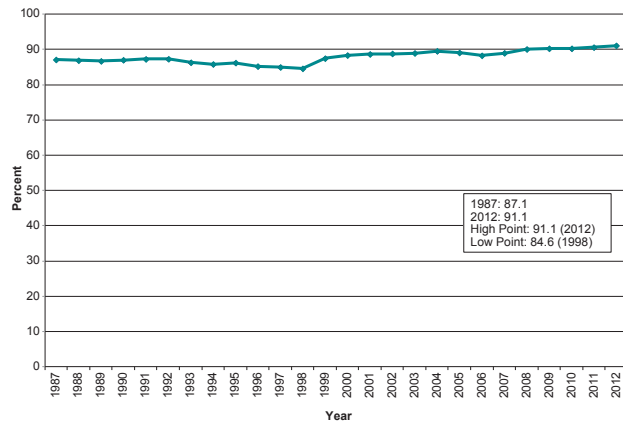

1987: 87.1
2012: 91.1
High Point: 91.1 (2012)
Low Point: 84.6 (1998)

Figure 6: Health Insurance Indicator (Percent of Children Ages 0-18 Living in Families with Public or Private Health Insurance), 1987-2012

The Safe/Risky Behavior Domain and Its Key Indicators

The Safe/Risky Behavior Domain time series is given in Figure 7. Its 2012 value, of 151.40, is the high point of the series, and is much higher than the 1975 base year value of 100. The low point of this Index was 93.4 in 1977, although the 1981 (93.9) and 1994 (94.4) values also are relatively low.

1975: 100.0
2012: 151.4
High Point: 151.4 (2012)
Low Point: 93.4 (1977)
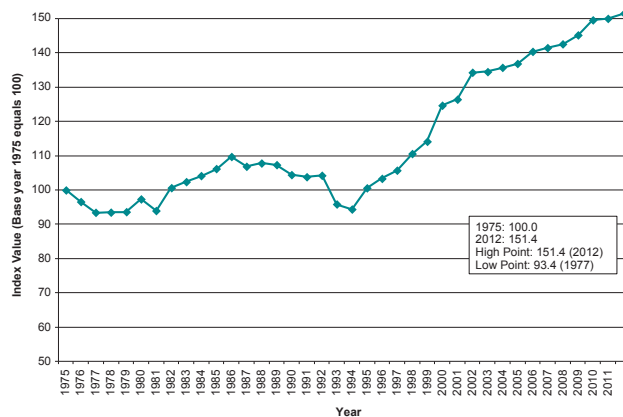
Figure 7: The Safe/Risky Behavior Domain, 1975-2012

Figure 8 contains the time series for the first Key Indicator in the Safe/Risky Behavior Domain, the Teenage Birth Rate, measured as the number of live births per 1,000 females ages 10–17. This series begins at 18.7 in 1975 and ends at a substantial decline, projected at 6.9 in 2012. Its high point was 20.1 in 1991 and its low point (among the observed values) was 7.9 in 2011, a 58 percent decline from the 1975 value.[22]
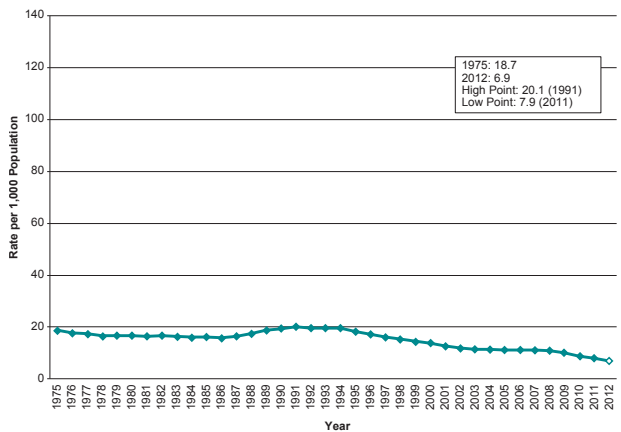

1975: 18.7
2012: 6.9
High Point: 20.1 (1991)
Low Point: 7.9 (2011)

Figure 8: Teenage Birth Rate (Number of Live Births per 1,000 Females ages 10-17), 1975-2012

Figure 9 shows the time series for the second Key Indicator in the Safe/Risky Behavior Domain, the Violent Crime Victimization Rate, measured as the number of victims of violent crimes per 1,000 in the 12–19 age group. This series begins at 83 in 1975 and ends at a much lower projected 35.9 in 2012. Its high point was 121.3 in 1994 and its low point (among the observed values) was 26.9 in 2010, a 68 percent decline from the 1975 value.
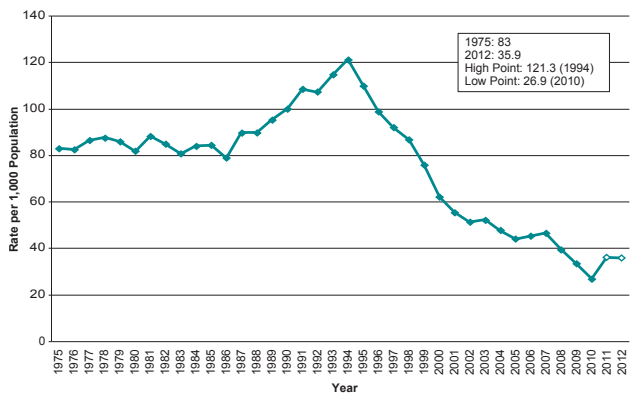

1975: 83
2012: 35.9
High Point: 121.3 (1994)
Low Point: 26.9 (2010)

Figure 9: Violent Crime Victimization Rate (Number of Victims of Violent Crimes Ages 12-19 per 1,000), 1975-2012

22 Projected values may be above or below the observed high or low point values. However, in this graph as with all of the graphs of the Key Indicators, low and high points in the time series are identified based only on the observed values for the series, not the projected values.

Figure 10 contains the time series for the third Key Indicator in the Safe/Risky Behavior Domain, the Violent Crime Offending Rate, which is measured as the number of violent crime offenders per 1,000 in the 12–17 age group (as perceived by victims of the violent crimes). This series begins at 31.2 in 1975 and ends at a much lower projected 4.6 in 2012. Its high point was 51.9 in 1993 and its low point (among the observed values) was 9.5 in 2010, a 70 percent decline from the 1975 value.

