# The Incidence of Recent Child Health Improvements

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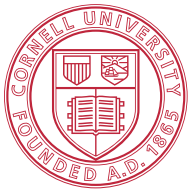


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# Introduction

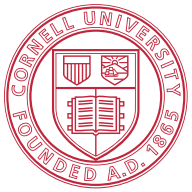
- Growth has finally picked up, especially in Africa
- Still,there is concern that the fruits of this growth are not equitably distributed
- Thus, the literature on "pro-poor" or "inclusive" growth
- All of that literature focuses on one “fruit”:  income or expenditure
- We want to look at a different one: child health

Thus, this paper sits at the intersection of two important literatures about improving living standards and poverty reduction: 1. the distribution of income growth; and 2. poverty or welfare as a multidimensional phenomenon.

# Motivation

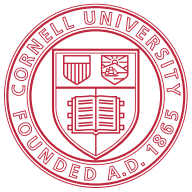
Our purpose here is to consider the extent to which improvements in children's health are distributionally progressive, or pro-poor.

- Thus, our topic(s):
  - Are intertemporal changes in the distribution of expenditures and health similar to each other?
  - How are health improvements distributed across the income distribution?
  - How are health improvements distributed across the health distribution?



# Data

- Health indicators are children's standardized heights and infant mortality, drawn from DHS
  - This gives us about a 20-year span in many countries
  - There have been substantial improvements that allow us to look at the distribution of benefits
- Household expenditures per capita are predicted, based on their projection on a set of household characteristics using a suitable income/expenditure survey
- Note: the samples are for kids, then, not households or all individuals



# Improvements in Child Health

| | *Sub-Saharan Africa* | | *Latin America and Caribbean* | | *East Asia and Pacific* | | *South Asia* | |
|---|---|---|---|---|---|---|---|---|
| Year | Infant Mortality Rate | Stunting Prevalence | Infant Mortality Rate | Stunting Prevalence | Infant Mortality Rate | Stunting Prevalence | Infant Mortality Rate | Stunting Prevalence |
| 1990 | 177 | 48 | 54 | 23 | 42 | 47.2 | 129 | 61 |
| 2012 | 98 | 38 | 19 | 11 | 12 | 29.0 | 60 | 38 |

*Data Source*: http://www.data.unicef.org/resources/2013/webapps/nutrition#

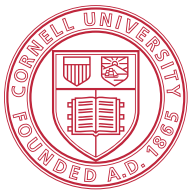
# Methods: Growth Incidence Curve

Ravallion and Chen

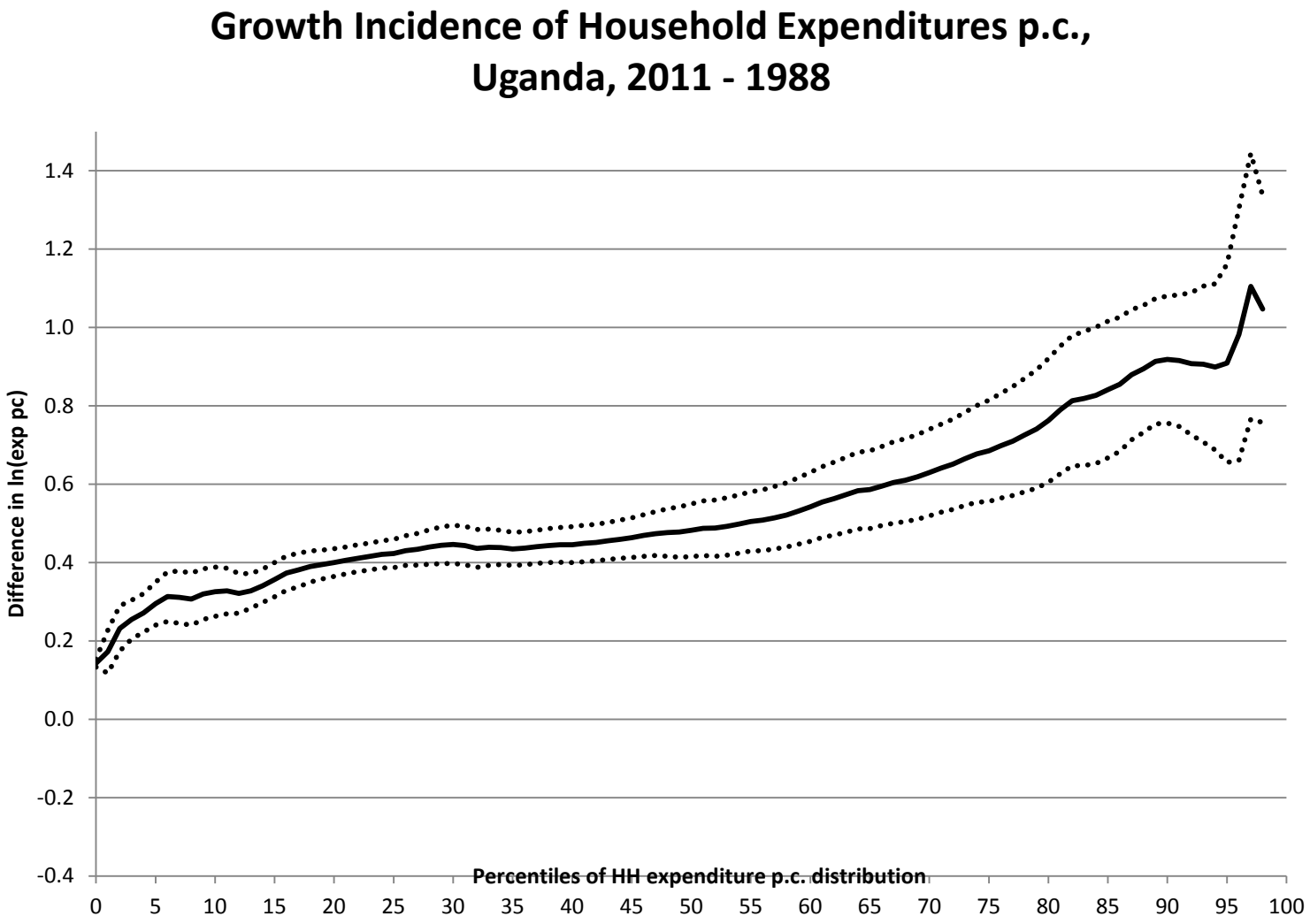
- Simple tool for examining whether economic growth is pro-poor.
- For a cumulative distribution of incomes F($y$), let $p$ be the quantile associated with a given income so that $p$ = F($y$). $p$ ranges from 0 (the poorest quantile) to 1 (the richest).
- The growth incidence curve (GIC) is:

$$g_t(p) = \frac{y_t(p)}{y_{t-1}(p)} - 1$$

This curve shows how much income at the $p^{th}$ quantile has grown at time $t$, graphing it for all values of $p$.

