

Dietary Transitions in Indonesia: The case of urban, rural, and forested areas

Mulia Nurhasan^{1,2*}, Desy Leo Ariesta¹, Mia Mustika Hutria Utami^{1,3}, Mochamad Fahim⁴, Nia Aprillyana⁵, Agus Muhammad Maulana¹, Amy Ickowitz¹

¹Center for International Forestry Research (CIFOR), Bogor, Indonesia

²Center for Regulation Policy and Governance (CRPG), Universitas Ibn Khaldun, Bogor, Indonesia

³Management of Food Service and Nutrition Study Program, College of Vocational Studies, IPB University, Bogor, Indonesia

⁴Statistics Indonesia of Kendal Regency, Social Statistics, Population and People's Welfare Department, Kendal, Indonesia

⁵Statistics Indonesia of Blora Regency, Regional Balance Sheet and Statistical Analysis Department, Blora, Indonesia

***Corresponding author:**

Mulia Nurhasan

m.nurhasan@cifor-icraf.org

Table A7. Results from regression models showing similar patterns across area categories: Each row represents a model for quantities consumed of different food groups or diet quality indicators for 2008 and 2017—coefficients with standard errors in parentheses¹⁻⁷

No	Dep Variables: Food groups and Diet quality indicators	Independent Variables			
		Area categories ³		Non-food expenditures ⁴	
		National	Forested areas	National	Forested areas
G. Foods which consumption do not show similar pattern between urban vs. rural and or high vs. low-TCL in 2008					
1	Non-liquid dairy	2.82*** (0.04)	-1.06*** (0.27)	1.57*** (0.02)	1.83*** (0.05)
2	Other vitamin A rich vegetables	1.67*** (0.04)	-0.78* (0.31)	0.94*** (0.02)	1.46*** (0.06)
3	Vitamin A rich fruits	4.04*** (0.13)	-2.45** (0.75)	2.33*** (0.05)	2.16*** (0.15)
4	Dark green leafy vegetables	-7.40*** (0.21)	8.93*** (1.82)	0.56*** (0.08)	1.60*** (0.36)
5	Other vegetables	-13.32*** (0.3)	0.66 (2.62)	3.24*** (0.12)	7.84*** (0.52)
6	Nuts and fresh legumes	-0.87*** (0.06)	1.58** (0.57)	0.64*** (0.02)	1.57*** (0.11)
7	Other fruits	-7.30*** (0.4)	2.31 (3.23)	13.8*** (0.15)	20.74*** (0.64)
8	Beverage ingredients	-10.38*** (1.2)	18.92* (9.51)	9.27*** (0.46)	21.22*** (1.89)
9	Spices	-0.78*** (0.07)	3.80*** (0.53)	1.38*** (0.03)	3.06*** (0.11)
10	Total energy	-161.24*** (2.61)	83.43*** (21.49)	83.35*** (0.99)	178.36*** (4.26)
11	Energy from protein	-0.97** (0.36)	13.25*** (2.91)	15.73*** (0.14)	28.77*** (0.58)
12	Energy from carbohydrate	-181.47*** (1.74)	29.04* (14.82)	23.2*** (0.66)	66.8*** (2.94)
13	NOVA 1 (least processed)	-225.00*** (1.98)	37.65* (16.93)	27.17*** (0.75)	70.62*** (3.36)
14	GDR final score	-0.19*** (0.01)	0.11* (0.05)	0.01*** (0.00)	0.02 (0.01)
H. Foods which consumption do not show similar pattern between urban vs. rural and or high vs. low-TCL in 2017					
1	Non-liquid dairy	2.24*** (0.05)	-1.21*** (0.31)	0.77*** (0.01)	0.80*** (0.03)
2	Other vitamin A rich vegetables	1.38*** (0.04)	-1.62*** (0.33)	0.53*** (0.01)	0.64*** (0.03)
3	Vitamin A rich fruits	5.62*** (0.15)	-1.66 (1.08)	1.37*** (0.03)	1.43*** (0.1)
4	Energy from protein	8.09*** (0.35)	-9.45** (2.91)	8.81*** (0.07)	13.27*** (0.26)
5	Nuts and fresh legumes	-0.41*** (0.04)	0.23 (0.35)	0.26*** (0.01)	0.54*** (0.03)
6	Other fruits	-2.61*** (0.35)	13.33*** (3.00)	6.83*** (0.06)	8.39*** (0.27)
7	Sugar	-3.49*** (0.07)	0.54 (0.72)	0.24*** (0.01)	0.67*** (0.06)
8	Beverage ingredients	-26.07*** (0.92)	25.31*** (7.65)	1.20*** (0.17)	3.94*** (0.68)
9	Spices	-0.36*** (0.08)	1.98** (0.69)	0.90*** (0.01)	1.63*** (0.06)
10	Total energy	-89.31*** (2.44)	4.97 (21.35)	46.92*** (0.45)	83.14*** (1.9)
11	Energy from carbohydrate	-125.15*** (1.53)	13.91 (13.83)	14.76*** (0.28)	30.59*** (1.23)
12	NOVA 2b (sugar, salt)	-12.82*** (0.27)	2.01 (2.63)	0.89*** (0.05)	2.46*** (0.23)
13	GDR healthy score	-0.07*** (0.01)	0.26*** (0.05)	-0.00* (0.00)	-0.00 (0.00)
14	GDR limit score	-0.02* (0.01)	0.30*** (0.06)	-0.00 (0.00)	-0.01* (0.01)
15	HDDS 12 ¹	-0.05*** (0.01)	0.17** (0.05)	-0.00 (0.00)	-0.00 (0.00)
16	HDDS 7 ²	-0.02*** (0.00)	0.10** (0.04)	-0.00 (0.00)	-0.00 (0.00)

