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

Rachel Gilbert
Tufts University
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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**

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<table>
<thead>
<tr>
<th>Food preferences, convenience and other goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy diets (meet food group recommendations)</td>
</tr>
<tr>
<td>Nutrient adequacy (avoid deficiencies and excesses of essential nutrients)</td>
</tr>
<tr>
<td>Caloric adequacy (short-term subsistence)</td>
</tr>
</tbody>
</table>

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

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

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
$3.11 (2017 PPP)

CoHD (global method)

Ethiopia

$0.18  Palm oil
$0.27  Spotted beans
$0.44  Maize grains
$0.78  Wheat flour
$0.55  Bananas
$0.55  Onions
$0.55  Carrots
$0.55  Cabbage

$0.88  Fresh sardines

11 items  2330 kcal
<table>
<thead>
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<th>Thousand Separator in 'Show Data'</th>
<th>Output Formatting Options</th>
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<tbody>
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<td>Units, Null Values</td>
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</table>

Show Data

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>A11</td>
<td>3.106</td>
<td>3.566</td>
</tr>
<tr>
<td>Cost of a healthy diet (PPP dollar per person per day)</td>
<td>Value</td>
<td>Value</td>
</tr>
<tr>
<td>Cost of animal source foods</td>
<td>0.882</td>
<td>0.982</td>
</tr>
<tr>
<td>Cost of fruits</td>
<td>0.777</td>
<td>0.777</td>
</tr>
<tr>
<td>Cost of legumes, nuts and seeds</td>
<td>0.271</td>
<td>0.271</td>
</tr>
<tr>
<td>Cost of oils and fats</td>
<td>0.189</td>
<td>0.189</td>
</tr>
<tr>
<td>Cost of starchy staples</td>
<td>0.444</td>
<td>0.444</td>
</tr>
<tr>
<td>Cost of vegetables</td>
<td>0.545</td>
<td>0.545</td>
</tr>
</tbody>
</table>
Cost of a Healthy Diet can be calculated in two ways

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## Healthy Diet Basket & Ethiopian FBDG comparison

<table>
<thead>
<tr>
<th>Food Group</th>
<th># of foods recommended</th>
<th>Calories (kcal/day)</th>
<th>Healthy Diet Basket</th>
<th></th>
<th>Ethiopia</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Starchy staples</td>
<td>2</td>
<td>1160</td>
<td></td>
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<td>Starchy staples</td>
<td>2</td>
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<tr>
<td>Vegetables</td>
<td>3</td>
<td>110</td>
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<td>Vegetables</td>
<td>3</td>
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<tr>
<td>Fruits</td>
<td>2</td>
<td>160</td>
<td></td>
<td></td>
<td>Fruits</td>
<td>2</td>
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<tr>
<td>Animal source foods</td>
<td>2</td>
<td>300</td>
<td></td>
<td></td>
<td>Meat, fish, and eggs</td>
<td>1</td>
</tr>
<tr>
<td>Legumes nuts and seeds</td>
<td>1</td>
<td>300</td>
<td></td>
<td></td>
<td>Dairy</td>
<td>1</td>
</tr>
<tr>
<td>Oils and fats</td>
<td>1</td>
<td>300</td>
<td></td>
<td></td>
<td>Legumes</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
<td><strong>2330</strong></td>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

### Notes
- The comparison shows the number of foods recommended and the calories per day for each food group in Healthy Diet Basket and Ethiopia.
- Both diets recommend the same total number of foods (11 vs. 12), but Ethiopia recommends slightly higher calories per day (2330 vs. 2330 kcal/day).
- The inclusion of oils and fats in the total count for both diets is noted, indicating a slight difference in the breakdown of food groups.
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

Cost of a Healthy Diet: **Calculation Logic**

- **Calculate price/kg**
  - \[ \frac{156 \text{ ETB}}{1 \text{ dozen eggs}} \times \frac{0.6 \text{ kg}}{1 \text{ dozen egg}} = \frac{260 \text{ ETB}}{1 \text{ kg of egg}} \]

- **Calculate price/kg of edible food**
  - \[ \frac{260 \text{ ETB}}{1 \text{ kg of egg}} \times \frac{0.88 \text{ kg edible egg}}{1 \text{ kg of egg}} = \frac{300 \text{ ETB}}{1 \text{ kg of edible egg}} \]

- **Calculate price/kcal**
  - \[ \frac{0.21 \text{ ETB}}{1 \text{ kcal}} \times \frac{1430 \text{ kcal}}{1 \text{ day}} = \frac{20.25 \text{ ETB}}{1 \text{ day}} \]

**Dietary Guidelines**

- **Calculate cost/day to meet food group recommendation**: \[ 98 \text{ kcal/day} \times 20.25 \text{ ETB/day} = 20.25 \text{ ETB/day} \]
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