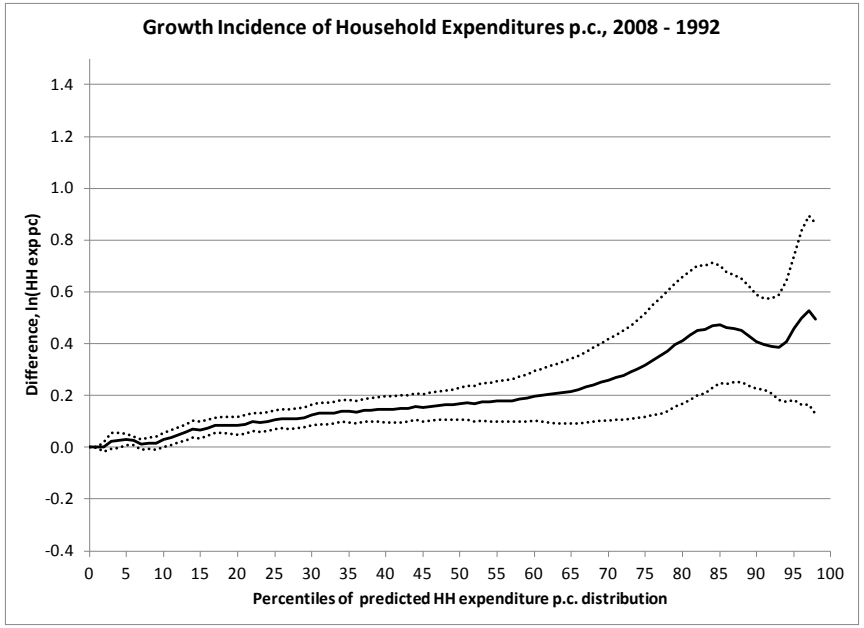


# Methods: Growth Incidence Curve

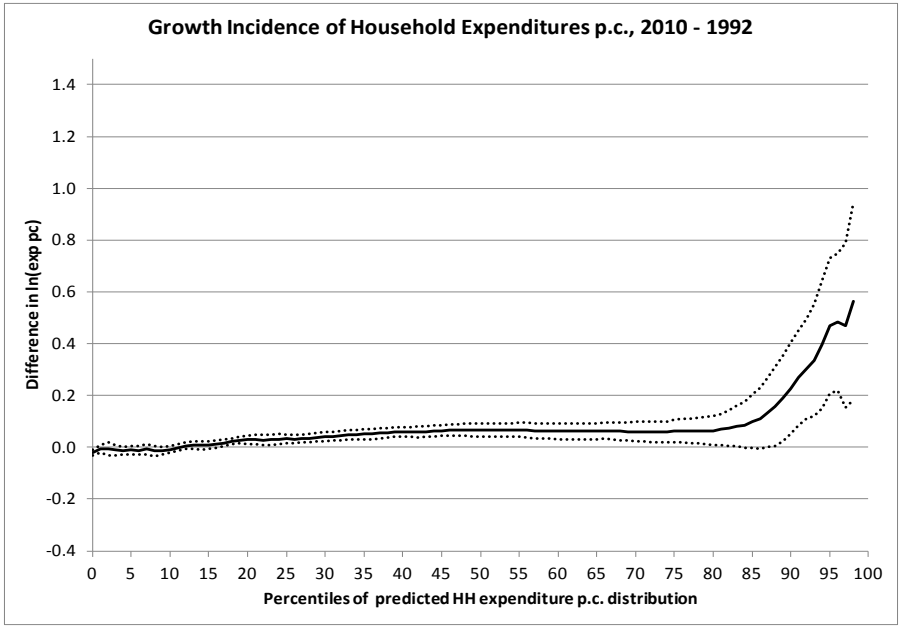


# Figure 4 – Growth Incidence Curves (GIC) cont.

## Madagascar

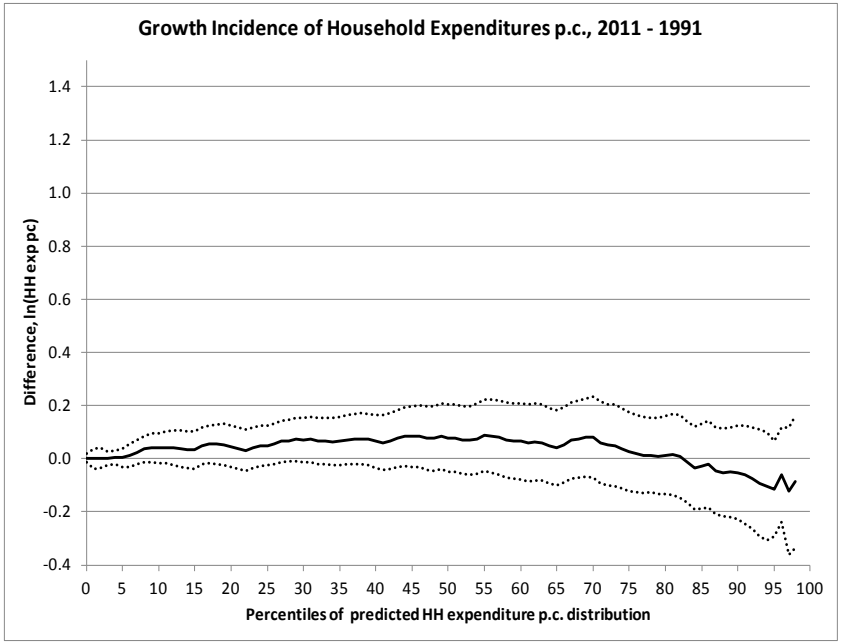



## Malawi

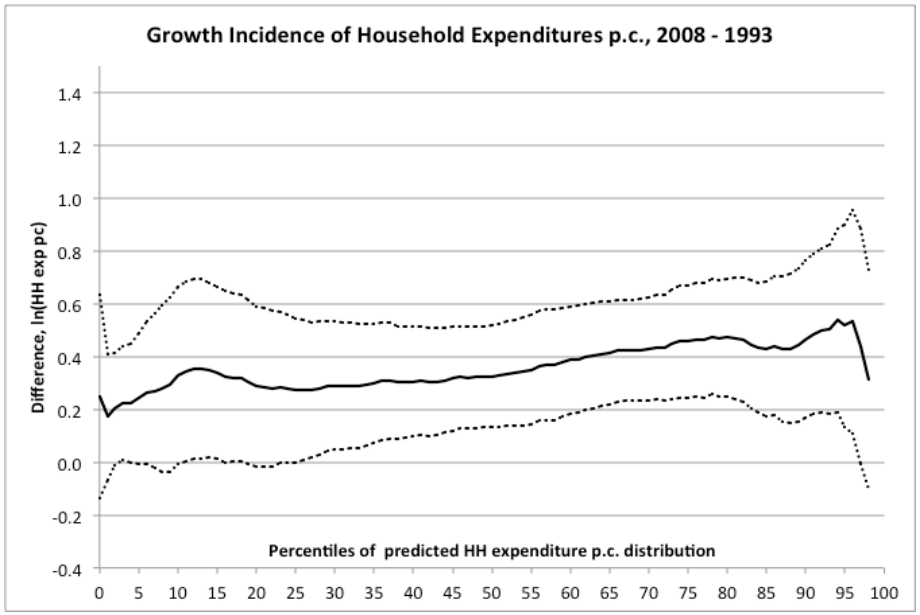


# Figure 4 – Growth Incidence Curves (GIC)

## Cameroon




## Ghana



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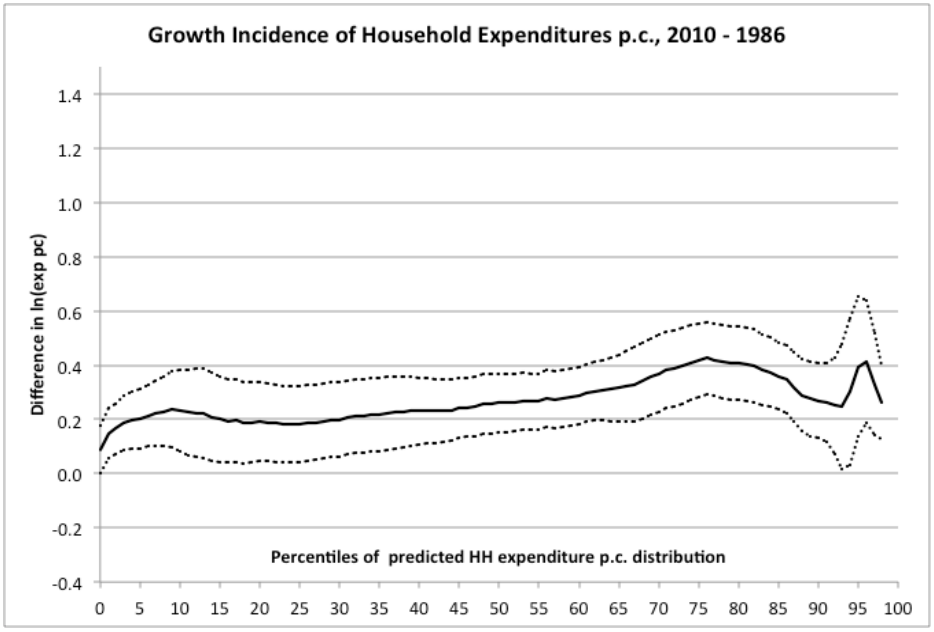
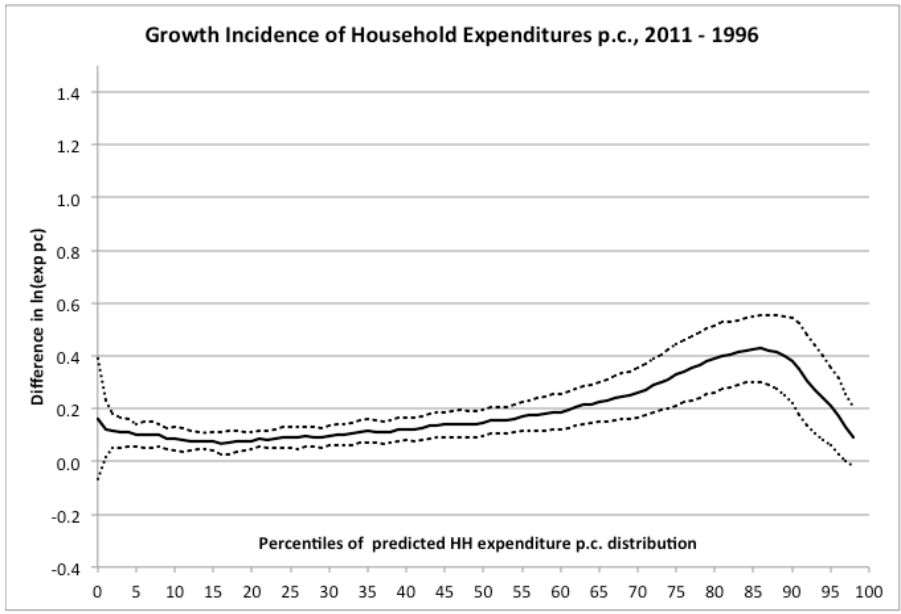
## Colombia




