

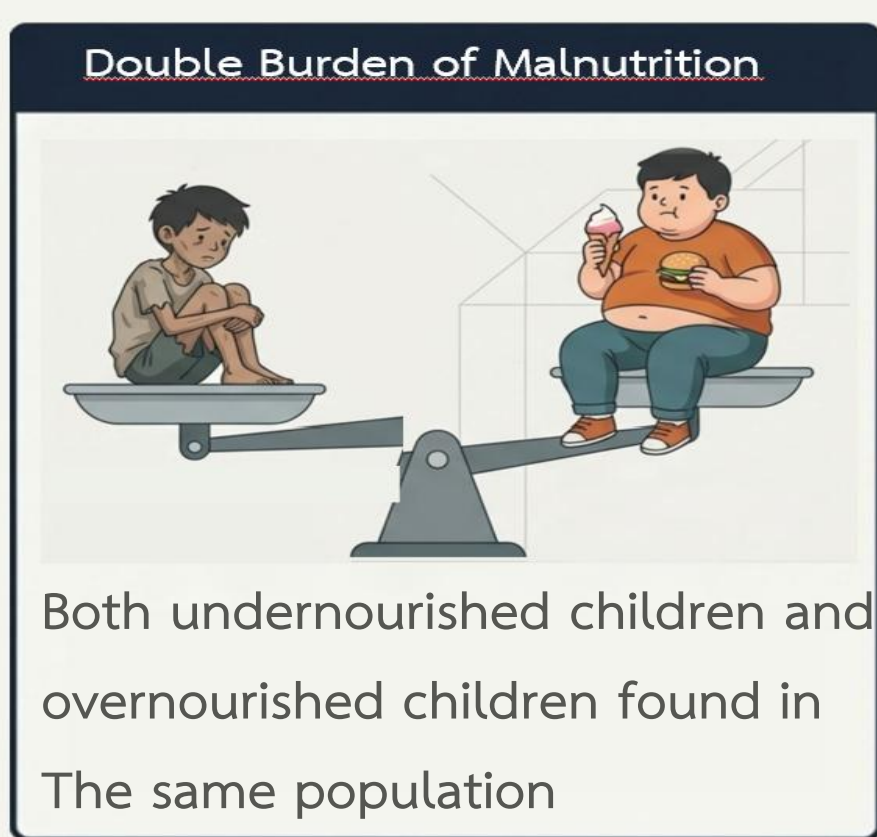
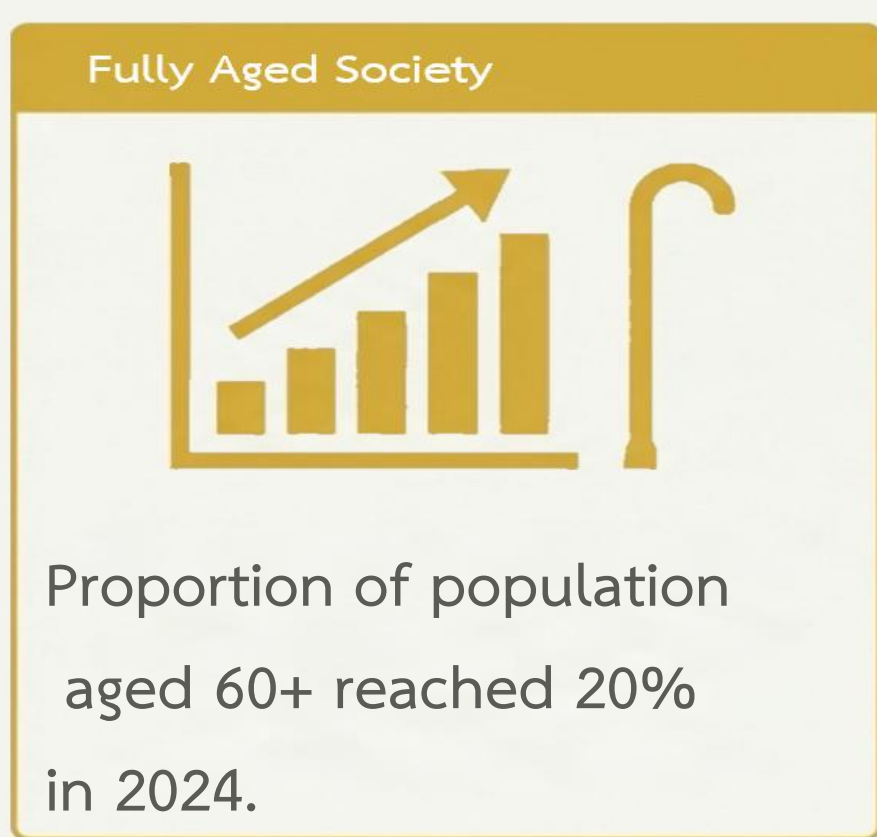
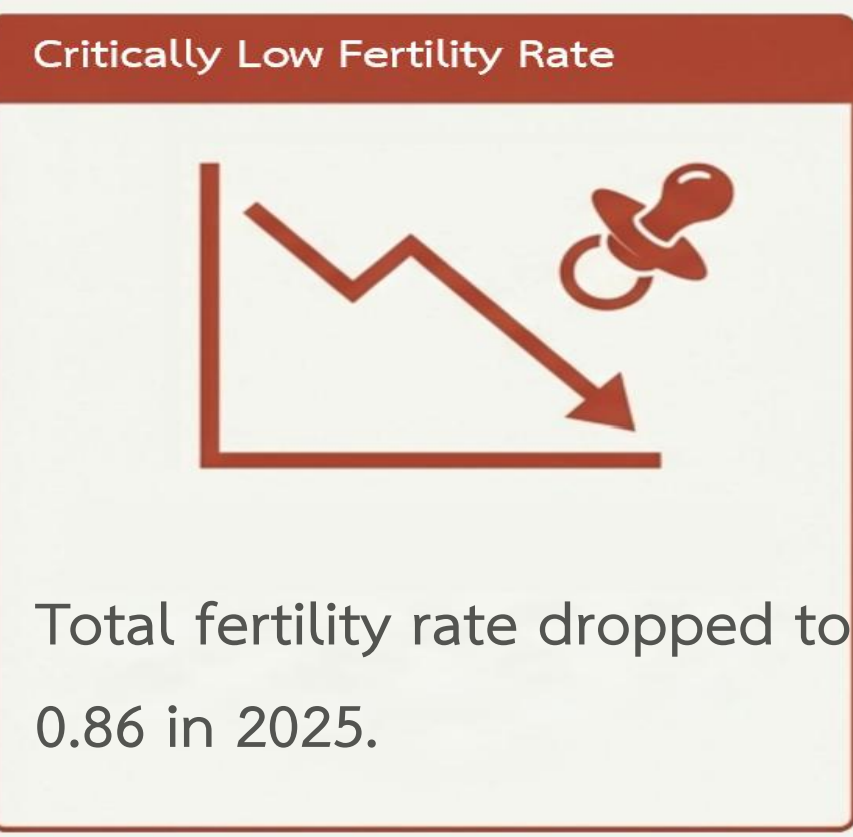
# Silver Hair and Healthy Growth: Grandparents and the Health of Thai School-Age Children



