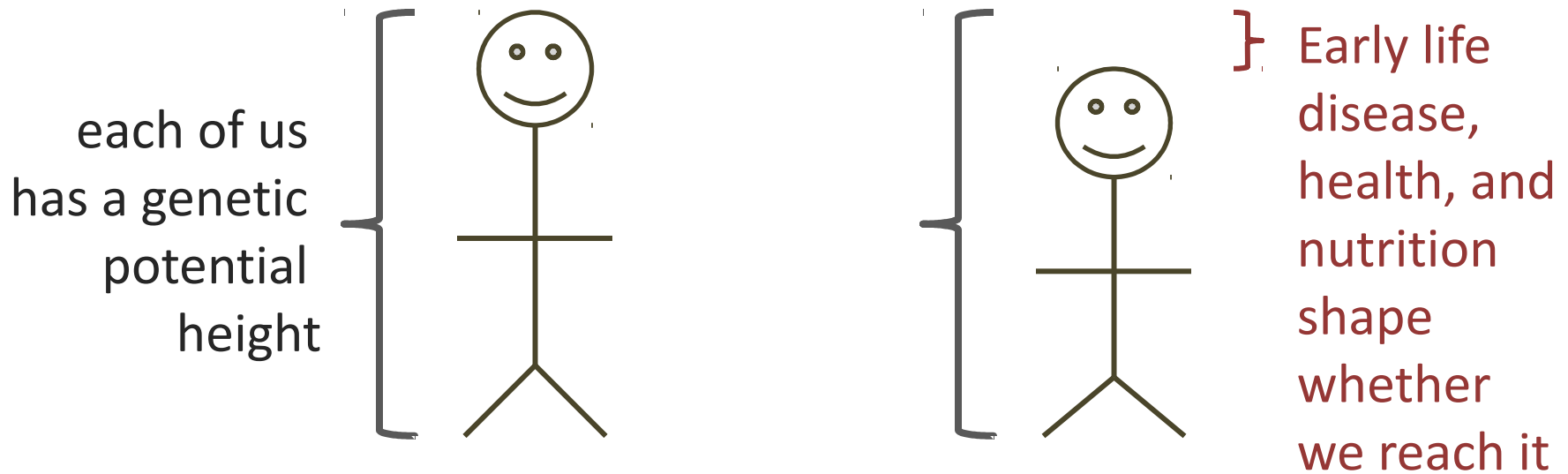


# the long and the short of open defecation:

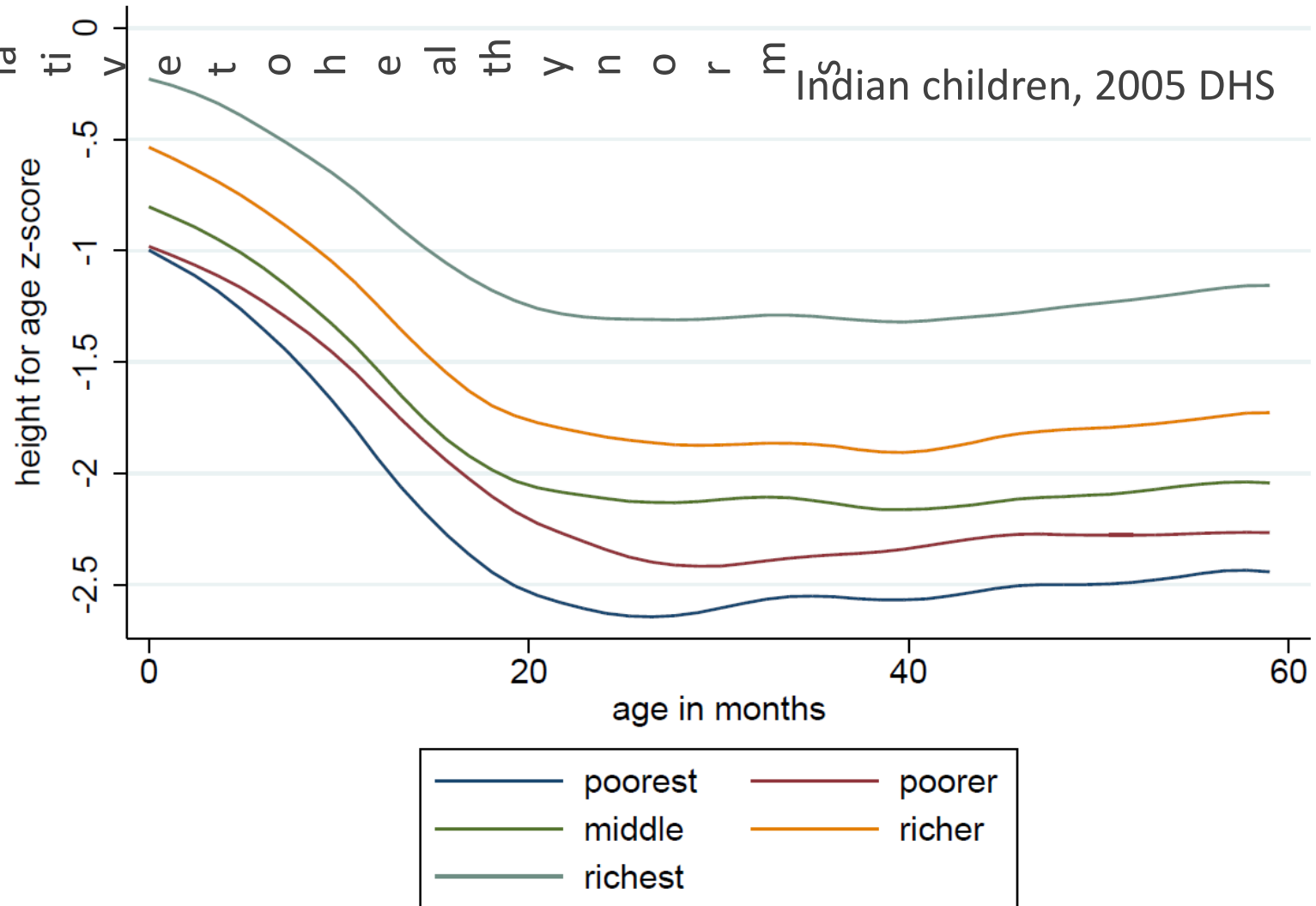
why sanitation matters for child height,  
how we know it does,  
and why everyone should care.

Dean Spears – rice – [www.riceinstitute.org](http://www.riceinstitute.org)

# height is importantly shaped by early life **net** nutrition: absorbed food minus losses to disease



# UNICEF: “The first two years are forever”



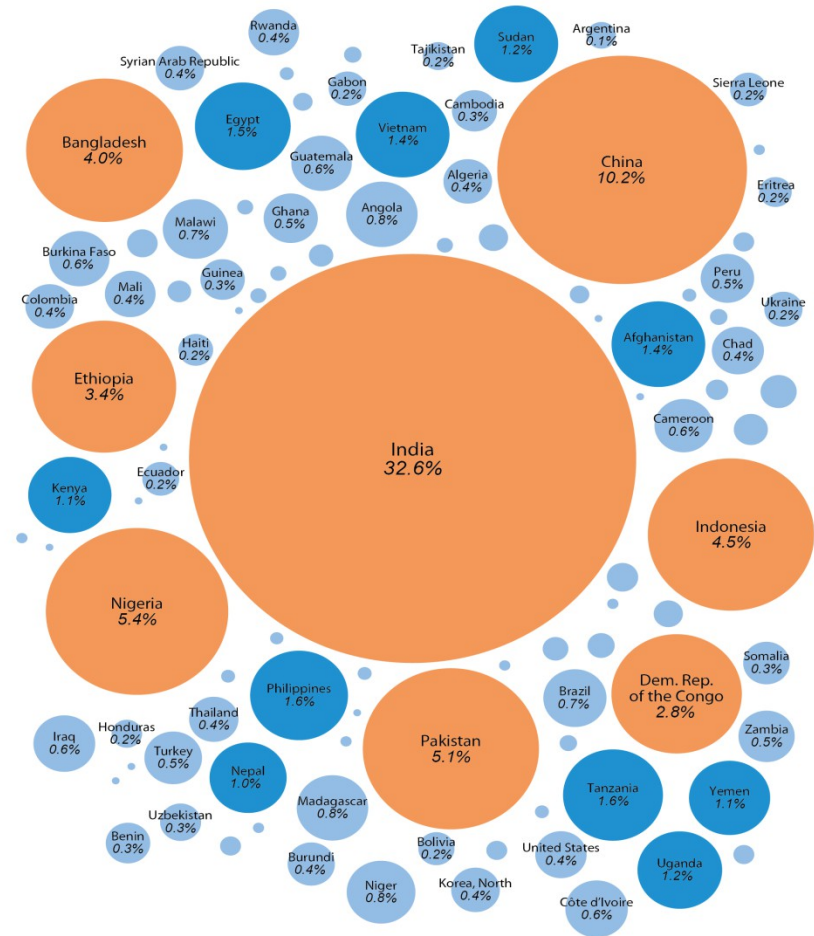
# small kids? big deal!

- Height is not the only thing developing in the first few years life
- The same early life health that helps bodies grow tall also helps brains grow smart
- Height predicts (on average):
  - Cognitive achievement
  - Adult occupation class, employment, wages
  - Adult health, mortality, and happiness
  - Promotion of people in large organizations (!)

# An Asian Enigma?

Why are Indian children so short, shorter even than children in many poorer countries?