## Bangladesh



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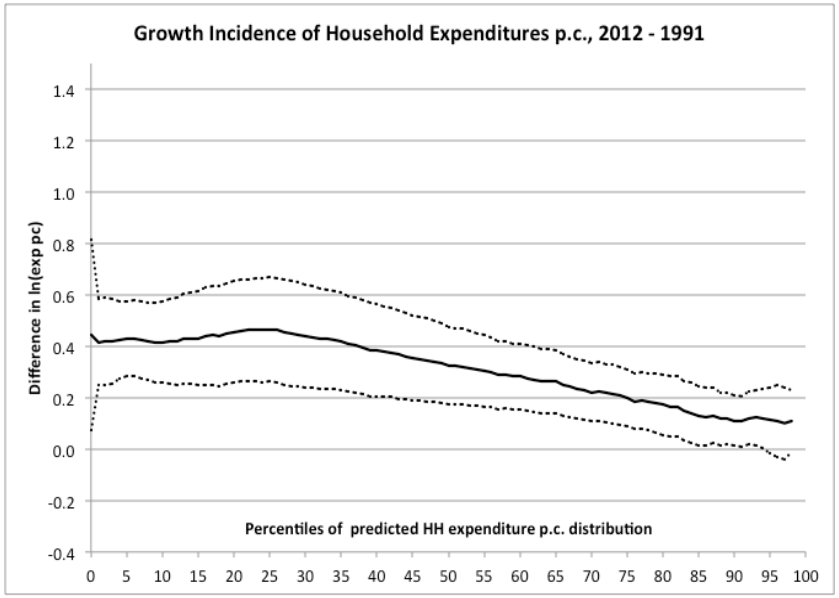
## Peru

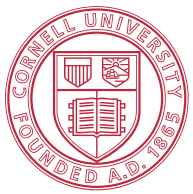


# Methods: Gradient Health Improvement Incidence Curve (HIIC)

- For "gradient" approaches, we use

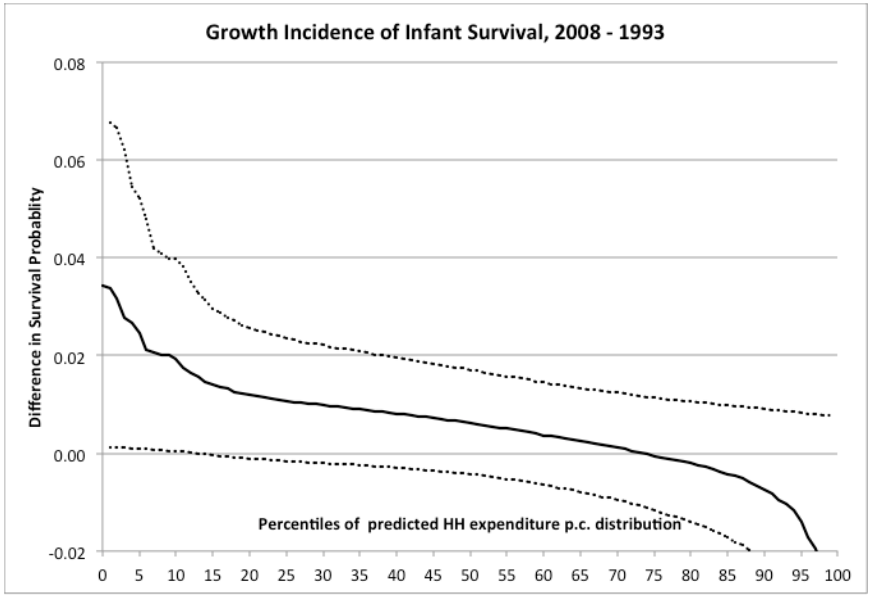
$$dgh_t(p) = h_t(y_t(p)) - h_{t-1}(y_{t-1}(p))$$

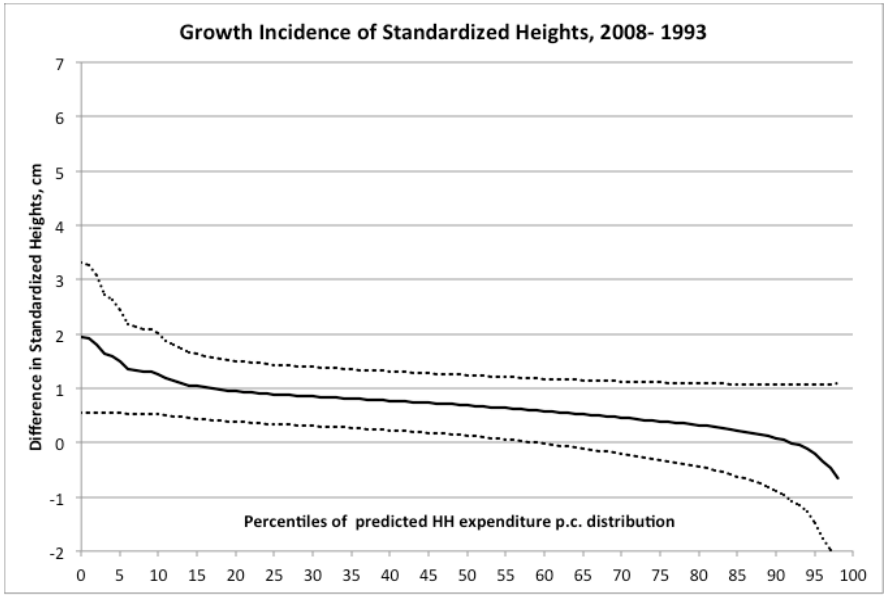
  - This requires a regression to get the health status conditional on income at the $p^{th}$ percentile
  - One advantage: handles discrete health indicators



# Figure 5 – Gradient Health Improvement Incidence Curves (GHIIC) cont.

## Ghana



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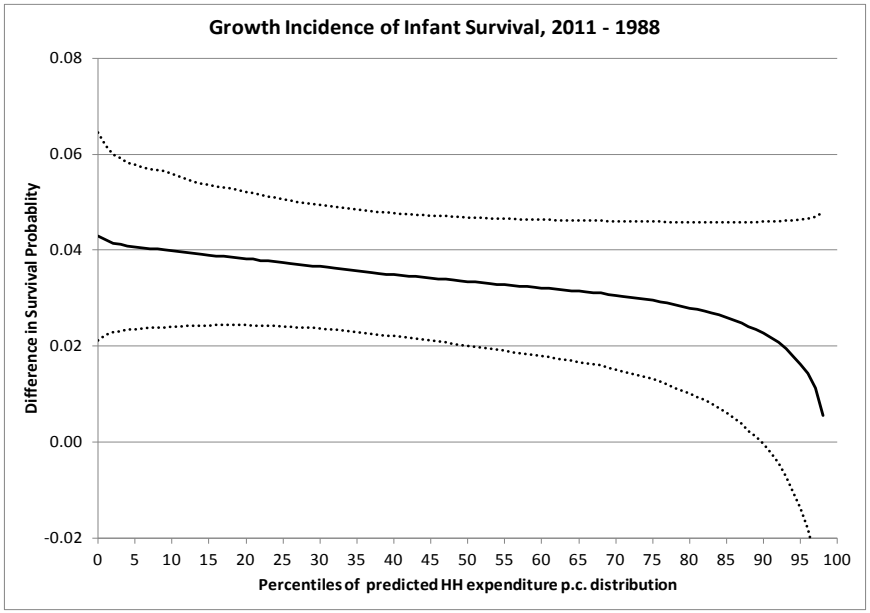
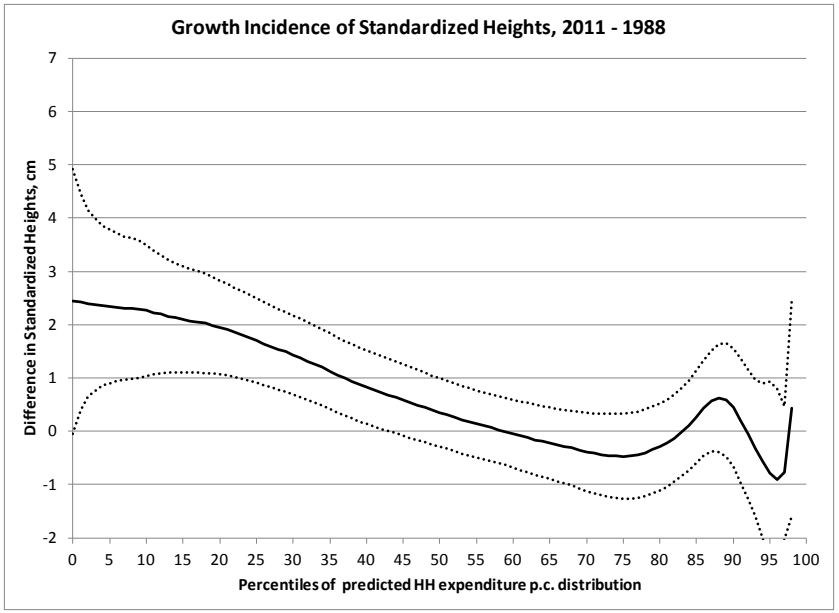
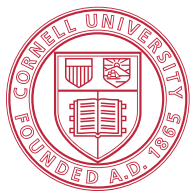
## Uganda

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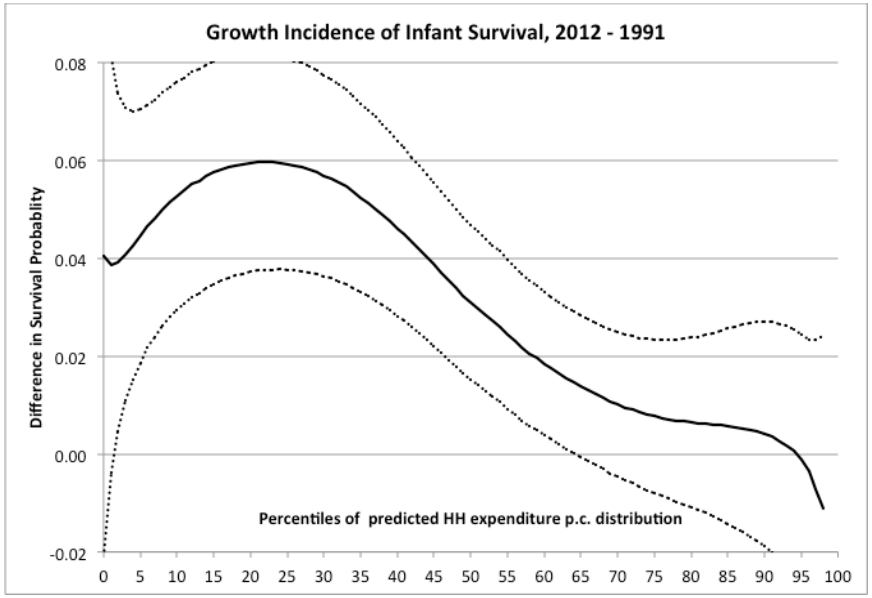
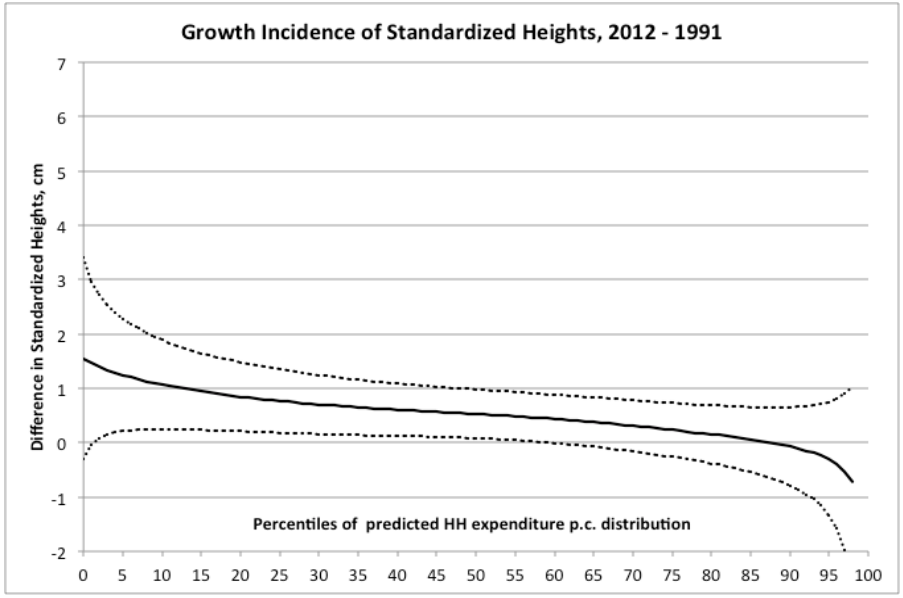
## Peru



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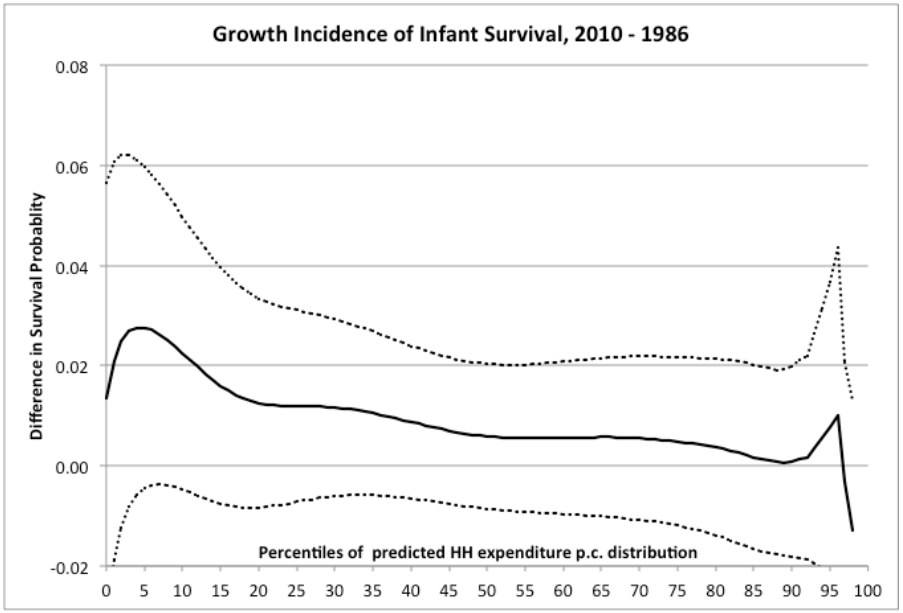


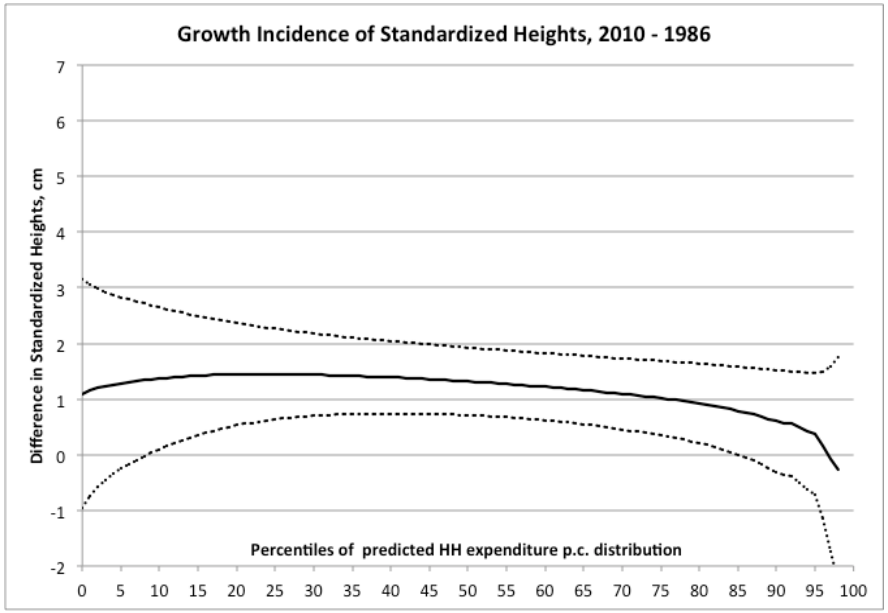

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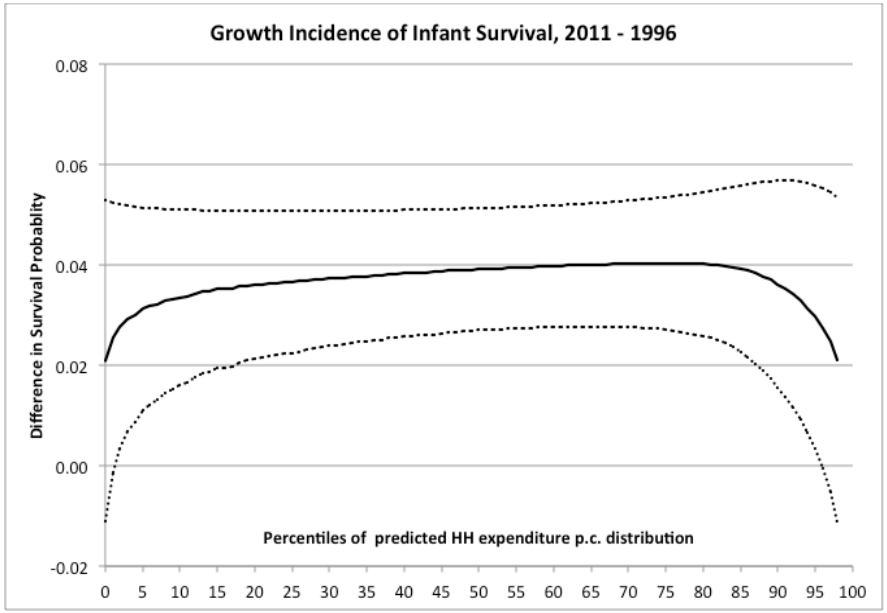


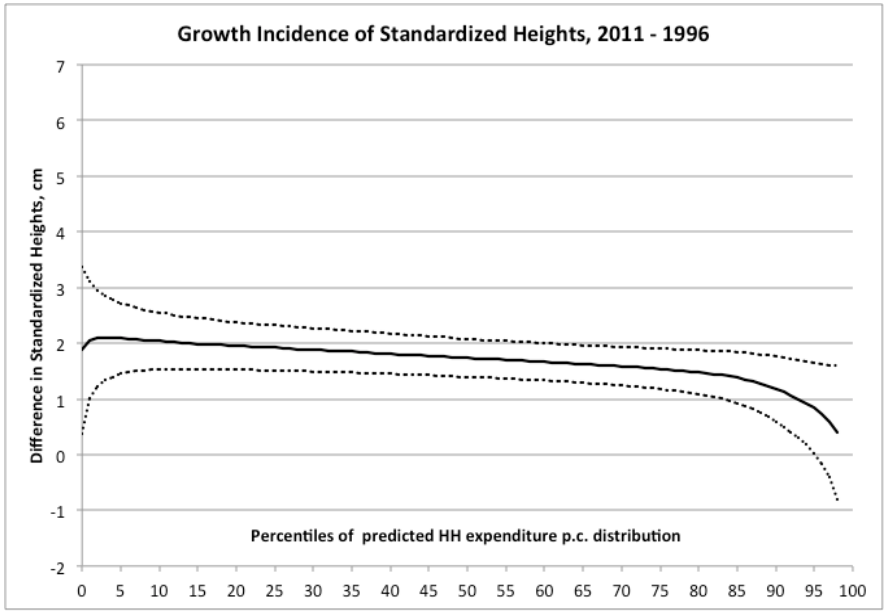

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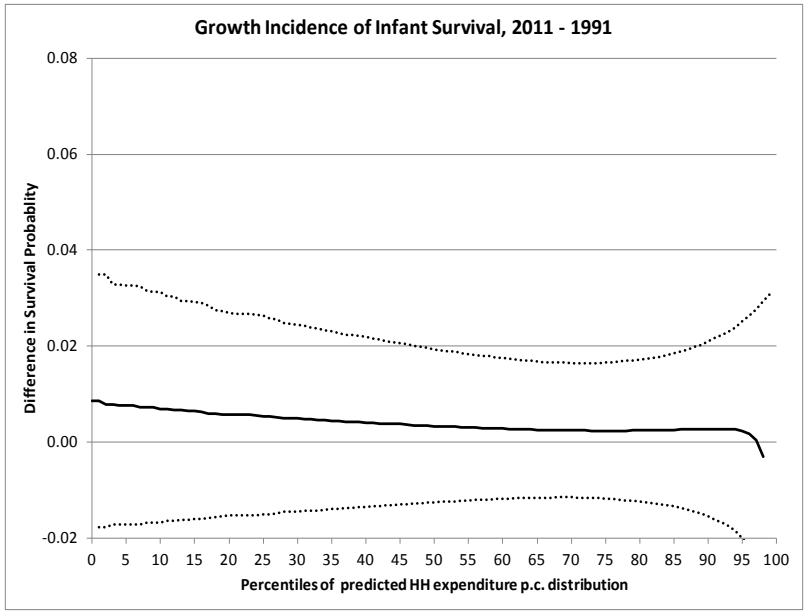