1975: 31.2
2012: 4.6
High Point: 51.9 (1993)
Low Point: 9.5 (2010)
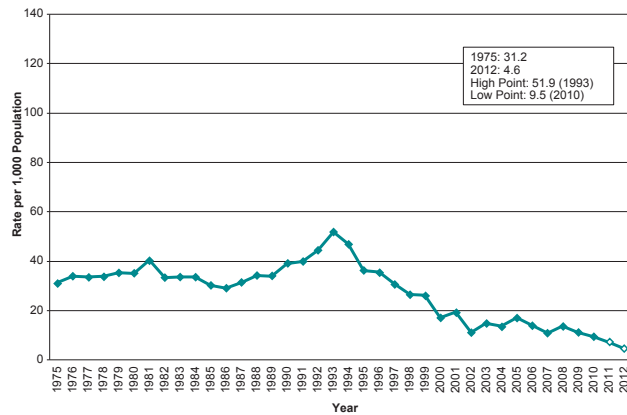
Figure 10: Violent Crime Offending Rate (Number of Violent Crime Offenders Ages 12-17 as Perceived by Violent Crime Victims per 1,000), 1975-2012

Figure 11 contains the time series for the fourth Key Indicator in the Safe/Risky Behavior Domain, the Cigarette Smoking Rate as measured by the percent of 12th graders who reported smoking cigarettes in the last 30 days. This series begins at 36.7 percent in 1975 and ends at a substantially lower 17.1 percent in 2012. Its high point was 38.8 percent in 1978, and the low point is the 2012 value of 17.1 percent, a 53 percent decline from the 1975 value.

1975: 36.7
2012: 17.1
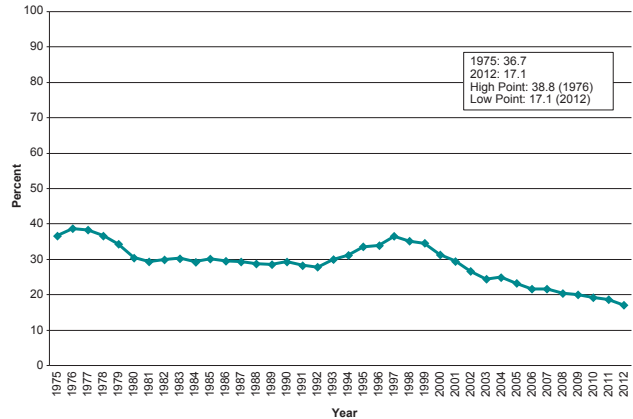High Point: 38.8 (1976)
Low Point: 17.1 (2012)

Figure 11: Cigarette Smoking Rate (Percent of 12th Graders Who Smoked Cigarettes in the Past 30 Days), 1975-2012

Figure 12 shows the time series for the fifth Key Indicator in the Safe/Risky Behavior Domain, the Binge Alcohol Drinking Rate, as measured by the percent of 12th graders who reported drinking five or more alcoholic drinks in a row in the last 30 days. This series begins at 36.9 percent in 1975 and ends at the much lower value of 23.7 percent in 2012. Its high point was 41.4 percent in 1981 and the low point was 21.6 percent in 2011, a 41 percent decline from the 1975 value.

1975: 36.9
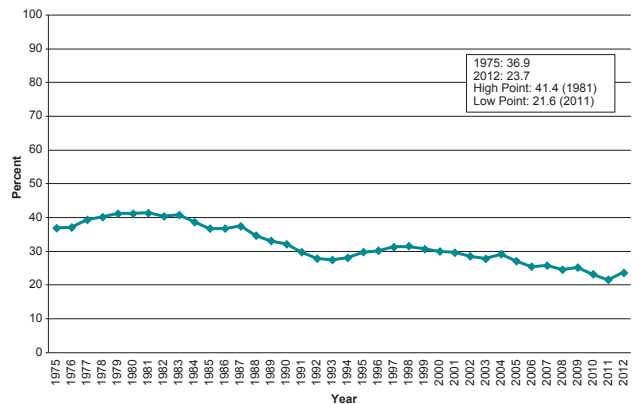2012: 23.7
High Point: 41.4 (1981)
Low Point: 21.6 (2011)

Figure 12: Binge Alcohol Drinking (Percent of 12th Graders Who Drank At Least 5 or More Alcoholic Drinks in a Row in the Past 30 Days), 1975-2012

Figure 13 shows the time series for the sixth and final Key Indicator in the Safe/Risky Behavior Domain, the Illicit Drug Use Rate as measured by the percent of 12th graders who reported using psychoactive drugs such as marijuana, cocaine, or heroin in the last 30 days. This series begins at 30.7 percent in 1975 and ends at a somewhat lower 26.3 percent in 2012. Its high point was 38.9 percent in 1978 and the low point was 14.4 percent in 1992.
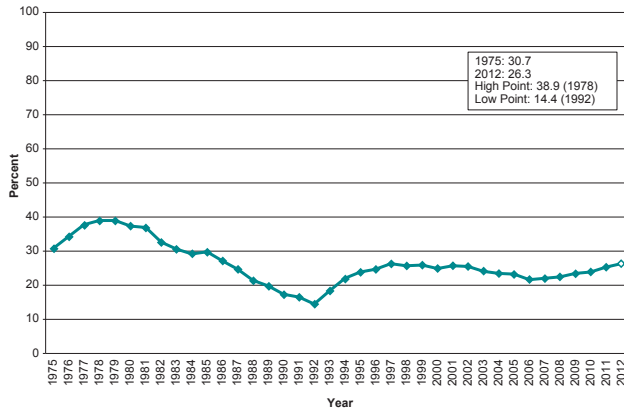

Figure 13: Illicit Drug Use (Percent of 12th Graders Who Used Psychoactive Drugs (e.g., Marijuana, Cocaine, Heroin) in the Past 30 Days), 1975-2012

The Social Relationships Domain and Its Key Indicators

The Social Relationships Domain time series is given in Figure 14. Its value in 2012 is 81.3, which is considerably lower than the 1975 base year value of 100. The low point of this Index was 67.5 in 1997 and its high point was 101.5 in 1976.
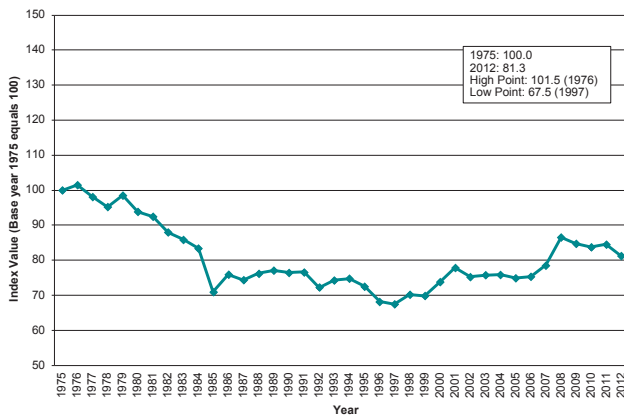