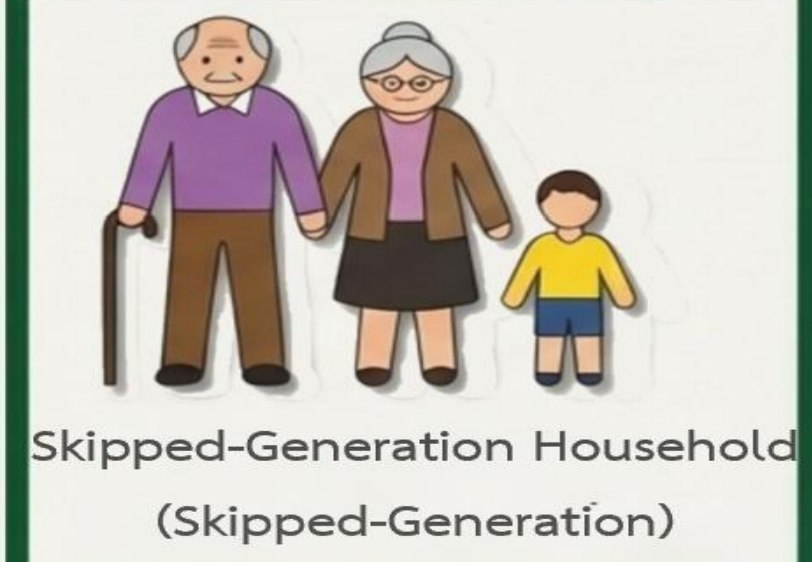
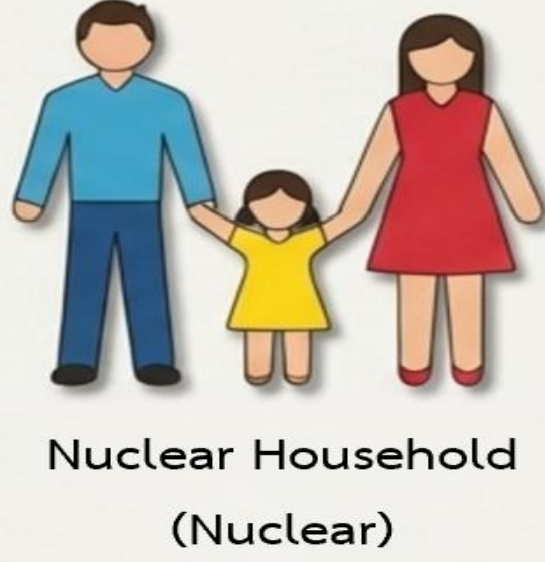
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## Introduction



