Nutrition-Specific and Nutrition-Sensitive Interventions: Implications for programming in Nepal

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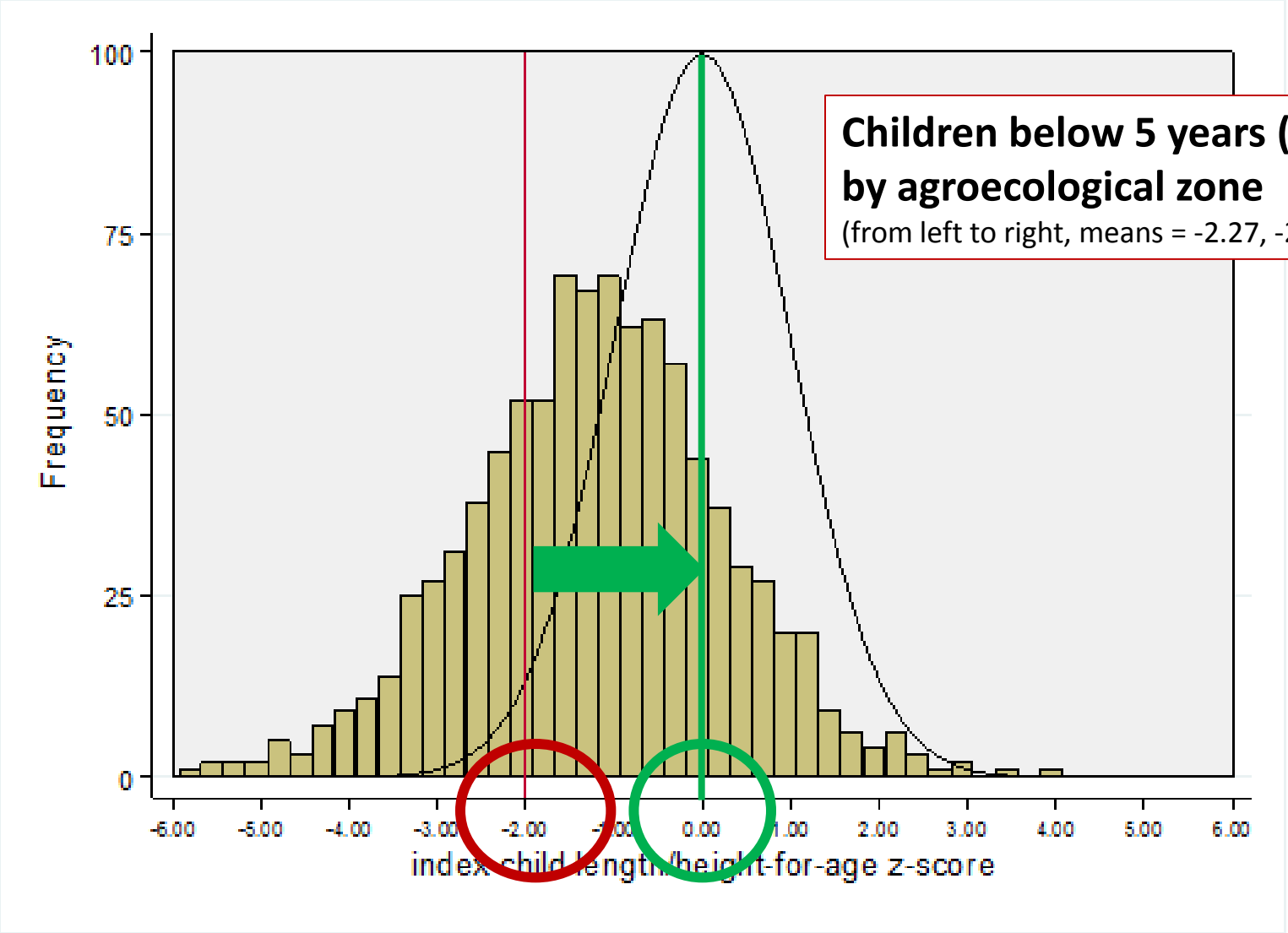
October 9, 2015


Children below 5 years (n=5,237)
by agroecological zone
(from left to right, means = -2.27, -2.02, -1.89)
Frequency
100
75
50
25
0
-6.00
-5.00
-4.00
-3.00
-2.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
index child length/height-for-age z-score

Lancet 2013

- Co-exposure of nutrit
  child deaths
- Prioritize stunting rec
  ways to prevent obe
- 1,000 day focus (but
- **10** known interventic
  stunting at 59m by 2(


THE LANCET

Maternal and Child Nutrition · June, 2013 www.thelancet.com

"The Series identifies a set of ten proven nutrition-specific interventions, which if scaled up from present population coverage to cover 90% of the need, would eliminate about 900 000 deaths of children younger than 5 years in the 34 high nutrition-burden countries —where 90% of the world's stunted children live."

Maternal and Child Nutrition

Please bear in mind:

a) High bar for standard of proof. Debate continues on "legitimate sources of evidence"

b) 'The 10' are not the only interventions possible

c) Not all 10 actions appropriate in every setting

d) Evidence base still evolving

Optimal maternal nutrition during pregnancy

- Maternal multiple micronutrient supplements to all
- Calcium supplementation to mothers at-risk of low intake[3]
- Maternal balanced energy protein supplements as needed
- Universal salt iodization

Infant and young child feeding

- Promotion of early, exclusive breastfeeding for 6 months; continued breastfeeding until 24 months
- Appropriate complementary feeding education in food secure populations and additional complementary food supplements in food insecure populations

Micronutrient supplementation in children at risk

- Vitamin A supplementation between 6-59 months age
- Preventive zinc supplements between 12-59 months of age

Management of acute malnutrition

- Supplementary feeding for moderate acute malnutrition
- Management of severe acute malnutrition

But, that's only a 20% reduction, leaving 80% of the problem to be solved!

- Recent global average rate of reduction in stunting has been c. 2.0% per year.
- But in 34 countries with highest burden (including Nepal), average has been just 1.7% per year.

	Cost
Salt iodisation	$68
Multiple micronutrient supplementation in pregnancy (includes iron-folate)	$472
Calcium supplementation in pregnancy	$1914
Energy-protein supplementation in pregnancy	$972
Vitamin A supplementation in childhood	$106
Zinc supplementation in childhood	$1182
Breastfeeding promotion	$653
Complementary feeding education	$269
Complementary food supplementation	$1359
SAM management	$2563
Total	$9559

Data are 2010 international dollars, millions.

