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Analyzing Differences in Child Well-Being Among U.S. States

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Abstract This article develops a comprehensive composite state-level index of child well-being modeled after the Foundation for Child Development's Child Well-Being Index (CWI) to assess state differences in child well-being among the 50 U.S. states in 2007. The state-level CWIs are composed of 25 state-level indicators clustered into seven different domains or dimensions of child well-being. In addition to examining state rankings and the inter-relationship among domains across states, statistics on 27 demographic, economic, and policy characteristics of the states are analyzed in a regression analysis with respect to their ability to explain state differences in the CWIs. Because of the large number of explanatory variables and the potential redundancy created thereby, a principal components analysis/composite index method is applied. This leads to three composite indices that simplify the regressor space and explain 66.0 % of the variance. A second regression that adds three key policy measures to the three structural indices explains 79.5 % of the variance. Key findings of the study pertaining to how the resources available to children provided by families, communities, and the public sector relate to child well-being are discussed.

Keywords Child well-being · Composite index · Variability among U.S. states

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1 Introduction

Over the past 20 years, there has been an enormous increase in the collection and use of social indicators related to children in the United States, which has been fostered by a mix of scientists, researchers, advocates, practitioners, and government officials (Ben-Arieh and Frones 2007; O'Hare 2011; Brown et al. 2002; Brown and Botsko 1996; Coulton 2008; Brown et al. 2008; Brown and Moore 2007; Stagner et al. 2008). There is growing interest in merging data on children from different data sources, constructing child well-being indices, and sharing results with policymakers and the public. In response to this growing interest, researchers have engaged in numerous efforts to produce indices of child well-being at the national and state levels (O'Hare and Gutierrez 2012; Fernandez et al. 2012; Land et al. 2001; Moore et al. 2007; O'Hare and Lamb 2004; Mather et al. 2007; O'Hare and Lamb 2009). There have been few systematic research efforts to date, however, that have attempted to explain state differences in child well-being.

A broad quality-of-life measure based on 25 indicators of children's well-being is developed to examine differences in the well-being of children across the states. The study builds on the work of the Child Well-Being Index (CWI) published yearly by the Foundation for Child Development (http://fcd-us.org/resources/2011-child-well-being-index-cwi). The CWI, which has published Annual Reports since 2004, is based on concepts and findings from quality-of-life/well-being research over the past 40 years. In this article, the 25 item index we construct is termed the *state CWI*. We use the state CWI to address three questions: 1) How do states vary in terms of overall child well-being? 2) How are the domains of well-being related across states? 3) What demographic factors, economic conditions, and public policies are associated with states that exhibit higher levels of child well-being?

2 The Importance of States

There is enormous variation across the 50 U.S. states in child well-being. The maximum and minimum state values for each of the ten indicators used in the 2011 KIDS COUNT Data Book show that in every case the worst state has a value that is nearly two times that of the best state. (The Annie E. Casey Foundation 2011, p. 36).

O'Hare (2006) found that most states are different than the national average on most of the ten measures used in the annual KIDS COUNT report. Of the 500 possible comparisons of a state value with the corresponding national value (50 states times 10 measures), 339 were statistically significantly different from the national measure. Given these state-level differences, national measures tell us very little about what is happening in any particular state or region

Moreover, during the past few decades there has been devolution of responsibility for programs designed to support vulnerable children and families from the federal level to the state level (Winston and Castañeda 2007). Devolution of federal power, through block grants, the passage of welfare reform in the mid-1990s (The Personal Responsibility and Work Opportunity Reconciliation Act of 1996—PRWORA), and other mechanisms have made states more powerful actors in social policy decisions (Finegold et al. 2004a, b).

For many major social service programs that serve children, states have the power to decide eligibility criteria and set benefit levels (Winston and Castañeda 2007). A comprehensive review of state and federal program responsibilities for major safety net programs concluded: "The recent shifts in federal-state arrangements across both standard setting and financing functions appears to have contributed to a widening of state variation in standards for, and financing of, three of these programs: TANF [Temporary Assistance for Needy Families], Food Stamps, and Medicaid (with state variation a hallmark of SCHIP [State Children's Health Insurance Program] since its inception)" (Winston and Castañeda 2007, p. 27).

The enhanced decision-making powers of states have led to increased demand for state-level measures of child well-being (Brown and Moore 2007). As state leaders grapple with meeting the needs of vulnerable children, having a clear understanding of the number, trends, and characteristics of vulnerable children at the state level is more important than ever.

3 Conceptualizing Child Well-Being

There are a number of definitions of child well-being in the literature but little consensus on exactly how to define the concept (Pollard and Lee 2002; Fernandez et al. 2012). A few definitions of child well-being from the literature are the following:

> "Child well-being encompasses quality of life in a broad sense. It refers to a child's economic conditions, peer relationships, political rights, and opportunities for development." (Ben-Arieh and Frones 2007, p. 249–250)

> Child well-being is "a multidimensional construct incorporating mental/psychological, physical and social dimensions." (Columbo 1986, p.1)

> Child well-being is "the ability to successfully, resiliently, and innovatively participate in the routines and activities deemed significant by a cultural community. Well-being is also the state of mind and feeling produced by participation in routines and activities." (Weiner 1988, p. 70)

> "Children's health and well-being is directly related to their families' ability to provide for their essential physical, emotional and social needs." (Schor 1995, p.414)

These statements demonstrate that there is no consensuses on exactly how child well-being should be conceptualized but most analysts think of *child well-being as a global concept involving multiple domains/dimensions*. We also conceptualize child well-being as a multi-dimensional construct, which is reflected in a variety of indicators from several key domains.

Some scholars make a distinction between *outcome domains* and *social environment domains* (see Fernandez et al. 2012). Indicators in the outcome domain reflect experiences and activities of children and are direct measures of how children are faring. Such domains are populated with measures such as infant mortality, school test scores, and measures of health.

Social environment domains, sometimes referred to as "context" in other studies (Moore et al. 2008) pertain to aspects of children's environments that influence their well-being. These domains include neighborhood and school characteristics, as well as characteristics of the family. Indicators in these domains are measures such as poverty, family structure, and parental employment. We believe that the social environmental measures are important to include in a child well-being index because the social environment has an impact on children that is not fully reflected in the outcomes measure. Some social environment measures, like family poverty or parental unemployment, may serve as proxy measures for lack of resources available to a child. In addition, the effects of the social environment may not show up until later in life (Duncan et al. 1998).

We include both outcome and social environment domains in this study, and following widespread practice, we combine outcome and social environment indicators into a single index to reflect overall child well-being.

4 Data and Methods

4.1 Indicators

The indicators used in this study are closely related to the measures used by Land and colleagues in developing their national CWI. Land and colleagues have published a series of reports with more information about how measures in the CWI were selected (Land et al. 2001, 2011; Meadows et al. 2005; Land et al. 2007; Haggerty and Land 2007). The index composed by Land et al. is documented in several peer-reviewed journal articles results are published yearly, and is based on 40 years of research on quality of life studies (Cummings 1996).

Measures chosen for the index constructed here possess three important attributes: 1) they reflect several important areas of a child's well-being; 2) the indicators reflect experiences across a range of developmental stages—from birth through early adulthood; and 3) all of the indicators are measured consistently across states.

By combining several different data sources for the year 2007, we found state-level data for 25 of the 28 measures used in the national CWI. It is worth noting that many of the indicators used here are only available periodically, and thus the index cannot be replicated every year. Of the 28 measures included in the national CWI, three are not included here because they are either unavailable or unreliable at the state level:

1. 12th Graders who report religion as being very important (Emotional/Spiritual Domain)
2. Violent crime victimization rates for teens (Safety/Behavioral Domain) and
3. Rate of violent crime offenders for teens (Safety/Behavioral Domain).

The remaining 25 CWI indicators are grouped into seven different domains of well-being:

1. Family economic well-being;
2. Health;
3. Safety/behavioral concerns;

4. Educational attainments;
5. Community connectedness;
6. Social relationships with family and peers; and
7. Emotional/spiritual well-being.

