

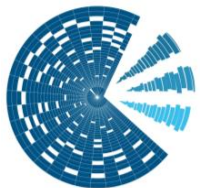
Cost and Affordability of a Healthy Diet: monitoring food access in Ethiopia

Rachel Gilbert

Tufts University

April 4, 2023

Addis Ababa, Ethiopia



**ETHIOPIAN
STATISTICS
SERVICE**



Tufts
UNIVERSITY

Gerald J. and Dorothy R.
Friedman School of
Nutrition Science and Policy



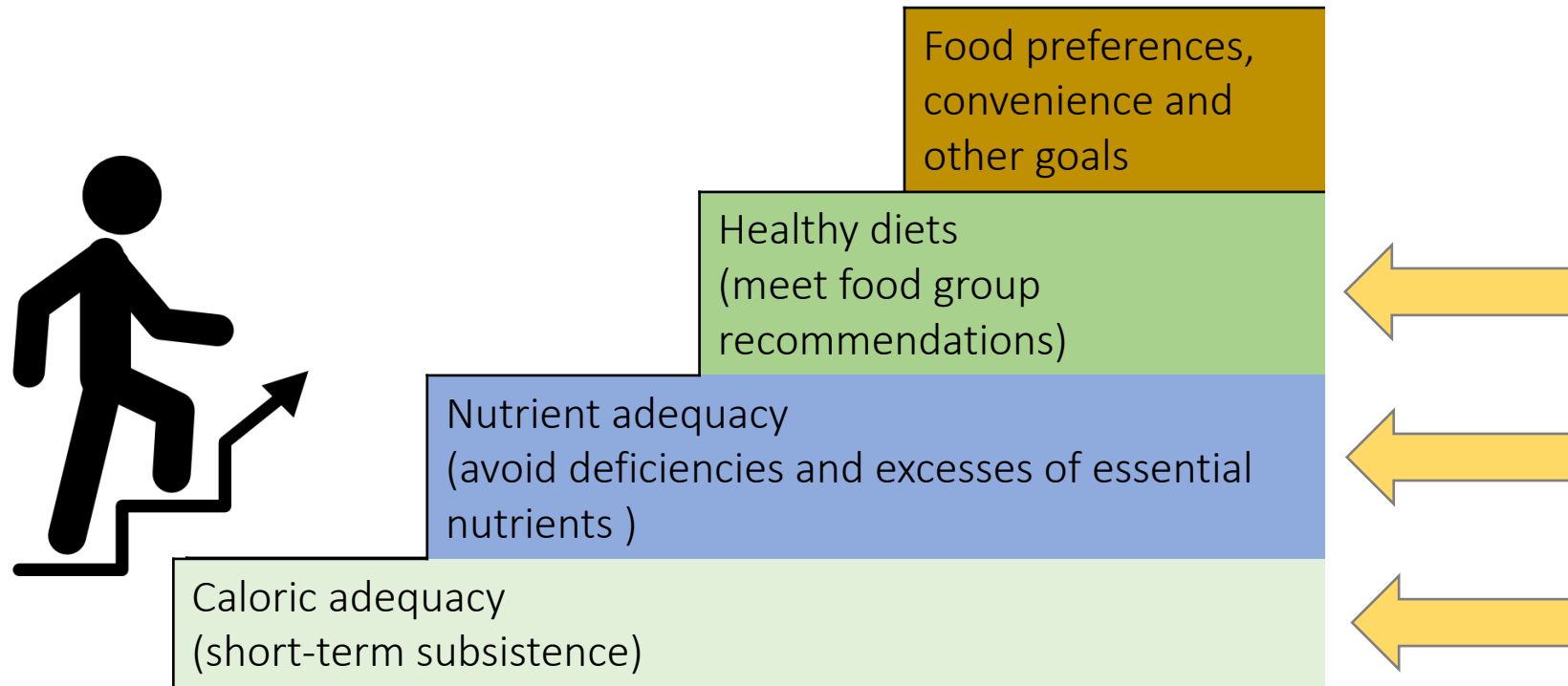
Food Prices for
Nutrition 

Cost and Affordability of a Healthy Diet: indicators to understand food access

- Measuring **physical and economic access** to healthy diets
- Use **retail food prices** to identify the **least expensive** combinations of locally available foods
 - No standard “food basket”
 - Selection depends on time and place
- Least-cost diets and their affordability help to explain why healthy diets are not consumed

Why do we track the cost of healthy diets?