Migration of working-age adults has made "grandparents" the primary guardians. (Approximately 25.11% of the sample of children aged 6-11)

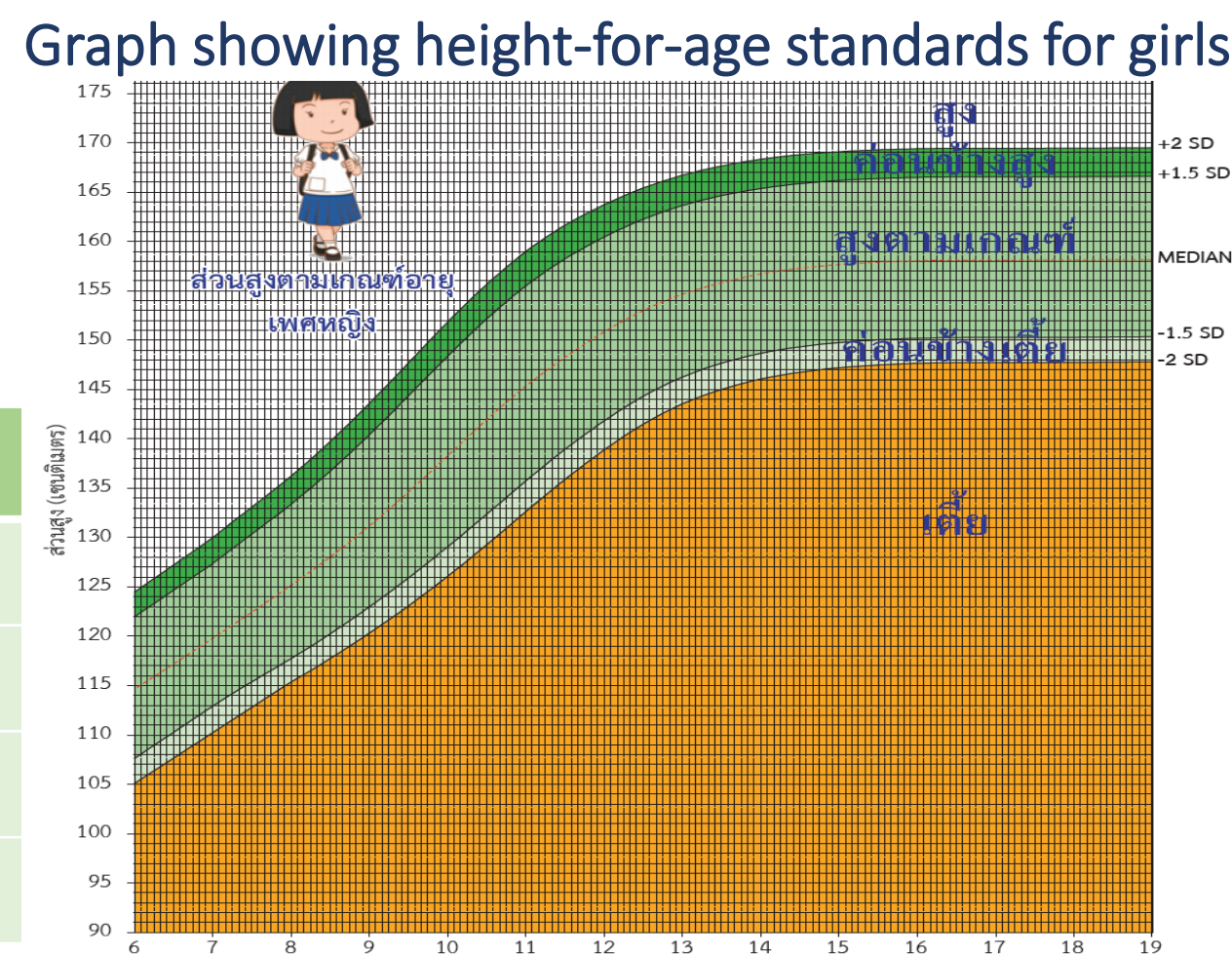


**Research Questions:**  
1. How are socioeconomic status and household structure related to the nutritional status of vulnerable children?  
2. Do living with grandparents and the "Elderly Allowance" have a causal effect on children's health?

**Research Objectives:**  
1. Analyze the effects of socioeconomic factors and