4.2 Composite Index Construction

Construction of a comprehensive composite index is one of the most efficient ways to communicate state-level patterns and trends in child well-being. A child well-being index can be used to combine multiple indicators of well-being across many dimensions into a single measure of overall well-being. For many audiences, an index provides a more concise and understandable portrayal of child well-being than a collection of data tables for the individual measures. An index helps one quickly determine which states are doing better and which are doing worse in terms of child well-being.

We combined the 25 measures into seven domain indices, and an overall index using same methodology employed by Land et al. (2001). Table 1 shows the 25 indicators of child well-being along with their domains and basic descriptive statistics. The data in Table 1 underscores the large variation in child well-being across states.

Before combining the indicators into an index, we standardized the state data in two ways. We controlled for directionality of some indicators and converted all of the measures to standard score units. We also calculated standardized domain scores because some domains contain more indicators than others.

By *directionality* we mean a high value on some indicators (e.g., median income) reflects positive child well-being but a high value on other indicators (e.g., child poverty) reflects poor child well-being. Standardizing directionality was done in two ways. Some of the measures were changed from positive measure to negative measures. For example, the measure specified as children *with* health insurance, was changed to children *without* health insurance. To control for differences in directionality for some measures (e.g., median income) we calculated the inverse of the measures so that for all the measures higher values consistently indicated *worse* child outcomes. This was done by multiplying some values by −1. Without this correction for directionality, it would not have been possible to combine scores together to derive a meaningful total or average. Table 2 shows the measures where we reversed directionality to make all the variables consistent in that regard. After reverse coding, a higher score always reflects worse outcome for children for each of the 25 indicators.

It is necessary to standardize scores because they often are measured on different units or scales (e.g., dollars, percentages, rates per 1,000, or rates per 100,000). For example, adding median income in dollars, average reading score, and percent in poverty together does not make sense. Moreover, the distributions are quite different across measures. For example, the state scores for the percent of 3- to 4-year-olds not in school ranged from 34.9 % to 71.5 % while the range for low birthweight babies was only 5.7 % to 12.3 %. If we simply combined these two scores, data for the percent of 3-to 4-year-olds not in school would dominate the resulting sum. By standardizing the variables, as described below, we make sure that each measure is given equal weight in the domain score.

Table 1 Descriptive information for 25 indicators in the state child well-being index

	State average	Lowest state value	Highest state value	Standard deviation
Family economic well-being domain				
1. FAMILIES WITH CHILDREN IN POVERTY 2007	14.5	7.5	24.6	4.17
2. CHILDREN WITH*OUT* SECURE PARENTAL EMPLOYMENT 2007	32.7	24.1	42.6	4.26
3. MEDIAN INCOME-FOR FAMILIES WITH CHILDREN 2007[a]	57,451	40,200	81,000	10,611
4. CHILDREN WITH*OUT* HEALTH INSURANCE COVERAGE 2007	9.7	4.5	20.2	3.69
Health domain				
5. INFANT MORTALITY RATE 2007	7.1	4.8	10.0	1.50
6. LOW BIRTHWEIGHT BABIES 2007	8.2	5.7	12.3	1.44
7. MORTALITY RATE, AGES 1–19 2007	33.1	18.4	51.9	8.41
8. CHILDREN *NOT* IN VERY GOOD OR EXCELLENT HEALTH 2007	13.8	7.6	22.3	3.23
9. CHILDREN WITH FUNCTIONAL LIMITATIONS 2007	4.6	2.9	6.7	0.91
10. CHILDREN AND TEENS WHO ARE OVERWEIGHT OR OBESE 2007	31	23.1	44.4	4.21
Safety/Behavioral domain				
11. TEEN BIRTH RATE 2007	42.3	20.0	71.9	12.75
12. CIGARETTE USE IN THE PAST MONTH, AGES 12–17 2006–08	10.8	6.5	15.9	1.96
13. BINGE ALCOHOL DRINKING AMONG YOUTHS, AGES 12–17 2006–08	10.2	6.6	13.2	1.59
14. ILLICIT DRUG USE OTHER THAN MARIJUANA, AGES 12–17 2006–08	4.8	3.8	6.2	0.63
Educational attainment domain				
15. AVERAGE READING SCORES FOR 4TH AND 8TH GRADERS 2007[a]	241.2	228.9	254.5	6.85
16. AVERAGE MATH SCORES FOR 4TH AND 8TH GRADERS 2007[a]	259.9	246.3	275.2	7.62
Community connectedness				
17. YOUNG ADULTS WHO HAVE *NOT* RECEIVED A H.S. DIPLOMA 2007	16.3	9.5	23.5	3.57
18. TEENS NOT IN SCHOOL AND NOT WORKING 2007	8	4.0	12.6	2.14
19. PERCENT OF CHILDREN, AGES 3–4 *NOT* ENROLLED IN SCHOOL 2007	54.6	34.9	71.5	8.14
20. YOUNG ADULTS WHO HAVE *NOT* RECEIVED A B.A. DEGREE 2007	72.3	56.7	82.0	7.13
21. YOUNG ADULTS WHO *DID NOTE* VOTE IN ELECTION 2007	54.3	40.8	77.6	7.74
Social relationships domain				
22. CHILDREN IN SINGLE PARENT FAMILIES 2007	31.9	18.2	43.7	6.12

Table 1 (continued)

	State average	Lowest state value	Highest state value	Standard deviation
23. CHILDREN WHO HAVE MOVED WITHIN THE LAST YEAR 2007	16.2	9.9	22.6	2.97
Emotional/spiritual well-being domain				
24. SUICIDE RATE, AGES 10–19 2007	5.2	1.4	14.5	2.82
25. CHILDREN *WITHOUT* WEEKLY RELIGIOUS ATTENDANCE, AGES 0–17 2007	46.8	25.6	74.5	10.70

[a] These measures were reverse coded in the index. Standard scores were multiplied by −1

Standard scores (also called *z-scores*) for each indictor were derived by subtracting the overall mean state value from the state estimate and dividing that value by the standard deviation for that distribution of state estimates, as shown in the formula below. In formula (1), for a specific indicator, x represents the state estimate of the indicator, $\bar{x}$ represents the mean across the 50 state values, and s represents the standard deviation:

$$\text{standard score}(\text{z}-\text{score}) = \frac{\text{x} - \overline{\text{x}}}{\text{s}}. \quad (1)$$

After reverse coding and standardizing the measures, we derived an index value for each of the seven domains by averaging the standardized scores for variables in that domain. For readability and ease of interpretation, we inverted the index values.

Table 2 Indicators that were reverse coded

From	To
1.Percent of children with secure parental employment	Percent of children *without* secure parental employment
2. Median annual income all families with children	Value multiplied by −1
3.Percent of children with health insurance coverage	Percent of children *without* health insurance
4. Percent of children in good or excellent health	Percent of children *not* in good or excellent health
5. Average 4th and 8th grade math scores	Value multiplied by −1
6. Average 4th and 8th grade reading scores	Value multiplied by −1
7. Percent who have received a high school diploma, ages 18–24	Percent who have *not* received a high school diploma, ages 18–24
8. Percent of 3–4 year olds in preschool	Percent of 3–4 year olds *not* in preschool
9.Percent of persons ages 25–29 who have a bachelor's degree	Percent of persons ages 25–29 who do *not* have a bachelor's degree
10. Percent of persons ages 18–24 who voted in the 2008 presidential election	Percent of persons ages 18–24 who did *not* vote in the 2008 presidential election
11. Percent of persons ages 0–17 who attend religious services weekly	Percent of persons ages 0–17 who do *not* attend religious services weekly

Thus a higher score means better child well-being. Then we averaged the domain means to derive an overall score for child well-being in each state. Finally, we ranked the states on the basis of their total standard score in sequential order from best (1) to worst (50).[1]

The national CWI classifies the 25 state-level indicators into seven different domains, calculates an equally-weighted average of the indicators within each domain, and then calculates an equally-weighted average of the domain scores to construct the overall index. That is the method we use here as well.[2] An equal-weighting strategy is the simplest, most widely used, and most transparent method. Some researchers have questioned whether an equal-weighting strategy is appropriate in measuring child well-being, given that not all measures contribute equally to children's overall quality of life, but there is no consensus at this point on a preferred alternative to equal weighting (Haggerty and Land 2007; Zill 2006). Moreover, Haggerty and Land (2007) argue that absent any compelling reason to vary weights, an equal weighting scheme works best. They show with both analytic proofs in a model of heterogeneous importance weights for composite indicators and numerical simulations that the equal weights method is a *minimax statistical estimator* in the sense that it minimizes extreme disagreements among individuals making such ratings.