Children Malnourished (below height) percentage by country



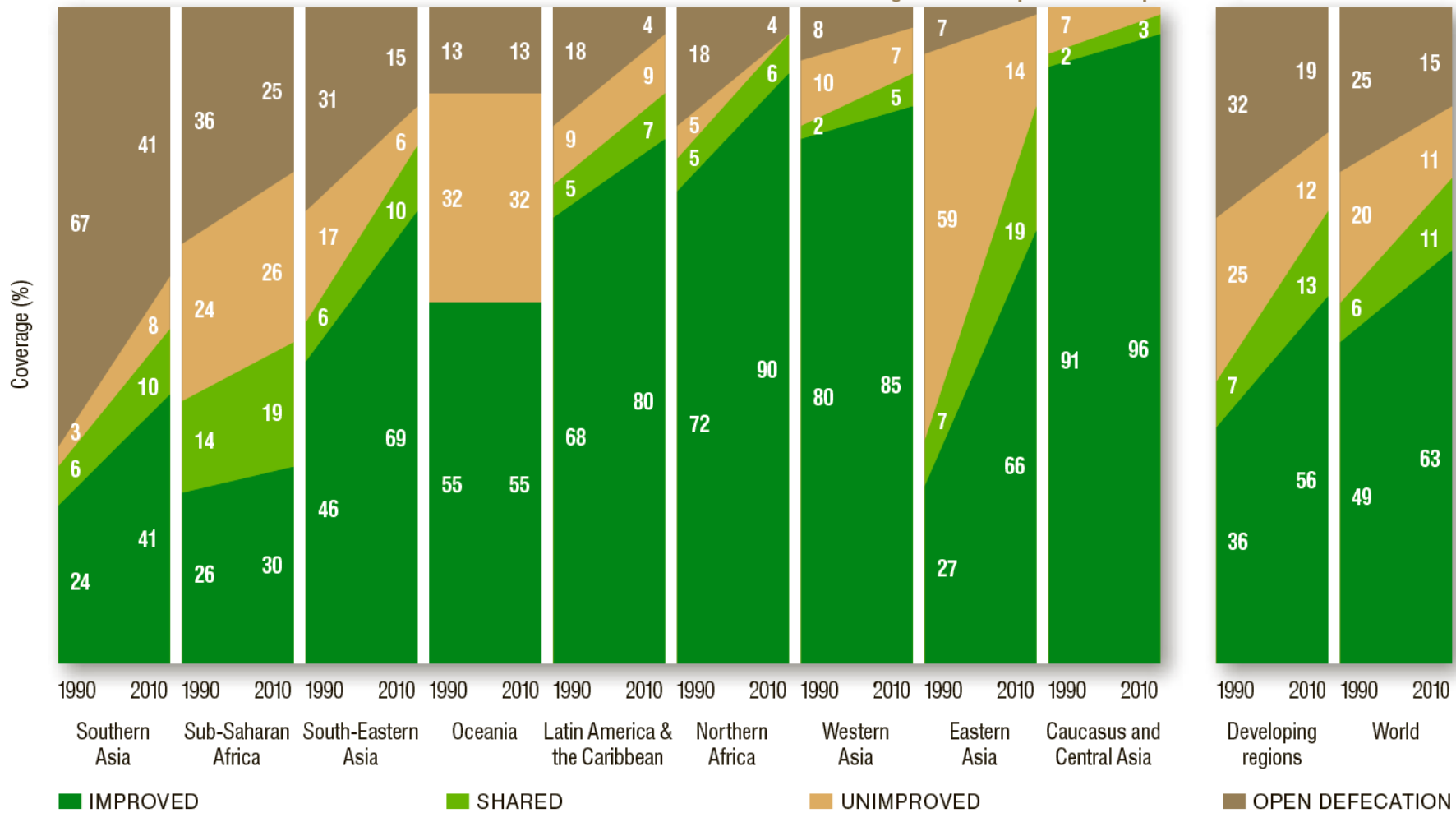
Figures are for 2007/08 or latest.

Sources: Processed from WDI; MPI data from OHPI MPI database  
Note: Author notes some discrepancies in WDI data for income poverty versus other poverty counts that suggests income poverty is underestimated

The Guardian newspaper, Tuesday 14 September 2010,  
posted by Jonathan Glennie  
(<http://www.guardian.co.uk/global-development/datablog/2010/sep/14/bottom-billion-poverty>)

as we all know, there are germs in feces, which get onto children's fingers and feet, into water and foods, and wherever flies go