household structure on the nutritional status and growth of vulnerable children.  
2. Examine the causal impact of receiving the elderly allowance on children's health who live with grandparents.

## Literature & Conceptual Framework

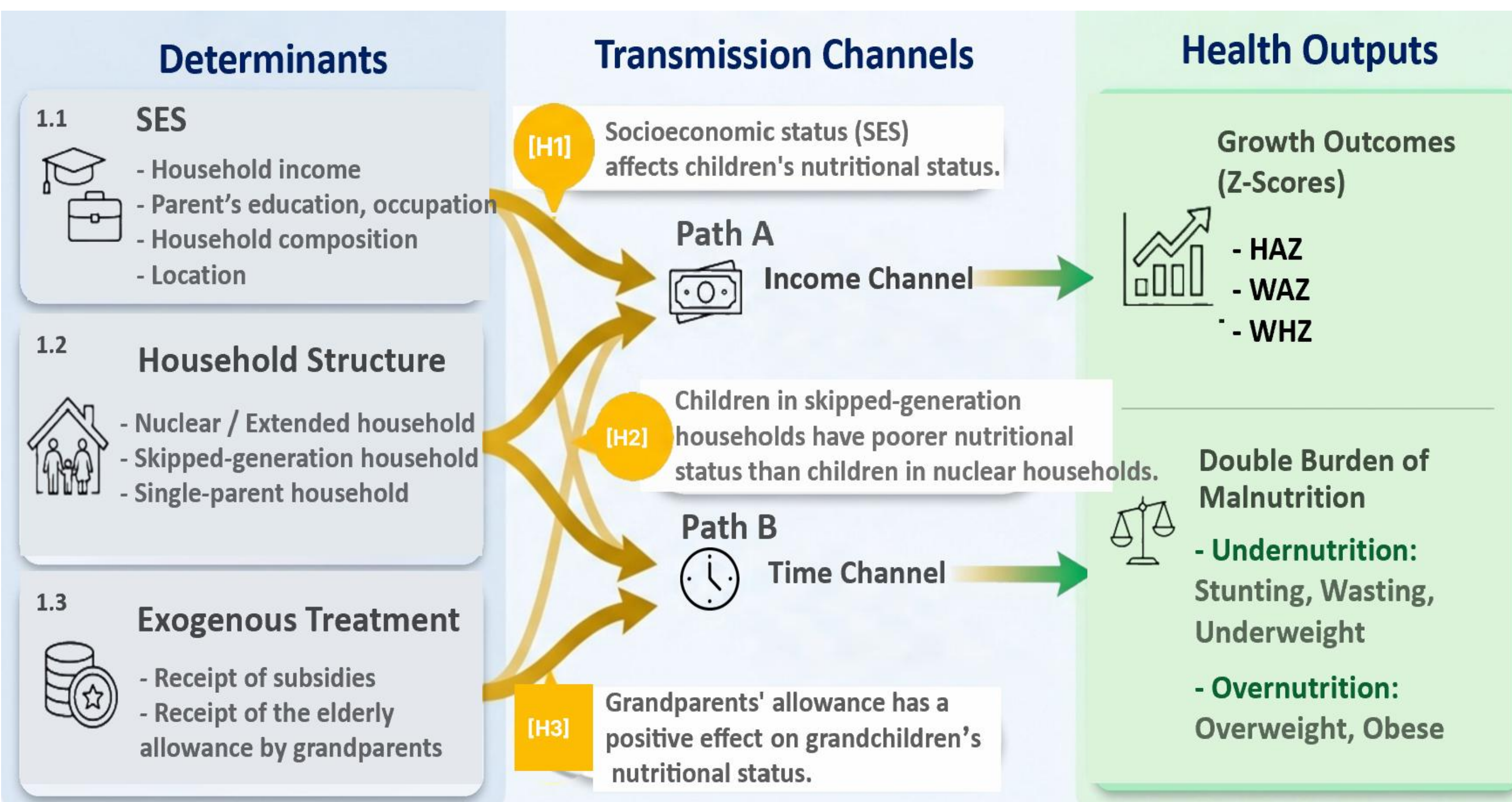
Measuring nutritional status:  $z\text{-score} = \frac{x - m}{sd}$   
X = each student's score, m = median, and sd = standard deviation (SD), using the reference from the Bureau of Nutrition, Department of Health, MOPH (2021)



Indicator	Criteria	Status
HAZ	HAZ < -2	Stunting
WAZ	WAZ < -2	Underweight
WHZ	WHZ < -2	Wasting
WHZ	WHZ > 2	Overweight

## Empirical Evidence

- Income, food prices, and especially maternal education shape child nutrition (Strauss 1990); wealth inequality and rural residence predict stunting and wasting, while richer urban households face obesity risk (the "nutrition transition").
- Grandparent involvement generally benefits survival, height, and weight in developing contexts, but raises BMI in richer countries (Sadrudin et al. 2019; Pulgaron et al. 2016).
- Duflo (2003): South African pensions received by grandmothers improved granddaughters' WHZ; grandfather pensions had no effect — supporting intrahousehold bargaining theory.
- Grandmother co-residence raises HAZ in Sub-Saharan Africa (Schrijner & Smits 2018); grandparent care benefits child health in China, strongest at young ages (Liu et al. 2021).



## Data & Methodology

- Data:** Students aged 6-14 in OBEC schools screened for the EEF conditional cash transfer (CCT) program, academic years 2022 and 2024 (1.4 million students; ≈21% of Thailand's 6-14 population). 3 components: (i) Household survey (พฉ.01: members, income, assets across 8 dimensions); (ii) Proxy Means Test (PMT) poverty classification (non-poor/near-poor/poor/extra-poor); (iii) Height and weight records from OBEC's student information system.
- Average per-capita income: 2,293 THB/month; the extra-poor subsample lives on under 985 THB/month.
- Household structure (ref. = nuclear): Nuclear (both parents); Extended (grandparents + parents + children); Single-parent; Skipped-generation (grandparents + grandchildren, no parents); Others.

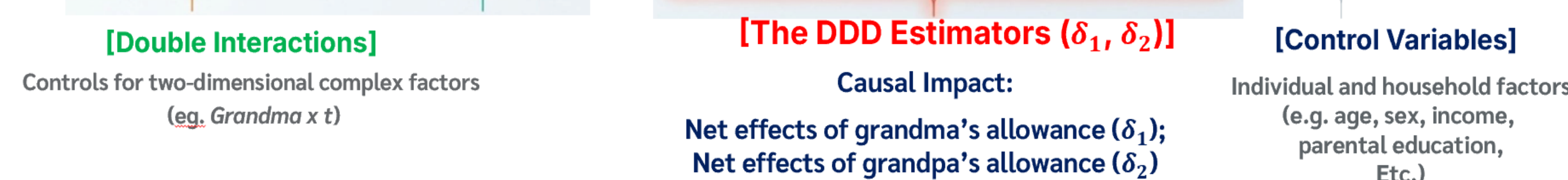
## Empirical Specifications

### Part I: Correlation Analysis (OLS & Logit) – use 2022 data

$$Y_{it} = \beta_0 + \beta_1 \text{Extend} + \beta_2 \text{SingleP} + \beta_3 \text{Skipgen} + \beta_4 \text{Other} + \alpha X_{it} + \varepsilon_{it}$$