- Policies and programs pursue what is measured
- Research finds higher costs for each “step up”
- If the next step is unaffordable, food prices are an **insurmountable barrier**





Aims

Cost

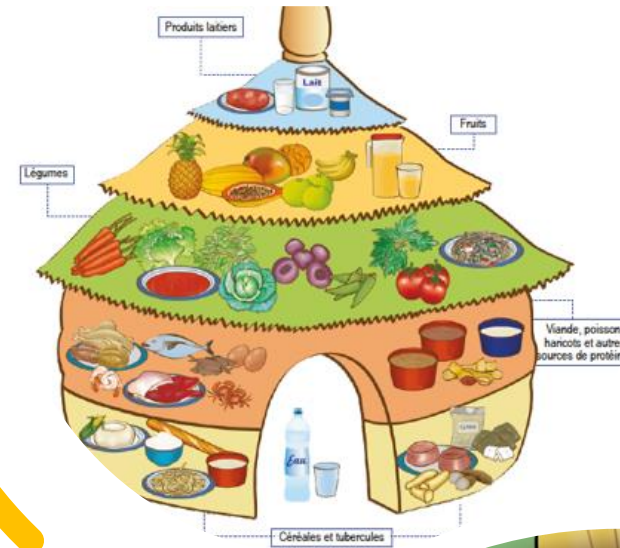
If you went to an average market in Ethiopia, how much would it cost to obtain a diet that satisfied dietary guidelines?

Affordability

How many people could not afford this cost?

Defining healthy diets to measure CoHD

- Based on food-based dietary guidelines (FBDGs)
- FBDGs represent a realistic way for people to select nutrient-adequate diets, using food groups



Quantified food-based dietary guidelines tell us how much food we need



Source: Federal Government of Ethiopia, Ministry of Health, Ethiopian Public Health Institute (2022). Ethiopia: Food-Based Dietary Guidelines–2022. Addis Ababa, Ethiopia.

Table 1. The recommended intake of different food groups in grams per day+* for the general population and various age-range subpopulations from individual and population diet modelling

Food group	General population above 2 years (g)	2–5 years (g)	6–18 years and 65+ years (g)	19–64 years (non-fasting) (g)	19–64 years (intermittent fasting) (g)	19–64 years (continuous fasting) (g)
Grains, white roots and tubers	570 (400–650)	490 (450–500)	600 (500–800)	650 (500–800)	600 (500–800)	600 (500–800)
Pulses	90 (80–115)	90 (80–115)	115 (80–115)	90 (90–120)	100 (90–150)	200 (100–250)
Nuts and seeds	15 (10–20)	15 (5–20)	10 (5–20)	15 (10–20)	15 (10–25)	50 (20–60)
Milk and dairy foods	250 (200–400)	200 (150–250)	200 (150–250)	250 (150–300)	250 (0–400)	0
Meat and eggs	30 (20–50)	30 (30–50)	50 (30–50)	45 (40–90)	40 (0–90)	0
Fruits	150 (110–160)	100 (100–150)	150 (100–200)	150 (100–200)	150 (100–200)	200 (150–250)
Vegetables	130 (100–140)	75 (70–100)	95 (70–100)	120 (100–170)	130 (100–150)	135 (100–150)
Fats and oils	15 (10–17)	15 (10–17)	15 (10–17)	15 (10–17)	15 (10–17)	15 (10–17)
Added sugar and SSBs	15 (0–31)	15 (0–31)	15 (0–31)	15 (0–31)	15 (0–31)	15 (0–31)
Salt	<5 (0–3)	<5 (0–3)	<5 (0–3)	<5 (0–3)	<5 (0–3)	<5 (0–3)
Alcohol	50 (0–150)	0	0	50 (0–150)	50 (0–150)	50 (0–150)
Physical activity+	>3 (3–5)	>3 (3–5)	>3 (3–5)	>3 (3–5)	>3 (3–5)	>3 (3–5)
Potable water*	>8 (8–10)	>8 (8–10)	>8 (8–10)	>8 (8–10)	>8 (8–10)	>8 (8–10)

Notes:

+days/week: at least 30 minutes per activity day

*glass/day: average estimated based on the current intake, optimized individual diets and population diet

Pregnant or breastfeeding women should take at least one additional meal from the food group that is not part of their main meal for the day

The recommended amounts given for the general population are an average amount that can be used for public messages and tips

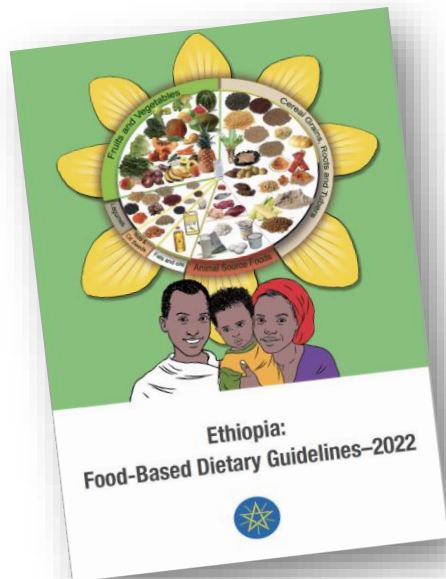
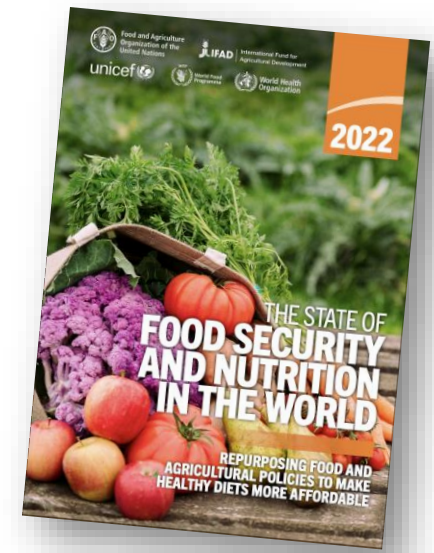
Least-cost healthy diets