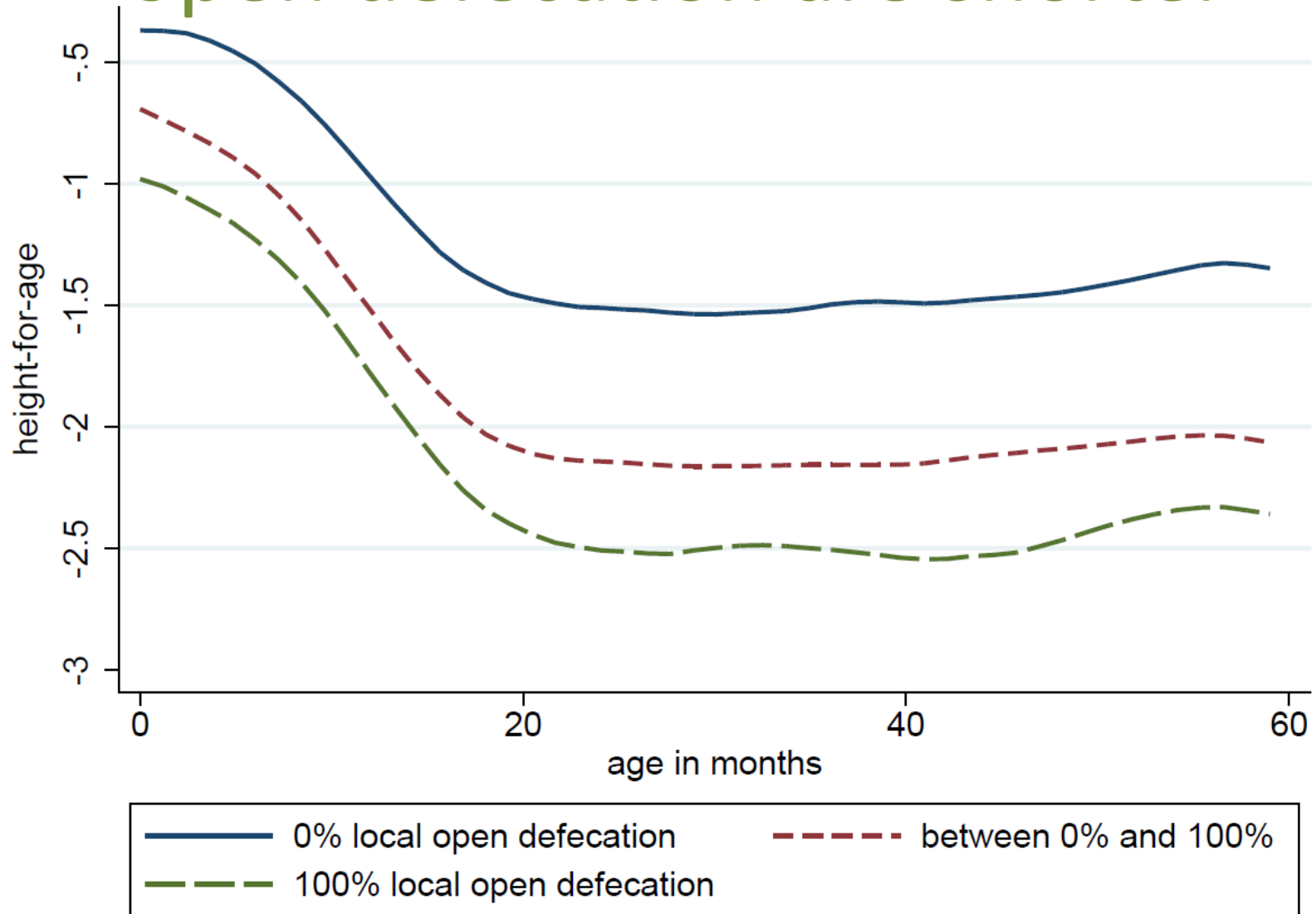
- even in rural places, open defecation is not always far from homes
- diarrhea □ direct loss of food
- enteropathy □ no absorption
- energy consumption fighting disease



