Appendix A.

Deriving Country-level Wealth Per Capita. The method can use any established measure of country-level wealth per capita. Here, we derive values from Davies et al. (2011) estimates from real per capita consumption (1, 2). To extend Davies' estimates to new years and countries, we rely on the relatively tight relationship between Davies' estimates of wealth per capita and GDP per capita (excluding GDP from oil rents (3)) in the 61 low and middle-income countries from Davies that are also in our DHS datasets. Specifically, we fit a linear regression relating Davies' estimates of country-level GDP and wealth per capita across countries in 2000 (n = 61, R^2 = 0.85). This provides the following equation for estimating wealth per capita in other years and countries: ln(wealth per capita) = 1.129 x ln((GDP per capita excluding oil rents) - 0.293. We exclude the oil rent component of GDP as oil rents are unlikely to reflect economic activity relevant to most households in the survey. Using this equation, we can estimate country-level wealth per capita in a given year from country-level GDP estimates for a given year (in constant 2011 international units, PPP, excluding GDP due to oil rents) (3).

Sensitivity Analysis. We assess the sensitivity of individual-level AWE values to changes in estimation in two ways.

First, The Gini coefficient is clearly important in determining the shape of the wealth distribution, but the accuracy of Gini coefficients varies widely across countries, depending on available data. Thus, we examine how the AWE values change when using Gini coefficients from Davies in comparison with a constant Gini coefficient across all countries and survey years in our sample (2).   The estimate of $Wealth_{0.32}$ when assuming that all country Gini coefficients take on the overall country average (0.717) is highly correlated (r = 0.99) with the estimate of $Wealth_{0.32}$ using country specific wealth Gini coeffficients from Davies et al. 2009, and the linear regression relating the two quantities has a slope of 1.00 (95% CI = 1.00,1.00) and intercept of -0.02 (95% CI = -0.02,-0.02).   These results suggest that estimates of $Wealth_{0.32}$ are only sensitive to variation in Gini coefficients that is larger than the variation observed among the sample countries.

Second, we assess the sensitivity of individual-level AWE values when distributing wealth to ranked households (and then individuals) or directly to ranked individuals. Specifically, in the analysis we can assign ranks in one of two ways. On one hand, we can rank individuals by their household wealth, and then assign a wealth estimate to an individual based on the individual's proportional rank.   On the other hand, we can rank households by wealth first, assign a per capita wealth estimate to a household, and then assign this estimate to each individual in the household. We find a similarly close match between $Wealth_{0.32}$ estimated by apportioning to ranked households first versus apportioning directly to ranked individuals, indicating that the estimate is not sensitive to this modification in procedure (correlation between two measures r > 0.95).

Third, the difference in results between relative and absolute measures may be due to the number of categories (14 for the AWE vs. 5 for the relative DHS quintiles). Thus, we also examine a 14-category ordinal variable based on the DHS Wealth Factor Score to ensure that differences between relative and absolute measures are not due to the number of categories. The results are very similar. AWE shows much better fit with all measures of growth than the 14-category relative measure of wealth (AIC reduction = 27241, 100, 60, 1315, 1462, resp.). Supplementary Table 1 also shows that the amount of within-country, between-country, and total variation explained by the 14-category relative measure is comparable to the 5-category relative wealth measure with a little improvement.

Headcount Analysis. India is a notable outlier, with the World Bank 2 USD headcount nearly double the AWE-based headcount. This is consistent with prior findings of a large, and growing discrepancy in India between poverty estimates based on consumption surveys (underlying the World Bank estimates) and country-level balance sheets (underlying the AWE estimates) (4)