Table 6: **Total additional annual cost of achieving 90% coverage with nutrition interventions, in 34 countries with more than 90% of the burden**

Source: Bhutta et al. 2013

What Makes Programmes Potentially Nutrition-sensitive?

- ✓ They address critical underlying determinants of undernutrition
- ✓ They are implemented at large scale and are effective at reaching the poor – who also have the highest malnutrition rates
- ✓ They can be leveraged to serve as delivery platforms for nutrition-specific interventions

Accelerating progress in nutrition requires increasing the nutritional impact of effective, large-scale, nutrition-sensitive development programmes

Source: Lancet series 2013

Key Findings

Programmes in these sectors are successful at addressing several underlying determinants of nutrition, but *evidence of nutritional impact is still limited*

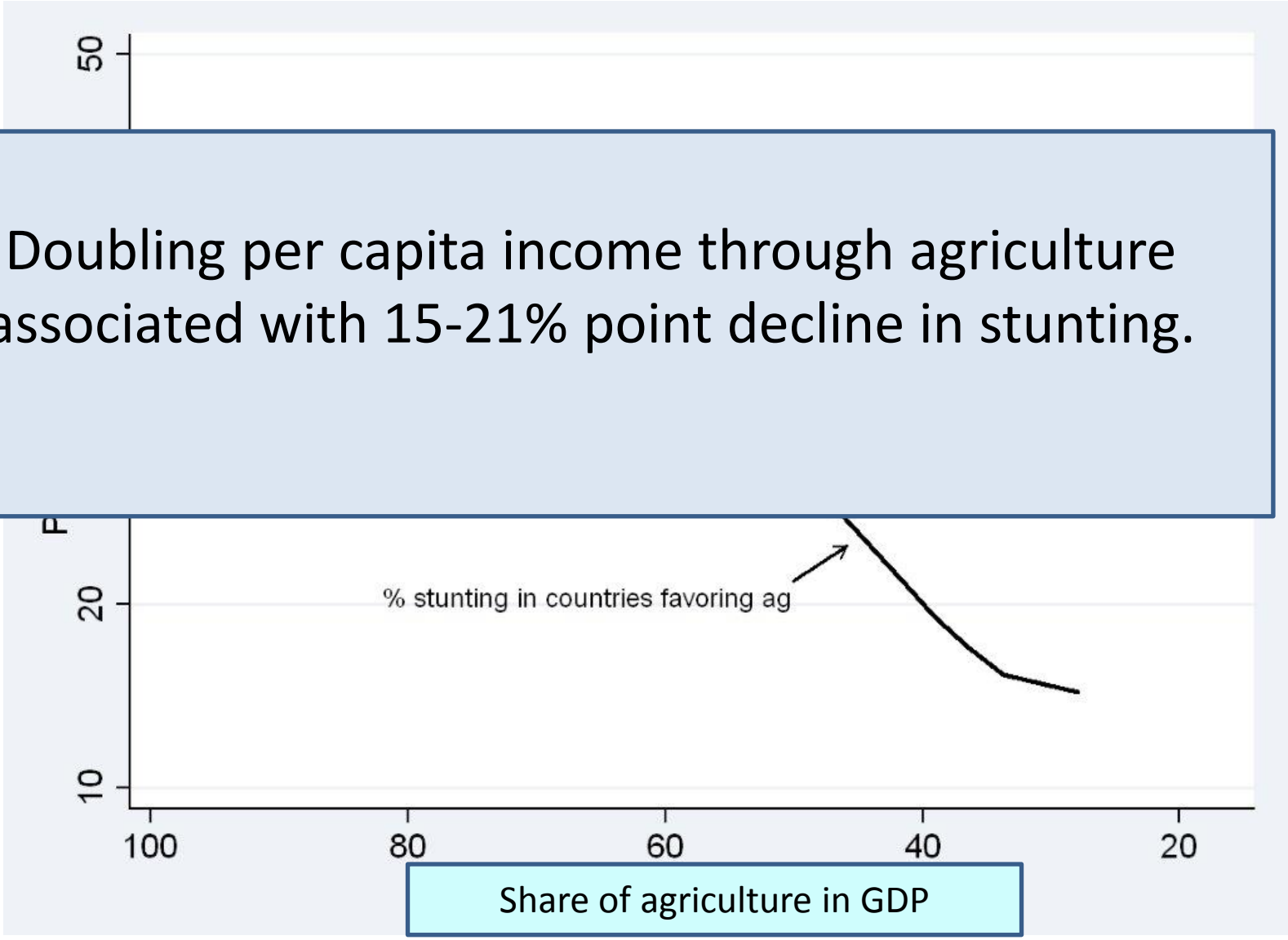
Source: Lancet series 2013

"There is no existing literature that explicitly tests whether…nutrition-sensitive growth really has a large impact on changes in malnutrition over the medium term."

Derek Headey (2011) *Turning Economic Growth into Nutrition-Sensitive Growth* (IFPRI 2020 Conference)