Figure 14: The Social Relationships Domain, 1975-2012

Figure 15 shows the time series for the first Key Indicator in the Social Relationships Domain, the Single Parent Family Rate, measured as the percent of children ages 0–18 living in single-parent families. This series begins at 17 percent in 1975 and ends at 27.4 percent in 2012, which is substantially higher than the 1975 base year value. Its high point was 28.2 percent in 2005 and the low point was the 17 percent in 1975.
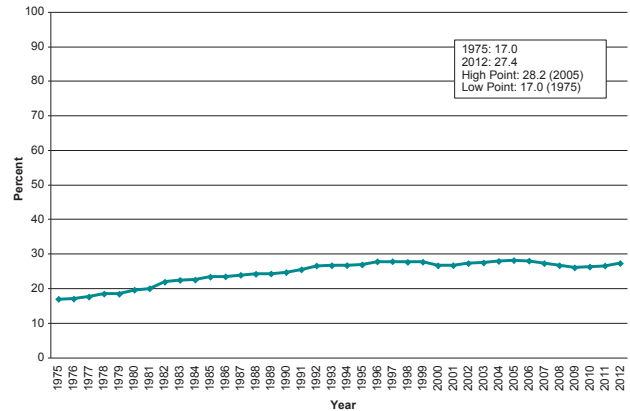

Figure 15: Single Parent Family Rate (Percent of Children Ages 0-18 Living in Single-Parent Families), 1975-2012

Figure 16 displays the time series for the second Key Indicator in the Social Relationships Domain, the Residential Mobility Rate measured as the percent of children ages 0–18 living in families that have moved residences in the past year. This series begins at 18 percent in 1975 and ends at 13.8 percent in 2012, which is somewhat lower than the 1975 base year value. Its high point was 21.7 percent in 1985 and the low point was the 12.6 percent in 2008.
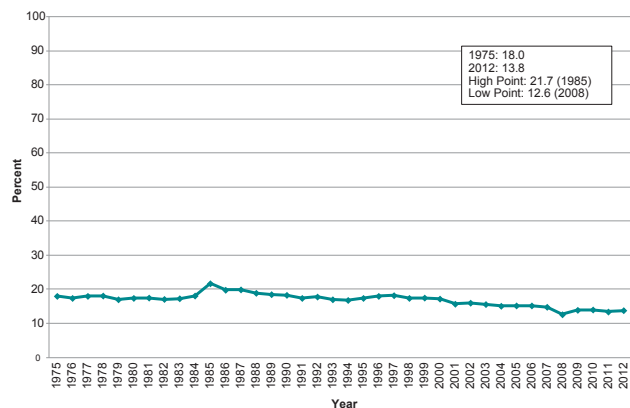

Figure 16: Residential Mobility Rate (Percent of Children Ages 0-18 Living in Families That Have Moved Residences in the Past Year), 1975-2012

The Emotional/Spiritual Well-Being Domain and Its Key Indicators

The Emotional/Spiritual Well-Being Domain time series is given in Figure 17. Its value in 2012 is 83.3, which is considerably lower than the 1975 base year value of 100. The low point of this Index was 71.8 in 1990 and its high point was 101.6 in 1980, although the 99.2 value in 2002 is close to that high point.
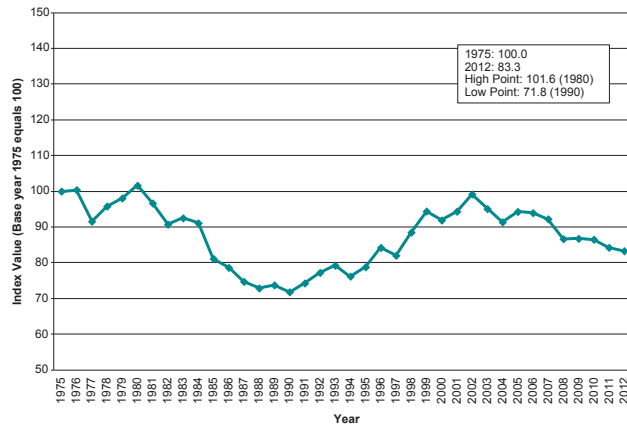


```
1975: 100.0
2012: 83.3
High Point: 101.6 (1980)
Low Point: 71.8 (1990)
```

Figure 17: The Emotional/Spiritual Well-Being Domain, 1975-2012

Figure 18 shows the time series for the first Key Indicator in the Emotional/Spiritual Well-Being Domain, the Suicide Rate measured as the number of suicide deaths per 100,000 people in the age group 10–19. This series begins at 4.2 in 1975 and ends at 4.4 in 2012. Its high point was 6.4 in 1994 and the low point was 3.9 in 2007.
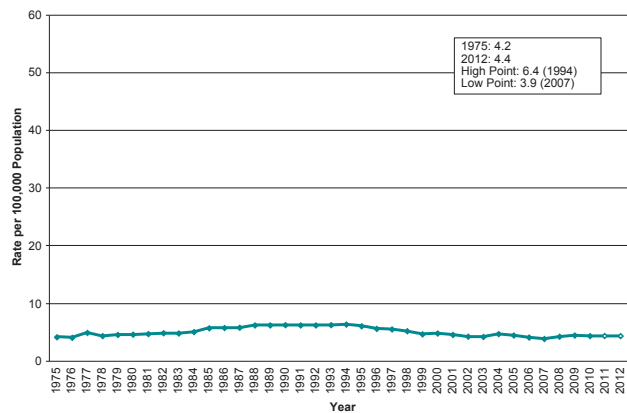


```
1975: 4.2
2012: 4.4
High Point: 6.4 (1994)
Low Point: 3.9 (2007)
```

Figure 18: Suicide Rates (Number of Suicide Deaths Ages 10-19 per 100,000), 1975-2012

Figure 19 contains the time series for the second Key Indicator in the Emotional/Spiritual Well-Being Domain, the Religious Participation Rate measured as the percent of 12th graders who report attending religious services weekly. This series begins at 41 percent in 1975 and ends at a projected 27.9 percent in 2012, which is substantially lower than the 1975 base year value. Its high point was 43 percent in 1989 and the low point (in the observed data) was 28.2 percent in 2011.
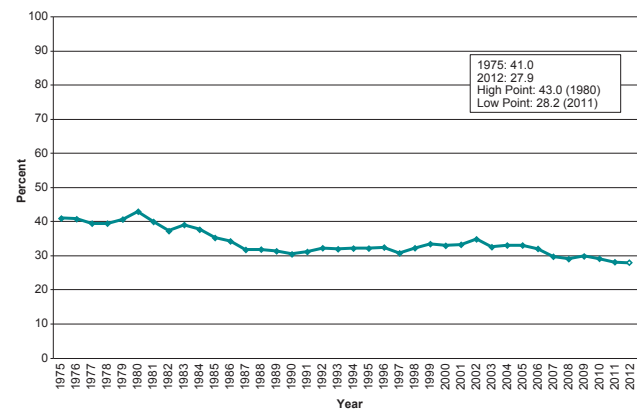


```
1975: 41.0
2012: 27.9
High Point: 43.0 (1980)
Low Point: 28.2 (2011)
```