Model Specification. All models were estimated using PROC MIXED in SAS 9.3, with a random intercept for country (maximum likelihood). The key results are presented graphically in Figure 3. Here, we also graphically represent coefficients for other covariates and interactions in (Supplementary Figures 1 to 3).
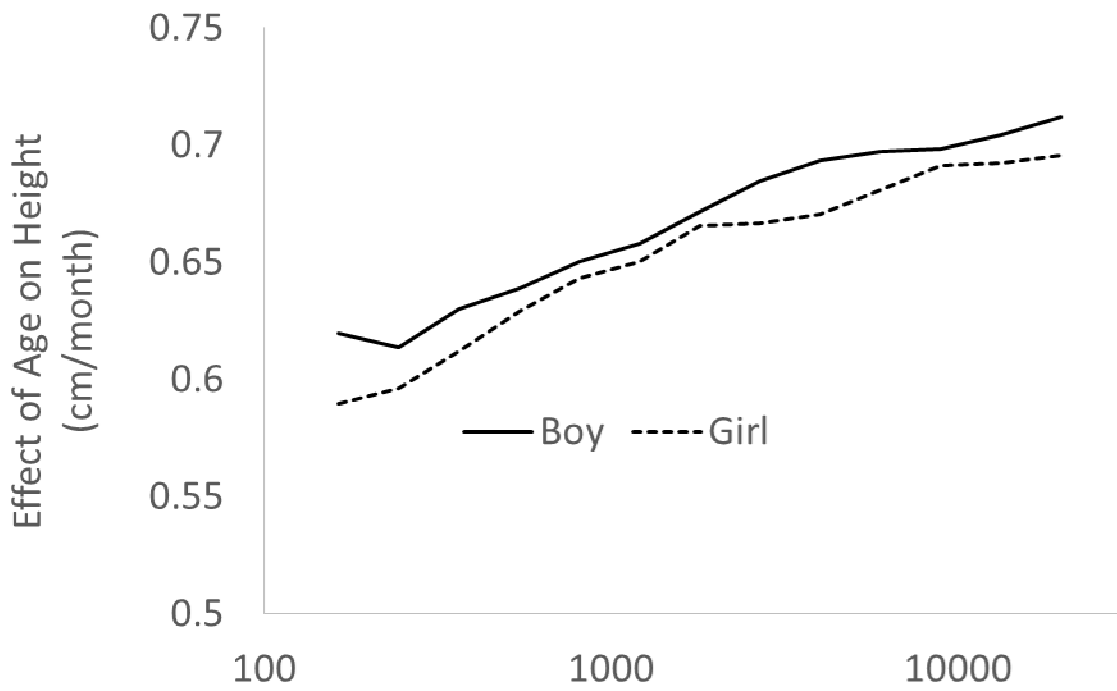
Supp. Figure 1. Coefficients for Interaction Between Current Breastfeeding and Wealth on Women's BMI. Increased BMI among breastfeeding women in wealthiest groups is likely a result of weight gain during pregnancy (5).
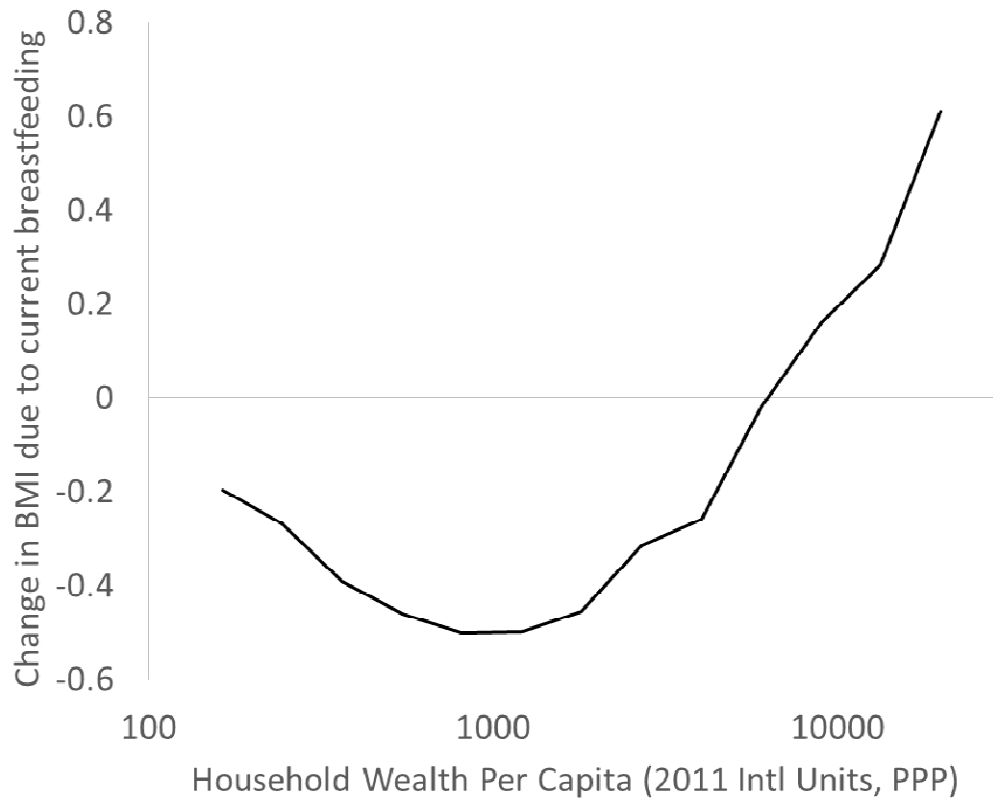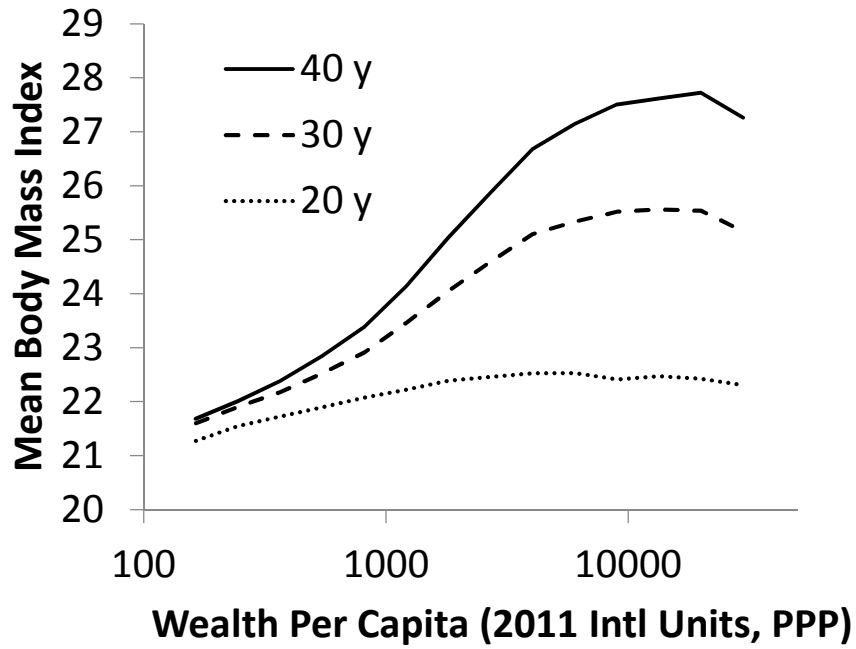