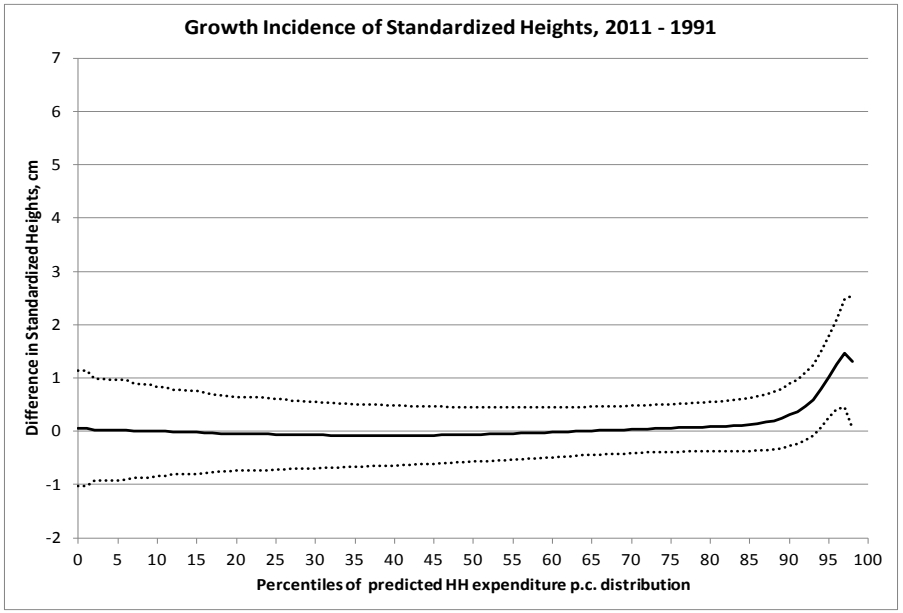


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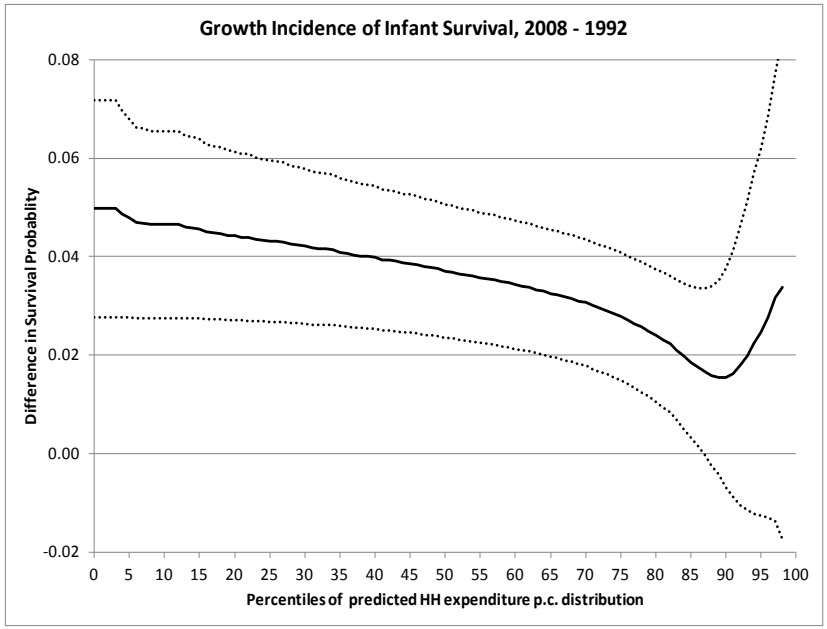


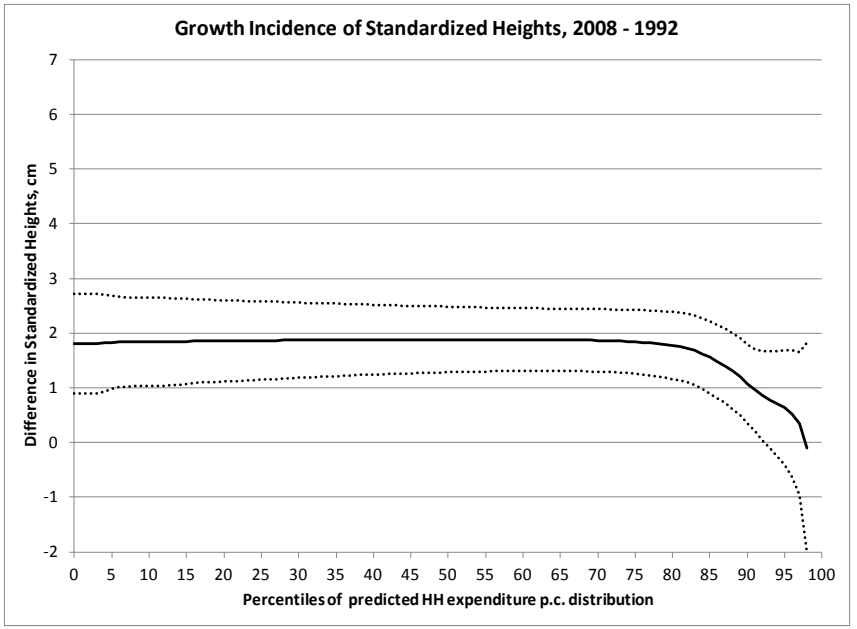


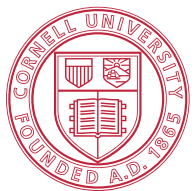


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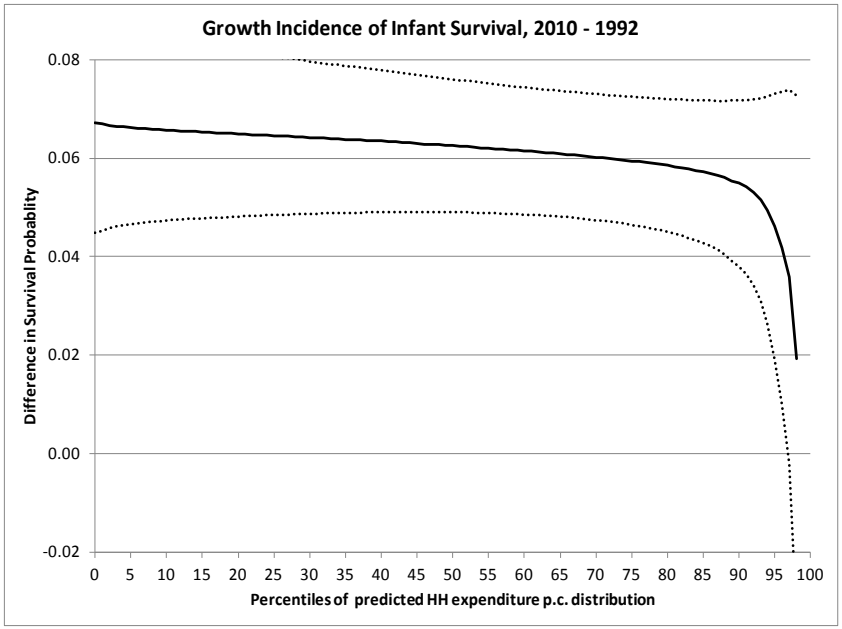
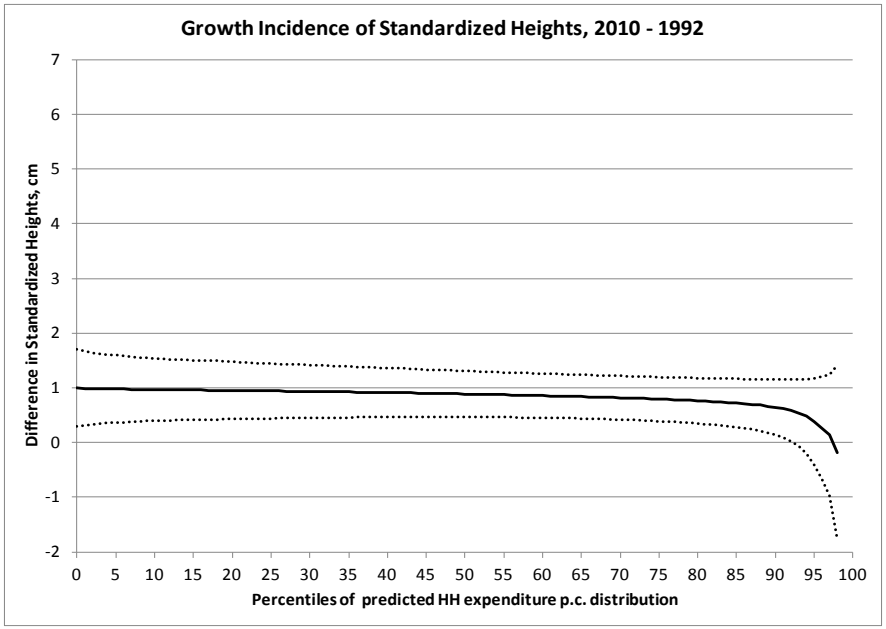
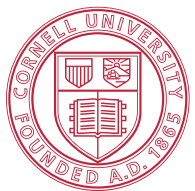
## Malawi