5 Findings

5.1 The States Ranked by the CWI

Table 3 shows the states ranked in terms of overall child well-being in 2007 based on our analysis and Map 1 provides a visual representation of the results. New Jersey and Massachusetts ranked highest on the state-CWI, while New Mexico and Mississippi were at the bottom of the rankings. Overall, the results are consistent with the general pattern seen in many other reports on state-level child well-being (The Annie E. Casey Foundation 2011; Every Child Matters Education Fund 2008). States in the South and Southwest do poorly while states in the upper Midwest and Northeast do well. The bottom-10 states in terms of child well-being are almost all in the South and Southwest. The top-10 states are mostly in the Northeast and upper Midwest.

The correlation between the rankings based on the state CWI and the KIDS COUNT state ranking for the same year is 0.91, which indicates a very high level of consistency. Small differences between the two rankings should not be surprising since to a great extent the KIDS COUNT ranking uses different measures of child well-being. Only six measures are exactly the same in the two indices, although a few

[1] The District of Columbia is not included in the rankings because it is really not comparable to states. The District of Columbia is very similar to many central cities around the country, but unlike those cities, the more affluent suburbs are not included. Also, the District of Columbia does not have many of the governance powers of a state.

[2] O'Hare and Bramstedt (2003) compared two alternative methods for producing a state index. In the first method, the standard scores were averaged without regard to domains and in the second method domains scores were calculated and then averaged together to arrive at the total score for each state. The results were nearly identical.

Table 3 States ranked on overall child well-being: 2007

Rank[a]	State	Index Value
1	New Jersey	0.85
2	Massachusetts	0.84
3	New Hampshire	0.77
4	Utah	0.75
5	Connecticut	0.74
6	Minnesota	0.73
7	Iowa	0.59
8	North Dakota	0.56
9	Maryland	0.53
10	New York	0.46
11	Pennsylvania	0.43
12	Virginia	0.40
13	Vermont	0.35
14	Wisconsin	0.29
15	Nebraska	0.26
16	Illinois	0.26
17	Maine	0.20
18	Rhode Island	0.19
19	Hawaii	0.19
20	Kansas	0.17
21	Delaware	0.13
22	Washington	0.09
23	Michigan	0.09
24	Idaho	0.07
25	Ohio	0.04
26	Colorado	0.02
27	South Dakota	0.01
28	Indiana	−0.01
29	Missouri	−0.04
30	California	−0.07
31	Oregon	−0.08
32	North Carolina	−0.11
33	Montana	−0.13
34	Florida	−0.15
35	Georgia	−0.18
36	South Carolina	−0.20
37	Wyoming	−0.23
38	West Virginia	−0.27
39	Texas	−0.34
40	Tennessee	−0.45
41	Kentucky	−0.47
42	Alaska	−0.47
43	Oklahoma	−0.56

[a]Ranking based on unrounded index values

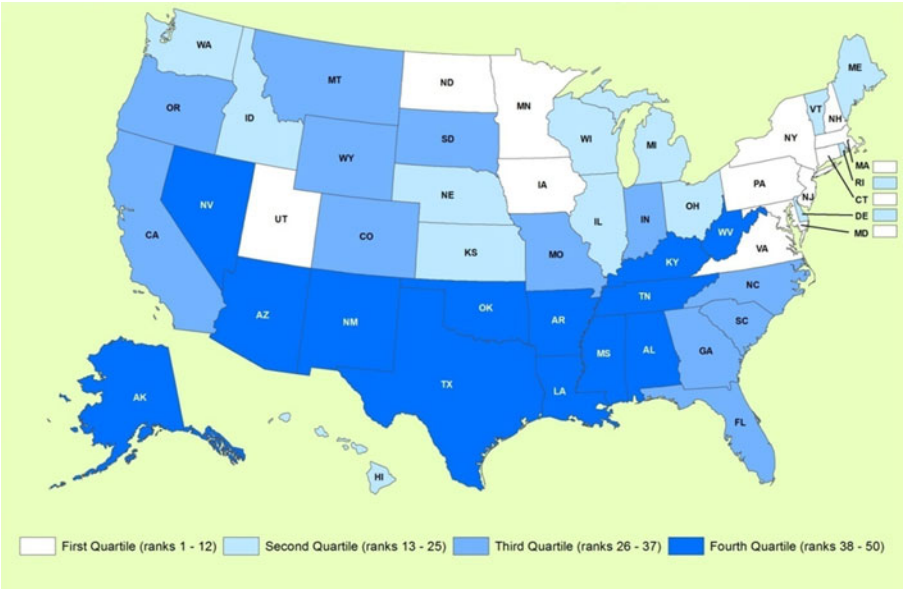
Table 3 (continued)

Rank[a]	State	Index Value
44	Alabama	−0.59
45	Arizona	−0.68
46	Nevada	−0.74
47	Arkansas	−0.77
48	Louisiana	−0.80
49	Mississippi	−0.92
50	New Mexico	−0.96

others are similar. These results are similar to previous studies comparing the CWI and the KIDS COUNT index (O'Hare and Bramstedt 2003). The consistency of the results, despite the use of different indicators, underscores the robustness of the findings.

5.2 Relationships Among Domains

Table 4 shows an inter-correlation matrix among domains as well as the overall index. There are positive correlations among most of the domains. Of the 21 correlations examined, 18 are statistically significantly different from zero at the 0.1 level or higher. In general the correlations across the seven domains are in the moderate-to-high range. The mean absolute value of the correlation coefficients for the 21 coefficients examined here is 0.36.



Map 1 Overall child well-being index, 2007

There are a few correlations between domains that stand out because they are very high and a few that stand out because they are very low. Of the three relationships that are not very high and not statistically significant, two involve Emotional/Spiritual Domain and two involve the Safety/Behavioral domain:

- Educational Attainment and Safety/Behavioral=0.19
- Emotional/Spiritual Well-Being and Safety/Behavioral=0.01
- Emotional/Spiritual Well-Being and Community Connectedness=−0.18

The highest correlations are listed below, all of which involve Family Economic Well-Being, Social Relationships, or Community Connectedness Domains:

- Social Relationships and Community Connectedness=0.78
- Social Relationships and Health=0.76.
- Family Economic Well-Being and Health=0.76
- Family Economic Well-Being and Community Connectedness=0.76
- Family Economic Well-Being and Social Relationships=0.75
- Community Connectedness and Educational Attainment=0.71
- Social Relationships and Educational Attainment=0.69

While most of the domains are related as one would expect, one of the domains—Emotional/Spiritual Well-Being—is negatively correlated with most of the other

Table 4 Inter-correlations among state CWI well-being domains: 2007

All domains	Family economic well-being domain	Health domain	Safety/ Behavioral domain	Educational attainment domain	Community connectedness domain	Social relationships domain	Emotional/ Spiritual well-being domain
Family economic well-being domain	1						
Health domain	0.76[a]	1					
Safety/ Behavioral domain	0.51[a]	0.41[b]	1				
Educational attainment domain	0.69[a]	0.68[a]	0.19	1			
Community connectedness domain	0.76[a]	0.58[a]	0.41[a]	0.71[a]	1		
Social relationships domain	0.75[a]	0.76[a]	0.59[a]	0.61[a]	0.78[a]	1	
Emotional/ Spiritual well-being domain	−0.28[b]	−0.51[a]	0.01	−0.35[b]	−0.18	−0.25[c]	1
Overall State CWI	0.90[a]	0.78[a]	0.63[a]	0.77[a]	0.87[a]	0.89[a]	−0.14

[a] Significant at the 0.01 level

[b] Significant at the 0.05 level

[c] Significant at the 0.1 level

domains. The Emotional/Spiritual Well-Being Domain has a negative correlation with five of the other domains and a near-zero correlation coefficient with a sixth domain. Of the 21 correlations among domains examined in Table 4, the Emotional/Spiritual Domain is the only one to exhibit a negative correlation with another domain. The relationship between the Health Domain and the Emotional/Spiritual Domain stands out because it is a highly negative correlation ($r = -0.51$), suggesting states that have good health outcomes often have poor scores in the Emotional/Spiritual Domain and vice versa. Moreover, the two indicators used in the Emotional/Spiritual Domain (Suicide Rate and Weekly Religious Attendance) are not correlated with each other.

