Determinants of stunting inequalities in the Philippines

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The Determinants of the Socioeconomic Inequality and the Trajectory of Child Stunting in the Philippines

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What explains the large disparity in child stunting in the Philippines? A decomposition analysis

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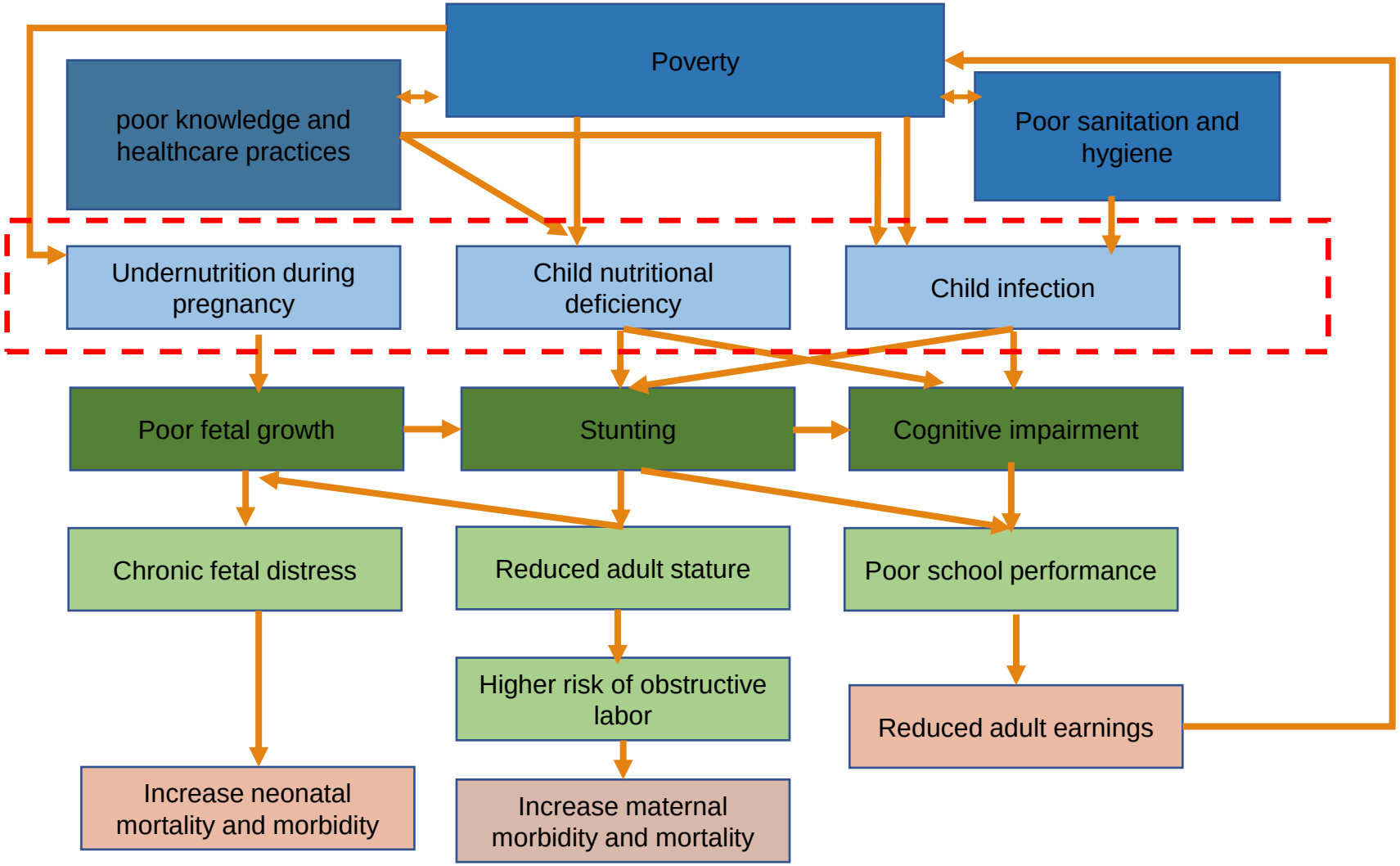
Abstract

Objective: About one-third of under-five Filipino children are stunted, with significant socio-economic inequality. This study aims to quantify factors that explain the large gap in stunting between poor and non-poor Filipino children.
Design: Using the 2015 Philippine National Nutrition Survey, we conducted a linear probability model to examine the determinants of child stunting and then an Oaxaca-Blinder decomposition to explain the factors contributing to the gap in stunting between poor and non-poor children.
Setting: Philippines.
Participants: 1881 children aged 6–23 months participated in this study.
Results: The overall stunting prevalence was 38·5 % with a significant gap between poor and non-poor (45·0 % *v.* 32·0 %). Maternal height, education and maternal nutrition status account for 26 %, 18 % and 17 % of stunting inequality, respectively. These are followed by quality of prenatal care (12 %), dietary diversity (12 %) and iron supplementation in children (5 %).
Conclusions: Maternal factors account for more than 50 % of the gap in child stunting in the Philippines. This signifies the critical role of maternal biological and socio-economic circumstances in improving the linear growth of children.

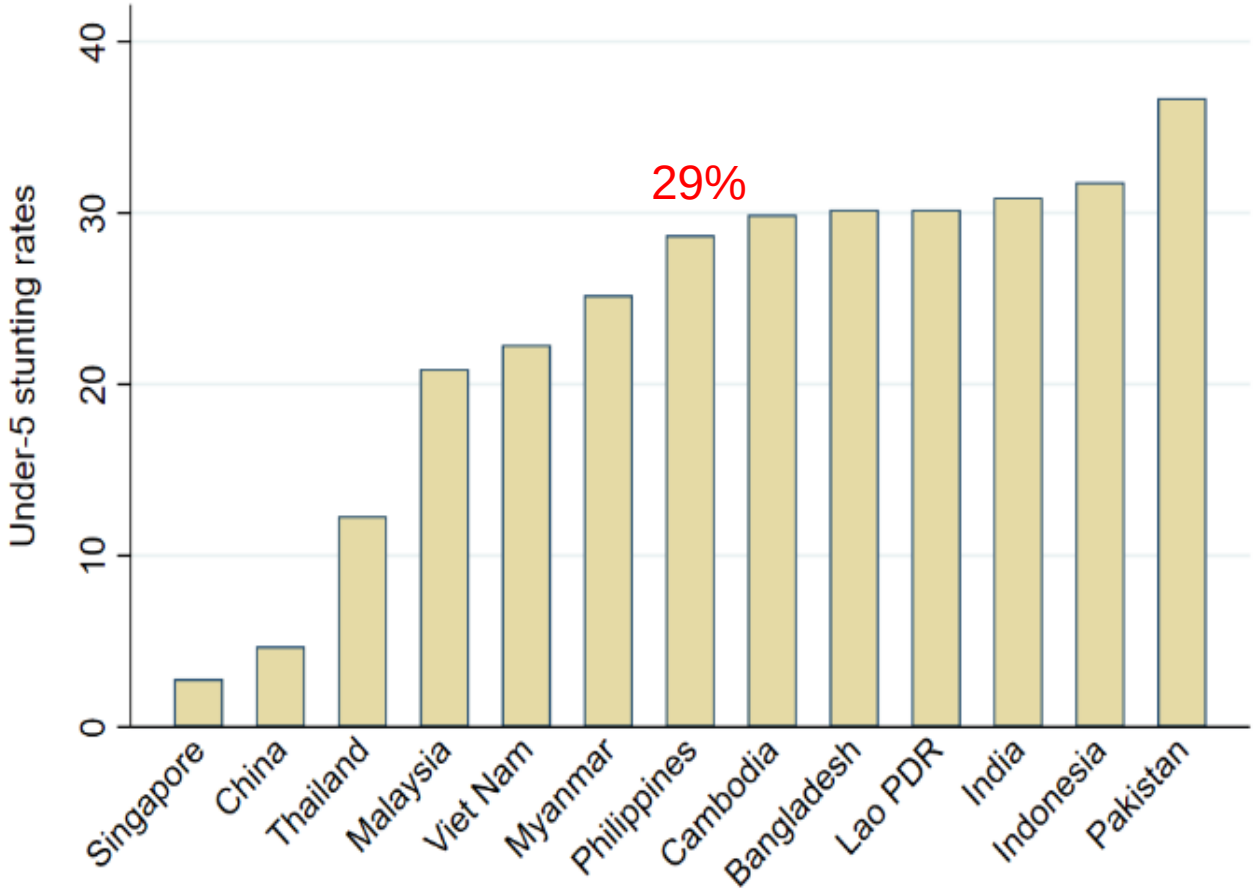
Keywords
Malnutrition
Stunting
Inequality
Philippines
Oaxaca-Blinder

Stunting, *or being too short for one's age,* is defined as a height that is more than two standard deviations below the World Health Organization (WHO) Child Growth Standards median

Spillover effects of stunting.