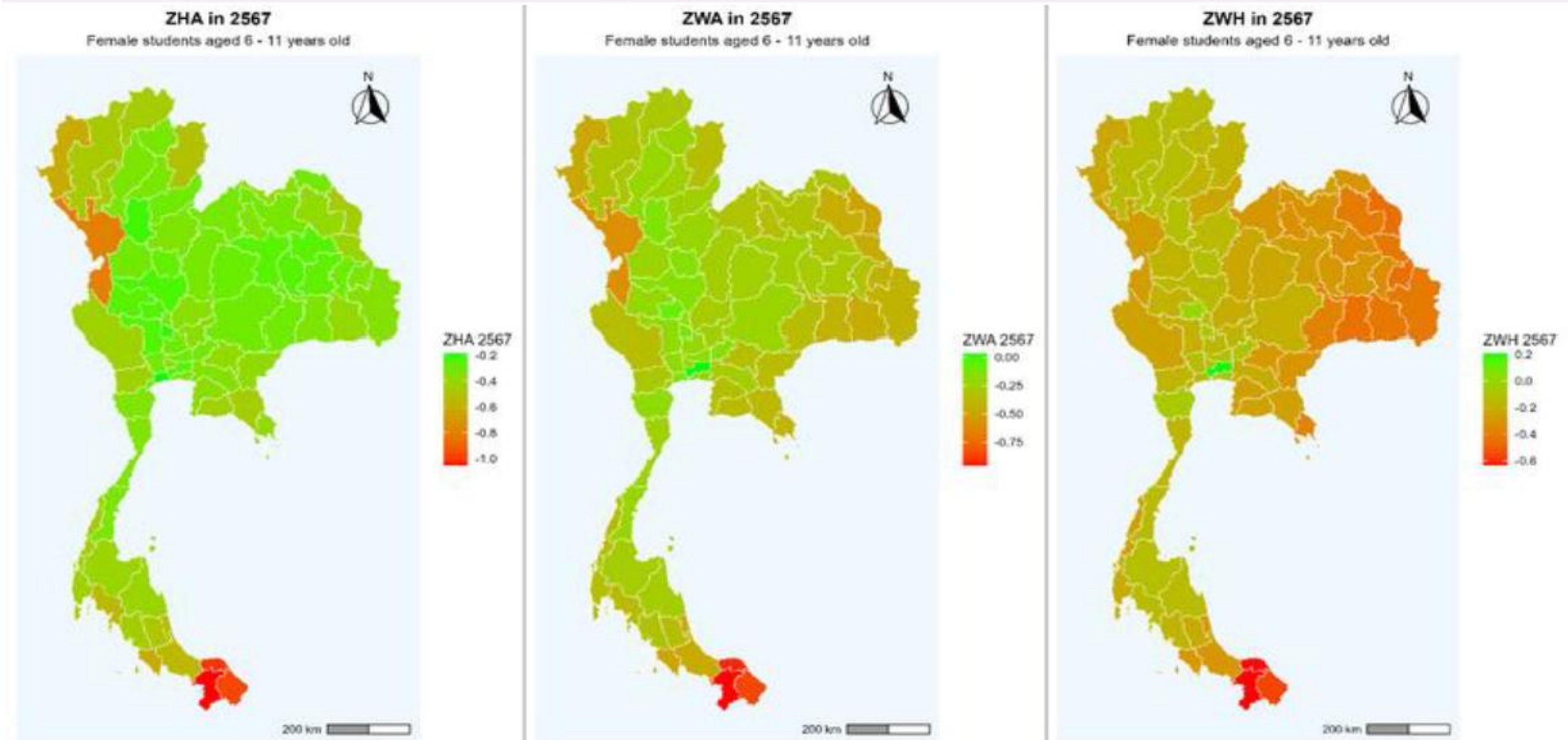
### Part II: Causal Impact Assessment (DDD) – use 2022-2024 data

$$Y_{it} = \alpha + \beta_1 T_t + \beta_2 \text{Grandma}_{it} + \beta_3 \text{Grandpa}_{it} + \beta_4 \text{GPGuard}_{it} + \beta_5 \dots \beta_9 (\text{Double Interactions}) + \delta_1 (\text{Grandma}_{it} \times \text{GPGuard}_{it} \times T_t) + \gamma X_{it} + \varepsilon_{it}$$