Past analysis shows that weekly religious attendance, which is one of the two indicators used to measure the Emotional/Spiritual Domain, is one of the few indicators where children in low-income families (below 200 % of poverty) score higher than children in middle and upper income families (O'Hare and Vandivere 2007). So it is not surprising that states with high concentrations of children in low-income families also have high levels of religiosity. From a sociological perspective it could be argued that families without ample resources or material goods are more likely to turn to the spiritual domain for solace and this may explain the negative relationship between spirituality and other domains of well-being.

The negative associations between the Emotional/Spiritual Domain and the other domains, as well as the overall index, raise a number of theoretical and/or methodological questions about this domain. The results suggest that this domain may not be measured adequately with the indicators we have available and/or it suggests that Emotional/Spiritual Domain is not a very powerful force in children's lives compared to other domains.

5.3 Analysis of Factors Related to Child Well-Being Differences Across States

Variation in child well-being across states may potentially be explained by several factors. Some states have a higher concentration of vulnerable population groups such as racial and ethnic minorities, new immigrants, and very young children. For example, numerous reports show black and Hispanic children have worse outcomes than Non-Hispanic white children and these groups are more prevalent in some states than in others (Land et al. 2001; Lamb et al. 2005; Hernandez and Macartney 2008). States also vary in their investment of time or money in children and this may affect child outcomes. For example, children in low-income families have poor child outcomes on almost every indicator, and children in low-income families are more concentrated in some states than others (O'Hare and Vandivere 2007). Investments in children may come through their parents or through supportive public policies and/or public expenditures. Investments coming through families and parents are often reflected by indicators such as family income, household wealth, parental education, and parental employment. State policies may directly or indirectly affect children's well-being. These include policies that affect parental income and employment, as well as state spending on things such as children's education or health that affect child well-being directly.

While past studies on state differences in child well-being are somewhat limited and uneven, two findings seem to be relatively robust. First, demographic and

economic measures consistently explain much of the variation in child well-being across states. Second, in several studies at least one dimension of social policy has been found to be related to differences in child well-being. Collectively, these kinds of factors are very powerful predictors of child well-being. Using multivariate analysis, O'Hare and Lee (2007) found that a regression model including demographic, economic, and policy variables accounted for 90 % of the variance in child well-being across states. Therefore, for purposes of this study we clustered factors into three different categories, demographics, economics, and policy-related measures.

Given the dearth of past studies examining factors related to differences in state child well-being, we view this study as partially exploratory. We include some variables that have been found to be related to differences in child well-being in past study, but we also add some measures that have not been examined before.

Demographic factors explored in this study are largely taken from previous studies and where they have been found to be related to state differences in child well-being. In addition to the typical demographic measures used in previous study, we have added three socio-demographic measures of the adult population in each state. Adult characteristics drive family well-being which is closely related to child well-being.

Economic factors explored here are measures that have been shown to be related to child well-being in other studies. For example, there is a rich literature showing children in families with higher incomes and more wealth tend to have better outcomes.

Developing state policy measures is a little more complicated and will be discussed in a later section of this article. Appendix A contains the sources and definitions for all the demographic, economic and state policy variables examined here.

5.4 Correlates of Child Well-Being at the State level

5.4.1 Demographic Correlates

Table 5 shows how selected demographic measures are correlated with child well-being. Consistent with past research, eight of the ten demographic measures are statistically significant, but many are only moderately correlated with child well-being.

Several prior studies have found that the racial composition of a state is associated with the level of children well-being (Engels et al. 2000; Cohen 1998). States with higher percentages of black and/or Hispanic children tend to have lower levels of child well-being. Engels and colleagues showed that state rankings on child well-being shifted significantly after adjusting for the percent black in each state.

The three measures of racial composition used in this study (Percent Black, Percent Hispanic, and Percent Minority) all have relatively similar levels of association with child well-being, with correlation coefficients ranging from −0.23 to −0.37. The Percent Minority includes blacks and Hispanics as well as other minority groups such as American Indians. The correlation between Percent Hispanic and child well-being is negative and not statistically significant at the 0.1 level (r=−0.23), but it is almost as strong as the correlation between Percent Black and

Table 5 Correlations between state CWI and10 demographic measures: 2007

Demographic measures	Correlation coefficient	Level of statistical significance
Percent of children Non-Hispanic Black	−0.27	*
Percent of children Hispanic	−0.23	
Percent of children minorities	−0.37	***
Percent of child population ages 0 to 4	−0.34	**
Percent child population ages 10 to 17	0.37	***
Percent of children with a foreign-born parent	0.10	
Percent of children living in urban areas	0.27	*
Percent of adults 25+ with a high school diploma	0.66	***
Percent of adults age 18–64 without health insurance	−0.71	***
Percent of adults with a disability	−0.64	***

***Significant at the 0.01 level

**Significant at the 0.05 level

*Significant at the 0.10 level

child well-being (r=−0.27). These negative correlations all make sense because on average minority groups have poorer child well-being than non-Hispanic white children. For example, the poverty rates for black children in 2007 was 35 % and the poverty rates for Hispanic children in 2007 was 29 % compared to only 8 % for non-Hispanic white children.

The Percent Hispanic and the Percent Minority have a relatively high correlation with each other (r= 0.68), but the correlation between Percent Black and Percent Minority is much lower (r= 0.34). This is probably related to states in the Deep South where there are large numbers of black children but few Hispanic children. For example, only 5 % of the child population of Alabama is Hispanic but 38 % are minority. Likewise, only 3 % of the Mississippi child population is Hispanic but 50 % are minority. It is likely that percent Hispanic and percent Minority reflect different parts of the country where child outcomes are poor. Percent Hispanic reflects Southwestern states and Percent Minority really reflects the Deep South, where the black population is concentrated. The analysis is also confounded because Hispanics are highly concentrated in just a few states. Almost two-thirds (63 %) of Hispanic children live in just five states (O'Hare 2011). The main finding from this analysis is that states with higher than average concentrations of minority populations tend to have worse outcomes, but the correlations are modest.

The age structure of a state's child population is also related to child well-being.We examined the percent of all children under age 18 who are under age 5 or ages 10–17. The residual, the percent of all children under age 18 who are age 5–9, is not included

There is a statistically significant negative correlation between the state CWI and percent of the population that is age 0 to 4 (r=−0.34). This may be explained by noting that the highest fertility rates tend to be in the fast growing states in the South and Southwest, which also have child outcomes that are worse than in the rest of the country. Many of the states with the worst child outcomes, such as Arizona and

Texas, have higher than average fertility that leads to a higher than average share of young children. Also, the race/ethnicity group with the highest fertility rate, Hispanics, is concentrated in some of these states.

