

WOMEN'S WELL-BEING: METHODOLOGICAL NOTES

The American Human Development Index

The American Human Development Index measures well-being and opportunity in three basic dimensions: health, access to knowledge, and living standards. All data used to calculate the Index come from official U.S. government sources. In the American Human Development Index:

- **A long and healthy life** is measured using life expectancy at birth. This indicator is calculated by Measure of America using an abridged life table methodology. Life expectancy calculations presented in this brief are taken from the third volume in the *Measure of America* series (forthcoming, NYU Press, 2013) and were calculated using mortality data from the Centers for Disease Control and Prevention, National Center for Health Statistics, as compiled from data provided by the fifty-seven vital statistics jurisdictions through the Vital Statistics Cooperative Program, and population estimates by age group from the U.S. Census Bureau, Population Estimates Program. Data are for 2009, the most recent year for which mortality data were available at the time of writing.
- **Access to knowledge** is measured using two indicators: net school enrollment for the population ages 3 to 24 and degree attainment for the population 25 years and older. Both indicators are one-year estimates from the 2010 American Community Survey of the U.S. Census Bureau.
- **A decent standard of living** is measured using median personal earnings for all workers ages 16 and older. Data are one-year estimates from the 2010 American Community Survey of the U.S. Census Bureau.

Calculating the American Human Development Index

The first step in calculating the American Human Development Index is to calculate sub-indices for each of the three dimensions of the Index: health, education, and income. The indicators that comprise these indices are measured in different units (years, dollars, etc.) so the sub-indices convert these indicators into units on a common scale so that they can be directly compared with one another. The method for doing this requires the identification of minimum and maximum values (goalposts) for each indicator. The goalposts are determined based on the range of the indicator observed across all population groups and levels of geography in the country and also take into account possible changes in that range over time.

The goalposts for the four principle indicators that make up the American Human Development Index are:

INDICATOR	UPPER GOALPOST	LOWER GOALPOST
Life expectancy at birth (years)	90	66
Educational attainment score	2.0	0.5
Net school enrollment (% of 3 to 24 year-olds)	95	60
Median personal earnings (2010 dollars) ¹	\$61,426.57	\$14,519.01

With the goalposts set, the sub-indices for each dimension of the Index can be calculated using the following general formula:

$$\text{Dimension Index} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} \times 10$$

EXAMPLE: Calculating the HD Index for all U.S. Females

HEALTH Index

Life expectancy at birth for all U.S. females is 81.3 years. The Health Index is then calculated as:

$$\text{Health Index} = \frac{81.3 - 66}{90 - 66} \times 10 = 6.38$$

EDUCATION Index

In 2010, 86.3 percent of U.S. women ages 25 and over had at least a high school diploma, 27.9 percent had a Bachelor's Degree and a further 10.1 percent had a graduate or professional degree. Therefore the Educational Attainment Score for all U.S. women is $0.863 + 0.279 + 0.101 = 1.243$. The Educational Attainment Index is then calculated as:

$$\text{Educational Attainment Index} = \frac{1.243 - 0.5}{2.0 - 0.5} \times 10 = 4.95$$

In addition, 78.83 percent of all young women and girls ages 3 to 24 were enrolled in school, so the Enrollment Index is calculated as:

$$\text{Enrollment Index} = \frac{78.83 - 60}{95 - 60} \times 10 = 5.38$$

The Educational Attainment Index and the Enrollment Index are then combined to obtain the Education Index. Educational attainment is weighted more heavily than enrollment to reflect the relative difficulty of completing a meaningful program of study compared to simply enrolling in school:

$$\text{Education Index} = \frac{2}{3} \times 4.95 + \frac{1}{3} \times 5.38 = 5.09$$

INCOME Indexⁱⁱ

Median personal earnings for females in 2010 were \$24,157. The Income Index is then calculated as:

$$\text{Income Index} = \frac{\log(24,157) - \log(14,519.01)}{\log(61,426.57) - \log(14,519.01)} \times 10 = 3.53$$

HUMAN DEVELOPMENT Index

Once the dimension indices have been calculated, the American Human Development Index for U.S. females is obtained by averaging the three sub-indices:

$$\text{American Human Development Index} = \frac{6.38 + 5.09 + 3.53}{3} = 5.00$$

Population Groups

Racial and ethnic groups used in this brief are based on definitions established by the White House Office of Management and Budget and used by the Census Bureau and other government entities.ⁱⁱⁱ Since 1997 the federal government has recognized five racial groups and two ethnic categories. The racial groups include Native Americans, Asian Americans, African Americans, Native Hawaiians and Other Pacific Islanders, and whites. The ethnic categories are Latino and not Latino and people of Latino ethnicity may be of any race. In this brief, members of each of these racial groups include only non-Latino members of these groups. Due to small population sizes and data limitations, life expectancy at birth by metro area could not be calculated separately for Native Americans and for Native Hawaiians and Other Pacific Islanders. Data that refer to all females do however reflect women who are members of all racial and ethnic groups.

Cautions on Comparability

This brief is the first Measure of America publication to use the net enrollment ratio of the population ages 3 to 24 in the Education Index component of the American Human Development Index. This net enrollment ratio replaces the previously used gross enrollment indicator of all students ages 3 and above. As a result of this change of indicators, readers are cautioned not to compare American Human Development Index values presented in this brief with previously published values from *The Measure of America: American Human Development Report 2008-2009*, *The Measure of America 2010-2011: Mapping Risks and Resilience* or Measure of America's state and county-level reports. The forthcoming *Measure of America 2013* volume will include historical estimates of the American Human Development Index revised retroactively to incorporate this change so as to facilitate comparisons over time.

Additionally, all the data used to calculate the American Human Development Index, with the exception of life expectancy at birth, come from the American Community Survey (ACS), an annual survey conducted by the U.S. Census Bureau. As the ACS surveys a subset of the overall population, estimates of population characteristics calculated from ACS data are subject to some degree of sampling and non-sampling error. Comparisons between similar values on any indicator, especially for small populations, should be made with caution since these differences may not always be statistically significant.

ⁱ Earnings goalposts were originally set at \$55,000 and \$13,000 in 2005 dollars, and have been adjusted to 2010 dollars using the CPI-U-RS.

ⁱⁱ The Income Index uses the logarithm (base 10, in this case) of median personal earnings and the earnings goalposts to reflect the view that the returns of increasing income to overall human development diminish at higher levels of earnings.

ⁱⁱⁱ See the U.S. Office of Management and Budget, "Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting."