Understanding the Cost of a Healthy Diet (CoHD) and Implications for Food Security Policy and Monitoring in Nigeria

Olutayo Adeyemi
Agriculture, Nutrition and Health (ANH) Academy Science-Policy Fellow
Federal Ministry of Agriculture and Food Security, Abuja
17 September 2025

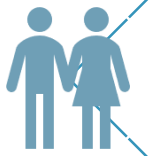
Poor Diet Quality is a Key Development Challenge in Nigeria

Malnutrition and diseases are major problems in Nigeria

Poor diet quality causes malnutrition and disease

Diet quality is poor for both children and adults

12% of children 6 – 23 months old had minimum acceptable diet in 2021 reflecting no improvements from 10% in 2013



22% of both men and women ≥15 years old consumed all five daily recommended food groups in 2024

NDHS, 2013; MICS, 2021; GHS-Panel 2024

Food Insecurity causes Poor Diet Quality

- Poor diet quality is influenced by several factors, including food insecurity
- 73% of Nigerians experienced moderate or severe food insecurity in the 12 months preceding MICS 2021
  - Ranged from 92% in Plateau to 56% in Gombe State
- Need to reduce food insecurity to improve diet quality and reduce malnutrition and diseases
- There can be no food security and diet quality if healthy diets are not affordable to households
- Nutrition education is not effective when people cannot afford a healthy diet

Indicators to measure Food Insecurity: Cost and Affordability of a Healthy Diet (CoAHD)

- Cost of a Healthy Diet (CoHD) is the cost of the cheapest possible combination of foods that meets healthy diet guidelines, given market prices of locally available foods.

- Measure **physical and economic access** to healthy diets

- Use **retail food prices** to identify the least-cost combination of locally available foods to meet healthy diet recommendations
  - Food selection depends on time and place
  - Least-cost combination of foods is not consistent

- **(Un)affordability** of least-cost diets can explain why healthy diets are not consumed

Affordability depends on Cost

Cost

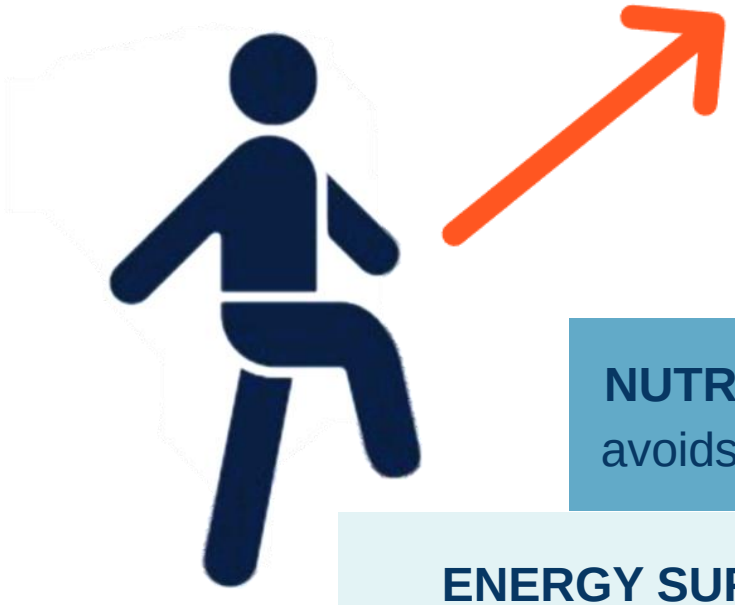
If you went to an average market in Nigeria, how much would it cost to obtain a diet that meets dietary guidelines?

Affordability

How many people could not afford this cost?

Food prices create a **ladder of affordability**

- Research finds higher costs for each “step up”
- Households can only consume diets that they can afford
- If food prices are unaffordable, they are an **insurmountable barrier**



OTHER GOALS
convenience, preferences

HEALTHY DIET
meets food group recommendations

NUTRIENT ADEQUATE DIET
avoids deficiencies & excess of essential nutrients

ENERGY SUFFICIENT DIET
meets caloric needs for short-term subsistence

Method for Calculating CoHD

Data required for calculating Cost of a Healthy Diet indicator

Healthy diet standard

Food based dietary guidelines (FBDGs) that define serving size and number of servings per day per food group to achieve a healthy diet

Food composition data

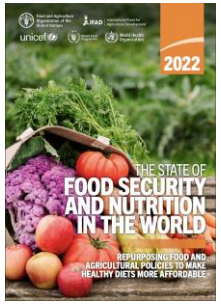
Calorie content and edible portion

Retail food prices

Prices that consumers buy their food

Calculating Least-Cost Diets: Different FBDGs can be used

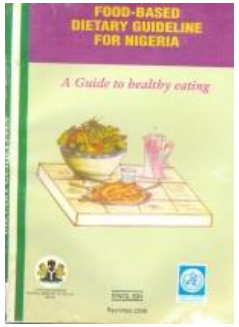
Global Monitoring:



Global Healthy Diet Basket

- Represents commonalities across national guidelines
- Facilitates global comparisons

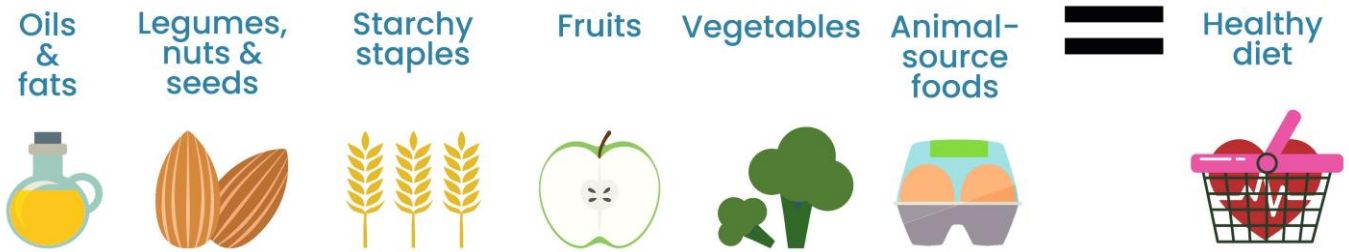
National Monitoring:



National Food-based Dietary Guidelines (FBDGs)

- Official policy standard set by national government
- Current FBDGs not quantitative so cannot be used for calculating least cost diets; can use Healthy Diet Basket
- Revised Nigeria FBDGs are in process

Healthy Diet Basket



Food Group	Number of Foods Recommended	Calories Needed (kcal/day)
Starchy staples	**2**	**1160**
Vegetables	**3**	**110**
Fruits	**2**	**160**
Animal source foods	**2**	**300**
Legumes, nuts and seeds	**1**	**300**
Oils and fats	**1**	**300**

Calculating CoHD:
Food Composition Data

Provides information about the number of calories and other nutrients in a food item

Informs about the proportion of a food item that is actually eaten after removing any parts that are not eaten, such as peels, bones, shells, etc.

Healthy diet requirements are met with the parts of a food item that is eaten

Food composition data allows calculation of CoHD to adjust for proportion of food items that are not eaten so that the full cost of meeting the requirements is obtained

Different Food Composition Database Can be Used

Information needed does not vary widely from one place to another so any food composition database with data about foods in the retail price list can be used

Calculation of CoHD for Nigeria uses:

- United States Department of Agriculture (USDA) Database which is the most comprehensive
- West African Food Composition Table published by FAO to address region-specific gaps in USDA Database
- Nigeria Food Composition Table published by local researchers to address contextual gaps in West Africa and USDA databases)

Calculating Least-Cost Diets: Different Food Price Data can be used

Global Monitoring:

World Bank ICP: National Average Prices

- Most recent data in 2021
- Items limited to comparable products sold in multiple countries
- National annual average price per item
- Used for State of Food Insecurity in the World (SOFI) reports

National Monitoring:

Nigeria NBS: Retail Food Prices

- New data every month
- Items include local foods
- Can disaggregate at different geographic levels

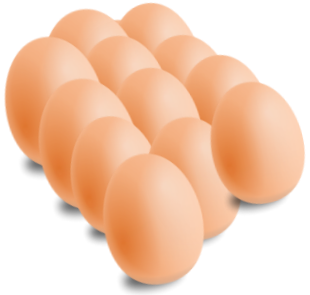
NBS Retail Food Prices Data

- Food prices collected monthly from over 10,000 informants across the country
- Prices are representative of rural and urban areas in each of Nigeria's 36 states and the federal capital territory (74 strata)
- Includes prices of >200 items and covers all food groups required for calculating cost of healthy diets
- Routine data collected by National Bureau of Statistics

Steps to calculate CoHD

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

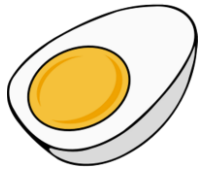
Cost of a Healthy Diet: Calculation Logic



1 dozen eggs → **500 ₦ /** dozen eggs ÷ **0.84** kg **/** dozen egg **=** **595 ₦ /** kg of egg as sold

595 ₦ / kg of egg as sold **x** 1 kg of egg **/** **0.88** kg edible egg **=** **676 ₦ /** kg of edible egg

Food Composition Data



676 ₦ / kg edible egg **x** 1 kg edible egg **/** **1430** kcal **=** **0.47 ₦ /** kcal

Food Composition Data

Dietary Guidelines

0.47 ₦ / kcal **x** **150** kcal **/** day **=** **71 ₦ / day**

Calculate **price per kilogram**

Calculate **price/kg of edible food**

Calculate **price/kcal**

Calculate **cost/day**

Food Prices for Nutrition

Software Tools available for Calculating CoHD

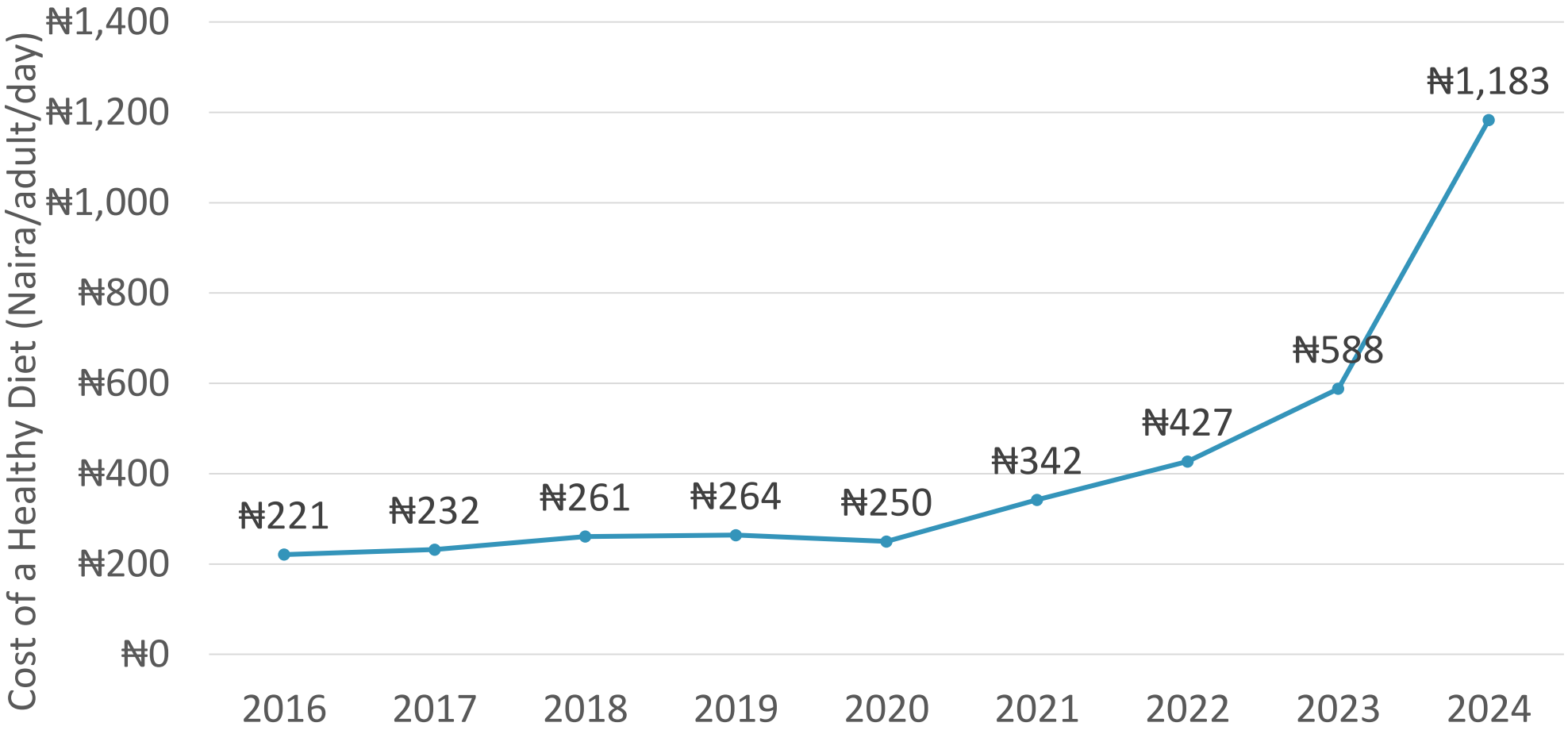
https://sites.tufts.edu/foodpricesfornutrition/tools/