If a state has a relatively high percent of children under age 5, almost by definition there is a relatively low percent in the 10–17 age group. States with a high percent of children in the 10–17 age group are likely to be the more slowly growing (or declining) states of the Northeast and Midwest. These states have relatively good child outcomes compared to the rest of the country.

The main point here is that age structure of the child population is associated with child well-being, largely operating through higher fertility rates in states with poor child outcomes, but it is only moderately correlated with child well-being.

The correlation between the share of children living in urban areas and child well-being is statistical significant but it is relatively low ($r = 0.27$) indicating states that have a larger share of their population living in big cities have better outcomes. This is probably due to the relatively poor outcomes of children in rural areas of the South and Southwest, and to the fact that many states in the Northeast, which tend to have good child outcomes, also have highly urban populations.

The three measures with the highest correlations with child well-being (significant at the 0.01 level) reflect education, disability status, and health insurance status of adults in the state. While we call these measures demographic, in fact, they are a mix of demographic and socioeconomic.

The percent of the adult population who are disabled is negatively related to child well-being ($r = -0.64$).The higher the percent of adults with at least a high school degree, the higher the level of child well-being ($r = 0.66$). The higher the percent of adults with no health insurance, the lower the level of child well-being ($r = -0.71$).

Since adults are the people with primary responsibility for taking care of children, perhaps it should not be surprising that states with struggling adult populations often have struggling child populations. The fact that the correlations between adult characteristics and child well-being are as high as those between economic measures and child well-being underscores the importance of family and the two-generational approach to solving the nation's poverty problems (Hsueh and Jacobs 2011).

Interestingly, there was not a statistically significant correlation between child well-being and Percent of the Child Population Living with a Foreign-Born Parent. This may reflect the diffusion of immigrants, particularly Hispanics, which has been witnessed over the past few decades (Johnson and Lichter 2008). Hispanics were the only major race/ethnicity group where the number of children increased in every state in the nation between 2000 and 2010 (O'Hare 2011).

5.4.2 Economic Correlates

Table 6 shows how selected economic measures are correlated with child well-being. The results indicate that Employment Ratio ($r = 0.60$), Per Capita Income ($r = 0.58$), and Average Household Wealth ($r = 0.56$), are all highly correlated with child well-being. The Employment Ratio is the percent of 18 to 64-year olds who are employed. Higher levels of employment, per capita income, and household net worth are each associated with better outcomes for children, which reflects the well-known relationship between socioeconomic status and good child outcomes. On almost every

Table 6 Correlations between state CWI and four economic measures: 2007

Economic measures	Correlation coefficient	Level of statistical significance
Per capita income	0.58	***
Gini coefficient (measure of income inequality)	−0.21	
Average household net worth	0.56	***
Employment ratio (ratio of workers to population ages 18–64)	0.60	***

***Significant at the 0.01 level

**Significant at the 0.05 level

*Significant at the 0.10 level

measure of child well-being children in families with more highly educated parents, more income, and more wealth do better than those in poorer families (O'Hare and Vandivere 2007).

These findings are consistent with many past studies. For example, Whitaker (2001) found that the economic environment in a state as well as the demographic composition (percent minority and female-headed households) were both strong predictors of child well-being, explaining over 90 % of the variance in child well-being across states. Cohen (1998) also found economic variables were closely related to state differences in child well-being. In looking at data for 1985 and 1992, Voss (1995) found that economic factors (unemployment rates, employment by industry, incomes, etc) were the most powerful predictors of child well-being. Ritualo and O'Hare (2000) also found that economic conditions were closely related to state variation in child well-being.

The measure of income inequality used in this study is the Gini coefficient and it does not show a statistically significant correlation with child well-being. There are many other measures of income inequality available, but the Gini coefficient is widely used and is highly correlated with most other measures of income inequality across states. Accordingly, we doubt this finding is caused by the particular measure of income inequality we used (Weinberg 2011).

While Wilkinson and Pickett (2010) contend that state variation in child well-being is more closely linked to income inequality than to per capita income, other researchers find that the relationship between income inequality and some measures of child well-being disappears when one controls for differences in racial composition across the states (McLeod et al. 2004). Given the mixed evidence on the relationship between child well-being and income inequality, it is not surprising that there is not a statistically significant relationship found in this study.

5.4.3 Policy Correlates

There is no widely accepted policy index for states, but the Policy Matters initiative undertaken by the Center for the Study of Social Policy assembled a group of experts to develop a state policy framework related to the well-being of children. The group identified five key factors and 20 state policies related to family and child well-being (Center for the Study of Social Policy 2008). We incorporate many of their measures

in this analysis. However, some policy measures that initially looked very promising turned out to be unavailable or inconsistent across states. For example, three measures related to preschool funding and activities were only available for 38 of the 50 states. Our selection of policy measures was also driven by ease of availability.

State government policy differences that are related to differences in child well-being outcomes can be separated into two types: 1) state fiscal/spending policies and 2) social programs designed to directly improve key aspects of child well-being, such as health and education.

Many analysts have found a relationship between state policy measures and child well-being across the states. Voss (1995) found that social service expenditures were very important predictors of child well-being. Ritualo and O'Hare (2000) found average Aid to Families with Dependent Children (AFDC, often called welfare) payment per family was closely related to differential child well-being as well. They speculate the average AFDC payment level is a reflection of state generosity to poor and low-income families across a broad set of state programs. Cohen (1998) also concluded that a higher AFDC maximum benefit level is associated with better conditions for children. Meyers et al. (2001) found that individual policy measures had little relationship with child well-being, but using clusters of policies was more productive. However, our attempt to build a broader policy index from the measures used here was not successful. The index had a lower correlation with child well-being than several of the individual measures.

Table 7 shows the correlations between the overall child well-being index and 12 policy measures. Only 5 of the twelve policy measures examined here showed a statistically significant correlation with overall child well-being; but four of the five were statistically significant at the highest level.

The policy measure that has the strongest correlation with the state CWI is State and Local Tax Rates ($r = 0.50$). This correlation coefficient is nearly as high as the most highly correlated demographic or economic characteristics. States that have high state and local tax rates have better child well-being scores. We hypothesize that this operates through a broad set of public sector programs that support vulnerable children and families, particularly children in low-income families

This idea is supported by other analysts. For example, after examining a number of key measures of child well-being such as child mortality, elementary school test scores, and adolescent behavioral outcomes, one set of researchers (Harknett et al. 2003, p. 1) conclude, "States that spend more on children have better outcomes even after taking into account potential confounding influences." In this context, it is worth noting that Billen et al. (2007) report that over 90 % of total state expenditures on children are in elementary and secondary education spending.

Other findings in Table 7: Higher levels of Temporary Aid to Needy Families (TANF, often called welfare) benefits are associated with better overall child well-being ($r = 0.40$). The association between higher welfare benefits and better child well-being was also found by Ritualo and O'Hare (2000) as well as Cohen (1998). Higher welfare benefits have some positive benefits in and of themselves, but we also believe the level of welfare benefits is reflective of a broader package of supportive programs. States that have higher TANF benefits also offer more generous supportive programs. Medicaid child eligibility as a percent of poverty is also associated with better child well-being scores ($r = 0.46$).Higher Medicaid child eligibility thresholds

Table 7 Correlations between state CWI and 12 policy measures: 2007

Policy measures	Correlation coefficient	Level of statistical significance
Income tax threshold for a two parent family of four	0.17	
State and local tax rate	0.50	***
States with personal income tax	0.18	
States with refundable earned income tax credit	0.20	
States where part time workers are eligible for unemployment insurance	0.20	
Annual TANF benefit per child	0.40	***
Food stamp participation rate	−0.17	
Medicaid child eligibility as a percent of federal poverty level	0.46	***
Medicaid working parent eligibility cutoff as a percent	0.11	
Education spending per 4 year old in pre-kindergarten	−0.03	
States charging a premium for child health coverage programs	0.35	**
Education spending per pupil in public elementary and secondary schools	0.47	***

***Significant at the 0.01 level

**Significant at the 0.05 level

*Significant at the 0.10 level

mean more children in the state are likely to be eligible for government health insurance, making it easier for children to obtain health care which leads to better child outcomes. The correlation between Medicaid Child Eligibility Levels and Percent of Children with Health Insurance Coverage is 0.30.