Figure 19: Religious Attendance (Percent of 12th Graders Who Attend Religious Services Weekly), 1975-2012

Figure 20 shows the time series for the third and final Key Indicator in the Emotional/Spiritual Well-Being Domain, the Importance of Religion Rate measured as the percent of 12th graders who rate religion as very important. This series begins at 29 percent in 1975 and ends at a projected 25.2 percent in 2012, which is slightly lower than the 1975 base year value. Its high point was 33.3 percent in 2002 and the low point was 24.9 percent in 1987.
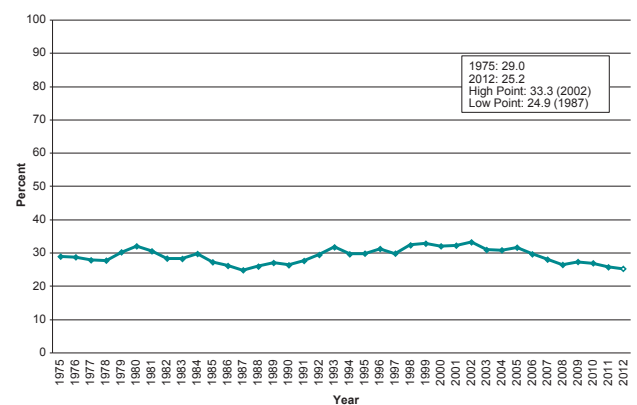


```
1975: 29.0
2012: 25.2
High Point: 33.3 (2002)
Low Point: 24.9 (1987)
```

Figure 20: Religion Importance (Percent of 12th Graders Who Report Religion as Very Important), 1975-2012

The Community Engagement Domain and Its Key Indicators

The Community Engagement Domain time series is given in Figure 21. Its value in 2012 is 129.7, which is considerably higher than the 1975 base year value of 100. That base year 1975 value of 100 is the low point of this Index; its high point was 131.1 in 2008.
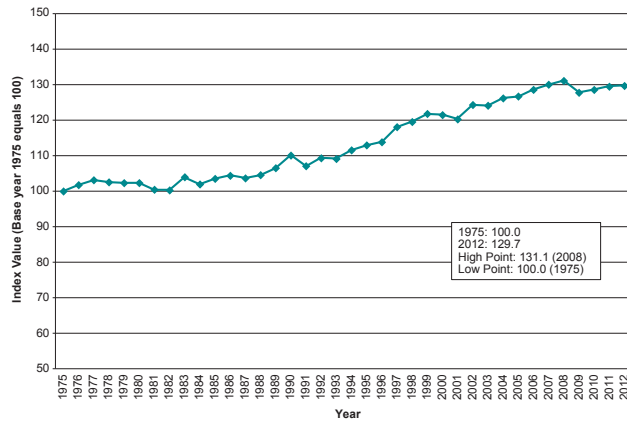

Figure 21: The Community Engagement Domain, 1975-2012

Figure 22 contains the time series for the first Key Indicator in the Community Engagement Domain, the High School Diploma Rate measured as the percent of the population ages 18–24 who have received a high school diploma. This series begins at 80.8 percent in 1975 and ends at a projected 85 percent in 2012, which is somewhat higher than the 1975 base year value. Its high point among observed values was 85 percent in 2010 and the low point was 80.1 percent in 1979.
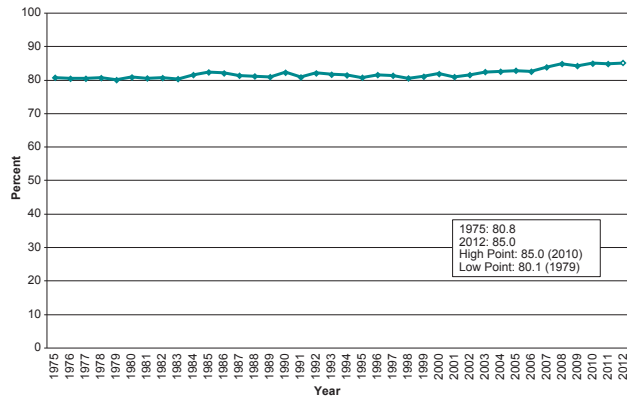

Figure 22: High School Diploma Rate (Percent Ages 18-24 Who Have Received a High School Diploma), 1975-2012

Figure 23 shows the time series for the second Key Indicator in the Community Engagement Domain, the Institutionally Disconnected Youth Rate, measured as the percent of the population ages 16–19 who are not enrolled in school and not employed. This series begins at 10.7 percent in 1975 and ends at a projected 7.9 percent in 2012, which is slightly lower than the 1975 base year value. Its high point among observed values was 11.8 percent in 1982 and the low point was 7.5 percent in 1998.
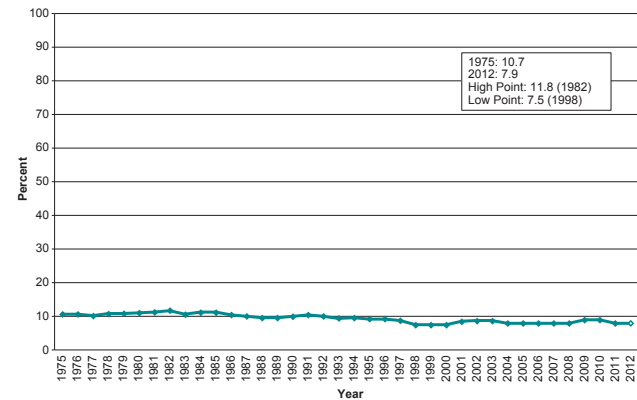

Figure 23: Institutionally Disconnected Youth (Percent of Youth Ages 16-19 Not Enrolled in School and Not Employed), 1975-2012