- The cost of the **least expensive** combination of locally-available foods needed for health
- Match retail prices to
 - Food composition
 - Requirements for health (FBDGs)
- Within the least-cost healthy diet
 - Food group proportions stay constant (share of kcal)
 - Within food groups, food items are substitutable
 - Least-cost items may vary at each time and place

Cost of a Healthy Diet can be calculated in two ways

Global monitoring: Healthy Diet Basket

- Represents commonalities across national guidelines
- Global comparisons
- Data source: national average prices from World Bank ICP, 2017



National monitoring: Ethiopian FBDG

- Official policy standard from national government
- Data source: average retail prices from ESS, monthly

CoHD (global method)

Ethiopia

\$0.18

Palm oil



1 item

300 kcal

\$0.27

Spotted
beans



1 item

300 kcal

\$0.44

Maize grains
Wheat flour



2 items

1160 kcal

\$0.78

Bananas
Mango



2 items

160 kcal

\$0.55

Onions
Carrots
Cabbage

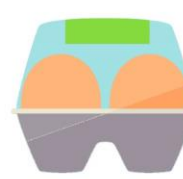


3 items

110 kcal

\$0.88

Fresh sardines
Red snapper



2 item

300 kcal

=

\$3.11
(2017 PPP)



11 items

2330 kcal

Select All Clear All

-- Cost of animal source foods x -- Cost of fruits x

-- Cost of legumes, nuts and seeds x

-- Cost of oils and fats x -- Cost of starchy staples x

-- Cost of vegetables x

2017 x 2020 x

Output Type: Table Pivot

File Type: CSV XLS

Thousand Separator in 'Show Data': None Comma Period

Output Formatting Options: Flags Notes Codes Units Null Values

Description and metadata

Suggested Reading

- Default coding and flags
- The cost and affordability of a healthy diet (CoAHD) indicators: Methods and data sources

Definitions and standa...

Metadata

Term of Use

Statistical Database Terms of Use



Show Data

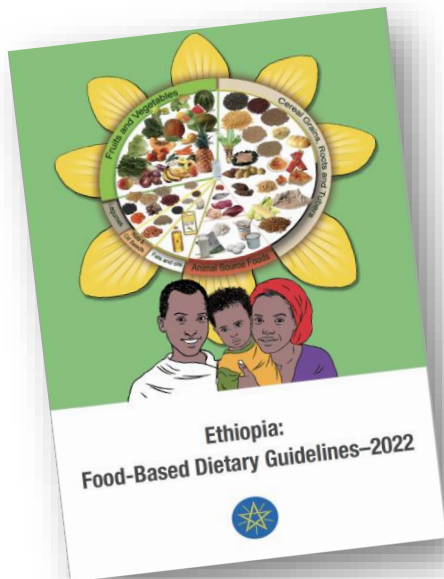
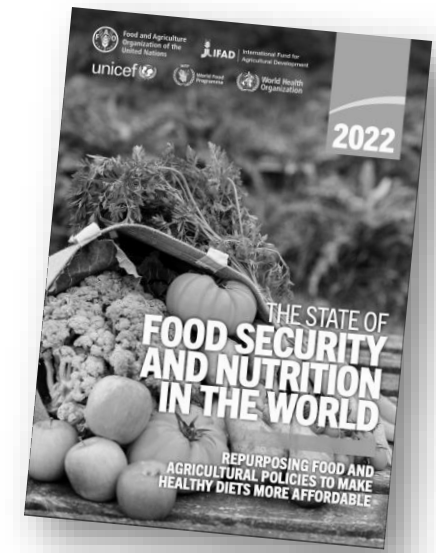


			- All		
			2017	2020	
			Value	Value	
- All	- Ethiopia	- Value	Cost of a healthy diet (PPP dollar per person per day)	3.108	3.366
			Cost of animal source foods	0.882	
			Cost of fruits	0.777	
			Cost of legumes, nuts and seeds	0.271	
			Cost of oils and fats	0.189	
			Cost of starchy staples	0.444	
			Cost of vegetables	0.545	

Cost of a Healthy Diet can be calculated in two ways

Global monitoring: Healthy Diet Basket

- Represents commonalities across national guidelines
- Global comparisons
- Data source: national average prices from World Bank ICP, 2017



National monitoring: Ethiopian FBDG

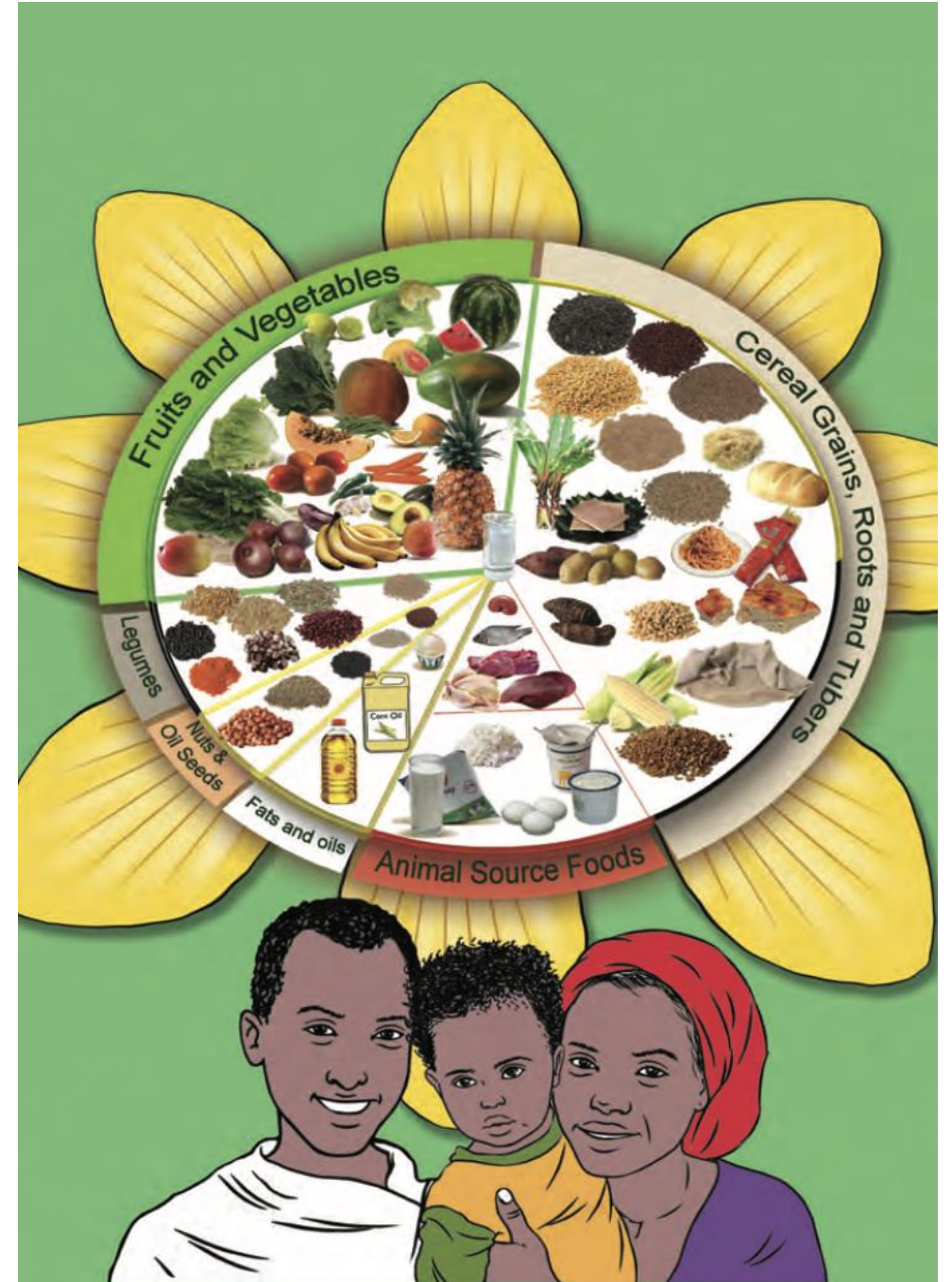
- Official policy standard from national government
- Data source: average retail prices from ESS, monthly

Healthy Diet Basket & Ethiopian FBDG comparison

Healthy Diet Basket			Ethiopia		
Food Group	# of foods recommended	Calories (kcal/day)	Food Group	# of foods recommended	Calories (kcal/day)
Starchy staples	2	1160	Starchy staples	2	1282
Vegetables	3	110	Vegetables	3	76
Fruits	2	160	Fruits	2	170
Animal source foods	2	300	Meat, fish, and eggs	1	98
			Dairy	1	185
Legumes nuts and seeds	1	300	Legumes	1	188
			Nuts and seeds	1	151
Oils and fats	1	300	Oils and fats	1	50
Total	11	2330	Total	12	2330

Our goal

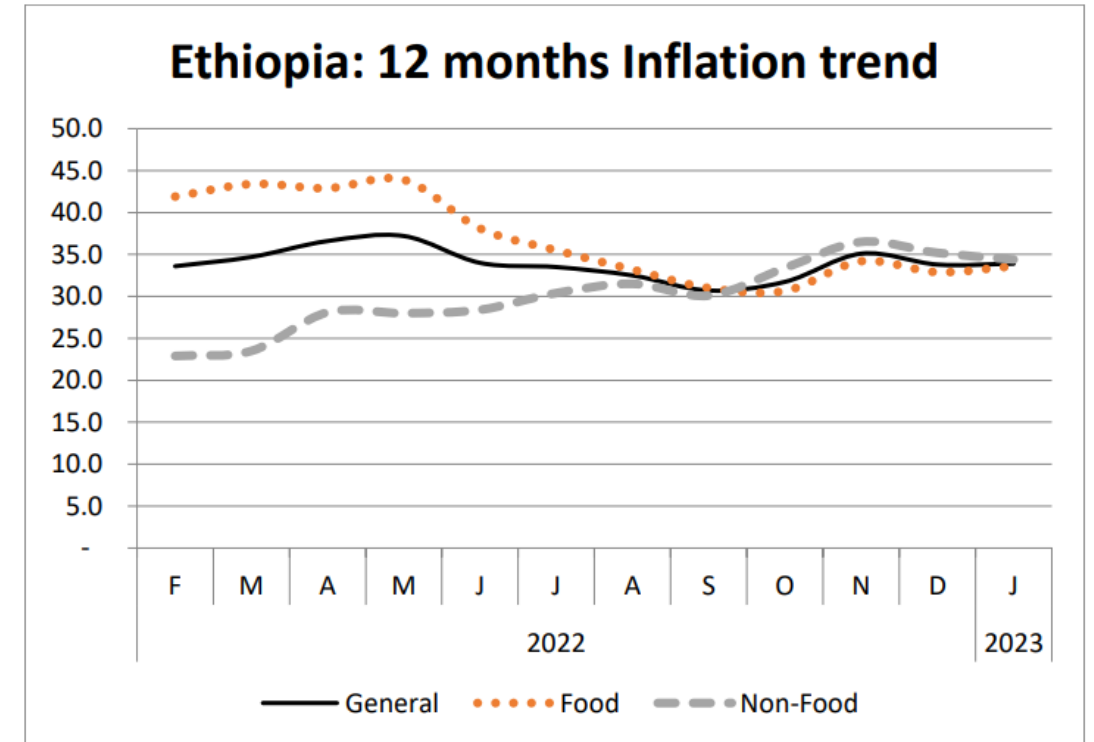
- Use **existing food price data**
- to support the **regular calculation** of the Cost and Affordability of a Healthy Diet
- to **inform policy and programs** to improve access to healthy diets
- as defined by **Ethiopia's new food-based dietary guidelines**



Food price data



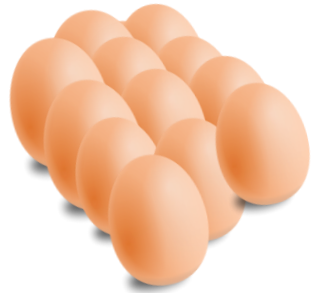
- Main data are food prices collected by governments
 - Used for measuring inflation with the Consumer Price Index (CPI)
- High quality, high frequency data collected in 116 markets across country
- Culturally acceptable, commonly consumed food items included



December 2016=100

Source: Ethiopian Statistics Service (January 2023). *Country and Regional Level Consumer Price Indices (CPI)*. Addis Ababa, Ethiopia.

Cost of a Healthy Diet: Calculation Logic

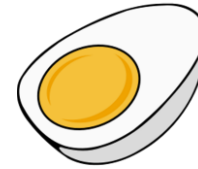


$$\begin{array}{l} \text{1 dozen} \\ \text{eggs} \end{array} \rightarrow \frac{156 \text{ ETB / dozen eggs}}{0.6 \text{ kg / dozen egg}} = 260 \text{ ETB / kg of egg}$$

Calculate price/kg

$$260 \text{ ETB / kg of egg} \times \begin{array}{l} 1 \text{ kg of egg /} \\ 0.88 \text{ kg edible egg} \end{array} = 300 \text{ ETB / kg of edible egg}$$

Food Composition Data



Calculate price/kg of edible food

$$300 \text{ ETB / kg edible egg} \times \begin{array}{l} 1 \text{ kg edible egg /} \\ 1430 \text{ kcal} \end{array} = 0.21 \text{ ETB / kcal}$$

Food Composition Data

Calculate price/kcal

$$0.21 \text{ ETB / kcal} \times \begin{array}{l} \text{Dietary Guidelines} \\ 98 \text{ kcal / day} \end{array} = 20.25 \text{ ETB / day}$$