The positive relationship between economic resources and child well-being has been found in other countries as well. Examining the countries of Europe, Bradshaw and Richardson (2009, p. 319) found that, "There are positive associations between child well-being and spending on family benefits and services and GDP per capita…."

However, it is noteworthy that state and local tax rate is not related to more revenue per capita. The correlation between personal state and local tax rates and revenue per capita is only −0.18 and is not statistically significantly different than zero. Some have suggested that state-level personal income taxes produce more state revenue that allows states to have more and better funded government programs for children. The correlational evidence in Table 7 does not support this assumption.

Table 8 shows there is a significant association between state/local tax rates and several supportive policies for children examined in this study. Our analysis shows states with higher state/local tax rates:

- pay higher TANF benefits (r=0.45),
- have less restrictive rules for participation in Medicaid (r=0.42),
- have higher per pupil spending in elementary and secondary schools (r=0.34), and
- put more money into public preschool programs (r=0.27).

Table 8 Correlations between state and local tax rate and selected social support programs

Social support programs	Correlation coefficient	Level of statistical significance
Annual TANF benefit per child	0.45	***
Medicaid child eligibility as a percent of federal poverty level	0.42	***
Spending per pupil in public elementary and secondary schools	0.34	**
Education spending per 4 year old in pre-kindergarten	0.27	*

***Significant at the 0.01 level

**Significant at the 0.05 level

*Significant at the 0.1 level

Most of the variables correlated with state and local tax rates are also associated with higher levels of child well-being as reflected in Table 7. The connection between state spending on children and educational spending is indicated by the correlation between per pupil spending on education and child well-being, which is 0.47. States that spend more on education tend to have better child outcomes; although it is worth noting that the correlation was markedly reduced when we controlled for differences in state incomes. In sum, our analysis of state differences strongly supports the idea that higher state and local tax rates rates are linked to more generous support programs which are linked to better child outcomes.

5.5 Multivariate Analysis

We next examine the ability of the demographic, economic and policy variables to account for the variation among states' CWI in regression analyses. This is complicated by the fact that there are 27 regressors and only 50 states. In addition, it might be anticipated that the 27 regressors covary substantially with each other. The consequences of these two data limitations were evident in a preliminary multivariate regression analysis with all 27 regressors in that only the regression coefficient of one variable, percent of adults with a disability, was statistically significant, while the regression equation as a whole accounted for 81.5 % (adjusted R^2) of the variation in the state-level CWIs. In this regression model, none of the 12 policy measures described above were found to be significantly associated with state-level CWI, net of other effects.

These findings are indicative of a statistical artifact known as the *partialling fallacy* (Gordon 1968; Land et al. 1990; McCall et al. 2010). This fallacy refers to situations wherein two (or more) regressors are more highly correlated with each other (even at relatively modest levels such as 0.6 or 0.5) than either is with the dependent variable. In such circumstances, the ordinary least squares estimation algorithms of conventional linear regression models such as those reported here often will attribute all explained variance to a regressor (e.g., percent of adults with a disability) that is more highly correlated with the outcome variable, and thus attribute no explained variance to the other regressors when there is no theoretical or substantive reason for allocating the explained variance in this way.

To provide further insight into the multivariate relationships of the state CWI to the demographic, economic, and policy variables, we first estimated a stepwise linear regression model on the 12 policy measures in Table 7. The results reported in Table 9 show the three policy measures—States Charging Premium for Child Health Coverage Programs, Spending Per Pupil in Public Elementary and Secondary Schools, and State and Local Tax Rate—that have statistically significant regression relationships to the state-level CWIs. In addition, the algebraic signs of all three of these policy measures are positive, which is consistent with the directionality of the corresponding zero-order correlations in Table 7. Taking together, the three policy measures account for 35.8 % of the variation in the state-level CWI.

Second, to correct for problems in the regression analyses on all 27 variables associated with partialling fallacy, we employ the principle components analysis/composite index method of Land et al. (1990) to simplify the covariate space and thus to reveal any underlying structure in the regression relationships. In the absence of theoretical and empirical knowledge of latent factors accounting for the intercorrelations among covariates, this principal components analysis identifies the number of (relatively) orthogonal and independent sources of variation in the vector space of the regressors. The results of the principal components analysis then can be used to form composite indices for each of the components as weighted averages of the regressors that define the components with the weights estimated by the component loadings. This analysis allows us to address two different yet related questions: Is it possible to summarize variation in the covariate space by principal components? And if yes, how do the state-level policy variables operate through the indices in accounting for variation in the state-level CWI?

In response to the first question, we conducted a principal-component analysis of the 27 covariates. Because the reduction in eigen values between successive principal components the analysis leveled off at the fourth component, we include only the first three principal components/dimensions in the multivariate analyses. Each regressor's loading on the first three components is listed on Table 10. It should be noted that the loadings of the three policy measures in Table 9 are not included in the three

Table 9 Estimated metric regression coefficients and fit statistics for stepwise regression using only policy measures

Variables included in model	Regression coefficient
States charging premium for child health coverage programs	0.23098[a]
Spending per pupil in public elementary and secondary schools	0.00007[b]
State and local tax rate	12.59387[c]
Intercept	−2.01889[b]
Fit statistics	
R^2	0.3976
Adjusted R^2	0.3584

[a] Significant at the 0.1 level

[b] Significant at the 0.01 level

[c] Significant at the 0.05 level

Table 10 Loadings of 27 covariates on the first three components of a principal components analysis

	Component 1	Component 2	Component 3
Percent of children Non-Hispanic Black	−0.0879	0.1059	0.1914
Percent of children Hispanic	0.0832	0.3745	−0.0359
Percent of children minorities	0.0394	0.3825	0.0762
Percent of child population ages 0 to 4	−0.1394	0.3088	−0.2531
Percent child population ages 5 to 9	−0.1544	0.2204	0.0748
Percent child population ages 10 to 17	0.1687	−0.3353	0.1869
Percent of children with a foreign-born parent	0.2167	0.3481	0.024
Percent of children living in urban areas	0.2298	0.2882	−0.0162
Percent of adults 25+ with a high school diploma	0.1848	−0.2185	−0.3164
Percent of adults age 18–64 without health insurance	−0.2025	0.2623	0.109
Percent of adults with a disability	−0.2717	−0.1311	0.2686
Per capita income	0.3389	0.0581	−0.0177
Gini coefficient (measure of income inequality)	0.003	0.1606	0.354
Average household net worth	0.2941	0.0104	−0.0101
Employment ratio (ratio of workers to population age 18–64)	0.1704	−0.0795	−0.414
Income tax threshold for a two parent family of four	0.2224	0.0855	−0.0335
State and local tax rate	0.2164	−0.002	0.2666
States with personal income tax	0.0293	−0.0457	0.2617
States with refundable earned income tax credit	0.1275	−0.0343	0.1306
States where part time workers are eligible for unemployment insurance	0.1282	−0.0298	0.0478
Annual TANF benefit per child	0.3015	0.0136	0.1329
Food stamp participation rate	−0.1097	−0.2053	0.2604
Medicaid child eligibility as a percent of federal poverty level	0.2748	−0.0216	0.1422
Medicaid working parent eligibility cutoff as a percent	0.1315	−0.0029	0.0695
Education spending per 4 year old in pre-K	0.0143	0.0694	0.2773
Education spending per pupil in public elementary and secondary schools	0.2927	−0.1098	0.1165
States charging a premium for child health coverage programs	0.1463	0.0348	0.0926

The corresponding eigenvalues associated with the first three components are 6.26834, 4.8142 and 3.58058, respectively

components so that we can subsequently evaluate the additional contribution of the three policy measures to explaining variation in state-level CWI.