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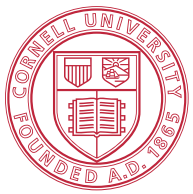
# Methods: Health Improvement Incidence Curve (GHIIC)

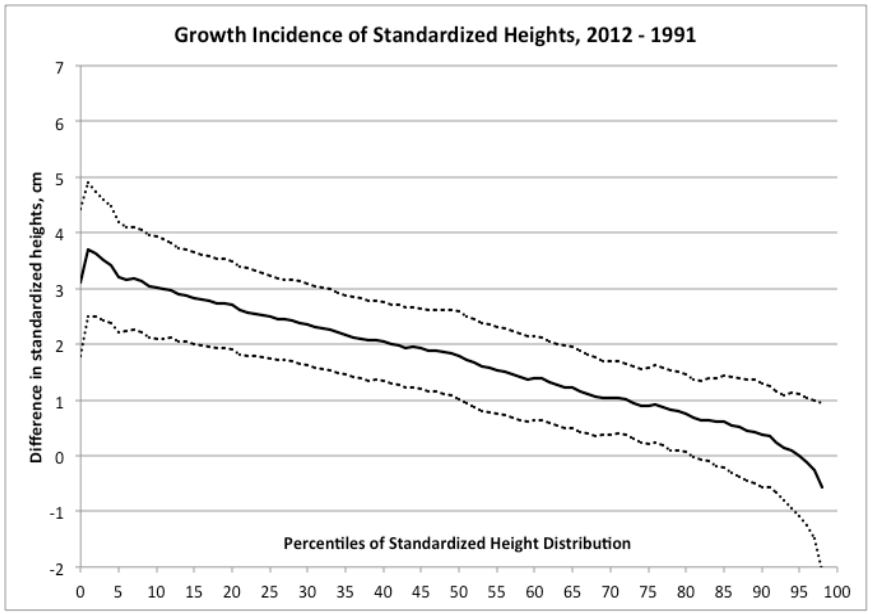
- Strict analogy would be: $dh_t(p) = \frac{ht_t(p)}{ht_{t-1}(p)} - 1$
- Or absolute changes: $dh_t(p) = ht_t(p) - ht_{t-1}(p)$
- These are consistent with the "univariate" approach to evaluating the distribution of health

$$dgh_t(p) = h_t(y_t(p)) - h_{t-1}(y_{t-1}(p))$$

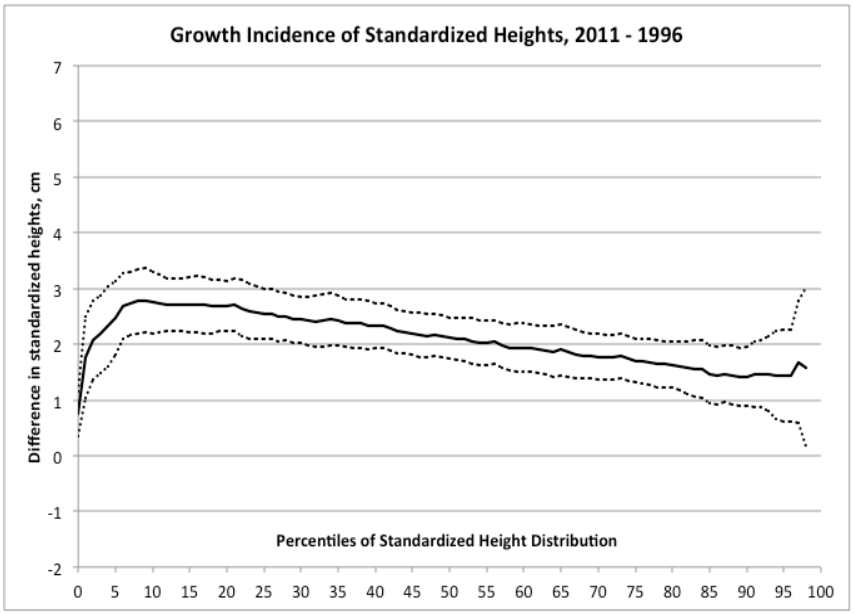


# Figure 6 – Figure Health Improvement Incidence Curves cont.

## Peru




## Bangadesh



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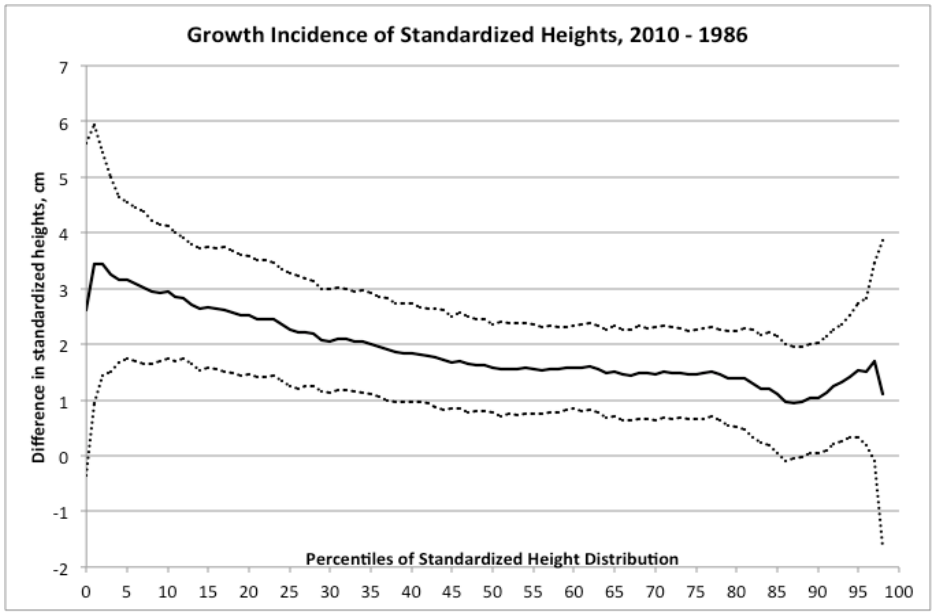
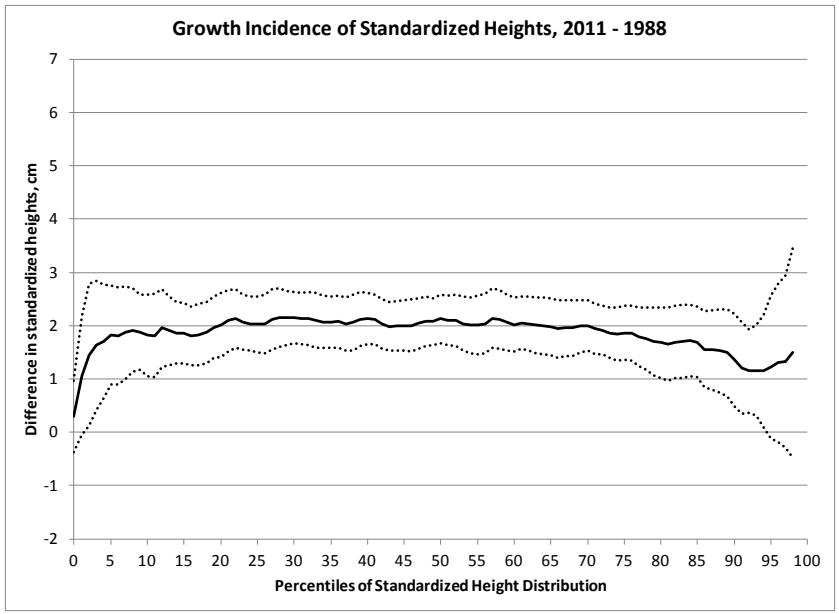
## Colombia




