

The Youth Human Capital Sector of the U.S. Economy: How Large Is It?

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Summary

This paper provides an estimate of the size of the sector of the U.S. economy committed to youth human capital development from conception to age-18, in dollars and as a share of the U.S. gross domestic product (GDP), for the year 2008. This sector includes all people and businesses involved in raising, caring for and educating children. While the estimate covers many areas, it does not include many state and federal programs for which data is limited or unclear.² The estimate includes documentable spending on prenatal care for an uncomplicated pregnancy; spending on a normal hospital delivery; parental spending on children from birth to age-18; and federal, state, and local spending on elementary and secondary education and birth to age-5 nutrition and early education. It does not include expenses associated with unpaid parental care and volunteer services or contributions, nor does it include state and federal expenditures for health insurance for children and social welfare and criminal justice services.

With these exclusions in mind, we estimate the youth human capital sector of the U.S. economy is 10.3 percent of GDP and totaled \$1.490 trillion in 2008. Accordingly, it can be confidently said that over a tenth of U.S. annual economic activity is committed to caring for and educating the young people who will be the human resource of America's future economy.

Background Discussion

Americans routinely think of agriculture, manufacturing and finance as essential, identifiable economic sectors. But, oddly, we do not think of raising children this way. If asked, we have no problem saying what the farming, manufacturing and banking sectors do.

¹ I am deeply grateful to Sara Watson, Elaine Weiss and Richard Wertheimer for their guidance and assistance in writing this paper. I also thank David Ahn, Peter Carota and several anonymous reviewers. Without their help, it would not have been completed. The concept of youth human capital development as an economic sector was first proposed as a research focus of the Invest in Kids Working Group in September 2004

http://www.partnershipforsuccess.org/docs/ivk/report_ivk_dugger_2005.pdf. It was refined and expanded in the research plan of the Partnership for America's Economic Success in 2006, and presented in an initial form at the December 2008 Invest in Kids Working Group Meeting in a discussion of this sector as a basis for a U.S. economic recovery strategy. http://www.partnershipforsuccess.org/uploads/20081211_PAESYHCSizeEstimate081210.doc

² An excellent overview of federal and state child development and education spending is in *The Children's Budget 2009*, First Focus: http://www.firstfocus.net/sites/default/files/Childrens_budget_2009_book.pdf

But when it comes to raising children, we tend to think of teaching, education, toys and the other aspects of children's lives as separate activities.

Business people, however, know nothing gets made or sold without people and that their employees are the most important input in producing and delivering everything. In all, there are about 153 million people in the U.S. workforce³, and 108 million are employed by businesses.⁴ Most executives see their main responsibility to be human resource management.

Clearly people are a critically important input to our economy. Some would say they are the most important input. Without team-ready, educated, healthy young adults prepared to enter the workplace or college, there would soon be no economy. Where do these young adults come from? How big is the economic sector that delivers them after 18 years of caring for them from before birth to high-school graduation?

This question has some urgency associated with it. The most recent broad assessment of the performance of the youth human capital sector was done in 2007 for the U.S. Department of Defense. Though designed to focus narrowly on preparedness for entry into the armed services, it provided an important insight. The study found that 75% of US young adults 17 to 24 years-old cannot qualify to serve in the military, with the most common reasons being lack of high school degrees, clean criminal records, or adequate fitness.⁵ Business executives in complex technologically advanced companies report that their health and fitness standards are more relaxed than the military's, but they estimate that more than 60% of young adults can't qualify to work for them for the same reasons.⁶ For the military, the portion of the economy that raises, educates and provides all the goods and services children need to grow up right, is performing at about a 25% success rate. For the modern business sector, the success rate is perhaps as low as 40%.

Is this better or worse than past performance? Is it good enough to successfully compete globally in the future and to drive our economy strongly enough to attain fiscal sustainability? How is U.S. economic growth and job creation dependent on labor input? To answer these kinds of questions, we need to know much more about the size and composition of the U.S. youth human capital sector. To do a better job in how we care for and educate children, we need to have a better understanding of roles of parenting, pediatrics, nutrition, athletics, early and k-12 education, and of business and government.

Improved U.S performance in youth human capital development will almost certainly improve long-term economic performance directly. Near-term, if the sector is large, expenditures in it will affect the economy directly, and how well the sector performs could

³ U.S. Bureau of Labor Statistics, *Employment Situation Summary Table A*, April 2011, <http://www.bls.gov/news.release/empsit.a.htm>

⁴ U.S. Bureau of Labor Statistics, *Historical Employment (Total Private)*, April 2011, <ftp://ftp.bls.gov/pub/suppl/empsit.ceseeb1.txt>

⁵ Mission: Readiness, *Ready, Willing, And Unable To Serve -- 75 Percent of Young Adults Cannot Join the Military: Early Education across America is Needed to Ensure National Security*, 2009, <http://cdn.missionreadiness.org/MR-Ready-Willing-Unable.pdf>

⁶ Author's discussions with business executives in companies engaged in communications, electrical power generation, construction, and information technology.

affect how well other sectors perform. A computer services company will be more productive if a call-center employee is herself more productive because she is confident she is being a good parent and her daughter is being well cared for in a near-by quality early education center.