Figure 24 displays the time series for the third Key Indicator in the Community Engagement Domain, the PreKindergarten Enrollment Rate measured as the percent of children ages 3–4 enrolled in Preschool programs. This series begins at 31.5 percent in 1975 and ends at a projected 53.4 percent in 2012, which is substantially higher than the 1975 base year value. Its high point among observed values was 56.3 percent in 2002 and the low point was 31.3 percent in 1976.
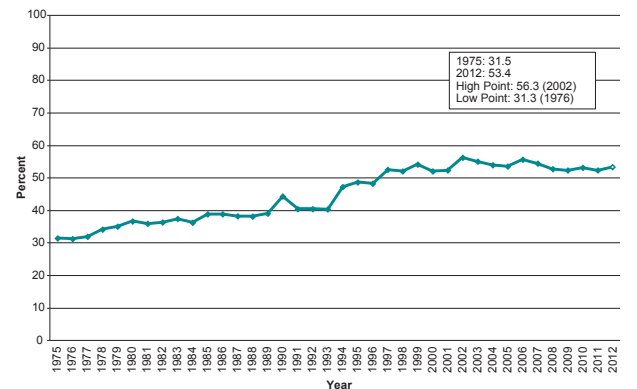

Figure 24: PreKindergarten Enrollment (Percent of Children Ages 3-4 Enrolled in Preschool), 1975-2012

Figure 25 contains the time series for the fourth Key Indicator in the Community Engagement Domain, the College Degree Rate measured as the percent of the population ages 25–29 who have received a bachelor's degree. This series begins at 21.9 percent in 1975 and ends at a projected 32.5 percent in 2012, which is substantially higher than the 1975 base year value. Its high point (among observed values) was 32.2 percent in 2011 and the low point was 21.3 percent in 1981.

1975: 21.9
2012: 32.5
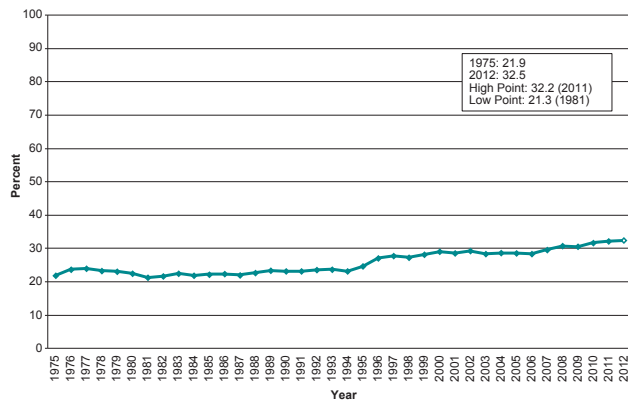High Point: 32.2 (2011)
Low Point: 21.3 (1981)

Figure 25: College Graduation Rate (Percent Ages 25-29 Who Have Received a Bachelor's Degree), 1975-2012

Figure 26 shows the time series for the fifth and final Key Indicator in the Community Engagement Domain, the Political Participation Rate, measured as the percent of the population ages 18–24 who voted in Presidential elections. This series begins at 41.5 percent in 1975 and ends at a projected 41.2 percent in 2012, which is about the same as the 1975 base year value. Its high point among observed values was 48.5 percent in 2008 and the low point was 32.3 percent in 2000.
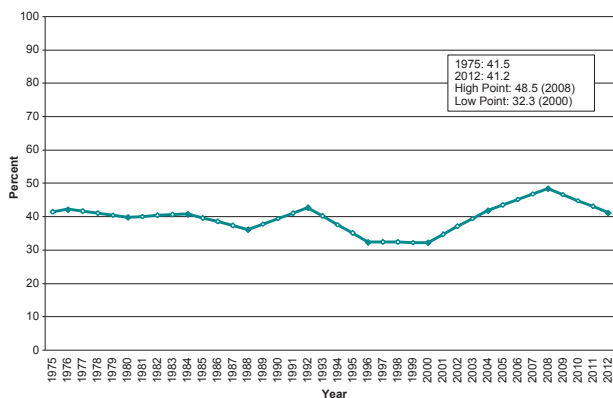

1975: 41.5
2012: 41.2
High Point: 48.5 (2008)
Low Point: 32.3 (2000)

Figure 26: Political Participation (Percent Ages 18-24 Who Voted in Presidential Elections), 2012-1975

The Educational Attainment Domain and Its Key Indicators

The Educational Attainment Domain time series is given in Figure 27. Its value in 2012 is 104.3, which is a slight improvement from the 1975 base year value of 100. Those values are also the high and low point values of the Indicator, respectively.

1975: 100.0
2012: 104.3
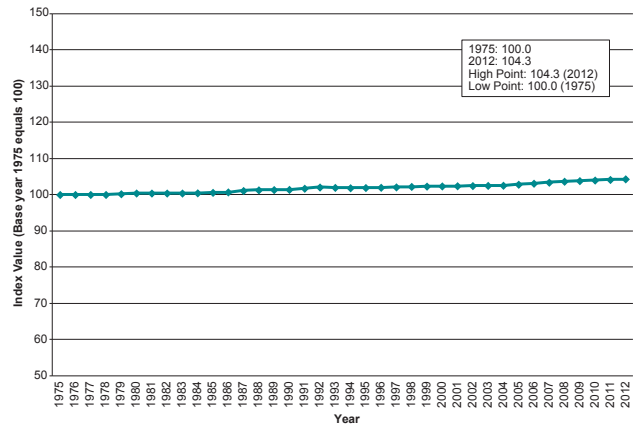High Point: 104.3 (2012)
Low Point: 100.0 (1975)

Figure 27: The Educational Attainment Domain, 1975-2012

Figure 28 contains the time series for the first Key Indicator in the Educational Attainment Domain, Reading Test Scores, measured as the average of national reading test scores for 9-, 13-, and 17-year-old students. The national test scores are measured on a scale from 0–500, with a value of 250 considered proficient.

The graph shows both the average scores (left y-axis) and the percent changes from the 1975 base year (right y-axis). Beginning with an average score of 250.7 in 1975, the average scores ends at 257 in 2012, which is slightly higher than the base year value. By 2012, there is only a 2.5 percent increase in reading scores compared to the 1975 base year. The high point of the series is 257, in 2012, and the low point is the base year value of 250.7.
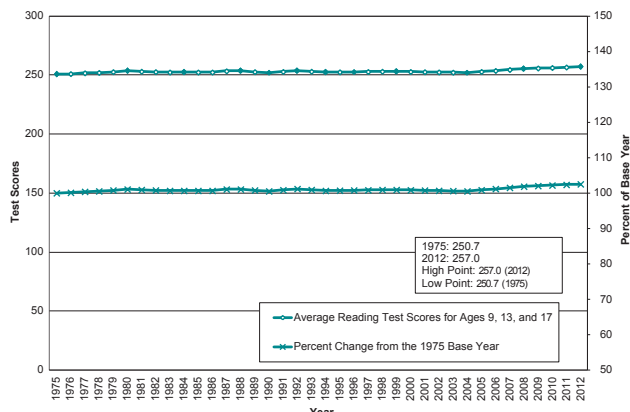
Figure 28: Reading Test Scores (Averages of National Assessment of Educational Progress Reading Test Scores for Ages 9, 13, and 17 and in Index Form Showing Percent Change from the 1975 Base Year), 1975-2012

1975: 250.7
2012: 257.0
High Point: 257.0 (2012)
Low Point: 250.7 (1975)

Average Reading Test Scores for Ages 9, 13, and 17

Percent Change from the 1975 Base Year

Figure 29 contains the time series for the second and final Key Indicator in the Educational Attainment Domain, Mathematics Test Scores measured as the average of national mathematics test scores for 9-, 13-, and 17-year-old students. As with the Reading Test Scores, these national test scores are measured on a scale from 0–500; a value of 250 is proficient.