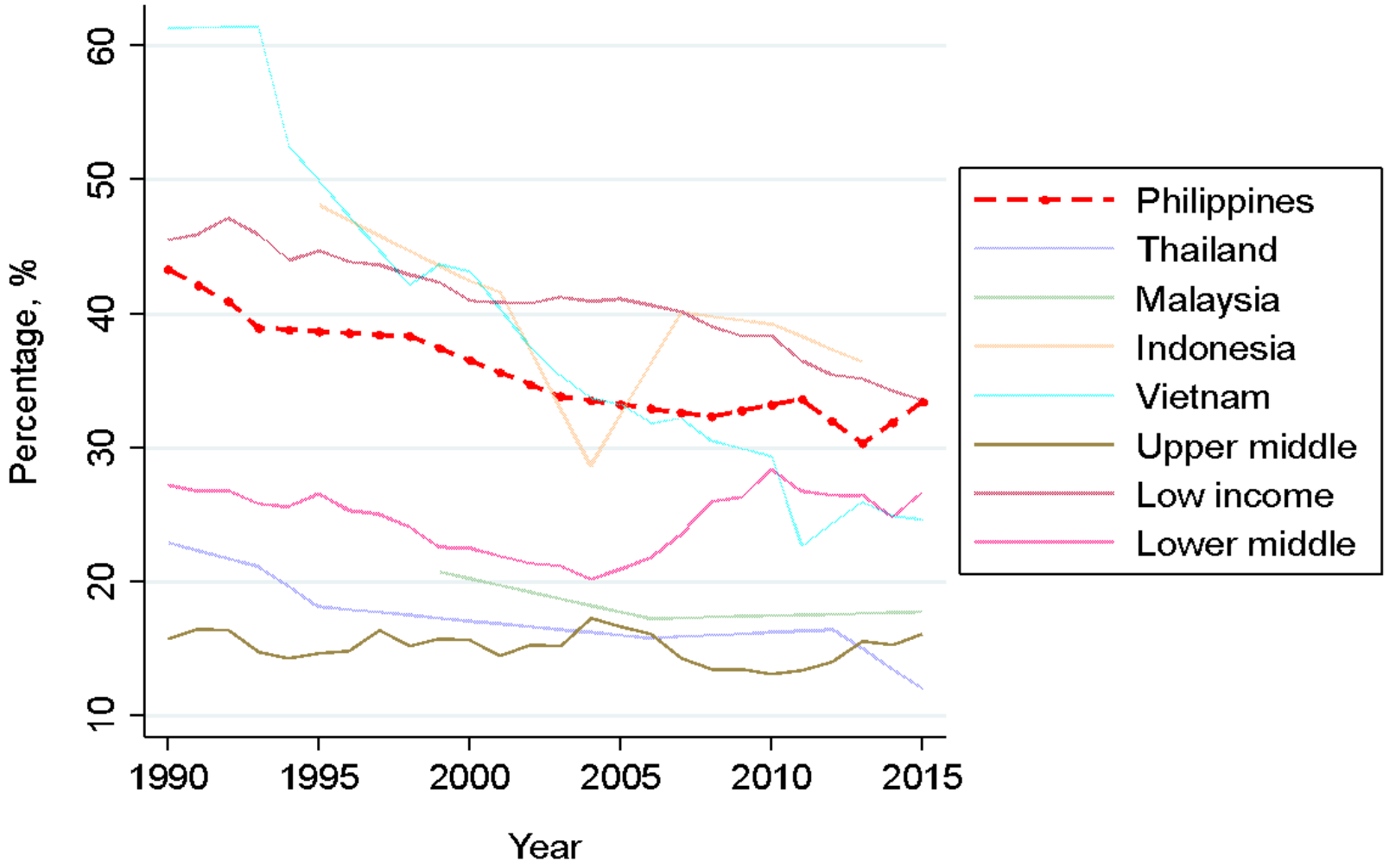


Almost a third of Filipino children are stunted.



Income	Average stunting rates
High income: OECD	2.8
High income: non-OECD	11.2
Low income	35.4
Lower middle income	27.3
Upper middle income	13.4

Stunting rates barely improved in the Philippines in recent decades.