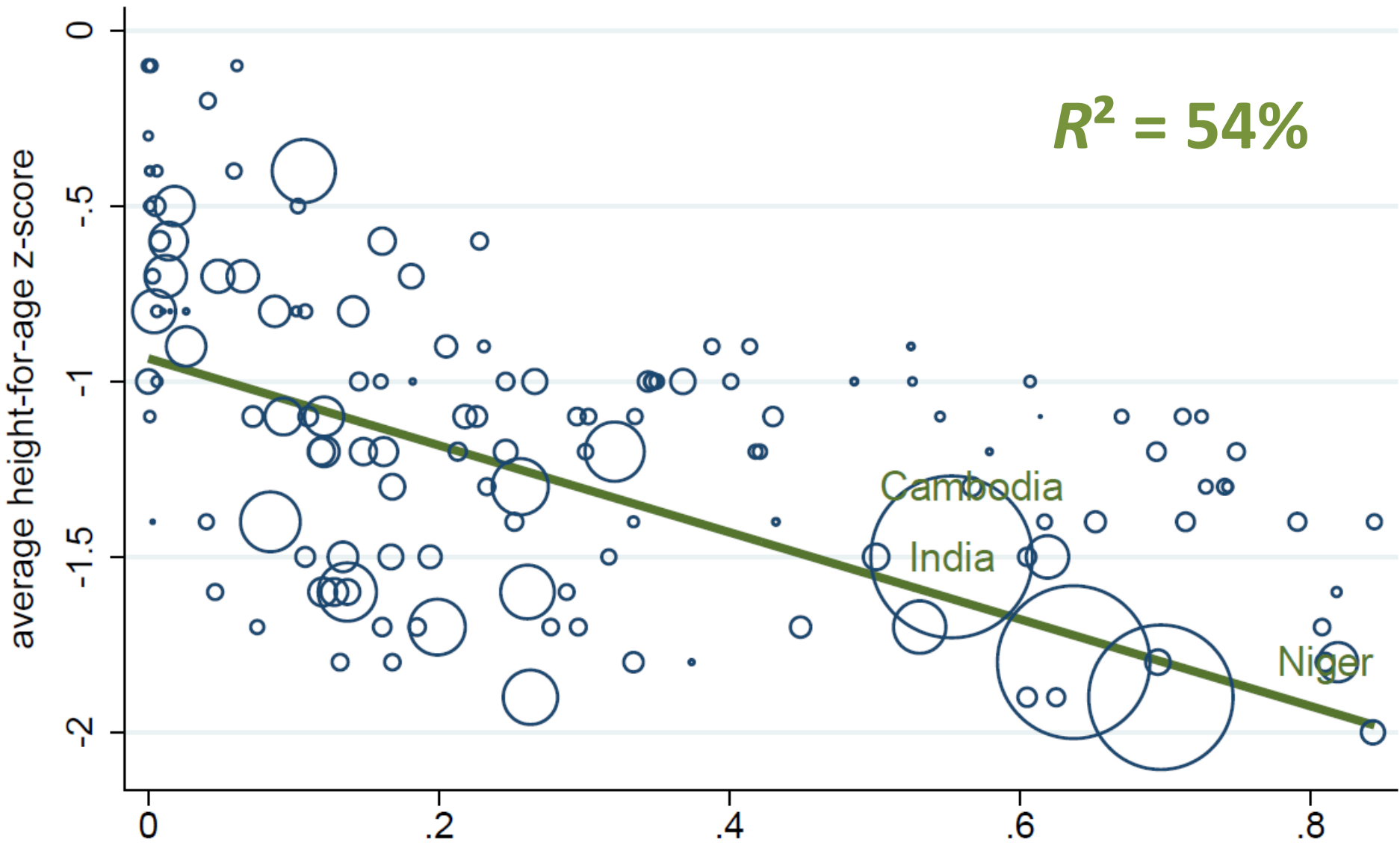
unicef 

 World Health Organization

# Indian children exposed to more open defecation are shorter





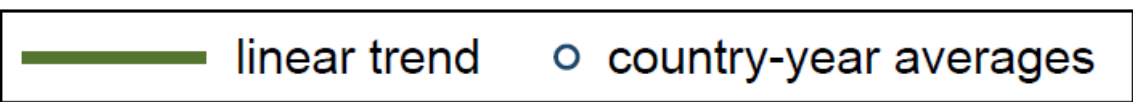


$R^2 = 54\%$

Cambodia