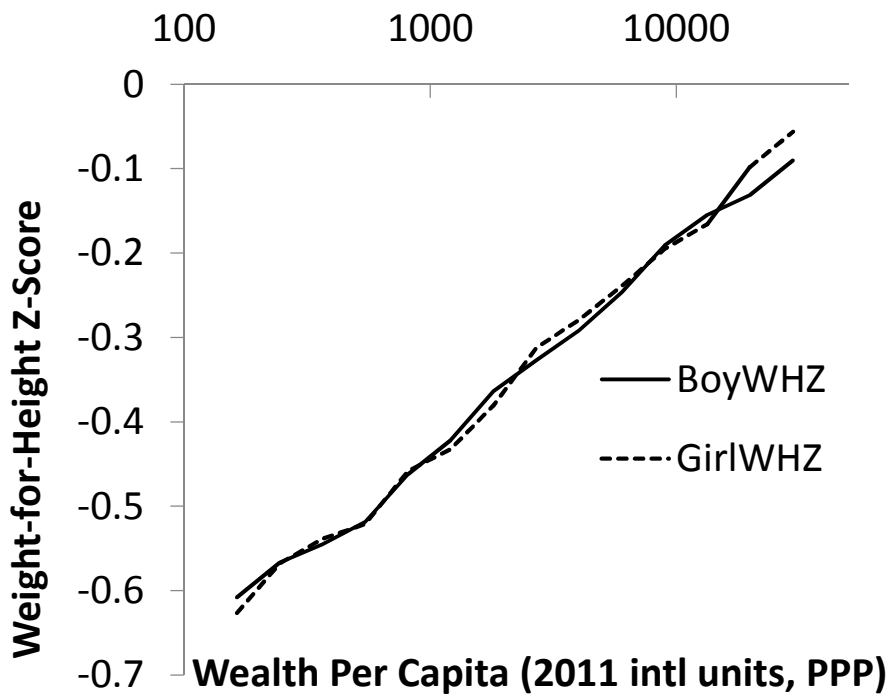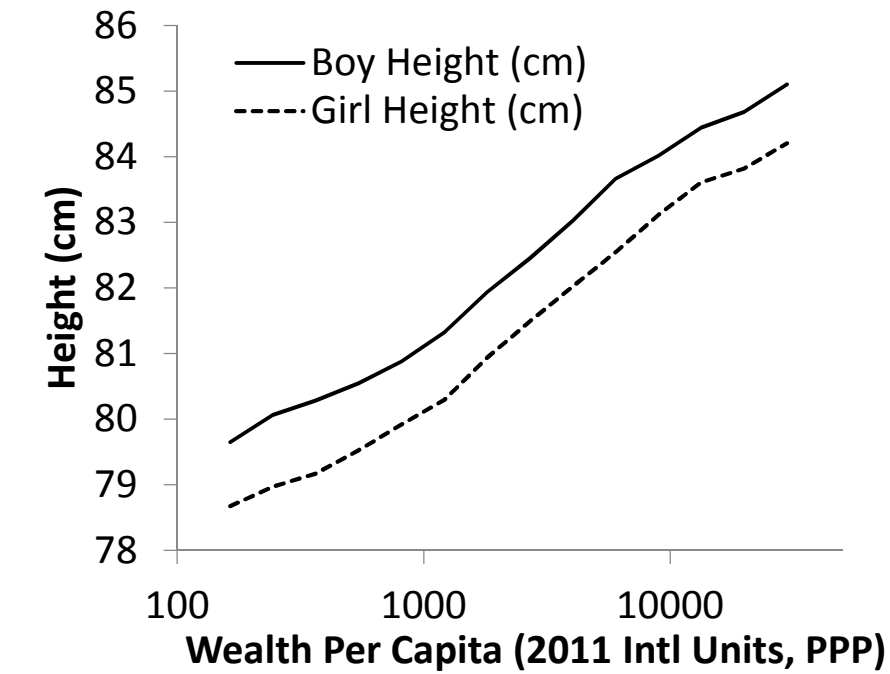**Supp. Figure 2. Coefficients for Effect of Age on WHZ score for girls and boys.**
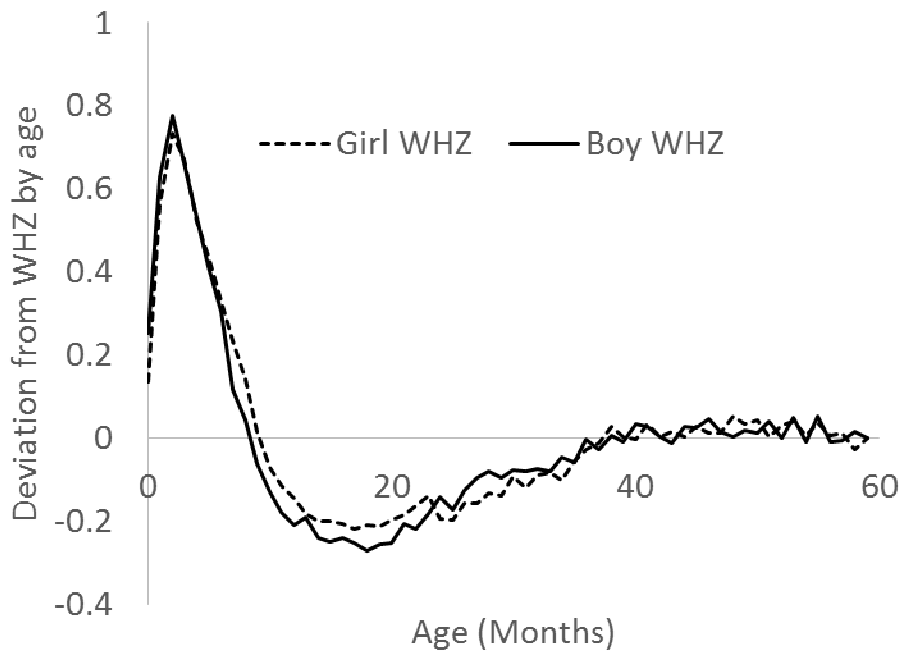
Supp. Figure 3. Effect of Age on Height by Level of Wealth and Gender.