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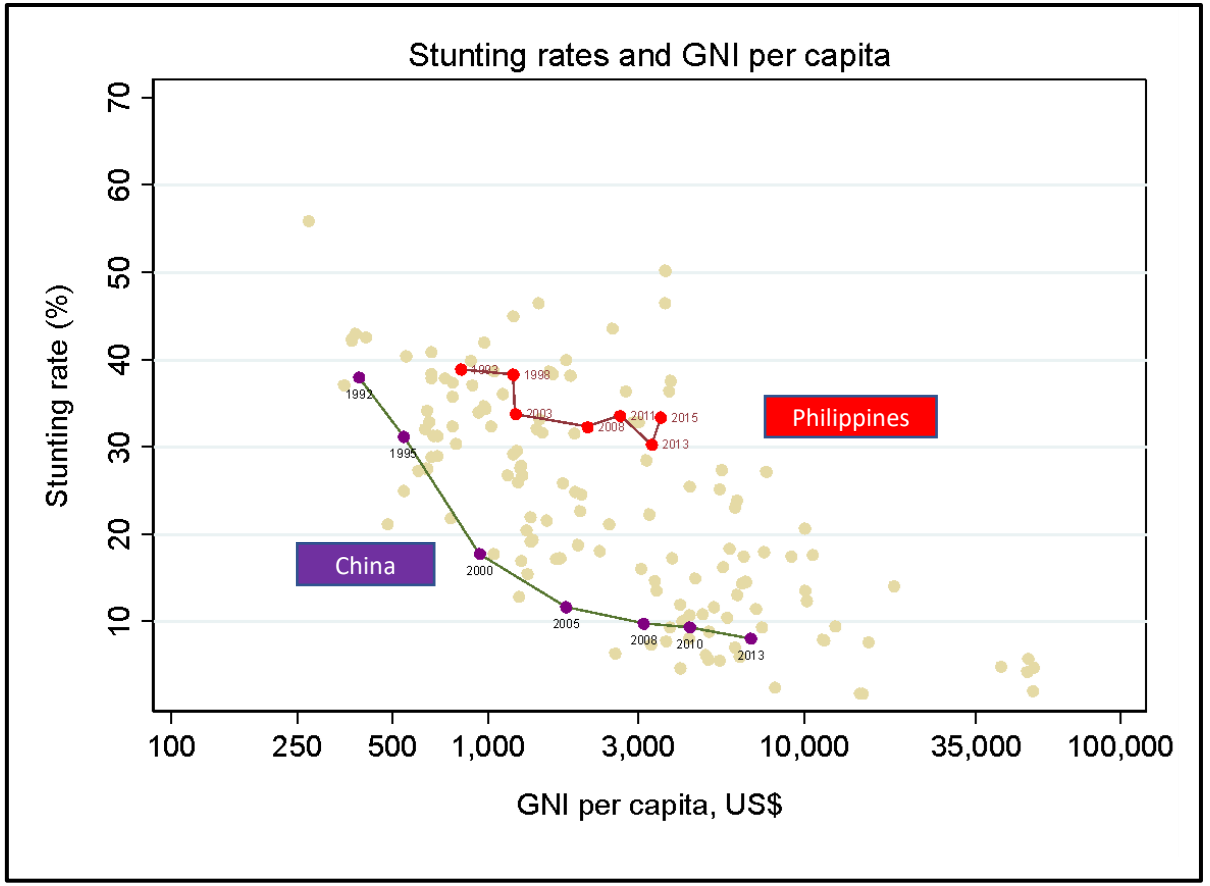
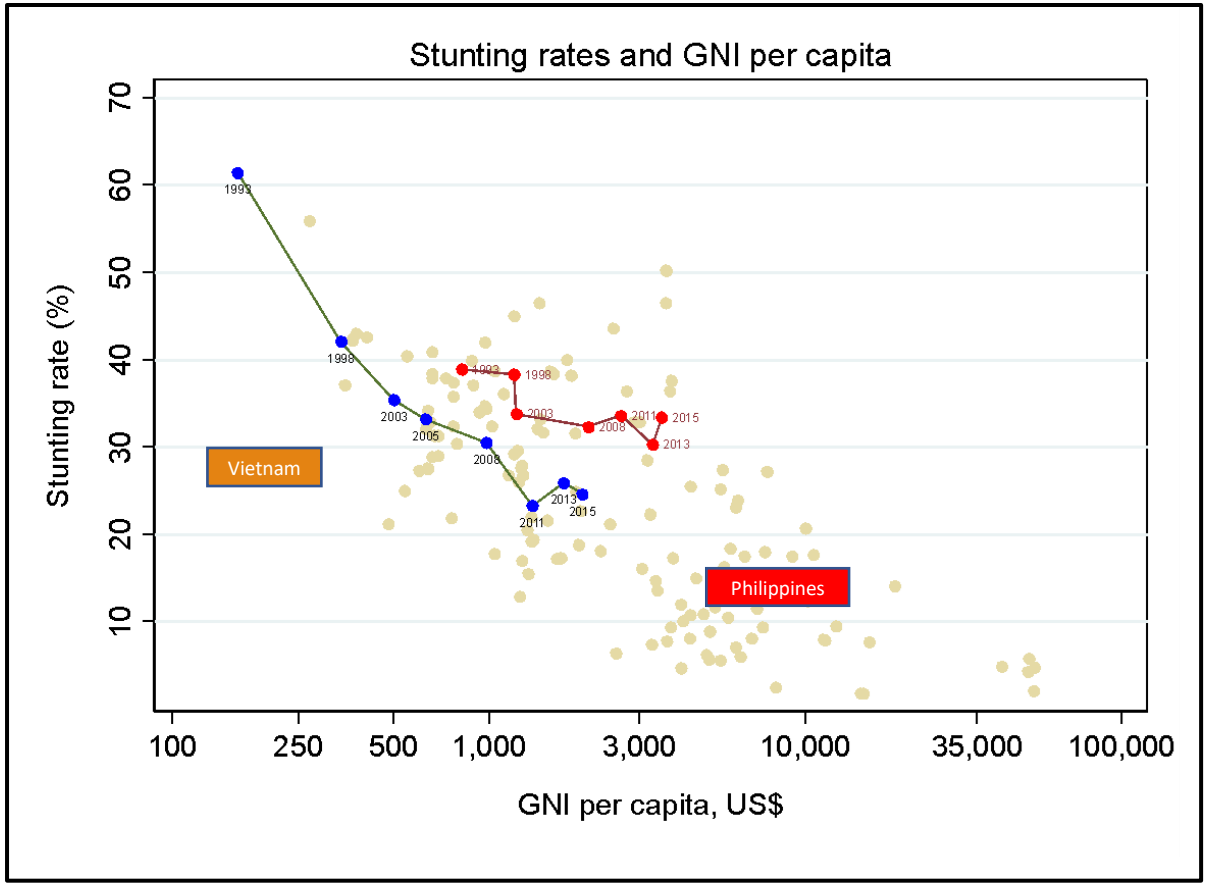
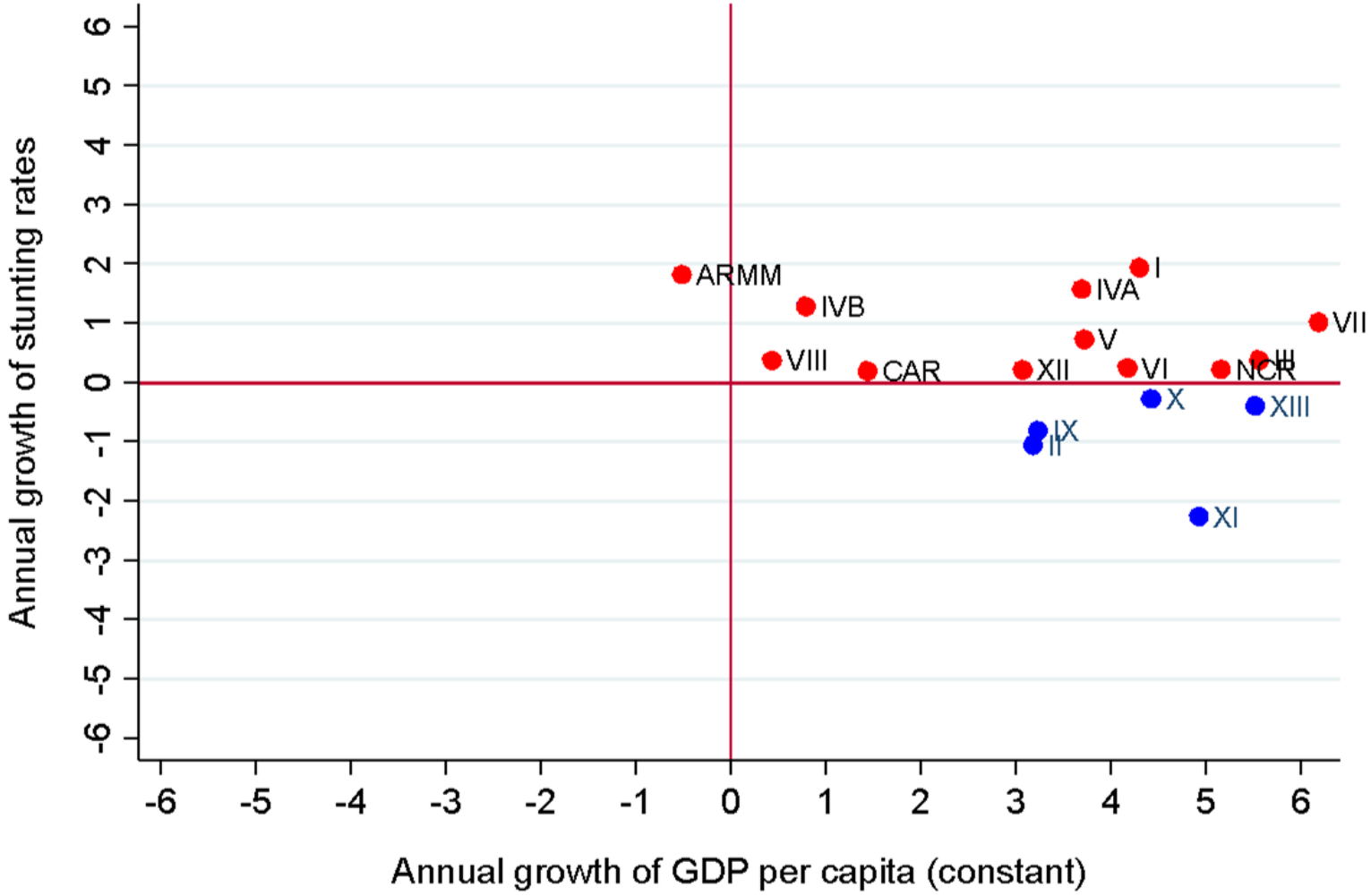


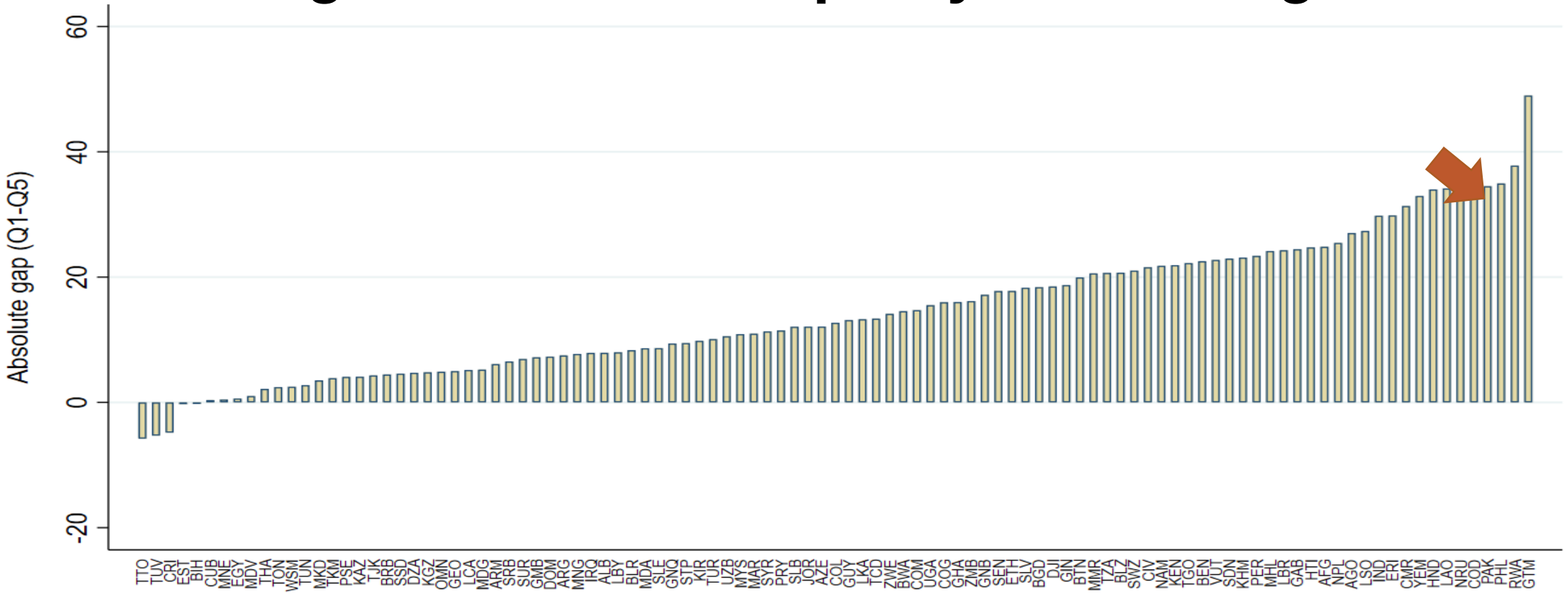


The paradox of economic growth and chronic malnutrition: regions had gotten rich but stunting had gotten worse.



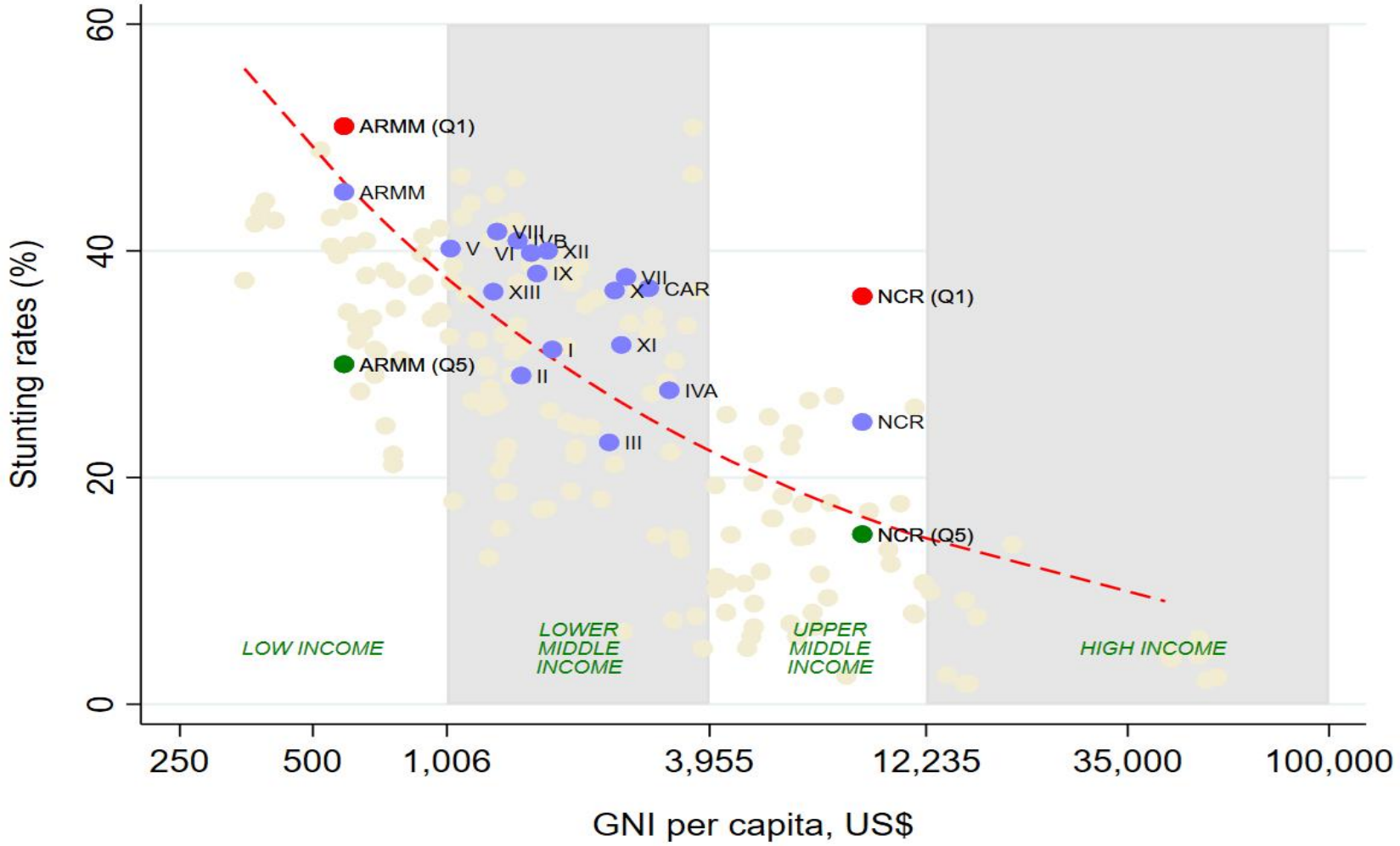
Note years: 2000-2018

Inequalities: The Philippines is one of the countries with the largest absolute disparity in stunting rates.

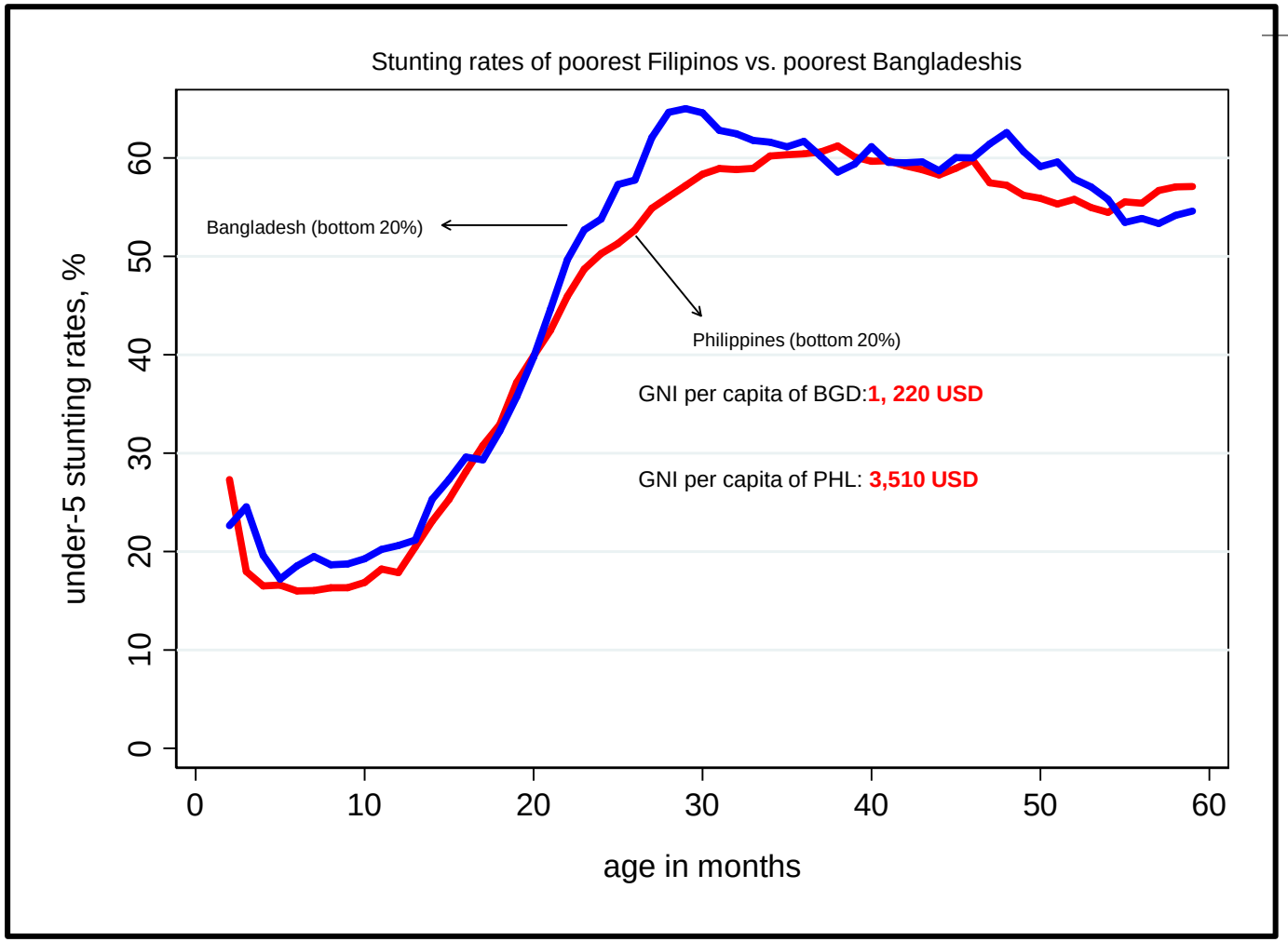


The **22-percentage point** absolute difference **between poor** (bottom 80%) and **non-poor** (top 20%) makes the Philippines as **one of the countries with the highest level of disparity.**

Inequalities: The disparity across socio-economic status is extraordinarily large



Stunting rates among the poor are comparable to countries with much lower income



Source: PHL: Analysis of the 2015 NNS. Smoothened using moving averages. BGD: Analysis of Bangladesh NDHS 2014

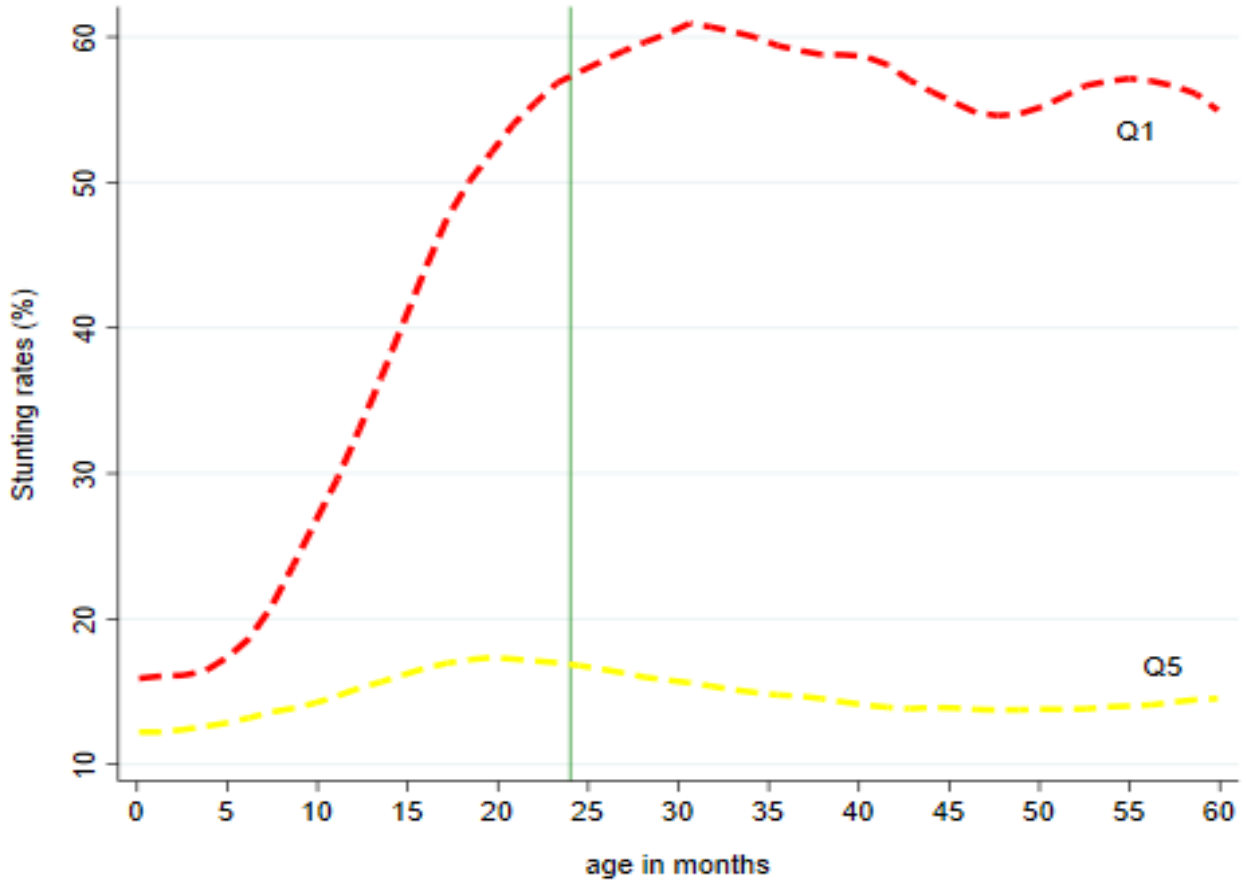
The stunting rates of the poorest Filipinos can be compared to the stunting rates of poorest Bangladeshis, on average. Filipinos is much richer than Bangladesh. The GNI per capita of the Philippines is 3 times larger than Bangladesh, but the stunting rates of the poorest population are comparable (46% vs. 47%).

The average household income of bottom 20%:
BGD: 3,090 USD (PPP)

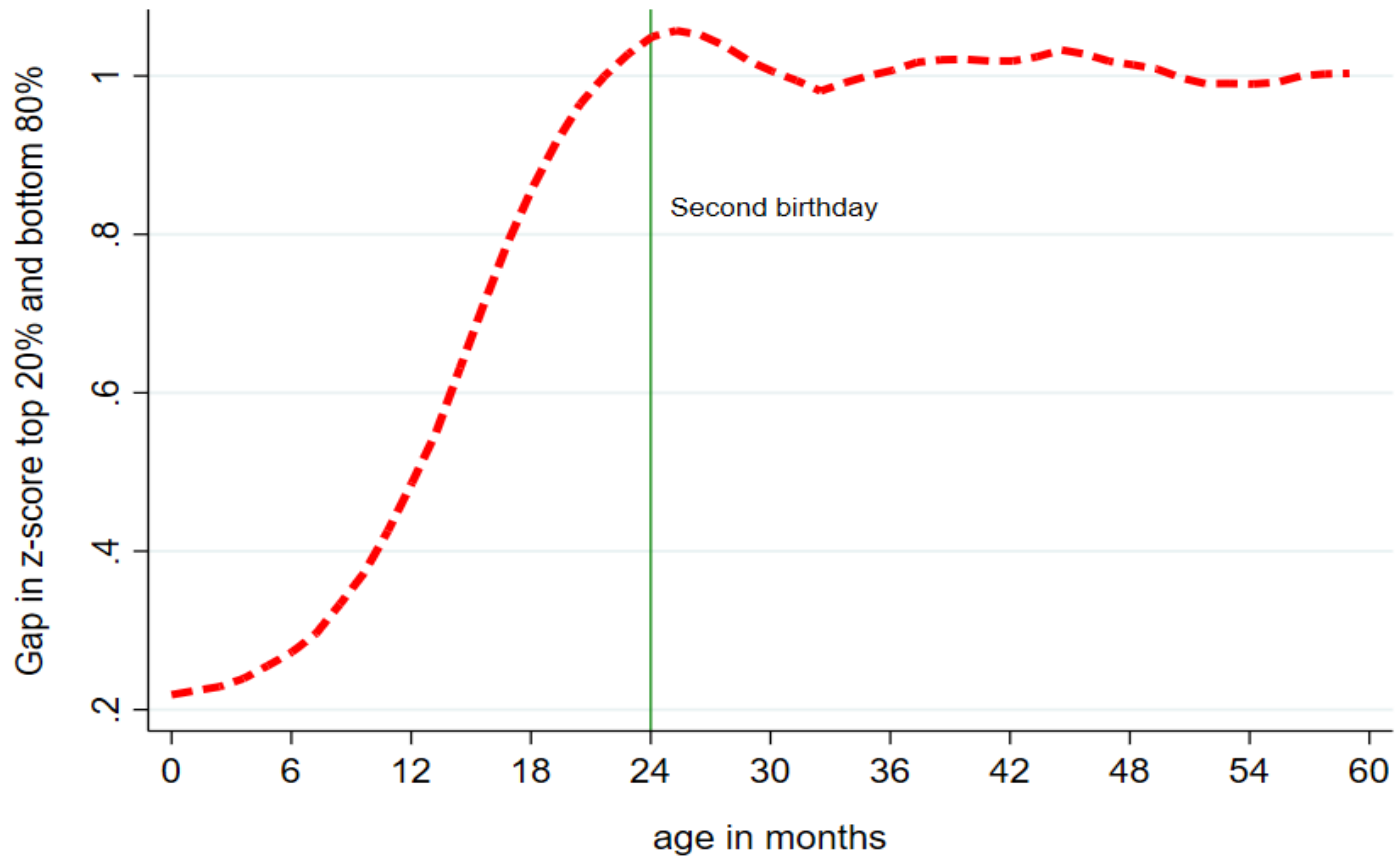
The average household income of bottom 20%
PHL: 3,950 USD (PPP)

Inequalities: The disparity across socio-economic status is extraordinarily large