INSTRUCTIONS	Visual protocol on how to use the technical tools for calculating the Cost of a Healthy Diet.
EXCEL WORKBOOK	Excel Workbook to calculate the Cost of a Healthy Diet.
STATA CODE	Stata .do file to calculate the Cost of a Healthy Diet. Imports food price data from a .dta file and additional inputs from an Excel file. Generates output files in a folder named StataResults.
R SCRIPT	R script to calculate the Cost of a Healthy Diet. Imports food price data from a .Rdta file and additional inputs from an Excel file. Generates output files in a folder named R_Results.
PSEUDODATA	Sample retail food price data for practicing Cost of a Healthy Diet calculations using Excel, Stata, or R. Models the file structure users should create for their data.
FOOD INFORMATION DATABASE	Excel database of food item information for 500+ common items found in national statistical organization price datasets. Intended to support the food matching step.

Monitoring CoAHD provides a framework for diagnosing the causes of poor diets and targeted responses

- High prices or unavailability of even the lowest-cost healthy foods
  - Improve supply to reduce cost to a reasonable frontier
- Low incomes available for any food
  - Improve livelihoods, earnings and safety nets for people who cannot afford even lowest-cost items
- Displacement of low-cost healthy foods by less nutritious items or more costly items
  - Limit consumption of unhealthy foods that displace low-cost, affordable options