¹Abbreviations used in the figure: HDDS for Household Dietary Diversity Score, GDR for Global Dietary Recommendation, TCL for Tree Cover Loss; OAA for other aquatic animals

²The table presents results from linear regression analysis with each of the food groups as the outcome, and area categories (national or forested areas), non-food expenditures, province, and household size as the control variables. The table reports the results for the area categories (urban vs. rural) and forested areas (high- vs. low-TCL), as well as the non-food expenditures. The baseline in the “National Urban vs. Rural” analysis is Urban, and the baseline in the “Change in Tree Cover in Forested Areas” analysis is High-TCL.

³A positive coefficient indicates higher consumption in urban areas compared to rural areas, and in high-TCL areas compared to low-TCL areas; A negative coefficient indicates higher consumption in rural areas compared to urban areas, and in low-TCL areas compared to high-TCL areas.

⁴A positive coefficient indicates an increase in consumption as non-food expenditure increases; a negative B coefficient indicates a decrease in consumption as non-food expenditure increases.

⁵HDDS 12 includes cereals, tubers, vegetables, fruits, meats, eggs, fish, legumes, dairy, oils and fats, spice-condiments and beverages ingredients, sweets (including ultra-processed foods and ready-to-eat foods); HDDS 7 includes vegetables, fruits, meats, eggs, fish, legumes, dairy (excluding ultra-processed foods).

⁶GDR-Healthy includes dark green leafy vegetables, vitamin A-rich orange vegetables, roots and tubers, other vegetables, vitamin A-rich fruits, citrus fruits, other fruits, legumes, nuts and seeds, whole grains; GDR-Limit includes sugar-sweetened beverages, baked grain-based sweets, other sweets, salty packaged snacks, unprocessed red meat, processed meat, deep-fried foods, food from fast-food restaurants or instant noodles.

⁷*** showing statistically significant difference at $P < 0.001$; ** at $0.001 \leq P \leq 0.01$; and * at $0.01 < P \leq 0.05$