Prevalence of stunting, by age and socio-economic status

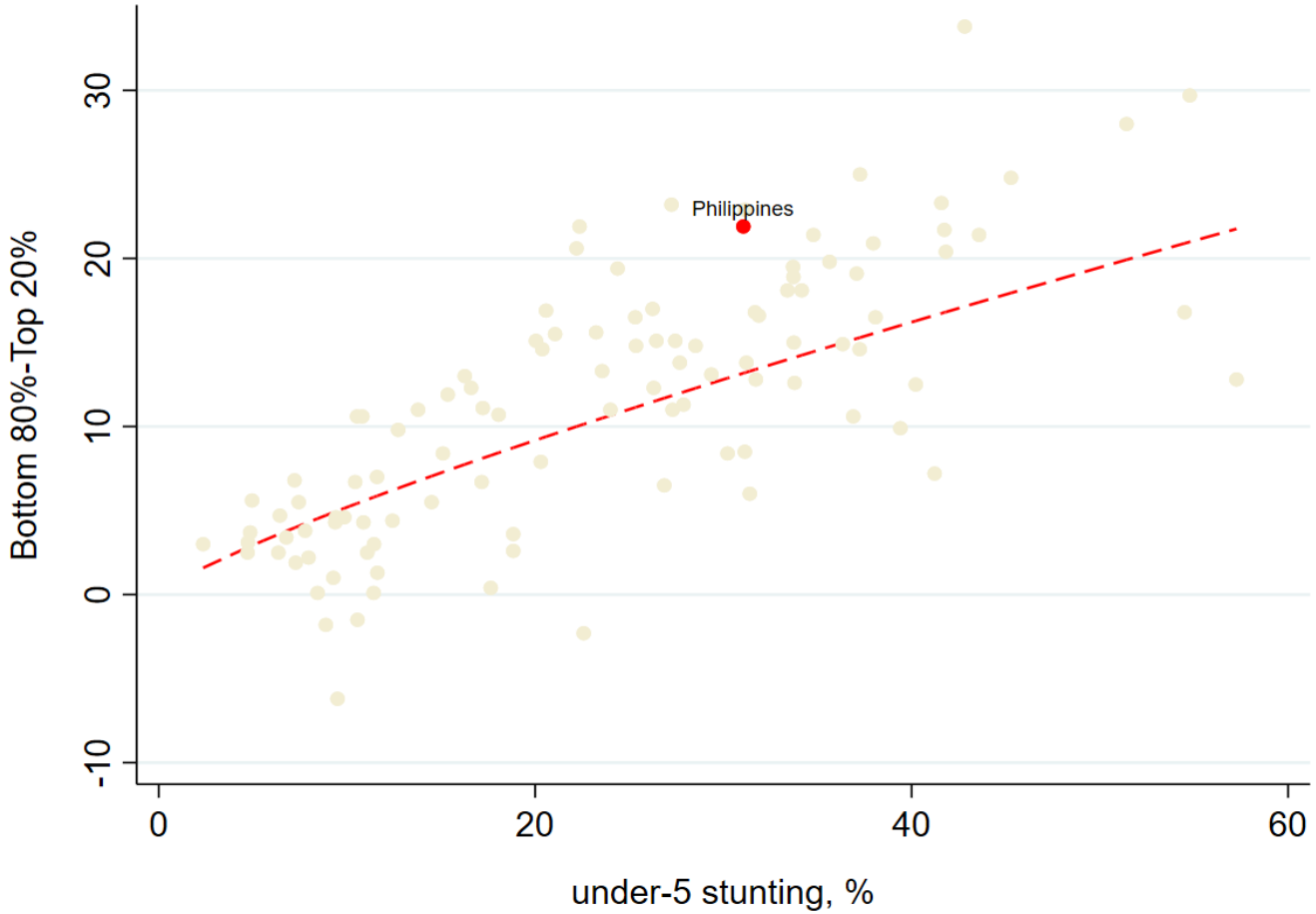


There is a sharp acceleration of the gap during the first 1000 days after which it remains stable



Determinants of inequalities in stunting

Reducing the gap across socio-economic classes to markedly improve the aggregate prevalence



The 22-percentage point absolute difference between poor (bottom 80%) and non-poor (top 20%) makes the Philippines as one of the countries with the highest level of disparity.

What explains the large gap in the stunting?

Dataset:

- National Nutrition Surveys 2015; different modules

Population:

- Children aged 6-23 months

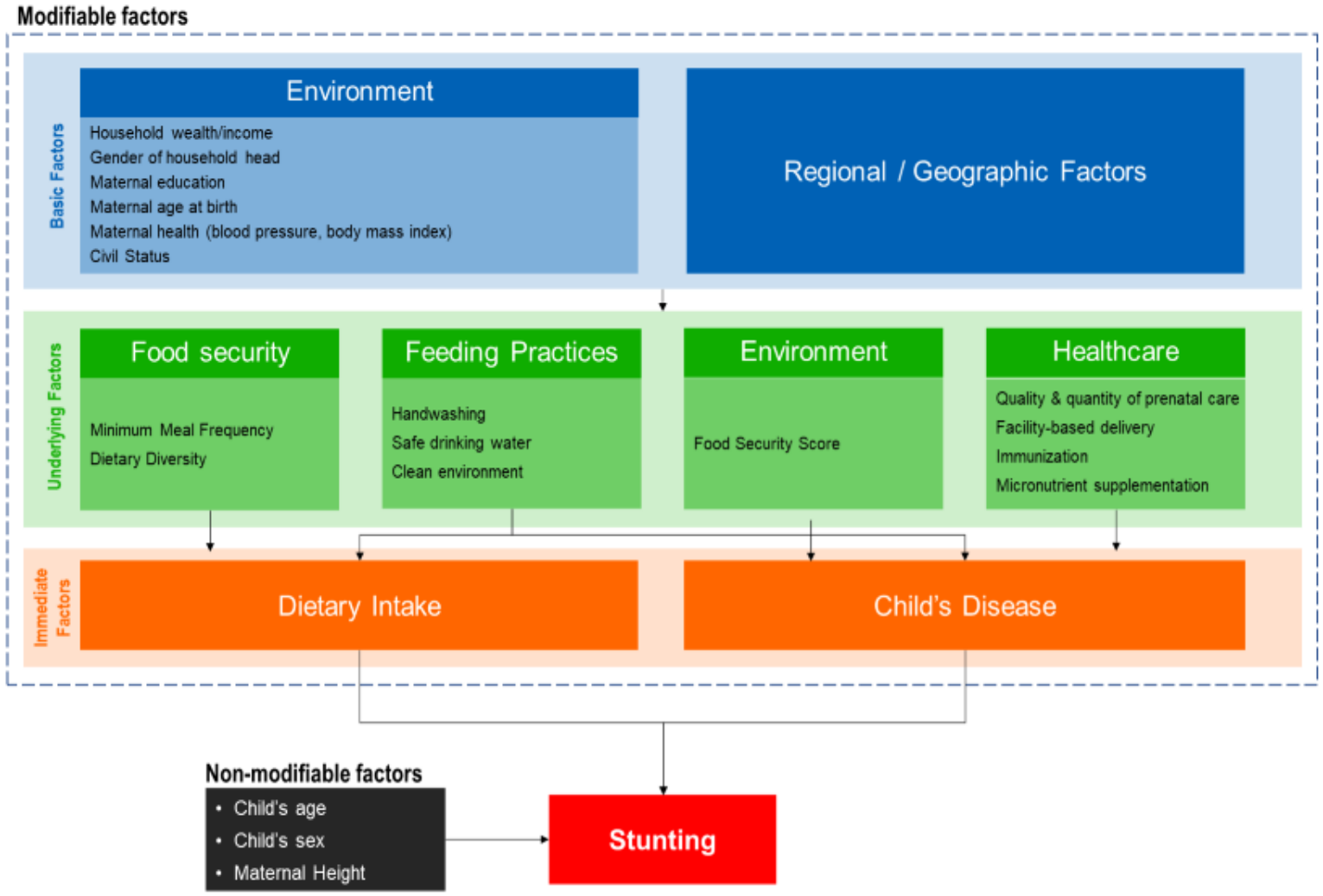
Statistical tool:

- Logit regression; Oaxaca-Blinder Decomposition

Socio-economic status:

- Difference in bottom 40% and top 60%

Conceptual Framework



Contribution of each factor in poor & non-poor differentials in stunting

	% share to the gap
Female sex	-1%
Child age	1%
Maternal height	**26%**
Civil status	-1%
Female HH head	0%
Maternal education	**18%**
Maternal age at birth	-1%
Maternal BMI	9%
Dietary Diversity Score	**12%**
Breastfeeding within the first hour	-1%
Handwashing	-2%
Garbage disposal	0%
Safe drinking water	8%
Toilet	-3%
On time prenatal care	3%
Quality of prenatal care	**10%**
Place of delivery	-3%
Complete DPT3	1%
Iron supplementation	**6%**
Vitamin A supplementation	-1%
Post-natal care	5%
Deworming	0%

Note: Red color- statistically significant

Summary result of Oaxaca decomposition analysis showing the mean differences in stunting rates