The three components can be defined by covariates with higher loadings (above 0.25). The substantive labels of the three components and the specific indicators corresponding to each (with the algebraic signs indicating direction of the relationships) are:

1. A **Deprivation-Affluence Dimension**, along which the following explanatory variables lie, Adults with disability (−), State Per Capital Income (+), Household Net Worth (+), Annual TANF Benefit per Child (+), and Medicaid Child Eligibility as a Percent of the Federal Poverty Line (+).

2. An **Urban-Immigrant Population Dimension**, along which we have Hispanic Population Under Age 18 (+), Percent of Children that are Minorities (+), Population Ages 0 to 4 (+), Population Ages 10 to 17(−), Children with a Foreign-Born Parent (+), Urban Population (+), and Adults 18–64 Without Health Insurance (+).
3. A **Human Capital Dimension**,[3] along which we have Population Ages 0 to 4 (+), Adults 25+ with a HS diploma (+), Adults with Disability (−), Gini Coefficient (−), Employment Ratio (+), States with Personal Income Tax (−), Food Stamp Participation Rate (−) and Education spending per 4 Year-Olds in Pre-Kindergarten (−).

Second, we regressed the state-level CWI on composite structural indices formed from these three dimensions (see Table 11). Results show that 66.0 % of the variation in the state-level CWI is explained by the three indices. Moreover, each of the three indices is significantly associated with state-level CWI, net of other effects. Whereas the Deprivation-Affluence and the Human Capital Indexes have a positive net effect on the state-level CWIs, the Urban-Immigrant Population Index has a negative net effect. In particular, relatively poor states with low levels of human capital and high levels of immigrant populations in urban areas tend to have the lowest CWIs.

Estimates of a second regression also are shown in the last column of Table 11. This regression nests the effects of the three composite indices within an equation that also contains the three policy measures. To make their sizes of effect comparable to those of the three dimensions, the policy measures were standardized. The explained variance increased from 66.0 % in the structural indices only equation to 79.5 % in the structural indices plus policy measures equation, which is a substantial increase in explanatory power. Among the three composite structural indices, the Deprivation-Affluence and Human Capital Indexes show positive net relationships to the state CWIs, while the Urban-Immigrant Population Index shows a negative net relationship. In brief, net of the policy variables in the regression, states that are more affluent and have higher levels of human capital have higher CWIs and states that have higher concentrations of urban immigrant populations have lower CWIs. These relationships are consistent with the zero-order associations noted in previous sections. In addition, after controlling for the structural sources of variation in the state-level CWI, as measured by the three composite indices, only one of the three policy measures, State and Local Tax Rate, has a significant positive relationship to the state-level CWIs.

6 Discussion and Conclusions

In sum, our analysis shows that state rankings based on the state CWI are very similar to the yearly rankings based on past studies. Both are governed by a geographic pattern where states in the South and Southwest show low rates of overall child well-being and states in the Northeast and Upper Midwest show the high rates of child

[3] The concept of *human capital* refers to the resources people have for producing monetary and psychic income (Becker 1975, p. 9). At the level of state populations, examples are attributes like adults who are not disabled and have educational and job skills and thus can participate in the labor force, several of which are reflected in the indicators with relatively high associations with this principal component.

Table 11 Estimated metric regression coefficients and fit statistics of three structural indices/covariates of state CWIs nested regression models and three policy measures

Variables included in model	Regression coefficients	
	Model 1	Model 2
Deprivation-affluence composite index	0.26811***	0.18280***
Urban-immigrant population composite index	−0.12098***	−0.11916***
Human capital composite index	0.08872***	0.14542***
State and local tax rate		0.19714***
Spending per pupil in public elementary and secondary schools		−0.03772
States charging premium for child health coverage programs		0.05422
Intercept	0.01633	0.01633
Fit statistics		
R^2	0.6808	0.8198
Adjusted R^2	0.6600	0.7947

***Significant at the 0.01 level

**Significant at the 0.05 level

*Significant at the 0.1 level

well-being. Examination of state differences on seven distinct domains of child well-being revealed some variation among the states but, with the exception of the Emotional/Spiritual Domain, dimensions of child well-being are positively correlated with each other at moderate levels.

Several factors are found to be associated with state differences in child well-being including state economic characteristics, demographic composition, human capital, and state policy measures. The human capital factors most highly correlated with child well-being are characteristics of adults including levels of education and health insurance coverage as well as levels of disability—all indicative of activities and investments that increase resources in people. Minority population concentrations, especially when concentrated in urban areas, are also associated with lower levels of child well-being, but minority population was not as closely correlated with child well-being as the characteristics of adults. The economic factors most highly correlated with overall child well-being include employment, income, and wealth. The policy measure that is most highly correlated with child well-being is the state and local tax rate. States that have higher tax rates are also more generous in providing education and support services and these states have higher levels of child well-being on average.

A key finding of this study, which is consistent with many other studies, shows that when children are situated in environments with more resources they do better. Resources may include private resources such as family income, wealth, and parental education or public resources such as welfare benefits, health insurance, or school expenditures. The evidence presented in this study shows a strong positive correlation between state and local income tax rate and child well-being and we hypothesize that this relationship operates through a broad set of supportive public policies and programs linked to higher tax rates.

Most of the demographic and economic factors closely related to state differences in child well-being are things that states cannot change quickly. The demographic composition of a state typically changes very slowly and public policy plays only a minor role in such shifts. Likewise, earnings and accumulation of wealth in a state do not change quickly and state policies have only marginal impact on these. Therefore focusing on the results of the policy measures may be more productive and useful. There are many policies that governments could enact or change immediately, if they choose to do so. While states provide most of the public expenditures on children, it is important that we do not overlook the role played by the federal government. More than a third of government support for children comes from federal sources. The federal government pays at least a portion of many major programs that help children such as Food Stamps, Medicaid, and TANF.

Since education is one of the biggest budget items for most states, it has been a victim of budget cuts. A recent report by the Center on Budget and Policy Priorities shows that real (inflation adjusted) per pupil expenditures have gone down significantly in many states (Olif and Leachman 2011). They identify ten states where per pupil expenditures in fiscal year (FY) 2012 are at least 10 % lower than they were in FY 2008. There have also been cutbacks on pre-K spending in recent years (USA Today 2010). A recent newspaper article identified nearly 300 school systems across the country that have adopted a 4-day school week in an effort to save money (Washington Post 2011).

Note also that the U.S. child population is growing most rapidly in states where child outcomes are among the worst in the country. The five states that gained the most children between 2000 and 2010 are all in the bottom half of the distribution on child well-being based on the CWI. Table 12 shows the five states that gained the most children between 2000 and 2010 are Texas (ranked 39th on the CWI), Florida (ranked 34th on the CWI), Georgia (ranked 35th on the CWI), North Carolina (ranked 32nd on the CWI), and Arizona (ranked 45th on the CWI). Moreover, four of these five states are in the bottom half of the distribution in terms of the state and local tax rate, which we have shown is closely linked to child well-being.In addition, many states where child outcomes are among the best in the country, the child population has declined over the past decade (O'Hare 2011). If public programs that supported the well-being of children were national in scope, this demographic shift would not be so meaningful. But, given child well-being's high dependence on state programs, this demographic shift has big implications for large numbers of children.