Supp. Figure 4. Relationship between estimated wealth and BMI of non-pregnant non-breastfeeding women.

Supp. Figure 5. Relationship between estimated wealth and weight-for-height z-score of 24 month child.

Supp. Figure 6. Relationship between estimated wealth and height of 24-month child.

Supp. Table 1. Amount of variation explained by wealth measures at between- and within-country levels (Total = total variation explained)

	N	AWE			DHS Quintile			DHS 14-category wealth		
		Between	Within	Total	Between	Within	Total	Between	Within	Total
Adult female BMI	1109850	0.42	0.09	0.14	0.00	0.06	0.02	0.00	0.07	0.02
Girl Ht	239029	0.12	0.04	0.06	0.00	0.03	0.02	0.00	0.04	0.02
Boy Ht	252416	0.10	0.04	0.06	0.00	0.03	0.02	0.00	0.04	0.02
Girl WHZ	306032	0.16	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.00
Boy WHZ	321390	0.17	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.00
Girl HAZ	239029	0.43	0.07	0.13	0.00	0.06	0.02	0.00	0.06	0.02
Boy HAZ	252416	0.50	0.07	0.14	0.00	0.06	0.02	0.00	0.06	0.02

Adding the DHS Wealth Index to the model with absolute wealth does slightly improve the model fit (AIC reduction = 2006, 13, 27, 55, 63, resp.), but does not substantially increase the proportion of variance explained (Change in R^2 < 0.01). We find similar results when using a more fine-grained measure of relative wealth with the same number of categories (k=14) as the absolute measure of wealth, indicating that the main finding is not an artifact of the number of categories of the relative wealth variables.

1.   Davies JB, Sandström S, Shorrocks A, Wolff EN. The Level and Distribution of Global Household Wealth. NBER Working Paper. 2009(w15508).
2.   Davies JB. The level and distribution of global household wealth. The Economic Journal. 2011;121(551):223-54.
3.   World Bank Indicators [database on the Internet]. World Bank. 2011 [cited July 1, 2011].
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