Calculate cost/day to meet food group recommendation

Review: Steps to calculate

1. Calculate the price per kg for each food
2. Match each food to its food composition
3. Calculate the price per calorie for each food
4. Categorize each food in appropriate food group
5. Calculate the cost per day for each food
6. Drop duplicate food items within a generic food category
7. Select the least-expensive food item(s) per food group
8. Sum the cost per day for all foods

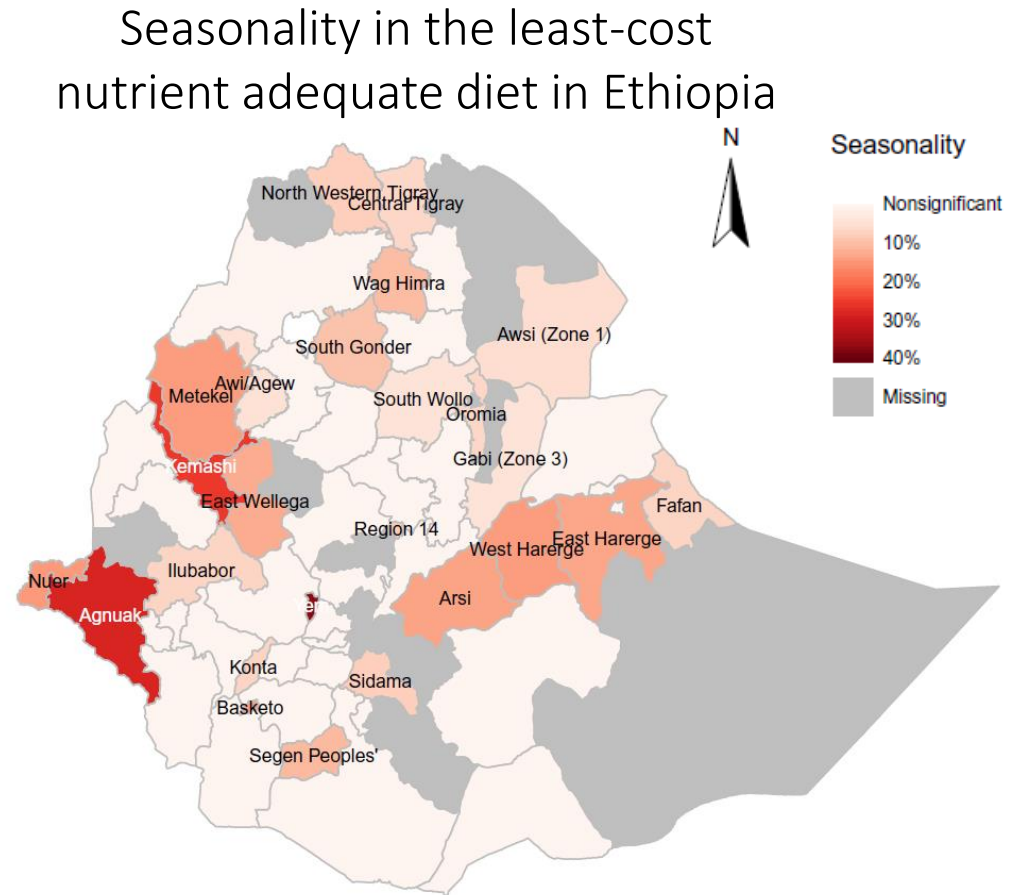
Affordability

- Compare cost to a defined income standard
 - E.g., income, expenditure, wages
- Average share of food expenditure for a reference population
 - E.g., average share of expenditure on food amongst the poorest quintile of the population
 - E.g., average share of expenditure on food by region
 - Adjust expenditure using CPI