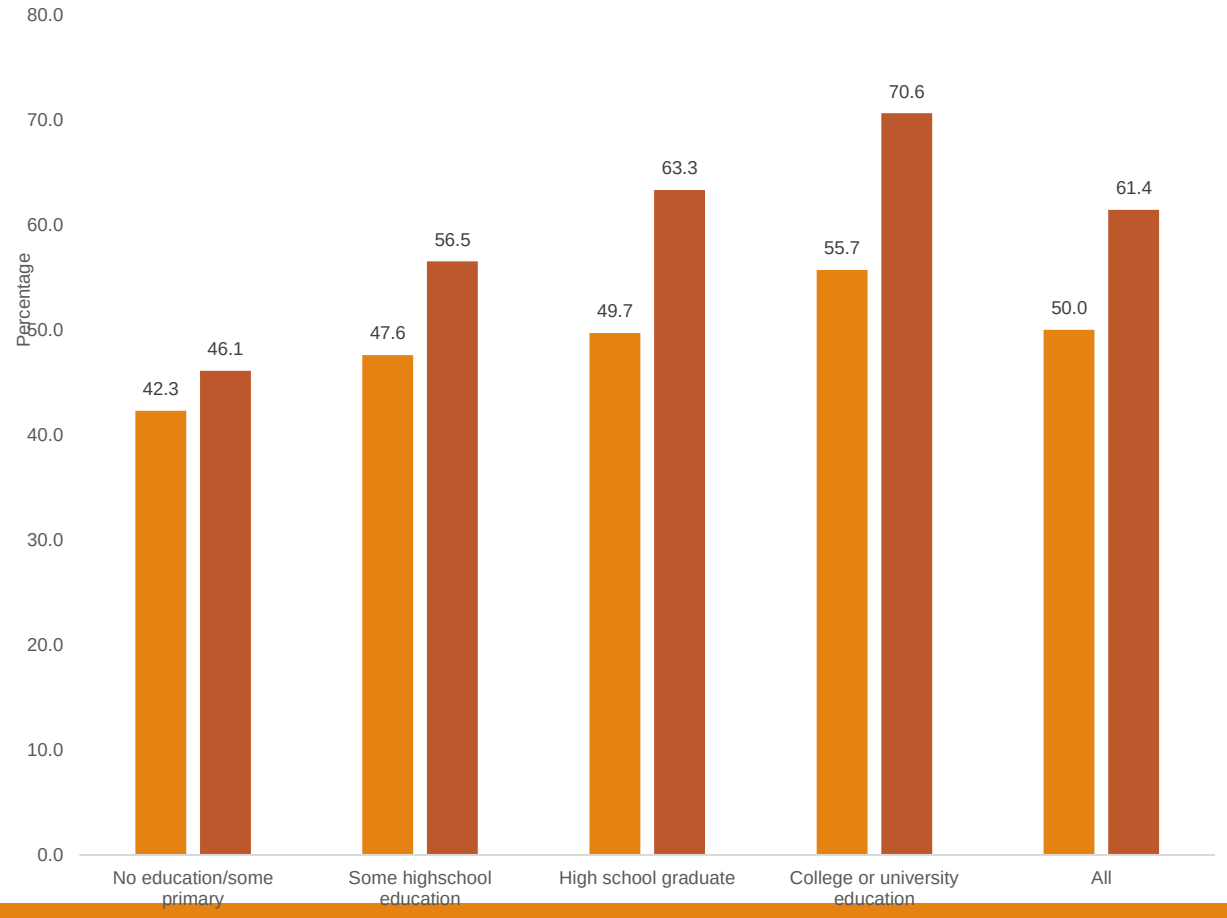
	coefficient	SD	*P*-value	% contribution
Mean prediction high (H)	0·45	0·02	0·00	
Mean prediction low (L)	0·32	0·01	0·00	
Raw differential (R) {H-L}	0·13	0·02	0·00	
due to endowments or explained (E)	0·11	0·02	0·00	82 %
due to unexplained (C)	0·01	0·03	0·76	7 %
due to interaction (CE)	0·02	0·03	0·59	12 %

Maternal education (17% of the gap)

- **Mothers with formal education**
  - better knowledge and understanding of child feeding and rearing.
  - Larger social capital/network.
  - Higher social status – social interactions, power.

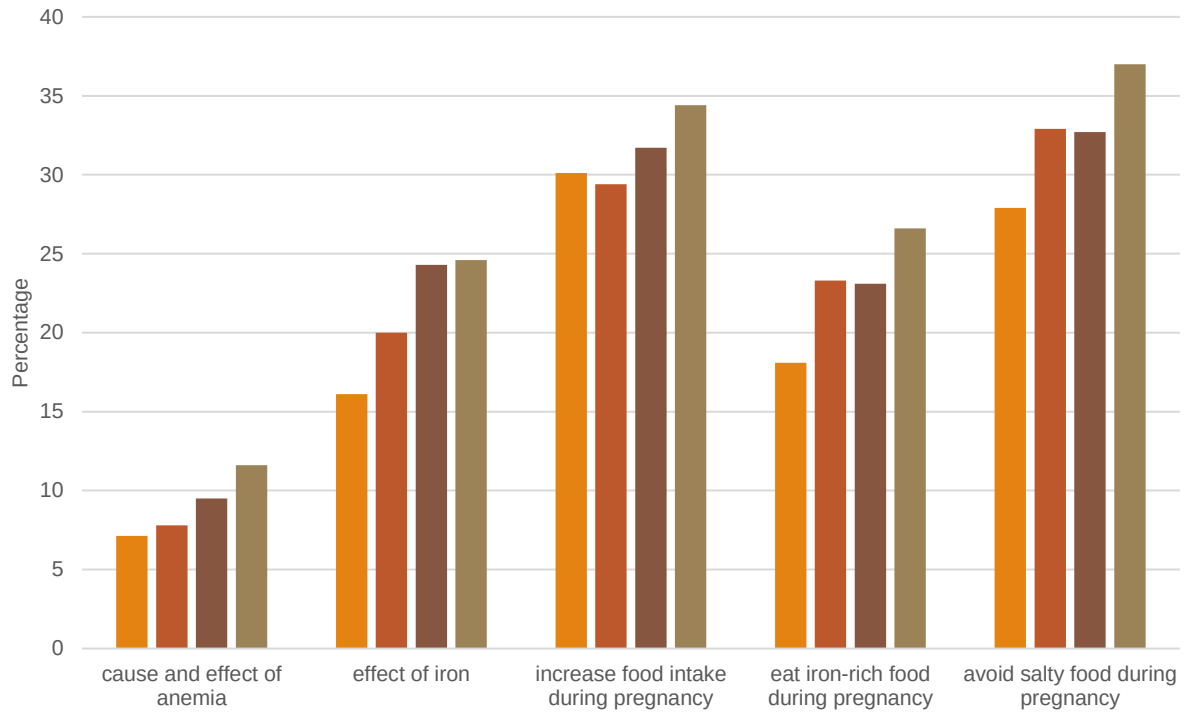
Maternal education (17% of the gap)

Proportion of mothers with correct knowledge about the optimal duration of exclusive breastfeeding and when to start complementary feeding



Quality of prenatal care (10% of the gap)

Low quality and unstandardized information and advice on food hygiene, diet, and lifestyle advice



Socio-economic quartiles

Maternal nutrition (maternal height: 26%; BMI:9%)

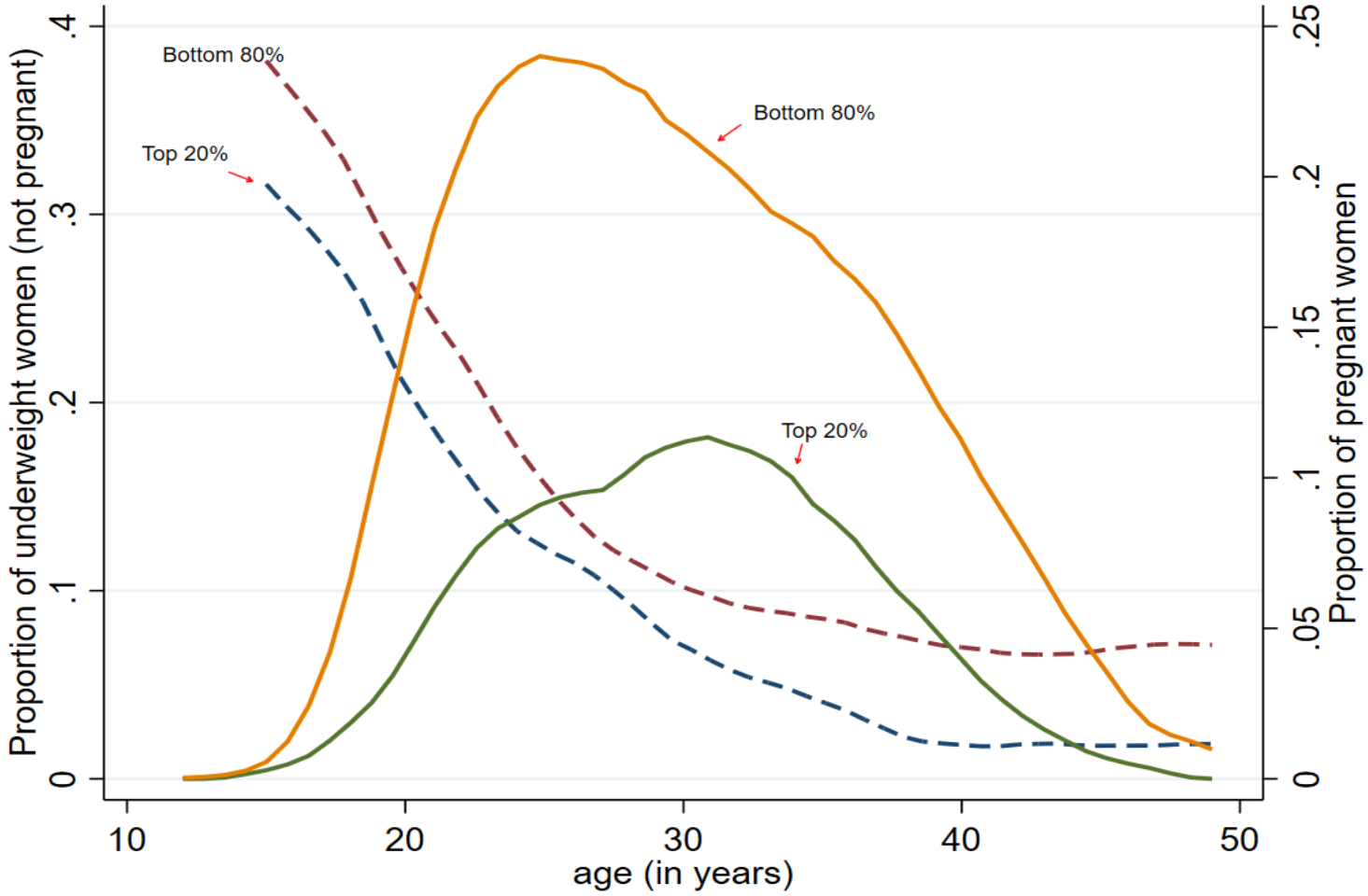
Maternal height

- Reflections of the health of the mother.