The graph shows both the average scores (left y-axis) and the percent changes from the 1975 base year (right y-axis). The average scores series begins at 262.3 in 1975 and ends, somewhat higher, at 278.3 in 2012. Compared with the 1975 base year, the average mathematics scores increased 6.1 percent in 2012. The high point of the series is 278.3 in 2012 and the low point is 261 in 1978.

1975: 262.3
2012: 278.3
High Point: 278.3 (2012)
Low Point: 261.0 (1978)

Average Mathematics Test Scores for Ages 9, 13, and 17
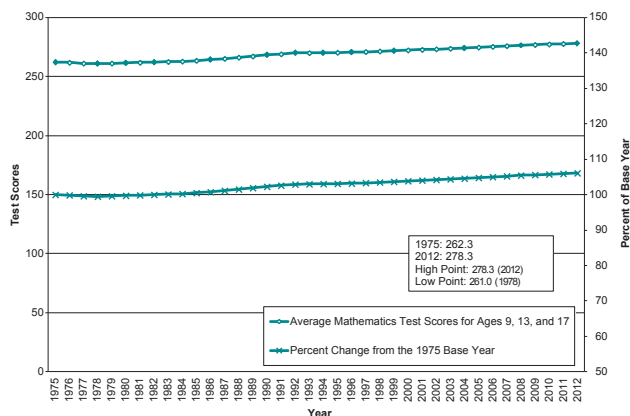
Percent Change from the 1975 Base Year

Figure 29: Mathematics Test Scores (Averages of National Assessment of Educational Progress Mathematics Test Scores for Ages 9, 13, and 17 and in Index Form Showing Percent Change from the 1975 Base Year), 1975-2012

The Health Domain and Its Key Indicators

The Health Domain time series is given in Figure 30. Its value in 2012 is 66.1, which is considerably lower than the 1975 base year value (100). The low point of the series is the 2009 value of 63.3 and its high point is 102.5 in 1977.
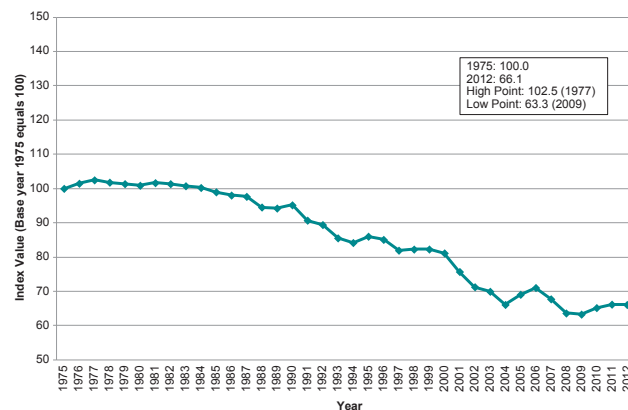

1975: 100.0
2012: 66.1
High Point: 102.5 (1977)
Low Point: 63.3 (2009)

Figure 30: The Health Domain, 1975-2012

Figure 31 contains the time series for the first Key Indicator in the Health Domain, the Infant Mortality Rate, measured as the number of deaths before age 1 per 1,000 live births. This series begins at 16.1 in the base year 1975 and ends at a projected 6.0 in 2012, which is substantially lower. Its high point was the 16.1 in 1975 and its low point (among the observed values) was 6.1 in 2011.
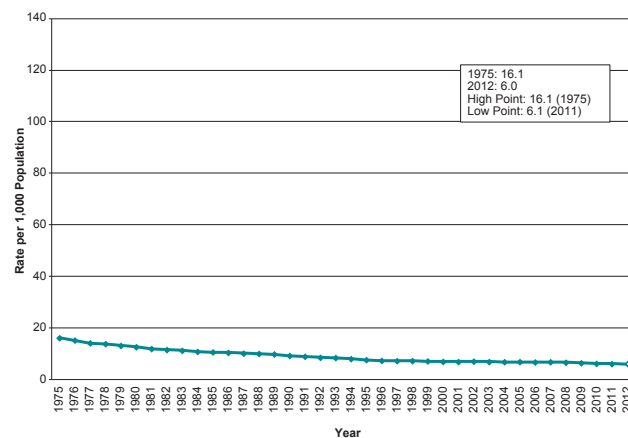

1975: 16.1
2012: 6.0
High Point: 16.1 (1975)
Low Point: 6.1 (2011)

Figure 31: Infant Mortality Rate (Number of Deaths before Age 1 per 1,000 Live Births),

Figure 32 shows the time series for the second Key Indicator in the Health Domain, the Low Birth Weight Rate, measured as the percent of live births weighing less than 2,500 grams. This series begins at 7.4 percent in the base year 1975 and ends at a projected 8.1 percent in 2012, which is slightly higher. Its high point was 8.3 percent in 2006 and its low point (among the observed values) was 6.7 in 1984.
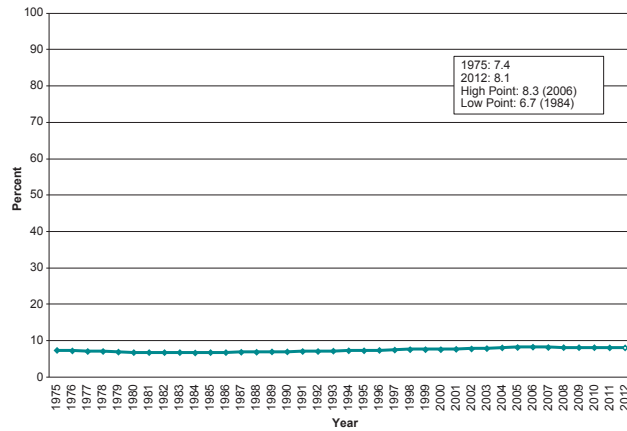

1975: 7.4
2012: 8.1
High Point: 8.3 (2006)
Low Point: 6.7 (1984)

Figure 32: Low Birth Weight Rate (Percent of Live Births Weighing Less Than 2,500 grams), 1975-2012