Millions of Americans are involved in raising children. This country has roughly 83 million mothers⁷, 68 million fathers⁸, and 56 million grandparents, including approximately 6 million grandparents whose grandchildren live with them⁹. Even if not all of them are directly involved in children's lives, this is well over half of the U.S. population. There are also at least 5 million people involved in providing the goods and services children need.¹⁰ The potential size of near-term direct and indirect effects of resource allocations to the youth human capital sector is suggested by the large number of people involved in raising children.

Estimation Methodology

We define the youth human capital sector to include all goods and services (paid and unpaid) involved in raising a child from conception to his or her 18th birthday. Major components of this sector include:

- Parental spending on children from conception to their 18th birthday;
- Spending on children's behalf by federal, state, and local government;
- Spending on children's behalf by private third parties; and
- Unpaid services provided by parents and relatives to children. (Note that this amount is not included in the estimate presented in this paper.)

Spending includes:

1. Prenatal care and delivery
2. Housing (shelter, utilities, and house furnishings and equipment);
3. Food (food and beverages purchased at grocery and other stores, dining at restaurants, and food purchased at school);

⁷ U.S. Census Bureau, *Facts for Features*, March 9, 2010, http://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb10-ff09.html

⁸ U.S. Census Bureau, *Facts for Features*, March 9, 2010, http://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb10-ff11.html

⁹ Sutherland, Tucker, "Once Again There Will Be a Grandparents Day that Few Will Notice," *Senior Journal*, Aug 27, 2007, <http://seniorjournal.com/NEWS/Grandparents/2007/7-08-27-OnceAgain.htm>

¹⁰ Examples of youth human capital sector goods and services employment:
Education and Child Care – U.S. Bureau of Labor Statistics, *Employment Situation Summary Table B-1*, May 2011, <http://www.bls.gov/news.release/empsit.t17.htm>
Pediatrics – U.S. Bureau of Labor Statistics, *Occupational Employment and Wages*, May 2009, <http://www.bls.gov/oes/current/oes291065.htm>
Toy employment – U.S. Department of Commerce, *Industry Report: Dolls, Toys, Games, and Children's Vehicles*, October 2008, <http://www.toyassociation.org/AM/PDFs/Trends/IndustryOutlook08.pdf>

4. Clothing (children's apparel, shoes, and cleaning services);
5. Health care (medical and dental services, prescription drugs, and medical supplies not covered by medical insurance and health insurance premiums);
6. Child care and education (child care tuition, elementary and secondary tuition, books and supplies); and
7. Miscellaneous (personal care items, entertainment, and reading materials).

Spending on children's behalf by federal, state, and local government includes (but is not limited to):

1. Public elementary and secondary education;
2. Head Start and child care subsidies;
3. Social welfare, criminal justice, and public health programs (*e.g.*, flu vaccination)
4. Nutrition subsidies (*e.g.*, Supplemental Nutrition Assistance Program (food stamps) and the Special Supplemental Nutrition Program for Women, Infants and Children (WIC)); and
5. Housing subsidies.

Spending on children's behalf by private third parties primarily consists of employers' share of their employees' health insurance premiums for their children.

Unpaid services provided by parents and relatives to children consist of the value of the time spent by parents and relatives caring for children.

We do not attempt here to measure all of the components of the youth human capital sector described above. Instead we focus on some of the most important components that can be measured in a straightforward fashion. In particular, spending on children's behalf by third parties and unpaid services from parents and relatives are omitted. The latter constitutes a major investment, so these omissions contribute to the conservative nature of the estimate provided. Note that a separate analysis by Weiss and Brandon concluded that the Early Childhood Sector for children birth to five was almost 3 percent of GDP.¹¹ (That figure and the total in this paper cannot be compared directly because of methodological differences.)

Using only those components that are easier to assess, our estimate of the youth human capital sector includes the following three elements: (1) Spending on prenatal care for an uncomplicated pregnancy and normal hospital delivery; (2) Parental spending on children from birth to their 18th birthday; and (3) Federal, state, and local spending on elementary and secondary education, and federal spending on early education and nutrition.