Maternal underweight

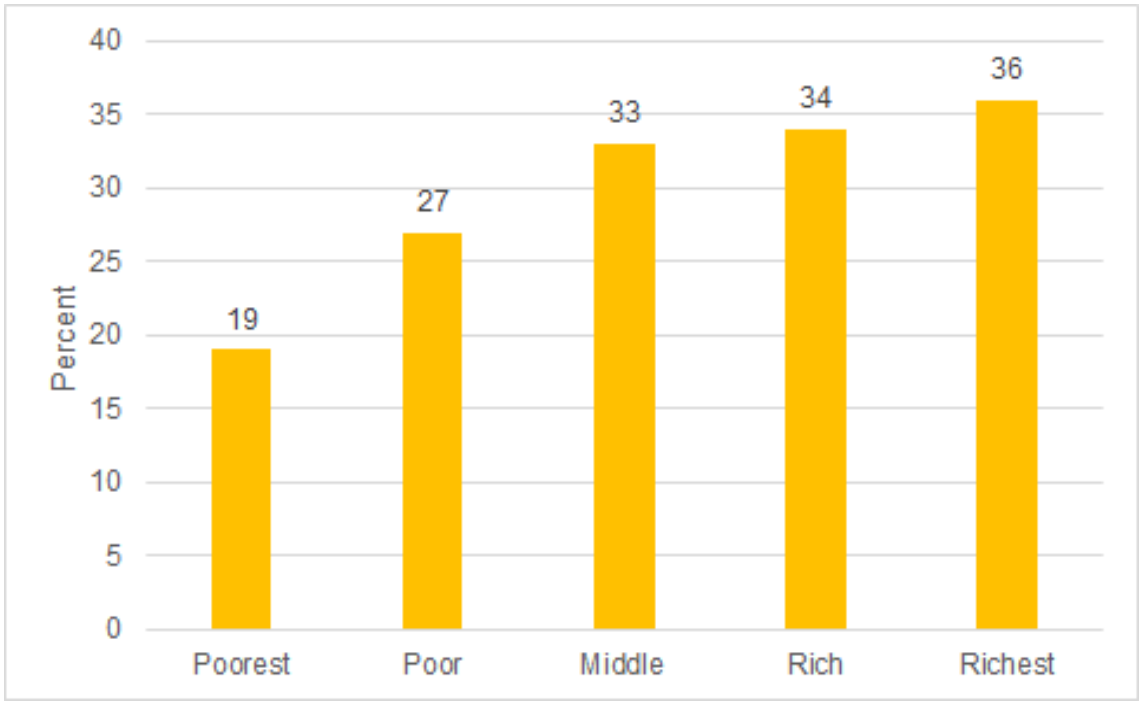
- anthropometric failure of the child might have started in utero.

Maternal nutrition (maternal height: 26%; BMI:9%)

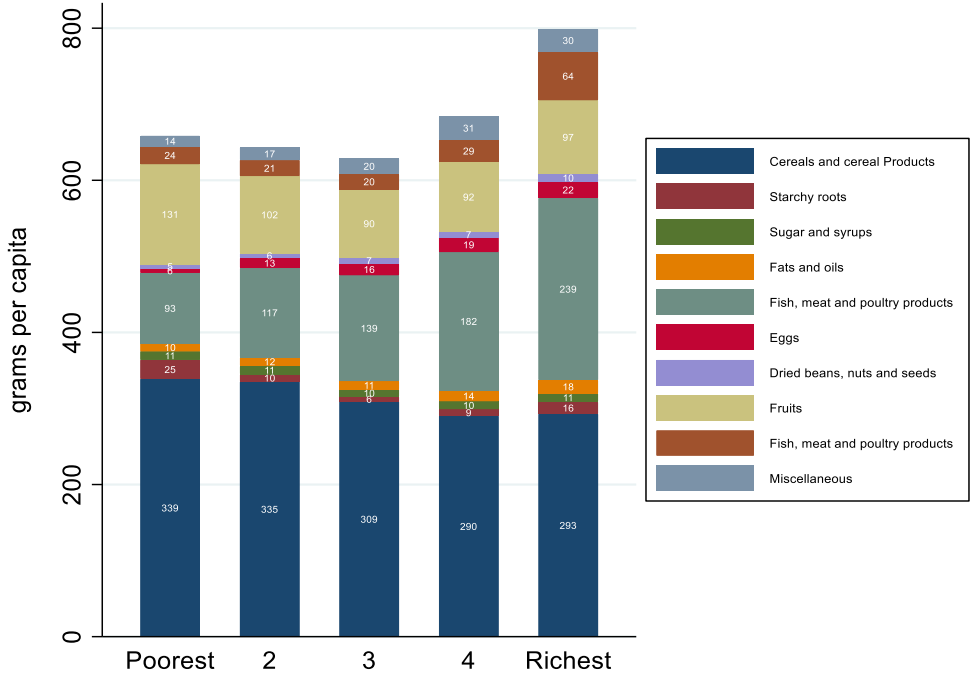


Dietary Diversity (12%)

Proportion of children 6-23 months old meeting the Minimum Dietary Diversity



Food consumption per capita, by socio-economic status



Recommendations

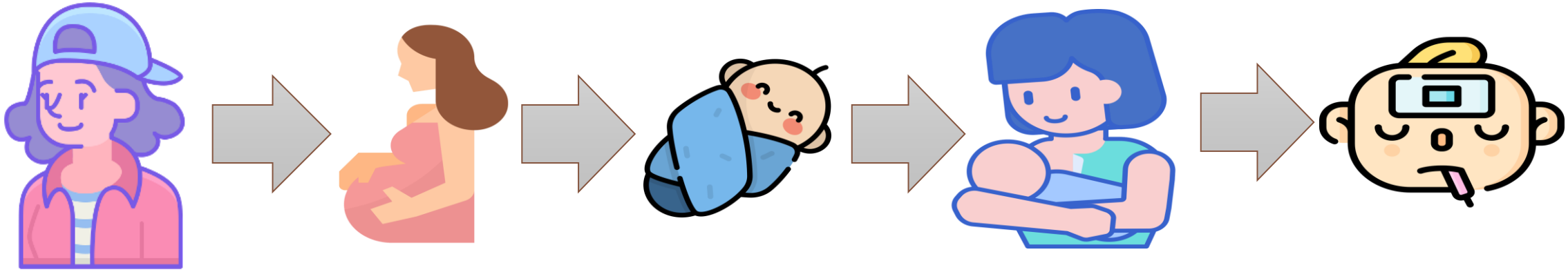
1. Improve socio-economic conditions and access to health services for impoverished women to reduce stunting, fostering multi-sector collaboration.
2. Tackle secondary education drop-outs by expanding innovative approaches, like conditional cash transfers, and addressing teenage pregnancies through accessible modern contraceptives.
3. Promote maternal education for better nutrition knowledge and economic opportunities, contingent on access to essential health services like prenatal care.
4. Expand social health insurance benefits to provide better coverage for impoverished women and their families.
5. Strengthen the primary care system to enhance early access to vital health and nutrition services for mothers and children.

What's wrong?

- **Correct interventions BUT….**
  - low or unstable coverage (CONSISTENCY)
  - not reaching the same beneficiary (CONVERGENCE)
  - not sustained (CONTINUOUS)

From a supply perspective, the following are needed to address the 3Cs :
(1) Adequate and sustained financing
(2) Functional delivery mechanism – HR is critical
(3) Shared governance and accountability – LGU ownership

Chronic malnutrition is a result of persistent assault to the mother and the child during critical period



Young adolescent at risk of pregnancy

Lack of access to adequate and high quality prenatal care

Lack of post-natal and infant care

Inadequate intake of high quality and diverse nutrition

Lack of access to health care to address child illness/infection