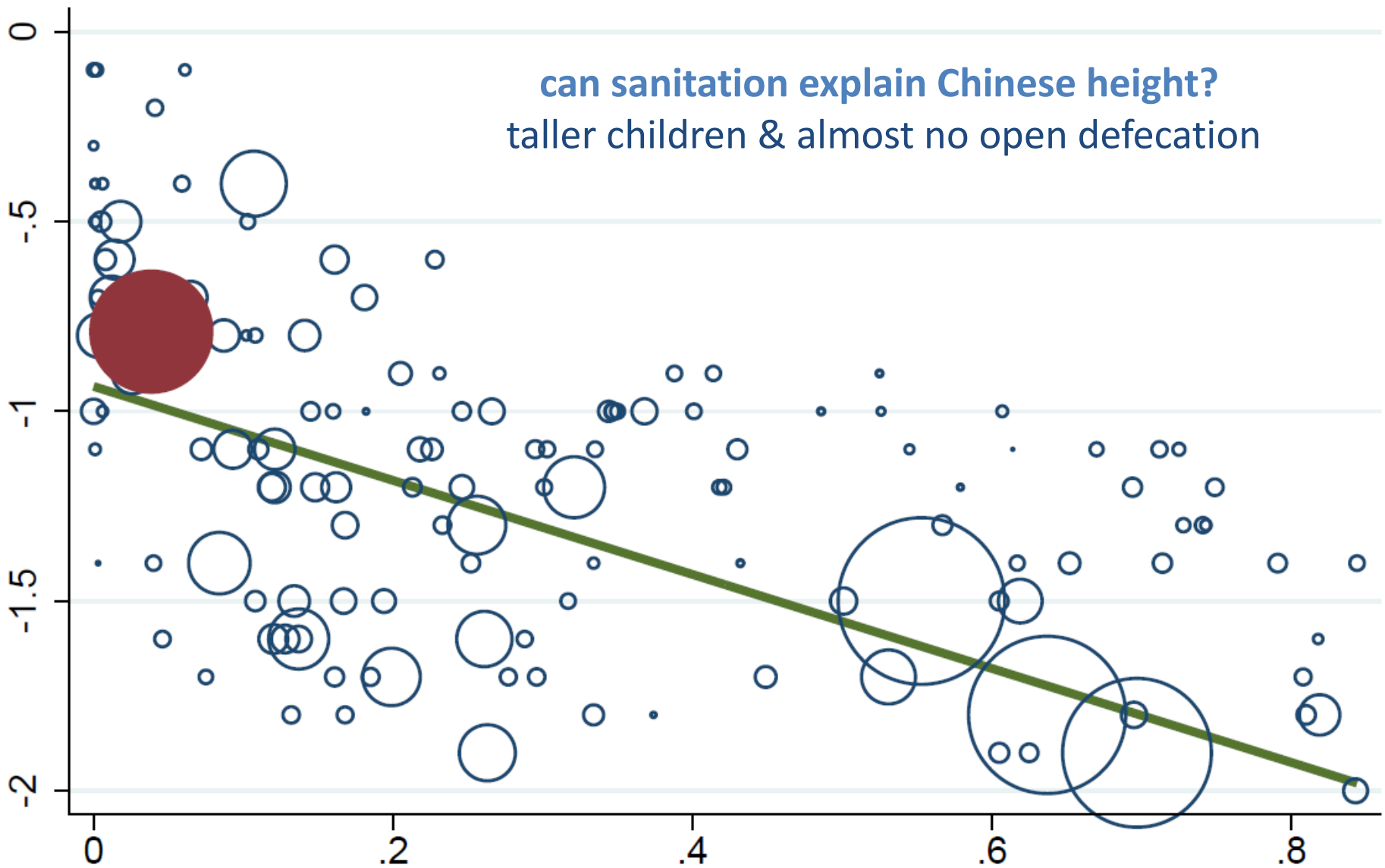
India

Niger



can sanitation explain Chinese height?  
taller children & almost no open defecation

height-for-age

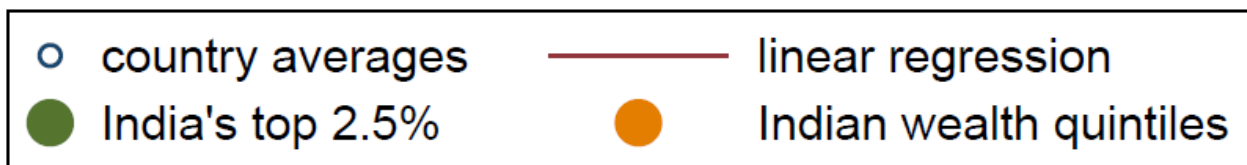
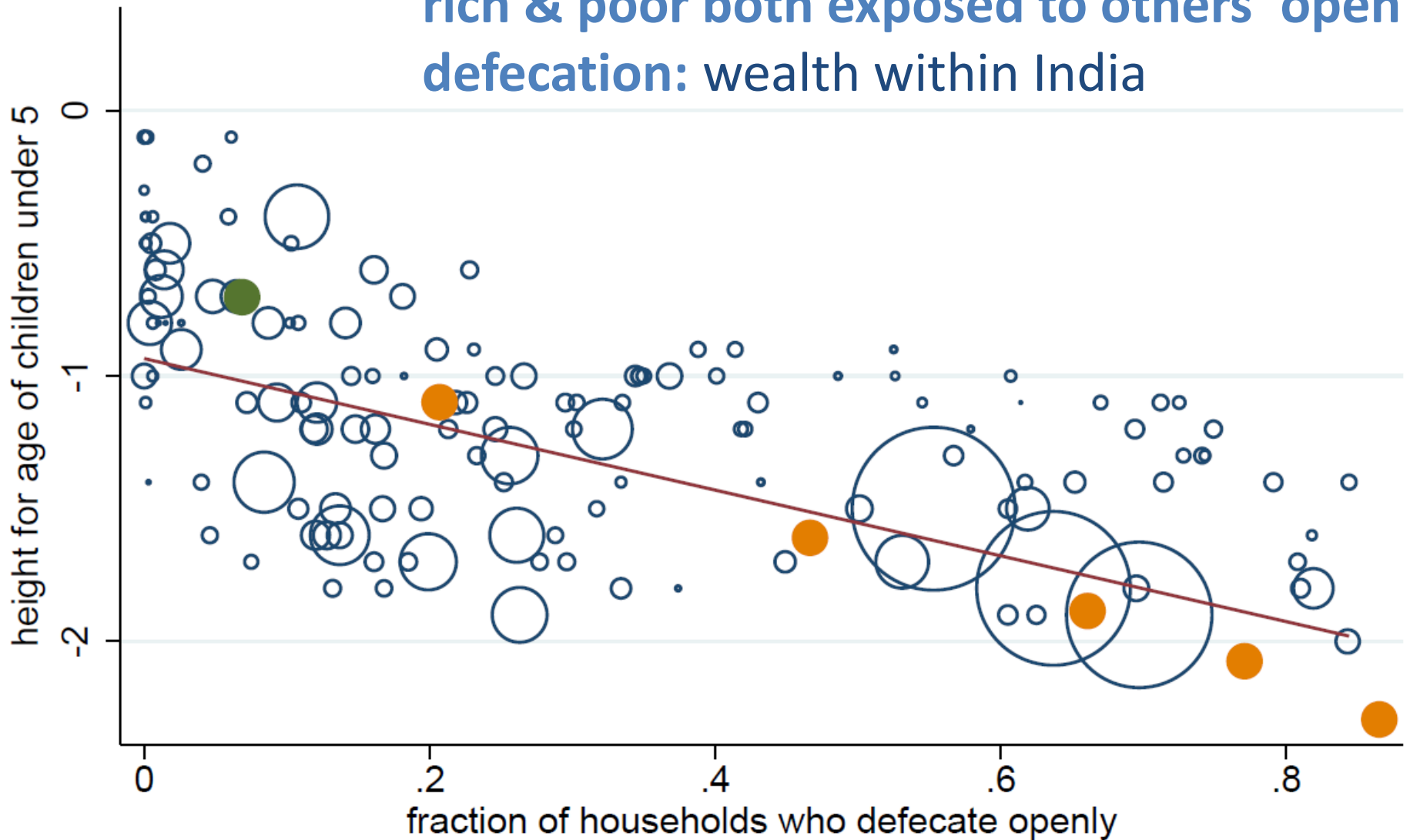