Figure 33 displays the time series for the third Key Indicator in the Health Domain, the Child and Adolescent Mortality Rate, measured as the number of deaths per 100,000 people ages 1–19. This series begins at 56.9 in the base year 1975 and ends at a projected 21.9 in 2012, which is considerably lower. This downward trend in mortality rates marks a large reduction in child and youth deaths. Its high point was the 56.9 in 1975 and its low point among the observed values was 24 in 2010.
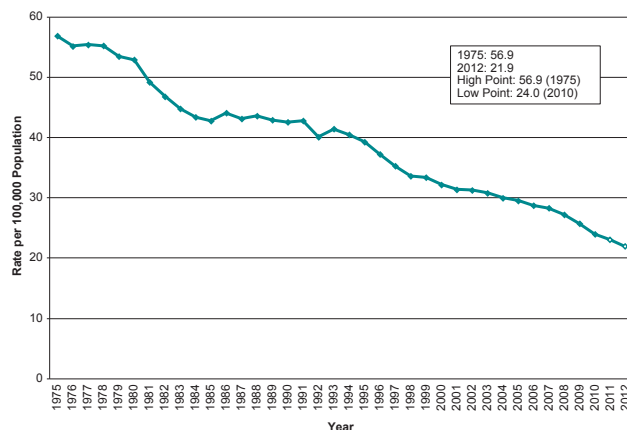

1975: 56.9
2012: 21.9
High Point: 56.9 (1975)
Low Point: 24.0 (2010)

Figure 33: Mortality Rate (Deaths for Ages 1-19 per 100,000), 1975-2012

Figure 34 shows the time series for the fourth Key Indicator in the Health Domain, the Rate of Children with Very Good or Excellent Health, a measure of the overall health of children ages 0–18, as reported by their parents.[23] This series begins at 78 percent in the base year 1984 and ends at a projected 82.7 percent in 2012, which is slightly higher. Its high point was 83.7 in 2002 and its low point was the 78 percent in 1984.
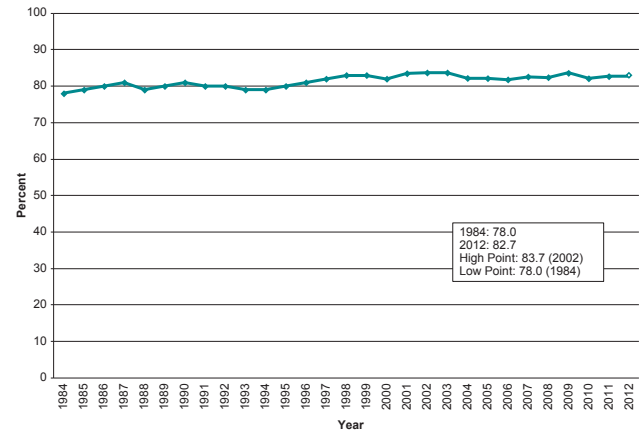

1984: 78.0
2012: 82.7
High Point: 83.7 (2002)
Low Point: 78.0 (1984)

Figure 34: Good Health (Percent of Children Ages 0-18 with Very Good or Excellent Health as Reported by Parents), 1984-2012

Figure 35 contains the time series for the fifth Key Indicator in the Health Domain, the Rate of Children with Activity Limitations, a measure of the percent of children ages 0–18 whose health problems limit their activities, as reported by their parents.[24] This series begins at 5 percent in the base year 1984 and ends at a projected 9.6 percent in 2012, which is slightly worse. The high point of the series among the observed values was 9.4 percent in 2009 and its low point was 4.9 percent in 1987.

1984: 5.0
2012: 9.6
High Point: 9.4 (2009)
Low Point: 4.9 (1987)
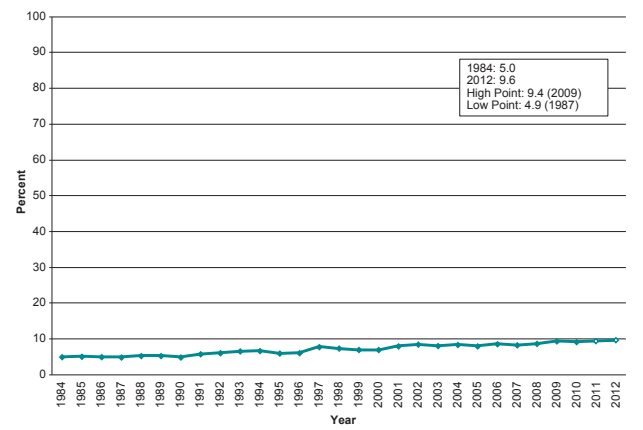
Figure 35: Activity Limitations (Percent of Children Ages 0-18 with Activity Limitation due to Health Problems as Reported by Parents), 1984-2012

23 Parents are asked: "Would you say [child's name]'s health in general was excellent, very good, good, fair, or poor?"

24 Parents are asked: "Does [child's name] have an impairment or health problem that limits [his/her] ability to (crawl), walk, run, or play?" The responses were "Yes" or "No."

Figure 36 contains the time series for the sixth and final Key Indicator in the Health Domain, the Child and Adolescent Obesity Rate, measured as the percent of children ages 6–19 whose Body Mass Indices (BMIs) are at or above the 95th percentile cut point for their ages. This series begins at 5.1 percent in the base year 1975 and ends at a projected 18.2 percent in 2012, which is considerably higher. The high point of the series (among the observed values) was 18.2 percent in 2010 and its low point was the 5.1 percent in 1975.

1975: 5.1
2012: 18.2
High Point: 18.2 (2010)
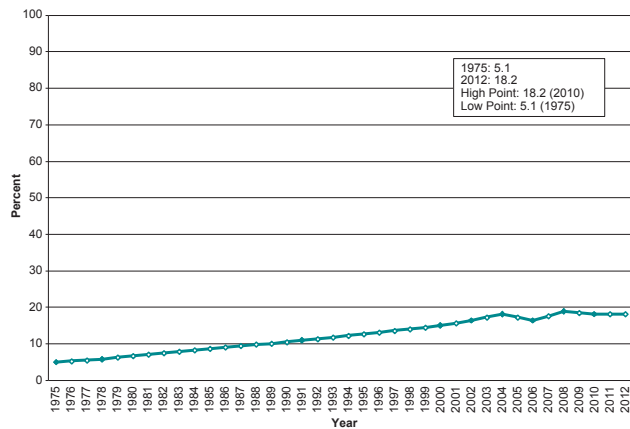Low Point: 5.1 (1975)

Figure 36: Obesity Rate (Percent of Children Ages 6-19 at or Above the 95th BMI Percentile Cutpoint for Their Age), 1975-2012

Acknowledgements and Contact Information

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 online at: **shttp://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.[25]

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 level of agreement among the members of the population. In statistical terminology, the equal-weighting method is a *minimax estimator.*[26]

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.*

25 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.