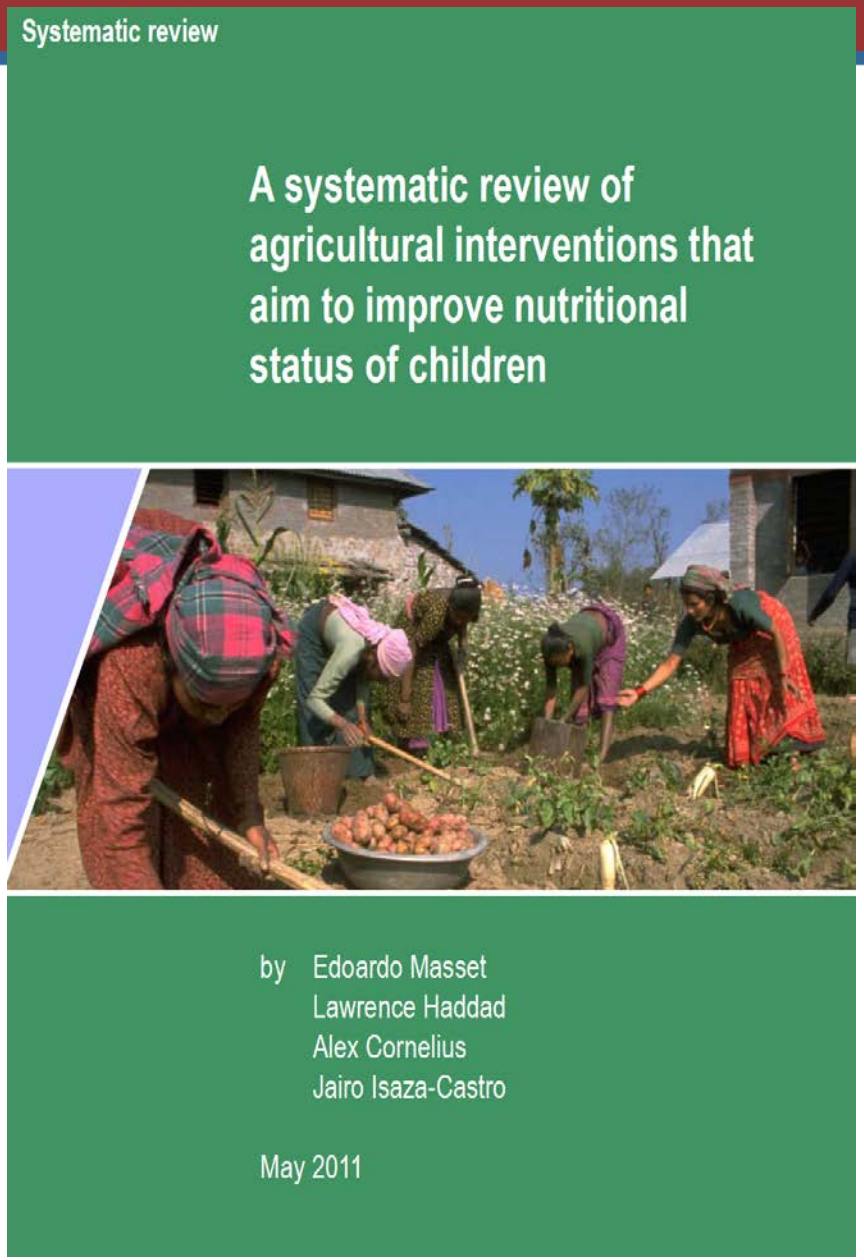
29 developing countries, 1980 - 2007

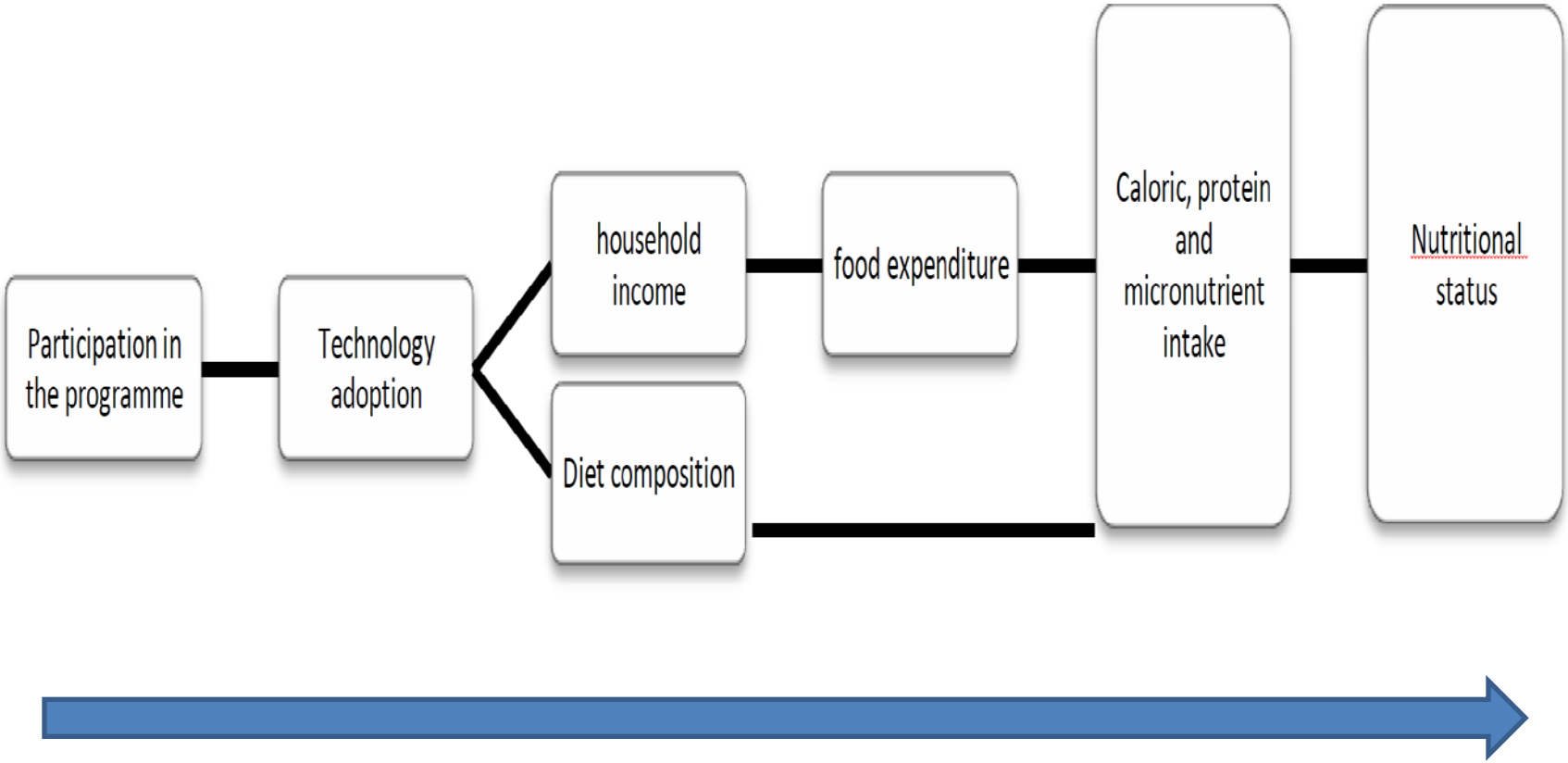
Doubling per capita income through agriculture associated with 15-21% point decline in stunting.



Source: Webb and Block (2012)

Systematic review of agricultural interventions aiming to improve children's nutrition by improving the incomes and diet of the rural poor.