¹¹ Weiss, Elaine and Richard Brandon, "An Economic Analysis of the Early Childhood Sector," July 2010, Partnership for America's Economic Success, http://www.partnershipforsuccess.org/uploads/20110211_ECSReportFormatted.pdf

1. Spending on prenatal care and a normal hospital delivery for an uncomplicated pregnancy

Our estimate of parental spending on prenatal care and normal hospital delivery for an uncomplicated pregnancy is based on a study produced by the U.S. Agency for Healthcare Research and Quality¹². The primary data source for this study is the Medical Expenditure Panel Survey (MEPS).

MEPS includes health expenditure data collected from both households and their medical care providers. Obtaining information from both sources increases the accuracy of the findings.

Expenditure data were pooled from three panels (2001-2002, 2002-2003, and 2003-2004). They include the following payments for medical expenditures associated with an uncomplicated pregnancy:

- Payments to hospitals;
- Payments to physicians;
- Payments to pharmacies; and
- Payments to other health care providers.

Payment sources “include direct payments by individuals, private and public insurance plans, and other miscellaneous payment sources for services received” (Machlin and Rohde, 2007).

Total spending on prenatal care and a normal hospital delivery was estimated using the three MEPS panels and was adjusted to 2004 dollars using a combination of the Producer Price Index and the Consumer Price Index.

Altogether, spending on prenatal care and a normal hospital delivery averaged \$7,564 in 2004 dollars. We have adjusted this estimate to 2008 dollars using the 2004-2008 percentage increase in the Bureau of Labor Statistics Consumer Price Index for medical expenses.¹³ This yields an estimate of \$8,880 in 2008 dollars, as shown in row (1) of the Appendix.

To obtain an estimate of the U.S. total spending on prenatal care and a normal hospital delivery, we multiply our estimate of \$8,880 per birth by the number of children born in 2008—the most recent year for which birth estimates are available. As shown in row (2) of the Appendix, there were 4,247,694 births in 2008, according to the CDC.¹⁴ The subtotal is \$37.7 billion (row 3). (This is a conservative estimate of costs in light of the fact that it does not include the much higher costs of births for babies with low birth-weight or disabilities.)

¹² Machlin, Steven and Frederick Rohde, “Health Care Expenses for Uncomplicated Pregnancies”, Research Findings No. 27, August 2007, Agency for Healthcare Research and Quality, Rockville, Md, http://www.meps.ahrq.gov/mepsweb/data_files/publications/rf27/rf27.pdf

¹³ U.S. Bureau of Labor Statistics, *CPI Detailed Report*, page 83, December 2008, <http://www.bls.gov/cpi/cpid0812.pdf>

¹⁴ Centers for Disease Control and Prevention, *FastStats*, 2008, <http://www.cdc.gov/nchs/fastats/births.htm>

2. Parental spending on children from birth to their 18th birthday

Our estimate of parental spending on children from birth to age-18 is based on a study by the U.S. Department of Agriculture¹⁵ (Lino, 2008). The primary data source for the Lino study is the 1990-1992 Consumer Expenditure Survey (CES), conducted by the U.S. Department of Labor. The CES is the most comprehensive data set collected from U.S. households on their household expenditures.

Lino provided estimates of parental spending on children for various categories of households by income level and family type. After careful review of the data, we chose children in husband-wife households with before-tax incomes between \$45,800 and \$77,100 in 2007 dollars. This is the middle category of Lino's three income categories and so appears to be a reasonable representation of expenditures.

While Lino provided separate estimates for eight categories of expenditure (housing, food, transportation, clothing, health care, child care and education, and miscellaneous goods and services), we use only his estimate of the total, which was \$204,060 in 2007 dollars. We adjusted this estimate to 2008 dollars using the 2007-2008 percentage increase in the Consumer Price Index (U.S. Department of Labor, Bureau of Labor Statistics, 2010). This yields an estimate of \$211,895 in 2008 dollars, as shown in row (4) of the table presented in the Appendix. To obtain an estimate of the average annual cost of raising children to age 18, we divided the total cost by 18—the number of years elapsing between birth and a child's 18th birthday. This estimate is \$11,772, as shown in row (5) of the Appendix. Then, to obtain an estimate of the total annual cost of raising all the children who have not yet reached their 18th birthday, we multiplied this annual estimate per child by the number of children ages 0-17, which was 74,075,436 in November 2008, as shown in row (6) of the Appendix.¹⁶

This yields an estimate of \$872.0 billion as the total annual parental costs for raising children until they reach the age of 18, as shown in row (7) of the Appendix.

3. Government expenditures

Because state and federal expenditures on programs such as health insurance for children and social welfare and criminal justice services are difficult to identify, we did not include them in this estimate.

The Children's Health Insurance Program reauthorization debate occurred during the time period under study, making it difficult to settle on a reliable 2008 expenditure number. In any case, the enactment of health insurance reform means any 2008 number would not be representative of future spending. Future health care to children and youth will need to be detailed and included in the estimate of the sector's size.