## Uganda



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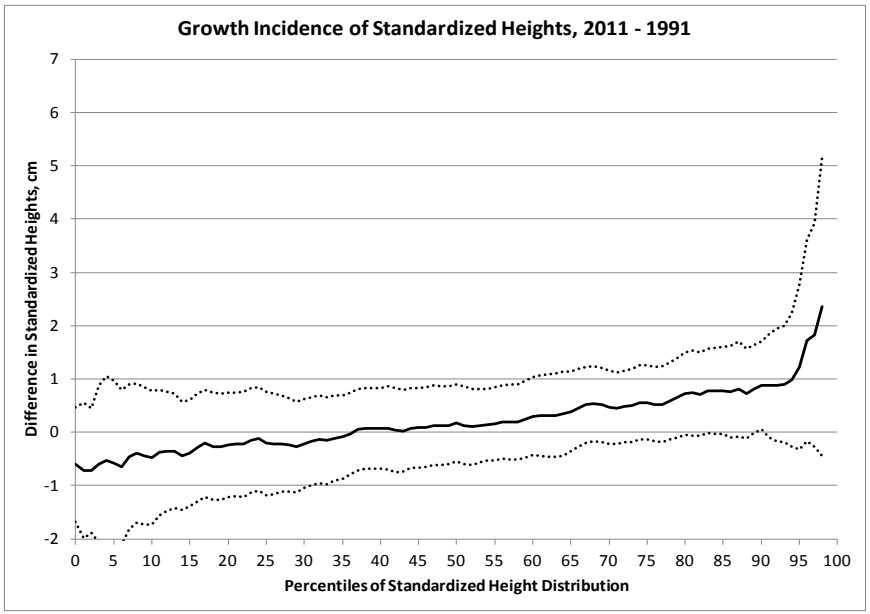
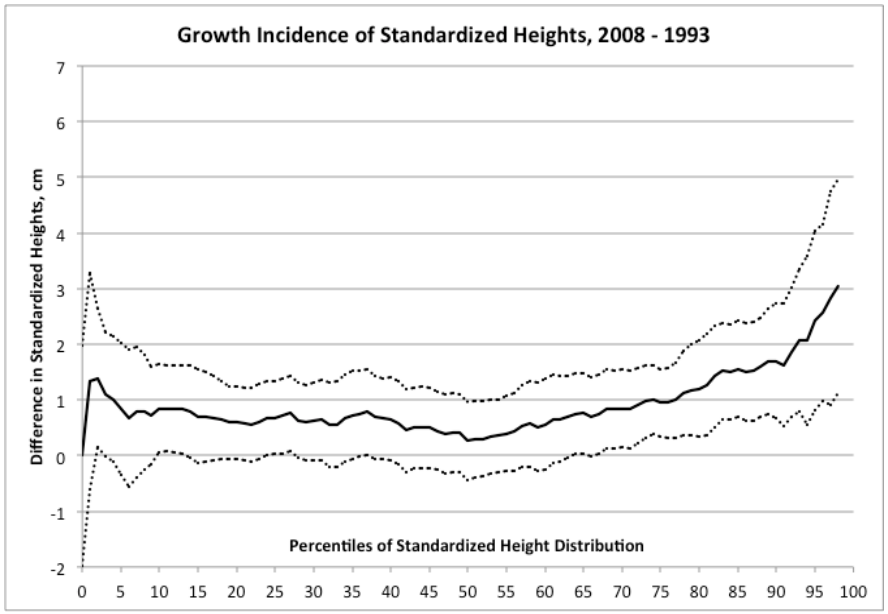
## Cameroon




## Ghana



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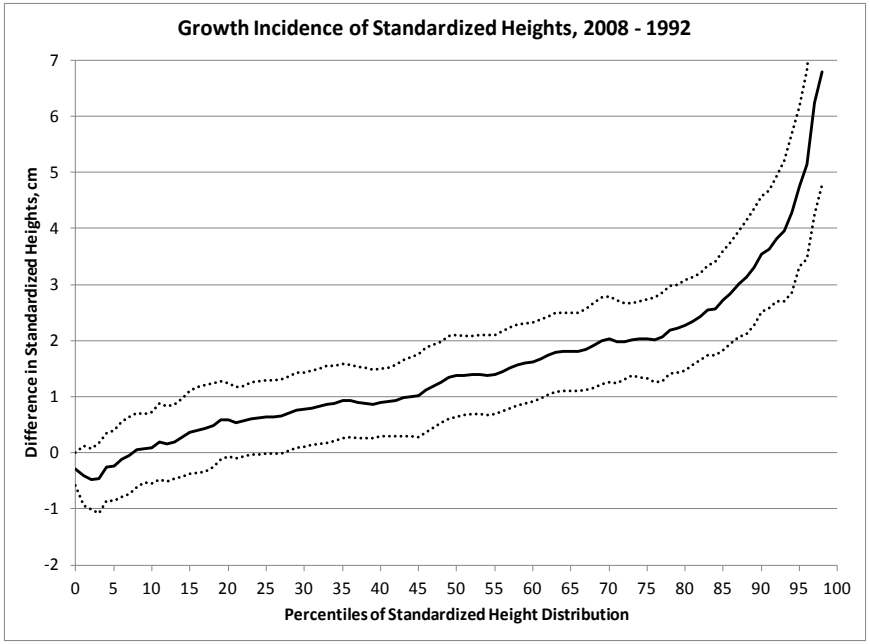


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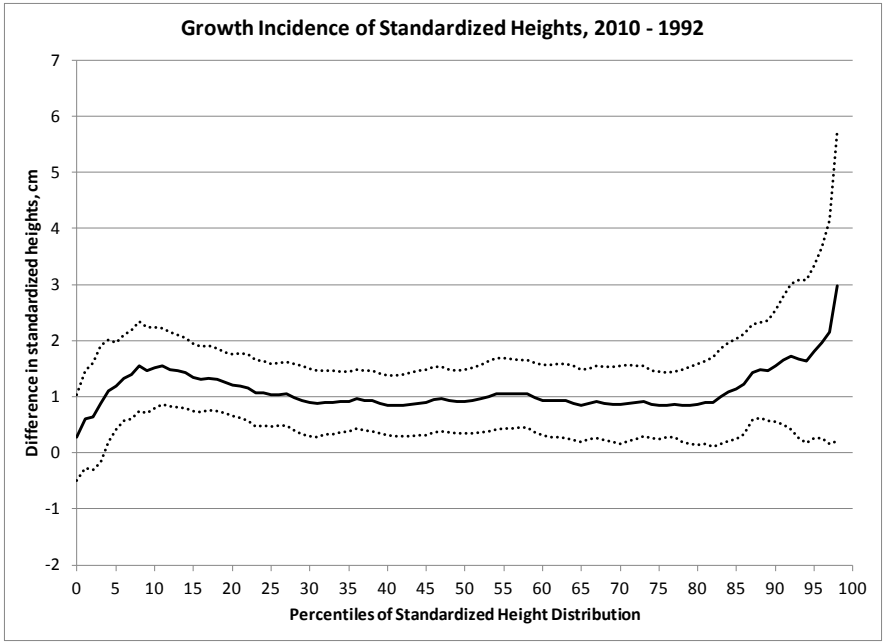

# Results

There are several patterns across countries

- Traditional expenditure-based GIC tend to be regressive (especially in faster growing economies) or at best distributionally neutral – exception is Peru
- the distributional benefits of health improvements differs from income, and tend to be pro-poor
- Gradient Health Improvement Incidence Curves (GHIIC) indicate:
  - Most countries witnessed substantial health improvements over time, even in countries with relatively small income improvements.
  - Tend to be progressive with greater improvement in absolute and relative terms among the poor
  - The greater the absolute improvement on average, the more progressive it is distributed

# **RESULTS** continued

- Health Improvement Incidence Curves (HIIC) indicate:
  - More mixed story, but often those at the top end of the univariate distribution benefit more. That is:
    - In non-African countries less healthy kids grow more, e.g., Colombia and Peru
    - In some cases the taller kids have increased in stature more, e.g, Madagascar
- Cannot predict what the Gradient Health Improvement Incidence Curve or HIIC will look like based on the growth incidence curves (GIC)
  - Incidence of income growth and health improvements is certainly not the same *within* a country
  - So it's worth doing this in more countries to look for more regional patterns
  - Justifies going beyond growth incidence curve (GIC)