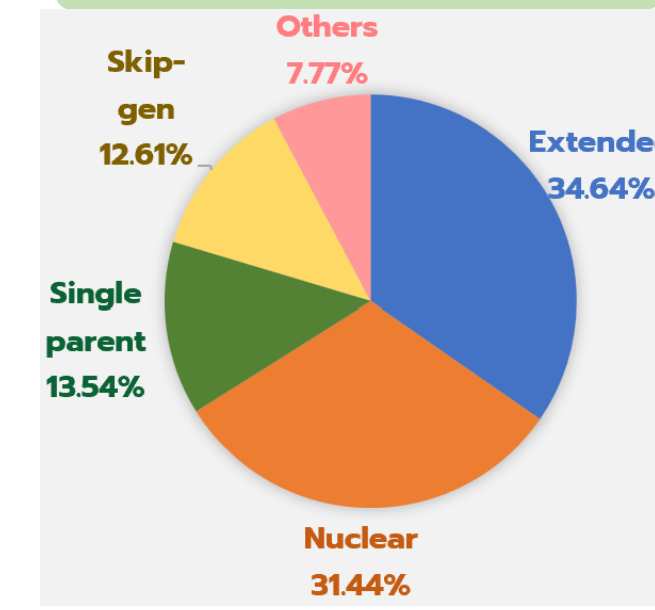


## Descriptive Statistics

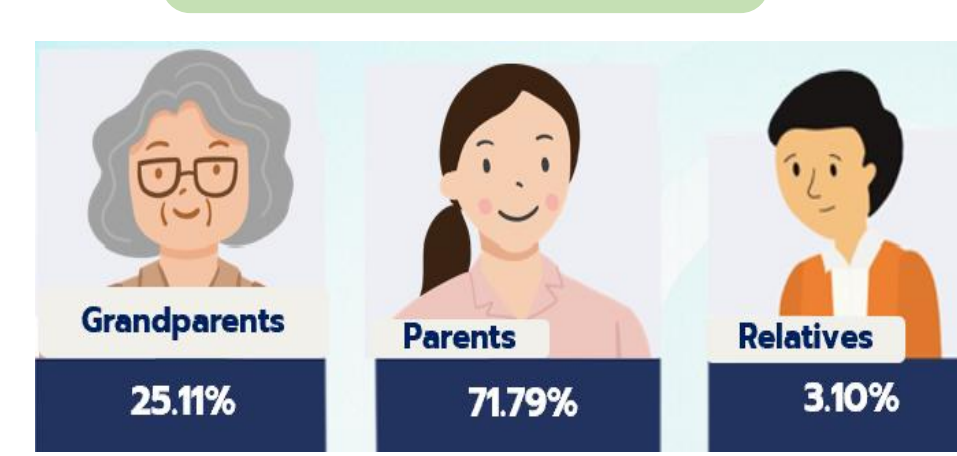
### Spatial Disparities (Based on Z-scores)