open defecation

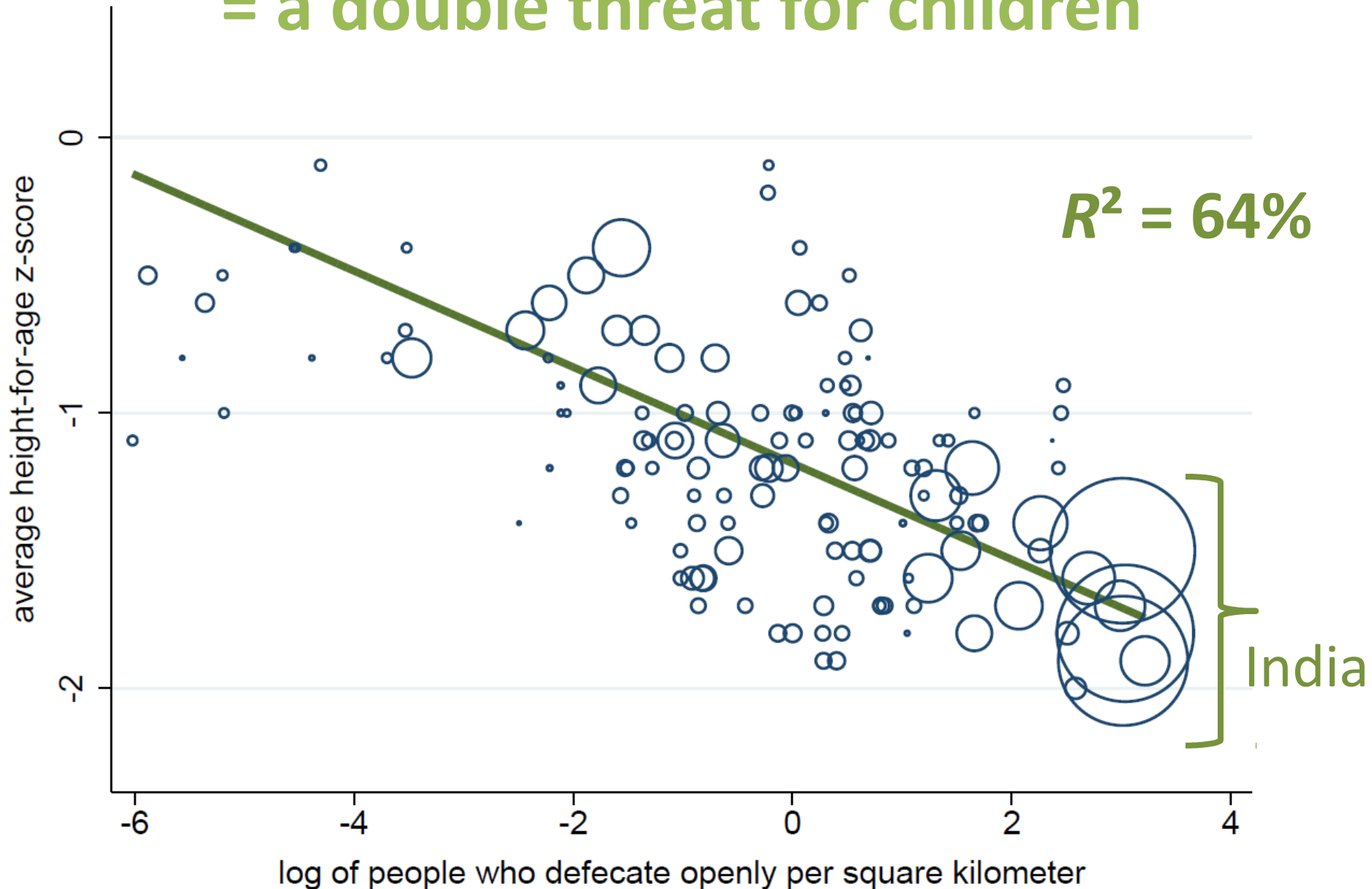


China

# rich & poor both exposed to others' open defecation: wealth within India



# open defecation + population density = a double threat for children



would any “good” property  
similarly predict height?