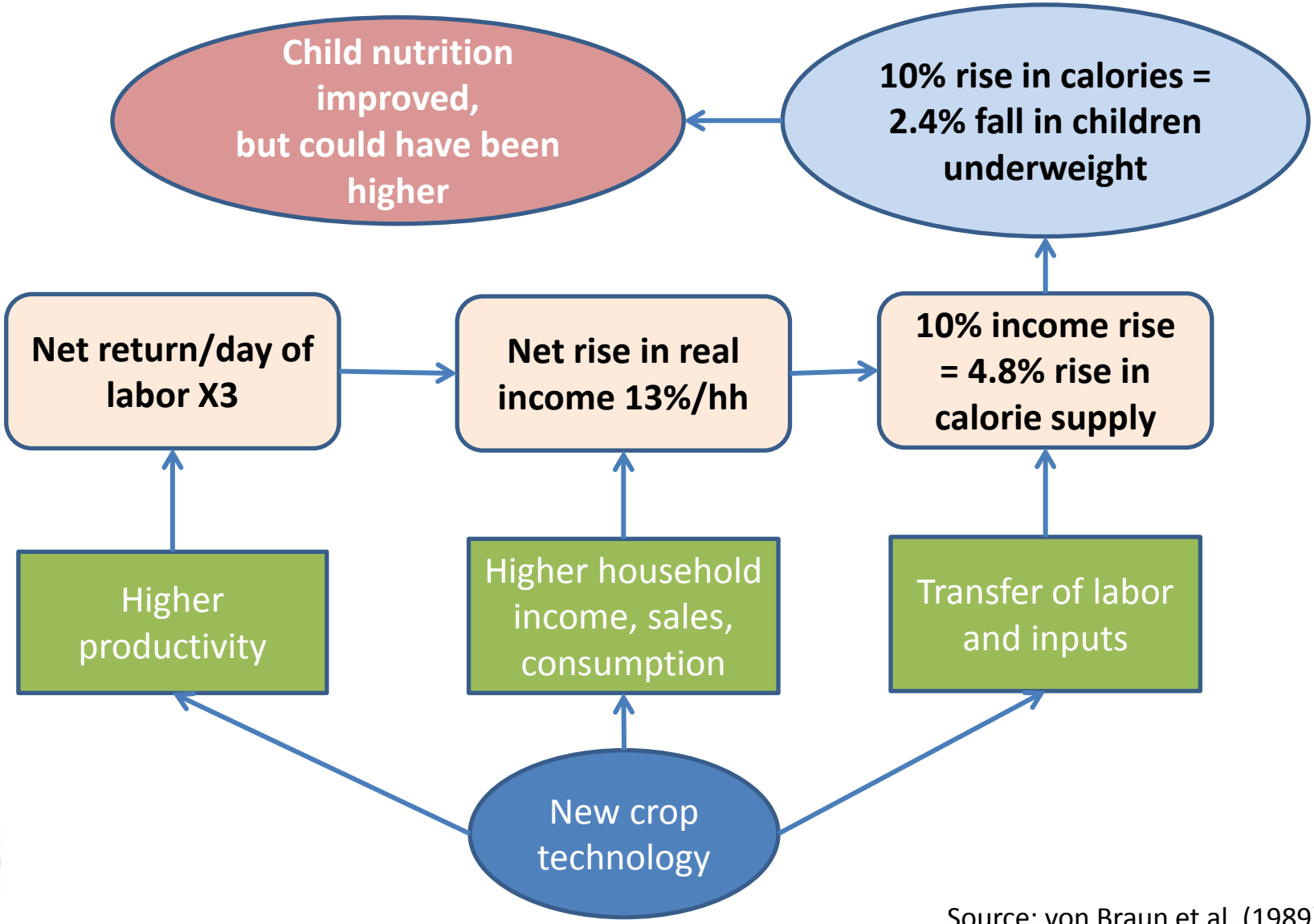
Source: Massett et al. (2011)

Masset et. al. (2011) report that agricultural interventions have:

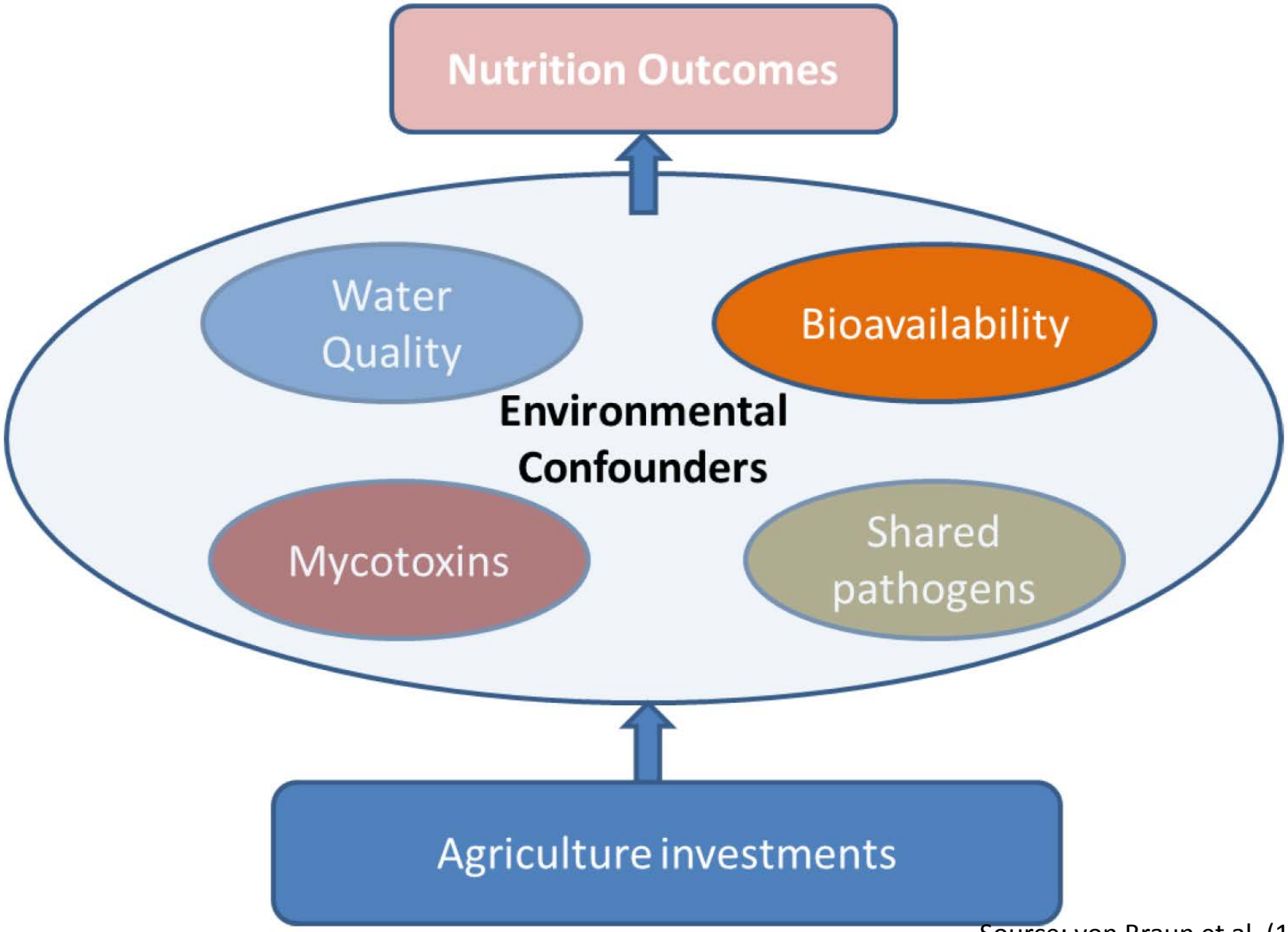
a) Positive impacts demonstrated on **farm output/productivity**.