Monitoring

Seasonal variation of diet costs in Ethiopia

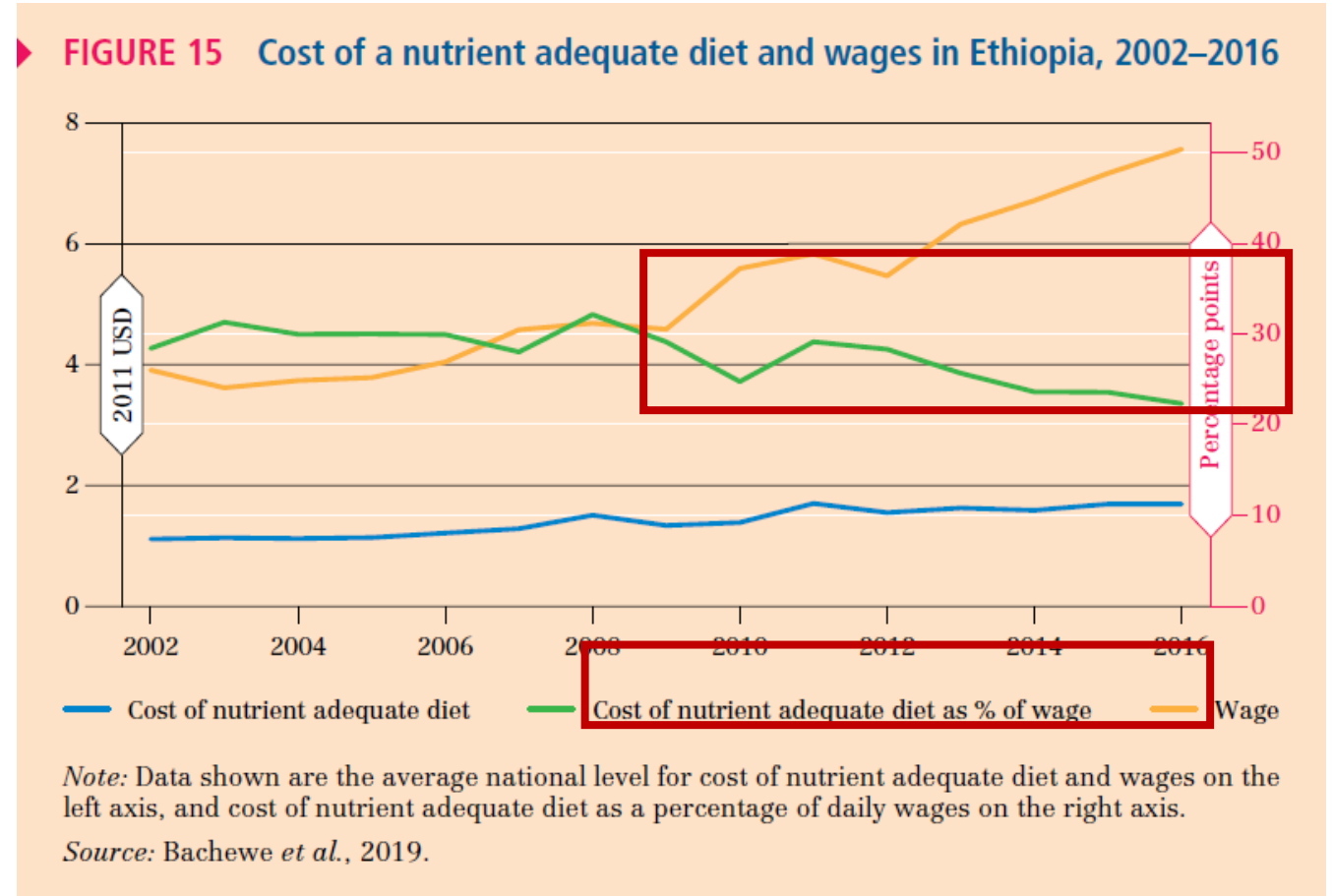
- Significant seasonality for
 - 27 of 57 zones in Ethiopia
 - 72 of 82 food items
- Fruits and vegetables had stronger seasonality than other food groups
- Reducing & stabilizing cost of nutritious foods is important for consumers and farmers who use markets to complement what they grow