¹⁵ Lino, Mark, "Expenditures on Children by Families", U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, Miscellaneous Publication No. 1528-2007, 2007, <http://www.cnpp.usda.gov/Publications/CRC/crc2007.pdf>

¹⁶ U.S. Census Bureau, *Population Estimates*, November 2008, <http://www.census.gov/popest/national/asrh/2007-nat-res.html>

Government spending on elementary and secondary education

Our estimate of federal, state, and local spending on elementary and secondary education is based on a report by the U.S. Census Bureau.¹⁷ The data source for this study is the 2006 Annual Survey of Government Finances. This survey uses cooperative agreements with each state to collect school expenditure data from state departments of education.

According to this survey, federal, state, and local expenditures on elementary and secondary education totaled \$ 526.6 billion in 2006. We have adjusted this estimate to 2008 dollars using the 2006-2008 percentage increase in the Consumer Price Index (U.S. Department of Labor, Bureau of Labor Statistics, 2010).

This yields an estimate of \$562.4 billion as the total annual federal, state, and local spending on elementary and secondary education, as shown in row (8) of the Appendix.

Government spending on early education and nutrition

Our estimate of federal, state, and local spending on birth to age 5 nutrition and early education (pre-k) programs includes: the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) expenditure for 2008 is \$6.19 billion.¹⁸ Head Start is almost \$6.9 billion.¹⁹ State and federal spending on prekindergarten from all sources, not including Head Start, is \$5.7 billion²⁰. Adding these gives us the amount shown in row (10).

Partial estimate of the youth human capital sector in 2008

Adding the categories of spending described above yields a total of \$1,490.9 billion, row (15) of the Appendix. Because of many expenditures not included in this estimate, it is only a partial estimate of the size of the youth human capital sector of the United States economy.

In 2008 U.S. GDP, as shown in row (11), was \$14,441.4 billion.²¹ Our estimate of the size of the youth human capital sector, expressed as a percent of GDP, indicates that in 2008 the sector was at least 10.3 percent of GDP, as shown in row (16).

¹⁷ U.S. Census Bureau, *Public Education Expenses 2006*, Page 1, 2008, <http://ftp2.census.gov/govs/school/06f33pub.pdf>

¹⁸ U.S. Department of Agriculture, *Women, Infants and Children Program Participation and Costs*, Data as of April 29, 2011, <http://www.fns.usda.gov/pd/wisummary.htm>

¹⁹ U.S. Department of Health and Human Services, *Head Start Program Fact Sheet Fiscal Year 2009*, 2009, <http://eclkc.ohs.acf.hhs.gov/hslc/Head%20Start%20Program/Head%20Start%20Program%20Factsheets/eHeadStartProgr.htm>

²⁰ National Institute for Early Education Research, “The State of Preschool 2009”, p 7, 2009, <http://nieer.org/yearbook2009/pdf/yearbook.pdf>

²¹ U.S. Bureau of Economic Analysis, *Gross Domestic Product: First Quarter 2010 (Advance Estimate)*, April 30, 2010, http://www.bea.gov/newsreleases/national/gdp/2010/pdf/gdp1q10_adv.pdf

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http://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb10-ff11.html

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Appendix

The Youth Human Capital (YHC) Sector of the U.S. Economy:

How Large Is It?

A Partial Estimate in 2008

(1) Average prenatal and delivery costs, 2008	\$8,880
(2) Number of children born in 2008	4,247,694
(3) Prenatal and delivery costs per year = (1)*(2)	\$37,719,522,720
(4) Cost of raising a child from birth to age 18, 2008	\$211,895
(5) Cost of raising child age 0-18 per year = (4) /18	\$11,772
(6) Number of children ages 0-18, November, 2008	74,075,436
(7) Cost of raising all children birth to age 18 per year = (5)*(6)	\$872,016,032,592
(8) Government spending for elementary & secondary education, 2008	\$562,445,451,746
(9) Government spending for nutrition and early education to age 5, 2008	\$18,757,131,368
(10) Government spending for nutrition and education (8)+(9)	\$581,202,583,114
(11) US Gross Domestic Product, 2008	\$14,441,400,000,000
(12) Prenatal and delivery costs as percent of GDP = (3)/(11)	0.26%
(13) Family private spending prenatal to age 18 as percent of GDP = (7)/(11)	6.04%
(14) Government spending for nutrition and education as % of GDP= (10)/(11)	4.00%
(15) Estimated YHC sector spending to age 18 = (3)+(7)+(10)	\$1,490,938,138,426
(16) Estimated YHC sector spending as percent of GDP (15)/(11)	10.32%