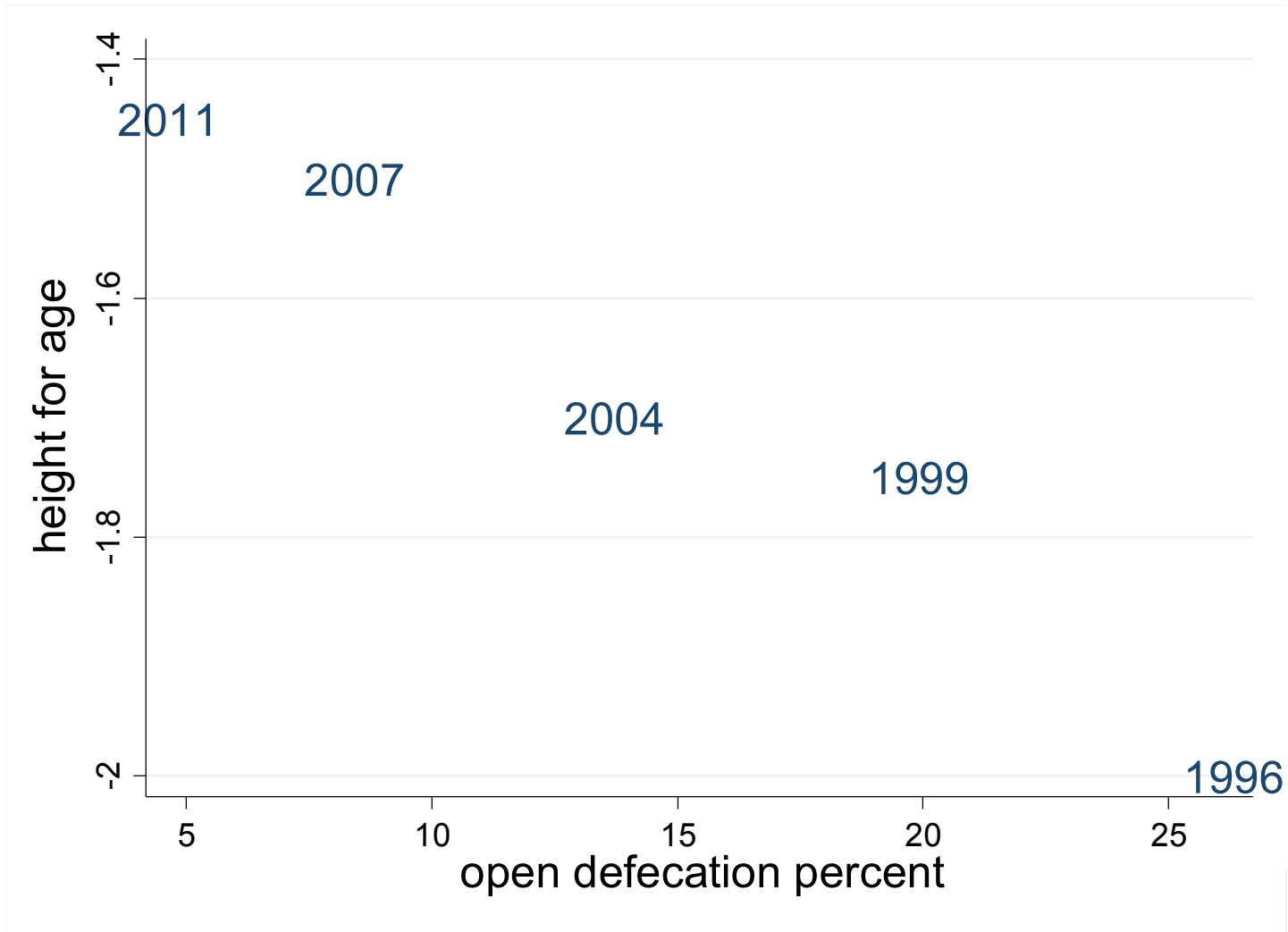
**Other variables cannot explain** international  
differences in child height, after accounting for  
**open defecation** and GDP.

female literacy    calorie deficit    electrification    democracy

breastfeeding    fed liquids    immunization    wealth

open defecation: **a human capital emergency**

# progress is possible: Bangladesh



Experiment like crazy!

Collect good data and  
learn from **whatever happens**



# let's talk over lunch!

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open defecation is  
**everybody's business.**

how can ending it be **everybody's job?**

[www.riceinstitute.org](http://www.riceinstitute.org) • [dean@riceinstitute.org](mailto:dean@riceinstitute.org)