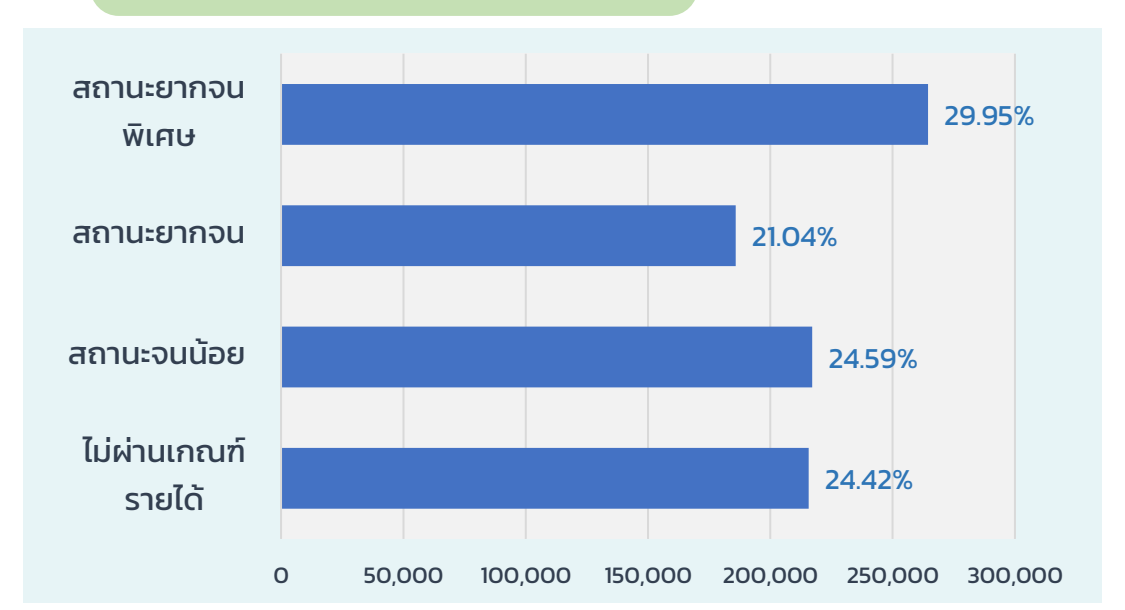
### Household Structure



### Students' Guardian



### Poverty Status



## Results

### PART I: Household structure and z-scores (OLS, ages 6-11)

Structure	HAZ	WAZ	WHZ
Extended	0.078***	0.082***	0.046***
Skipped-gen.	0.121***	0.091***	0.021**
Single-parent	-0.015***	-0.027***	-0.027***

N = 883,313. Ref. = nuclear family / non-poor. Full controls included. \* p<0.05, \*\* p<0.01, \*\*\* p<0.001.

### PART I: Household structure and Malnutrition Status (Logit, ages 6-11)

Structure	Stunting	Wasting	Under-weight	Overweight
Extended	-0.010***	-0.001	-0.004***	0.005***
Skipped-gen.	0.006***	0.001	0.002***	-0.001
Single-parent	-0.018***	-0.001	-0.007***	0.003***

N = 883,313. Ref. = nuclear family / non-poor. Full controls included. \* p<0.05, \*\* p<0.01, \*\*\* p<0.001.

- Controls: Divorced parents** are associated with reductions in all z-scores; parent's education shows a monotonic positive gradient; each additional child in the household lowers all z-scores; extra-poor status is the single strongest predictor. Patterns persist at ages 12-14.

### Modified Models:

- Grandparent age gradient:** "younger" grandparents (60-64) show the largest positive associations, declining with age — evidence for the time (caregiving) channel.
- Income channels:** agriculture income raises HAZ while salary income lowers HAZ/WAZ - earnings that displace caregiving time hurt nutrition.

### PART II: Causal effect of elderly allowances (DDD estimator)

Z-score	DDD Estimator	Age 6-7	Age 8-9	Age 10-11
HAZ	Grandma allowance × GP_Guardian × Post (δ <sub>1</sub> )	1.329**	0.035	0.030
	Grandpa allowance × GP_Guardian × Post (δ <sub>2</sub> )	-0.737	0.009	-0.007
WAZ	Grandma allowance × GP_Guardian × Post (δ <sub>1</sub> )	-0.097	0.038	0.033
	Grandpa allowance × GP_Guardian × Post (δ <sub>2</sub> )	0.712	0.036	0.006
WHZ	Grandma allowance × GP_Guardian × Post (δ <sub>1</sub> )	-1.454	0.040	0.012
	Grandpa allowance × GP_Guardian × Post (δ <sub>2</sub> )	1.993***	0.036	0.013

All other outcomes/ages n.s. N = 129,968 / 240,056 / 243,726. Full controls included. \*\* p<0.01, \*\*\* p<0.001. n.s. = not significant.

## Discussion & Conclusion

- Grandparents are effective nutritional safety nets: extended and skipped-generation households outperform nuclear and single-parent homes on HAZ/WAZ even after full controls. This challenges the view that parental absence is uniformly harmful in vulnerable communities.
- Allowances work through caregivers, at the right age: transfer income reaches young children without displacing caregiving time, unlike wage work; effects are concentrated at ages 6-7 and show intrahousehold gender patterns.
- Poverty still dominates: extra-poor children score 0.17-0.18 SD lower in HAZ/WAZ; the deep-South and parts of the Northeast face persistent deficits.
- Policy implications:
  - Nutritional literacy programs for elderly to counter overfeeding
  - Redesign cash transfers to recognize the grandparent-child channel
  - Prioritize grandparent-targeted support where elderly care for young children
  - Strengthen the EEF's CCT - raise amounts or expand coverage
  - Integrate elderly welfare and early childhood development policy as one coherent system.
- Limitations: vulnerable public-school sample limits generalizability; possible unobserved confounders despite DDD; no direct dietary or caregiving-practice data; modest allowance size (≈8% of household income) may attenuate effects.