26 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.

Table A-1.

Twenty-Eight Key Indicators of the National CWI.[a]

Family Economic Well-Being Domain

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

Safe/Risky Behavior Domain

1. Teenage Birth Rate (Ages 10-17)[b]
2. Rate of Violent Crime Victimization (Ages 12-19)[c]
3. Rate of Violent Crime Offenders (Ages 12-17)[c]
4. Rate of Cigarette Smoking (Grade 12)
5. Rate of Binge Alcohol Drinking (Grade 12)
6. Rate of Illicit Drug Use (Grade 12)[b]

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 1-18)

Emotional/Spiritual Well-Being Domain:

1. Suicide Rate (Ages 10-19)[c]
2. Rate of Weekly Religious Attendance (Grade 12)[b]
3. Percent Who Report Religion as Being Very
   Important (Grade 12)[b]

Community Engagement Domain

1. Rate of Persons Who Have Received a High School
   Diploma (Ages 18-24)[b]
2. Rate of Youth Not Working and Not in School
   (Ages 16-19)[b]
3. Rate of PreKindergarten Enrollment (Ages 3-4)[b]
4. Rate of Persons Who Have Received a Bachelor's
   Degree (Ages 25-29)[b]
5. Rate of Voting in Presidential Elections
   (Ages 18-20)[e]

Educational Attainment Domain

1. Reading Test Scores (Ages 9, 13, and 17)[e]
2. Mathematics Test Scores (Ages 9, 13, and 17)[e]

Health Domain

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

Notes:
a Unless otherwise noted, indicators refer to children ages 0–18.
b Projected for 2012.
c Projected for 2011 and 2012.

d 2011 to 2012 data are held constant at the 2010 value until new data
  are available.
e Reported data for 2012; projected for 2009–2011.

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, http://www.census.gov/hhes/www/poverty/data/historical/hstpov3.xls, 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, http://www.childstats.gov/americaschildren/tables/econ2.asp?popup=true, 1980–present. 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, http://www.census.gov/hhes/www/income/data/historical/families/2010/F09AR_2010.xls, 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, http://www.census.gov/hhes/www/cpstables/032011/health/h08_000.htm, 1987–present.
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. http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_01.pdf, 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. http://www.cdc.gov/nchs/data/nvsr/nvsr59/nvsr59_04.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/nvsr59/nvsr59_04.pdf 1975–present.
Subjective Health and Activity Limitations	CDC, National Center for Health Statistics, National Health Interview Survey, Hyattsville, MD: National Center for Health Statistics. www.cdc.gov/nchs, available from Forum on Child and Family Statistics, http://www.childstats.gov/, 1984–present.
Obesity	CDC, National Center for Health Statistics, Health United States, 2003 and National Health and Nutrition Examination Survey (NHANES), Hyattsville, MD. http://www.cdc.gov/obesity/data/index.html, 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–present). Hyattsville, MD: National Center for Health Statistics, http://www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_02.pdf
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, http://bjs.ojp.usdoj.gov/content/pub/pdf/cv10.pdf 1975-present.
Violent Crime Offenders	US Department of Justice, Bureau of Justice Statistics, National Crime Victimization Survey. http://www.ojp.usdoj.gov/bjs/ 1975–present.

Cigarette Smoking, Binge Drinking, and Illicit Drug Use	The Monitoring the Future Study, Institute for Social Research, University of Michigan: Ann Arbor, MI, www.monitoringthefuture.org/data/data.html, 1975–present.
Reading and Mathematics Scores	U.S. Department of Education Statistics, National Assessment of Education Progress (NAEP), http://nces.ed.gov/nationsreportcard, 1975–present.
High School Completion	U.S. Bureau of the Census, October Current Population Surveys, Washington, D.C.: U.S. Bureau of the Census. http://www.census.gov/hhes/school/data/cps/historical/TableA-5a.xls
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, http://www.childstats.gov/, 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, http://nces.ed.gov/programs/coe/tables/table-ope-1.asp, 1980–present, interpolated years 1976–1979.
Bachelor's Degree	U.S. Department of Education, National Center for Education Statistics, Condition of Education, http://nces.ed.gov/pubs2012/2012001.pdf, 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, http://www.census.gov/hhes/www/socdemo/voting/publications/p20/2008/tables.html, 1975–present.
Single Parent Families	U.S. Bureau of the Census, Current Population Reports, Marital Status and Living Arrangements, Annual Reports, www.census.gov/population/socdemo/hh-fam/cps2011/tabC3-all.xls, 1975–present.
Residential Mobility	U.S. Bureau of the Census, Series P-20, Geographic Mobility, Washington, D.C.: U.S. Bureau of the Census, www.census.gov/hhes/migration/files/cps/cps2011/tab01-01.xls 1975–present.
Suicide	CDC, National Center for Health Statistics, National Vital Statistics System, http://www.cdc.gov/nchs/nvss/mortality_tables.htm, 1975–present.
Church Attendance and Importance	The Monitoring the Future Study, Institute for Social Research, University of Michigan: Ann Arbor, MI. http://www.monitoringthefuture.org/ 1975–present.

Appendix C

National Child and Youth Well-Being Index Values, 1975-2012,[27] with an Updated Estimate for 2011 and an Initial Estimate for 2012[28]

Year	CWI	Change in CWI
1975	100.00	0.00
1976	100.75	0.75
1977	98.93	-1.82
1978	99.26	0.32
1979	99.97	0.71
1980	99.59	-0.37
1981	97.37	-2.23
1982	96.02	-1.35
1983	96.55	0.53
1984	96.43	-0.11
1985	93.92	-2.51
1986	95.14	1.22
1987	93.98	-1.15
1988	94.00	0.01
1989	94.52	0.52
1990	94.06	-0.46
1991	92.97	-1.09
1992	92.87	-0.10
1993	91.50	-1.37
1994	91.37	-0.14
1995	93.22	1.85
1996	93.87	0.65
1997	94.29	0.42
1998	96.92	2.63
1999	99.34	2.42
2000	101.20	1.85
2001	101.26	0.06
2002	102.40	1.15
2003	101.44	-0.97
2004	100.91	-0.53
2005	101.96	1.05
2006	103.06	1.10
2007	103.09	0.02
2008	102.83	-0.25
2009	101.79	-1.04
2010	102.20	0.41
2011	102.40	0.20
2012	102.26	-0.15

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.

---

27 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.

28 As of release date, 6 Key Indicators were projected for 2011 and 18 Key Indicators were projected for 2012; see Table A-1 in Appendix A.

FOUNDATIONFORCHILDDEVELOPMENT