b) "Poor evidence of impact on households' **net income**."
c) "Little evidence…on changes in **diets** of the poor."

d) None assessed improved **quality of whole diet** (tradeoffs).
e) 9 studies tested impact on **Vitamin A** (only 4 were positive).
f) "**No evidence of impact on stunting, wasting**."



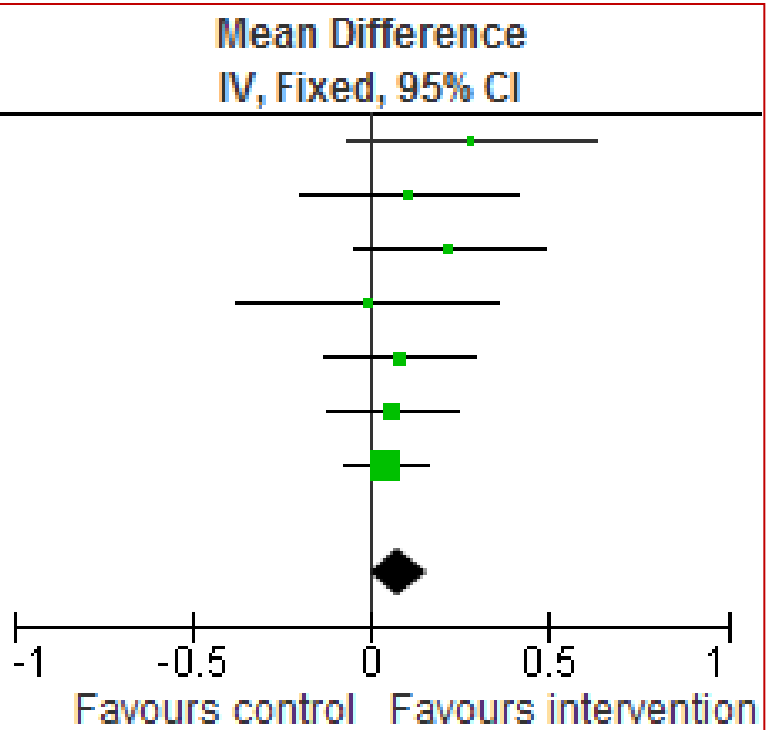
Source: von Braun et al. (1989)



Source: von Braun et al. (1989)

Suggestive evidence that WASH improves height-for-age

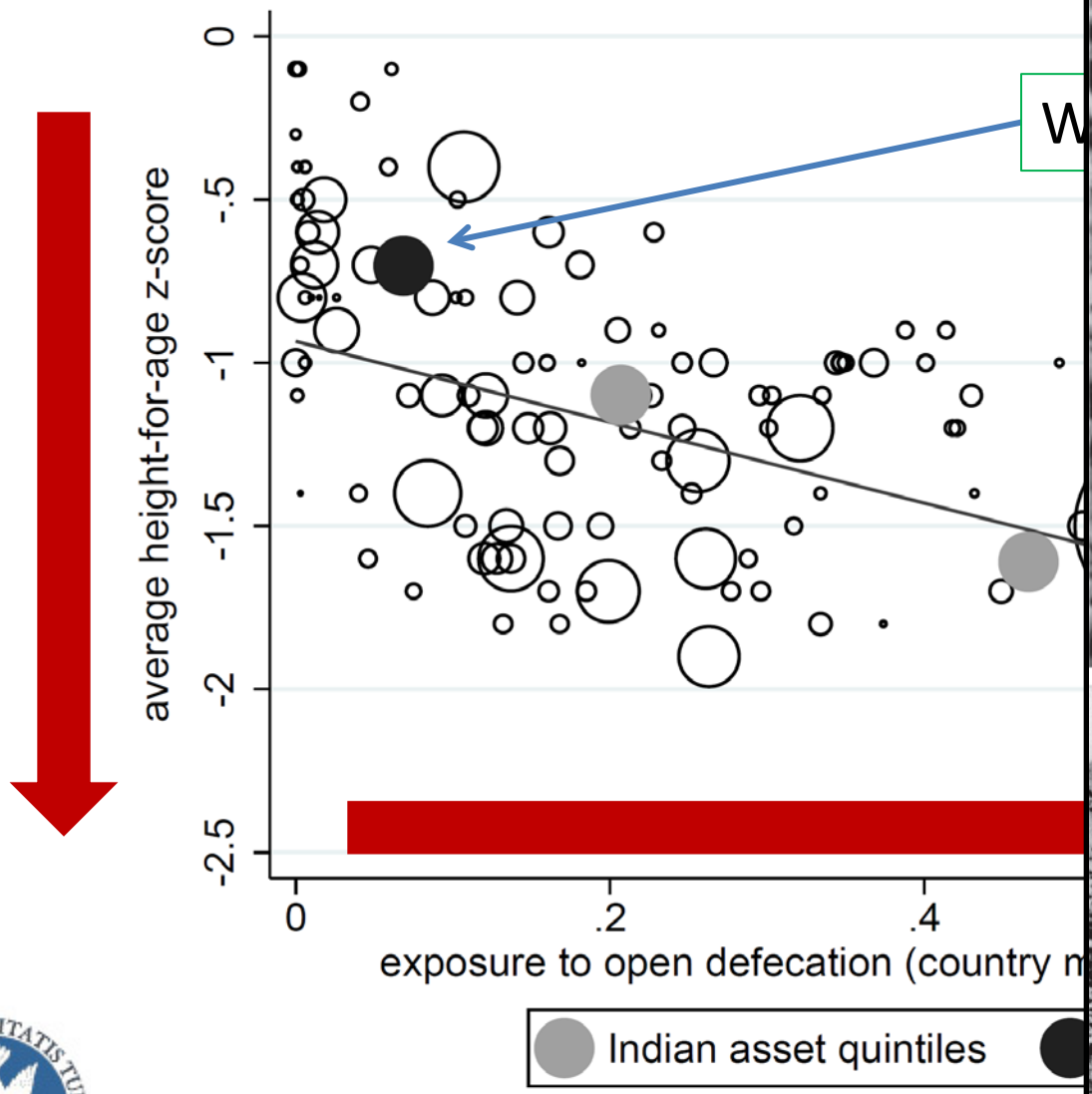
Study or Subgroup	Mean Difference IV, Fixed, 95% CI
Du Preez 2010	0.28 [-0.06, 0.62]
Du Preez 2011	0.11 [-0.19, 0.41]
McGuigan 2011	0.22 [-0.04, 0.48]
Luby 2004	-0.01 [-0.37, 0.35]
Luby 2006 (Soap)	0.08 [-0.13, 0.29]
Luby 2006 (Soap & Floc)	0.06 [-0.12, 0.24]
Luby 2006 (Floc & Bleach)	0.04 [-0.08, 0.16]
Total (95% CI)	**0.08 [0.00, 0.16]**