Source: Bai, Naumova, and Masters, 2020

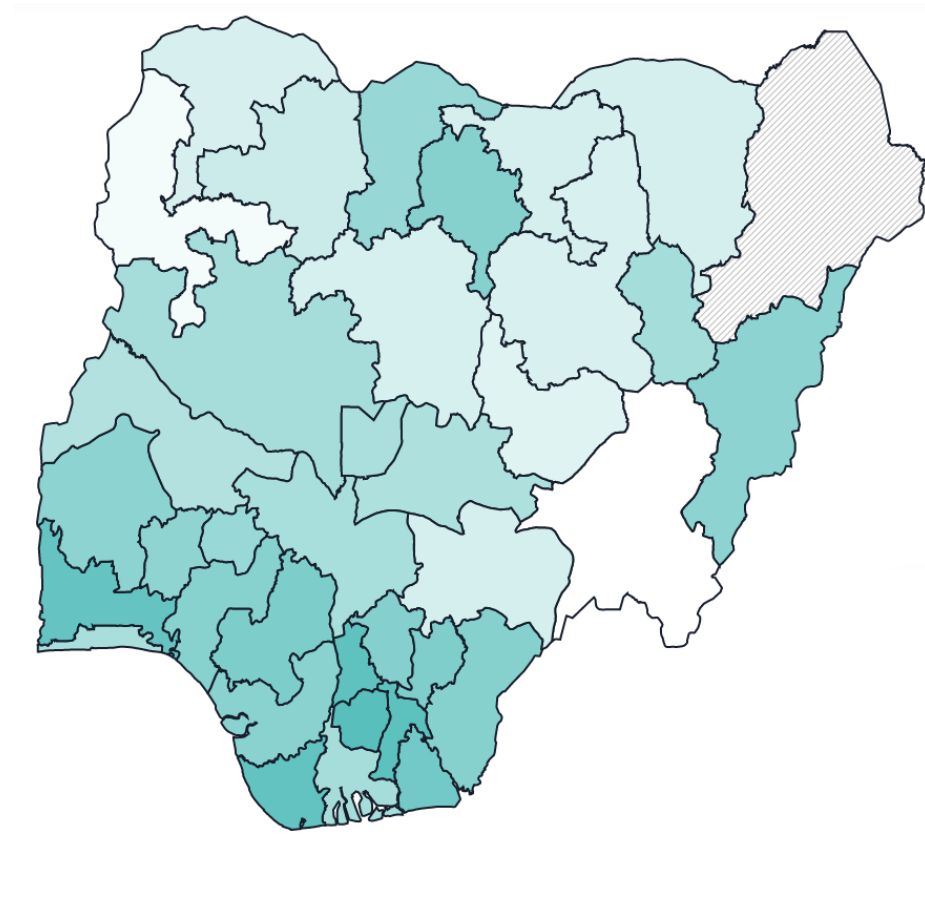
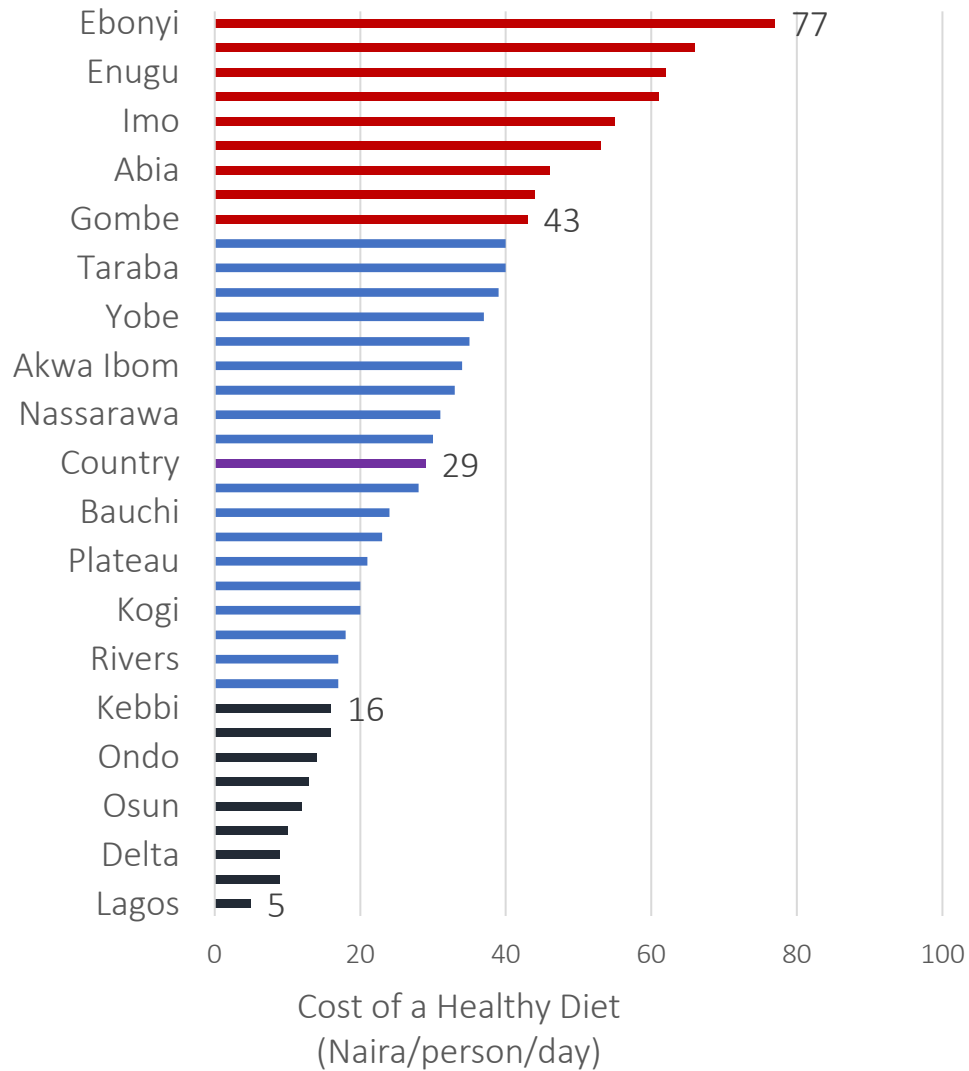
Affordability relative to wages

- Daily wages for unskilled laborers
- Cost as a percentage of wages decreased from 32% (2008) to 22% (2016)
- Affordability improved due to wage increases, rather than less expensive food



Source: Bachewe *et al.*, 2019; Herforth *et al.*, 2020

Example sub-national results from Nigeria



Source: Mekonnen et al., 2021 (left), Food Systems Dashboard (right).

Q&A and Discussion