# **Under-stunting** the Child Nutrition Problem in the Philippines:

Determining the Nutritional Status and Severity of Undernutrition among Children Aged 0-5 years old using Binary Logistic Regression, and Adjacent-Categories Logit Models

By

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#### **INTRODUCTION**



Intensifies diseases that Increases child morbidity







Decreases productivity and capability to contribute in the economy



#### **OBJECTIVE**

"To determine the factors affecting stunting among children below five years old in the Philippines. Also, to seeks to identify and characterize stunting at its different levels of severity."



#### Intergenerational consequences FRAMEWORK Non-communicable Sub-optimal adult diseases, reproductive Mortality, morbidity height, cognitive ability, health, premature from infectious economic/work Consequences diseases, disability mortality, disability, productivity, social isolation reproductive outcomes Overnutrition/unbalanced intake Maternal and child undernutrition Immediate causes **Physical inactivity** Poor dietary intake (quality and/or quantity) Disease Sedentary Insufficient Inadequate CARE and Poor water, sanitation Underlying causes at lifestyle and **FEEDING** practices food safety and inadequate access to household/family level behaviours and behaviours **HEALTH services** healthy FOODS Access to natural capital (land, water, clean air), markets, education, support networks, social protection, infrastructure and transportation, employment, income, technology, information, marketing Basic causes at social level Culture and social norms; gender; fiscal and trade policies; legislation and regulations;



Note: Basic, underlying and immediate causes are included in this figure, as well as outcomes of malnutrition. Figure adapted by ASEAN, UNICEF and WHO for publication in ASEAN/UNICEF/WHO (2016) Regional Report on Nutrition Security in ASEAN, Volume 2, from the 1997 UNICEF Conceptual Framework of Malnutrition. Not to be reproduced without permission.

agriculture; food systems; urbanization; climate change; pollution; political stability and security

#### **METHODOLOGY**

#### **MODELS USED**

Nutritional Status (Stunted – Y/N)

Logistic Regression Model Severity of Undernutrition Adjacent Categories Logit Model



#### DATA

Obtained from

**2013 National Nutrition Survey** 

Data for

8,111 children aged 0 to 5 were considered

Response variables

**Nutritional Status (Stunted)** 

Stunted: HAZ <-2

# **Severity of Undernutrition**

Severely stunted: HAZ < -3

Moderately stunted:  $-3 \le HAZ < -2$ 

Mildly stunted:  $-2 \le HAZ < -1$ 



# DATA

# **FACTORS**

Individual	Maternal	Household
Age of Child (in months)	Years of schooling	Household Income (Wealth Quintile)
Sex of Child	Employment status	Household Size
		Access to Safe Drinking Water (Improved or unimproved water source)



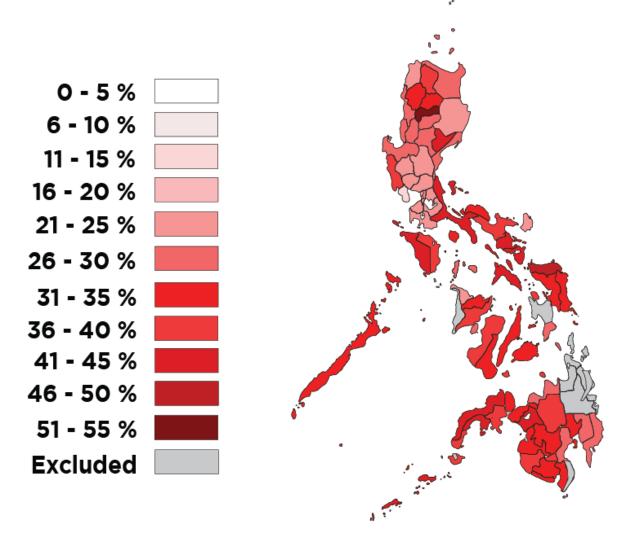




Figure 2. Thematic Map of the Prevalence of Stunting Children Aged 0 – 5 Years in the Philippines in 2013

Table 1. Severity and Prevalence of Undernutrition among Children Ages 0-5 Years Old

Form of Undernutrition		Overall		
	Mild	Moderate	Severe	Overall Prevalence (%)
Stunting	50.67	34.11	15.22	29.85

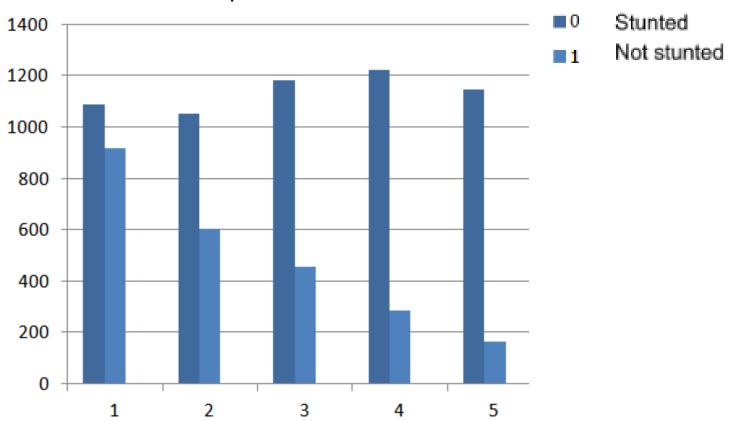
**Table 2. Characteristics of Mothers in each Child Nutritional Status** 

	Mothers' Average Years of Schooling	Percentage of Employed Mothers	
Among stunted children	11.43	25.40	
Among all nourished children*	12.97	33.01	

<sup>\*</sup>Nourished children are those who neither stunted nor underweight



Figure 3: Number of Cases of Stunted Children per Wealth Quintile





Variance Inflation Factors
(VIF) indicate

Absence of
multicollinearity

62.65% Sensitivity **64.14%**Predictive power of the logistic regression model

**67.49%** Specificity



Table 4. Results of the Logistic Regression and Adjacent-Categories Logit Models

		LOGISTIC		ADJACENT CATEGORIES	
Parameter		Exponentiated Estimate	p-value	Exponentiated Estimate	p-value
Intercept 1		0.453	<0.000	1.133	0.266
Intercept 2				1.887	<0.000
Age in months		1.020	<0.000	0.996	0.001
Sex (Baseline: Female)		1.114	0.039	0.924	*0.051
Household Size		1.054	<0.000	0.974	0.001
Wealth Quintile (Baseline: Poorest)	Poor	0.781	<0.000	1.127	0.027
	Middle	0.554	<0.000	1.382	<0.000
	Rich	0.352	<0.000	1.787	<0.000
	Richest	0.235	<0.000	1.806	<0.000
Primary source of drinking	g water				
Maternal Employment (Baseline: Unemployed mo	other)	0.834	0.003		
Mother's Years of Schooling	ng	0.953	<0.00	1.033	<0.000



#### **SUMMARY**

- The age and sex of a child are significant in understanding their nutritional status, but these factors are uncontrollable. However, these can be used as a basis when conducting nutrition programs.
- Household factors such as size and wealth quintile are significant and are indicators of the household's capability to acquire and capacity to share resources
- Having an employed mother with higher years of schooling has a positive impact on one's nutritional status



#### RECOMMENDATIONS

- Strengthen nutrition programs in the country and complement them with educational, livelihood, and family planning programs
- Include other factors that explain a child's access to nutritious food and explore other variables that can explain a child's intake of safe drinking water
- Explore regional or provincial determinants which can aid in large-scale or area-specific programs for reducing undernutrition



# Maraming Salamat!