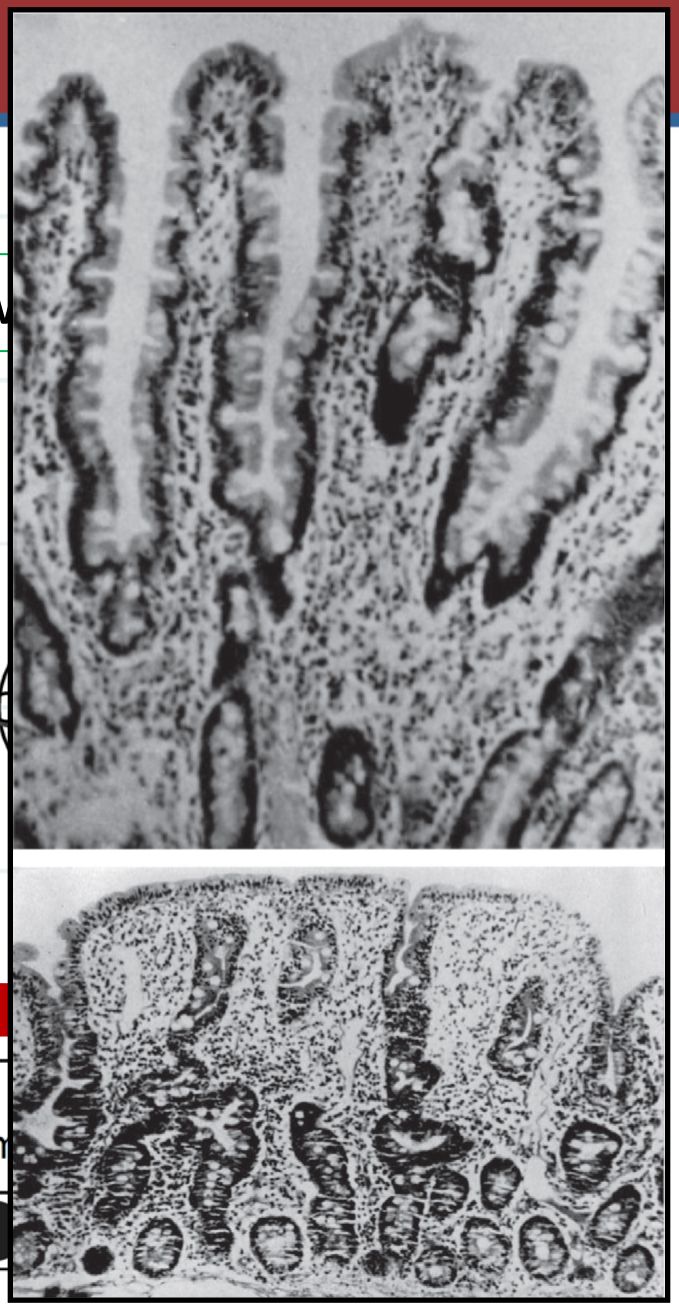


Cochrance review:

- 5 cRCTs involving 4,627 children aged <5 years

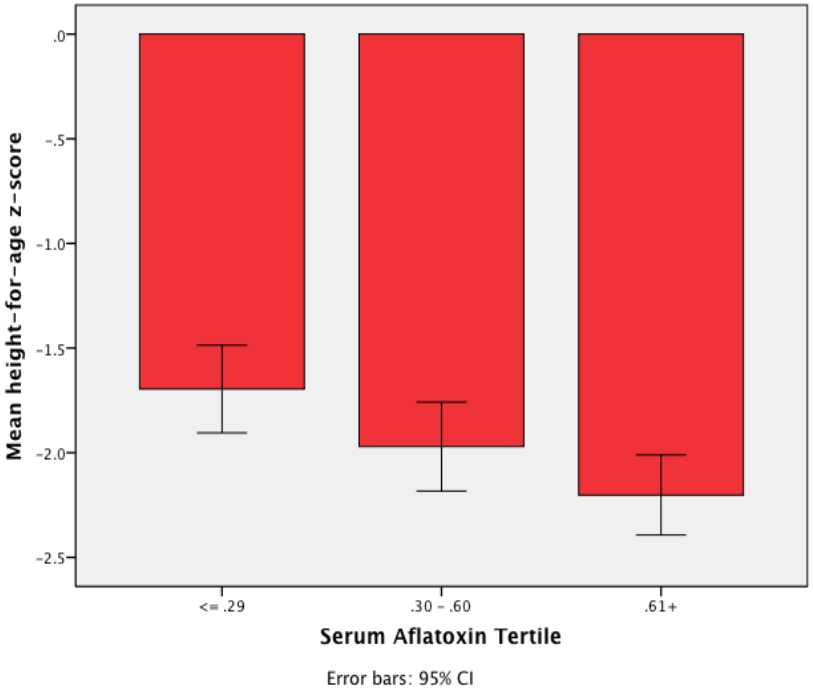
Source: Dangour et al. (Nov 2015)