Table 12 Change in child population 2000 to 2010 and child well-being

State	Children (under age 18) population 2000	Children (under age 18) population 2010	Change in number 2000 to 2010	Rank on State CWI (1 is best)	Rank on State and local tax rate (1 is highest)
Arizona	1,366,947	1,629,014	262,067	45	29
North Carolina	1,964,047	2,281,635	317,588	32	14
Georgia	2,169,234	2,491,552	322,318	35	28
Florida	3,646,340	4,002,091	355,751	34	37
Texas	5,886,759	6,865,824	979,065	39	46

Appendix A: Sources and Definitions of Demographic, Economic and Policy Measures

Demographic Measures	Source	Definition/Importance for Children and Families
Non-Hispanic Black Population Under Age 18	U.S. Census Bureau, Population Estimates 2007	Percent of the under 18 population that is non-Hispanic and black.
Hispanic Population Under Age 18	U.S. Census Bureau, Population Estimates 2007	Percent of the under 18 population that is Hispanic.
Minority Population Under Age 18	U.S. Census Bureau, Population Estimates 2007	Percent of the under 18 population that is not non-Hispanic white.
Population Ages 0 to 4	U.S. Census Bureau, Population Estimates 2007	Percent of the under 18 population that is age 0 to 4.
Population Ages 10 to 17	U.S. Census Bureau, Population Estimates 2007	Percent of the under 18 population that is age 10 to 17.
Children with a Foreign-Born Parent	U.S. Census Bureau, American Community Survey 2007	Percent of the under 18 population with at least one foreign-born parent.
Urban population	U.S. Census Bureau, American Community Survey 2007	Percent of total population that live in urban areas.
State Per Capita Income	U.S. Bureau of Economic Analysis 2007	Sum of all personal income received by all persons from all sources divided by state population from U.S. Census Bureau's Population Estimates.
Gini Coefficient	U.S. Census Bureau 2007	A measure of the inequality of the income distribution. A value of 0 implies total equality, and a value of 1 is considered the maximum inequality.
Household Net Worth	U.S. Census Bureau 2007	Household net worth is the sum of assets of any person age 15 years and older in the household, less any liabilities. Assets included in this measure are interest-earning assets, stocks and mutual fund shares, real estate, own business or profession, mortgages held by sellers, and motor vehicles. Liabilities covered include debts secured by any asset, credit card or store bills, banks loans, and other unsecured debts.
Employment Ratio	U.S. Census Bureau, American Community Survey 2007	Percentage of all working-age persons, 18 to 64, who are employed.
Adults 25+ with a HS diploma	U.S. Census Bureau, American Community Survey 2007	Percentage of persons 25 and older who have a high school diploma or equivalent.
Adults 18 to 64 without Health Insurance	U.S. Census Bureau, Current Population Survey 2007	Percentage of adults 18 to 64 who were not covered by any health insurance in the previous year.
Adults with a Disability	U.S. Census Bureau, American Community Survey 2007	Percentage of adults, 18 and older, who reported at least one type of disability.

Economic Measures	Source	Definition/Importance for Children and Families
State Per Capita Income	U.S. Bureau of Economic Analysis 2007	Sum of all personal income received by all persons from all sources divided by state population from U.S. Census Bureau's Population Estimates.
Gini Coefficient	U.S. Census Bureau 2007	A measure of the inequality of the income distribution. A value of 0 implies total equality, and a value of 1 is considered the maximum inequality.
Household Net Worth	U.S. Census Bureau 2007	Household net worth is the sum of assets of any person age 15 years and older in the household, less any liabilities. Assets included in this measure are interest-earning assets, stocks and mutual fund shares, real estate, own business or profession, mortgages held by sellers, and motor vehicles. Liabilities covered include debts secured by any asset, credit card or store bills, banks loans, and other unsecured debts.
Employment Ratio	U.S. Census Bureau, American Community Survey 2007	Percentage of all working-age persons, 18 to 64, who are employed.

Policy Measures	Source	Definition/Importance for Children and Families
State and local tax rates	Tax Foundation State-Local Tax burdens, All States, 2007	Total states and local taxes paid by state residents to both their own and other Governments divided by each state's total income
Income tax threshold for a two parent family of four	*Policy Matters: 2008 Data Update*, Center for the Study of Social Policy	Higher thresholds at which a family becomes subject to state income taxes reduce the tax burden and ensure that the state's tax structure encourages and rewards work.
States with personal income tax	*Policy Matters: 2008 Data Update*, Center for the Study of Social Policy	Does the state have a personal income tax?
States where minimum wage exceeds federal requirements	*Policy Matters: 2008 Data Update*, Center for the Study of Social Policy	States where minimum wage exceeds the federal requirements can promote economic stability and encourage and reward work.
States with refundable Earned Income Tax Credit	*Policy Matters: 2008 Data Update*, Center for the Study of Social Policy	The Earned Income Tax Credit (EITC) is considered effective in helping move working families out of poverty. States can supplement the federal EITC by making the state tax credit refundable and increasing tax refunds.
States where part time workers are eligible for unemployment insurance	*United States Department of Labor,* Comparison of state unemployment laws, 2007	Many states exclude workers who seek part-time employment, often times parents and primarily women. Possible benefits to workers seeking part-time work include full eligibility for unemployment insurance or limited eligibility—possibly covering workers with health conditions or a history of part-time work.

TANF cutoff for countable asset limits	*Corporation for Enterprise Development,* 2007–2008 Assets and Opportunities Scorecard	Temporary Assistance to Needy Families (TANF) may limit benefits to those with few or no assets, which can discourage families from saving or collecting assets in the interest of receiving benefits. Higher limits on assets can encourage personal savings and asset building allows families to move off of assistance.
Food Stamp participation rate	*U.S. Department of Agriculture,* State Supplemental Nutrition Assistance Program Participation Rates In 2008.	The participation rate is calculated by dividing the number of people participating in food stamp programs by the number of eligible people. The estimates of eligible individuals are derived from a model that uses data from the U.S. Census Bureau's Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC), which provides income and program participation information for the previous calendar year, as well as detailed information on program rules from the fiscal year to simulate eligibility for SNAP.
Medicaid child eligibility as a percent of federal poverty level	*Policy Matters: 2008 Data Update*, Center for the Study of Social Policy	The availability of government health insurance is determined by the income eligibility level and is considered an important part of child development and helping children to stay healthy.
Medicaid working parent eligibility cutoff as a percent of poverty	*Policy Matters: 2008 Data Update*, Center for the Study of Social Policy	Parental health eligibility is determined by the income level of the family and is an indicator of child's use of health services. The eligibility for government funded health insurance is determined separately from the child's eligibility.
States charging a premium for child health coverage programs	*Policy Matters: 2008 Data Update*, Center for the Study of Social Policy	States that charge a premium or copay for access to children's health care can ultimately limit access to health care. Copayments apply to non-preventative physician visits, emergency visits, and/or inpatient hospitalizations.
Education spending per 4 year old in pre-kindergarten	*Policy Matters: 2008 Data Update*, Center for the Study of Social Policy	Education spending is an indicator of access to pre-school and is a comparative measure across states. This is not the same measure as funding per 4 year old enrolled, which can be considered a measure of quality.

Spending per pupil in public elementary and secondary schools	*National Center for Education Statistics,* Digest of Education Statistics, 2007	This is the total current expenditures for public elementary and secondary education divided by the fall membership as reported in the state finance file. The expenditures for equipment, non-public education, school construction, debt financing and community services are excluded. These data are from the CCD National Public Education Financial Survey.
Access to preschool	*National Institute for Early Education Research,* State of Preschool Yearbook, 2007	The measures of access for 3 and 4 year-olds were calculated using state data on enrollment and Census population estimates. Criteria considered were total state program enrollment, school districts that offer state program, income requirement, hours of operation, hours of operation, special education enrollment, federally funded Head Start enrollment, and state-funded Head Start enrollment.
Resources for preschool	*National Institute for Early Education Research,* State of Preschool Yearbook, 2007	All reported spending per child was calculated by dividing the sum of reported local, state, and federal spending by enrollment. Types of spending include: total state pre-K spending, whether local providers match state funding, state Head Start spending, state spending per child enrolled, and all reported spending per child enrolled.
Quality standards for preschool	*National Institute for Early Education Research,* State of Preschool Yearbook, 2007	Quality standards for preschools were determined from the following indicators: early learning standards set by the state, teachers with at least BA degrees, teacher specialized training, assistant teacher degree, teacher in-service, maximum class size, staff-child ratio, screening/referral and support services for vision, hearing, and health, meals, and monitoring of classes.

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