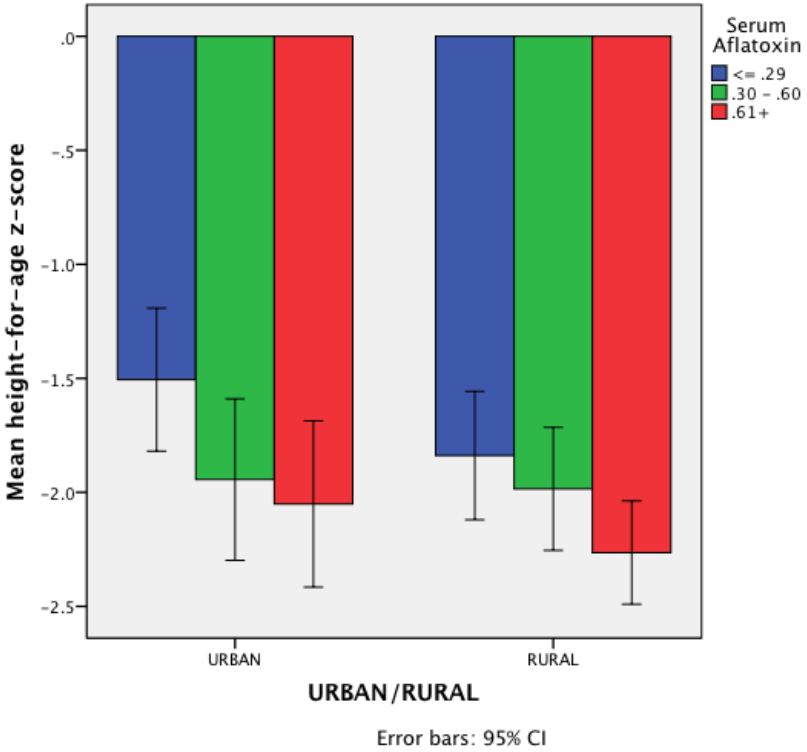


Source: Spears (2013)
International variation in height explained by sanitation

Stunting (HAZ) by aflatoxin levels

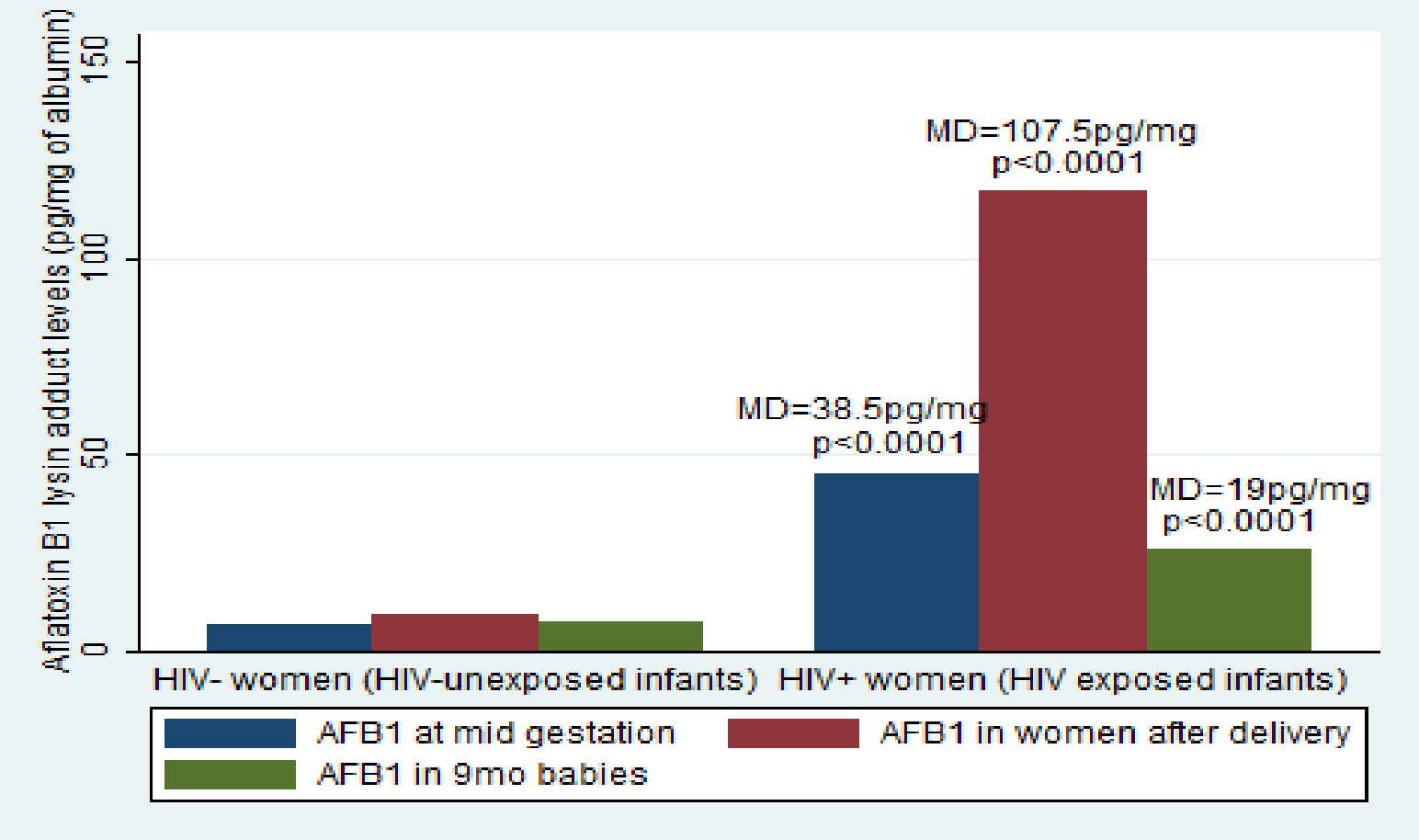


Stunting (HAZ) by aflatoxin level, urban versus rural

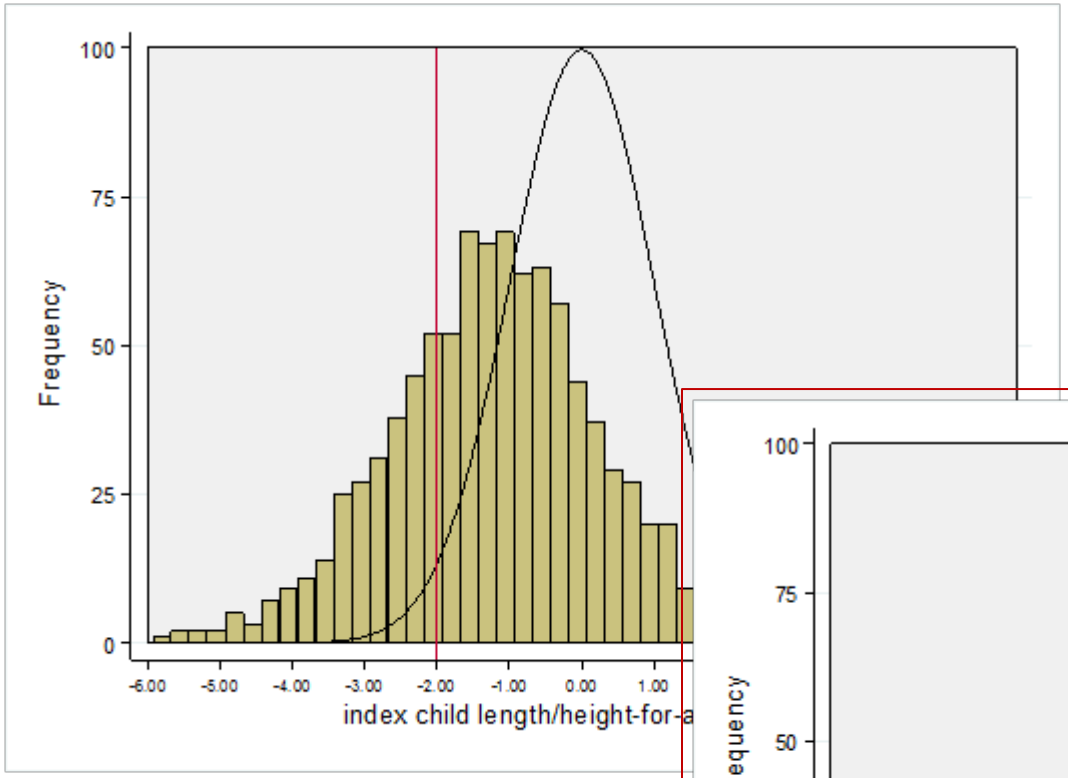


Source: Unpublished data, Timor Leste

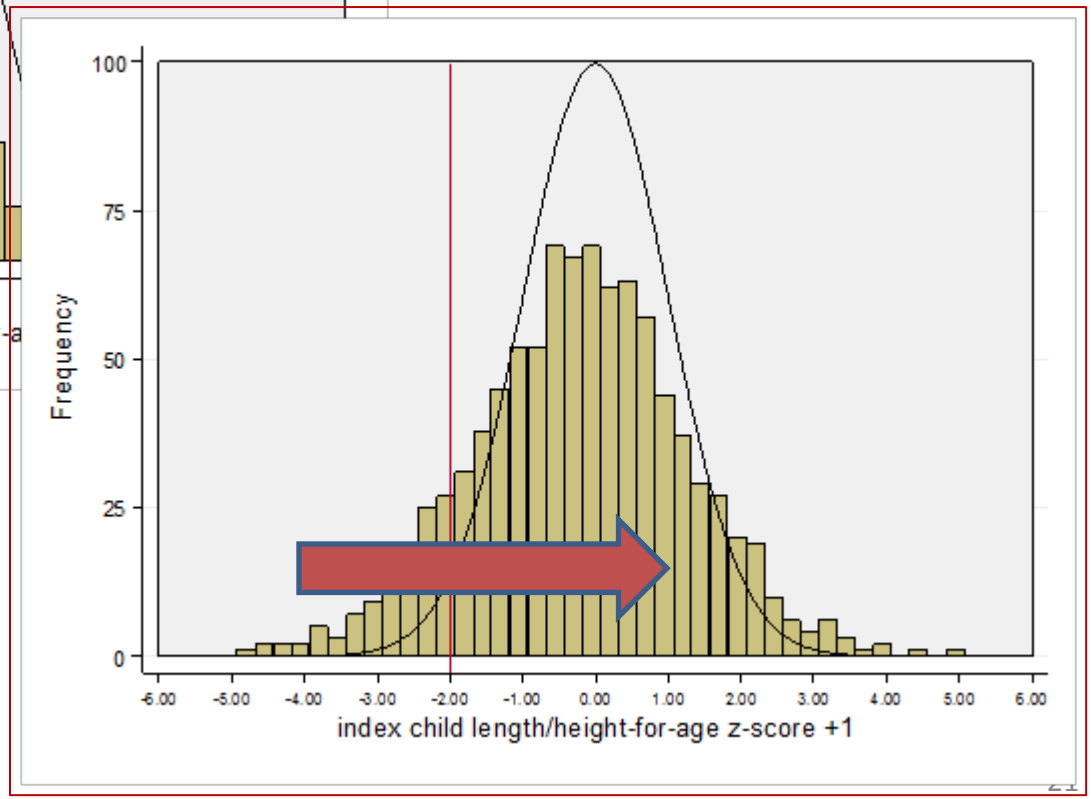
AFLATOXIN LEVELS HIGHER IN HIV (+) WOMEN AND THEIR INFANTS



Source: Unpublished data, Uganda



Nepal (DHS 2011)
Child stunting distribution



Nepal (DHS 2011)
Child stunting distribution
Shifted +1 Standard Deviation

Conclusions

- 10 Lancet interventions address c.20% of stunting.
- The 'other 80%' requires multi-sector actions – agriculture, safety nets, health.
- Much research still needed on:
  - Cost-effectiveness of packages of interventions.
  - Roles of WASH, food safety, microbiome, heavy metals and toxins, liver metabolism (drug-nutrient interactions), etc.