CoAHD Findings: CoHD from 2016-2024



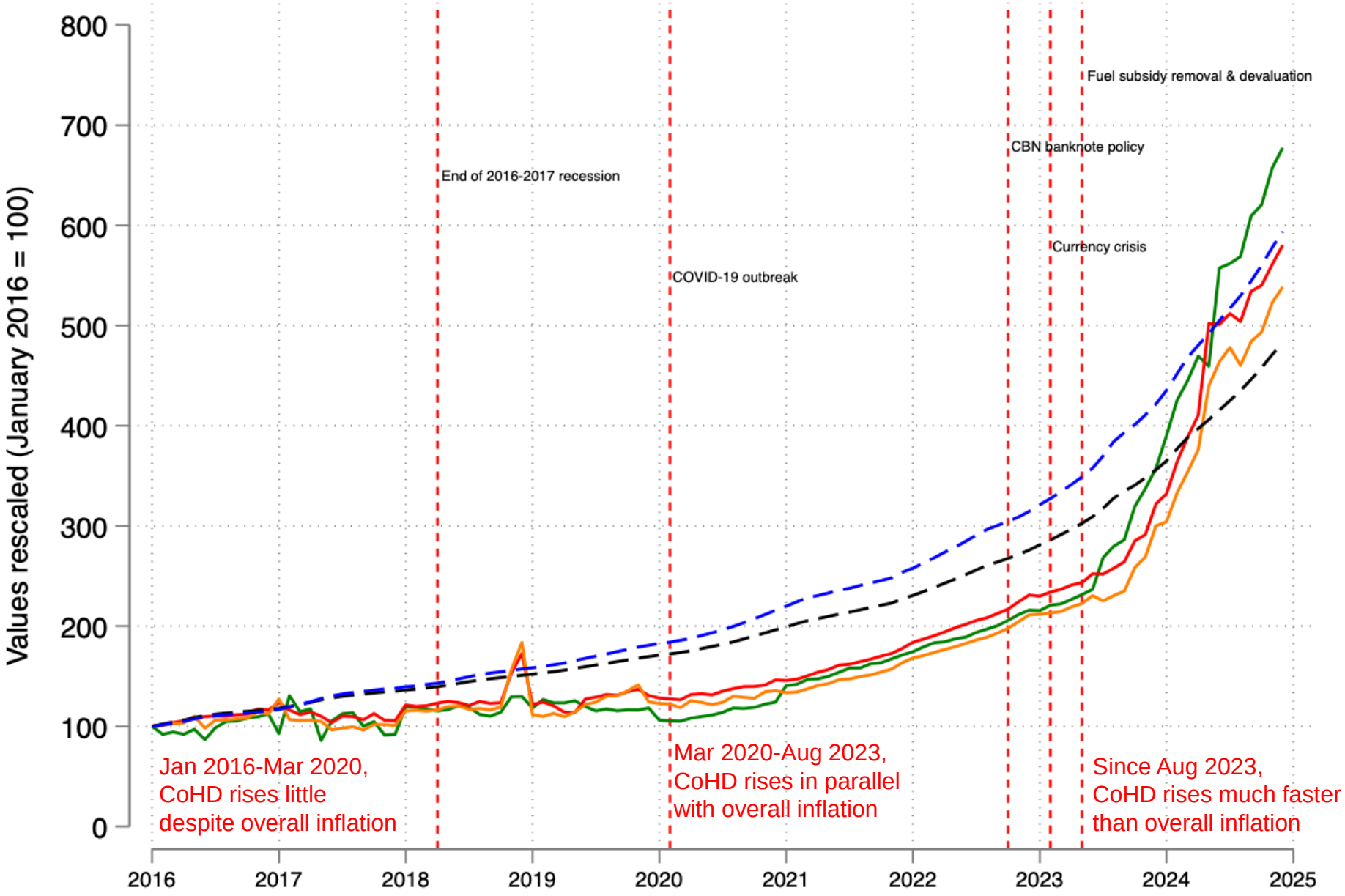
CoHD has risen alarmingly in recent years

Commonly Selected Least-Cost Items by Food Group

Animal source foods	Starchy staples	Vegetables	Fruits	Oils and fats	Legumes, nuts, and seeds
• Beef Head • Fresh Milk (Industrial) • Agric Eggs (1 Dozen)	• White Maize Grains • Whole Millet Grains • Yellow Maize Grains • White Garri	• Dried Okra • Dried Kuka • Bitter Leaf	• Coconut • Avocado • Date palm	• Palm Oil • Vegetable Oil • Groundnut Oil	• Groundnut (Shelled) • Soya Beans • Melon (Shelled)

Food Prices for Nutrition

Inflation dynamics for the lowest cost of a healthy diet (CoHD), in contrast to other prices shows relative rise in price for least-cost items compared to all foods/goods



Item prices

- Cost of a Healthy Diet (CoHD)
- CoHD-All*
- Simple average of all foods

Consumer Price Index (CPI)

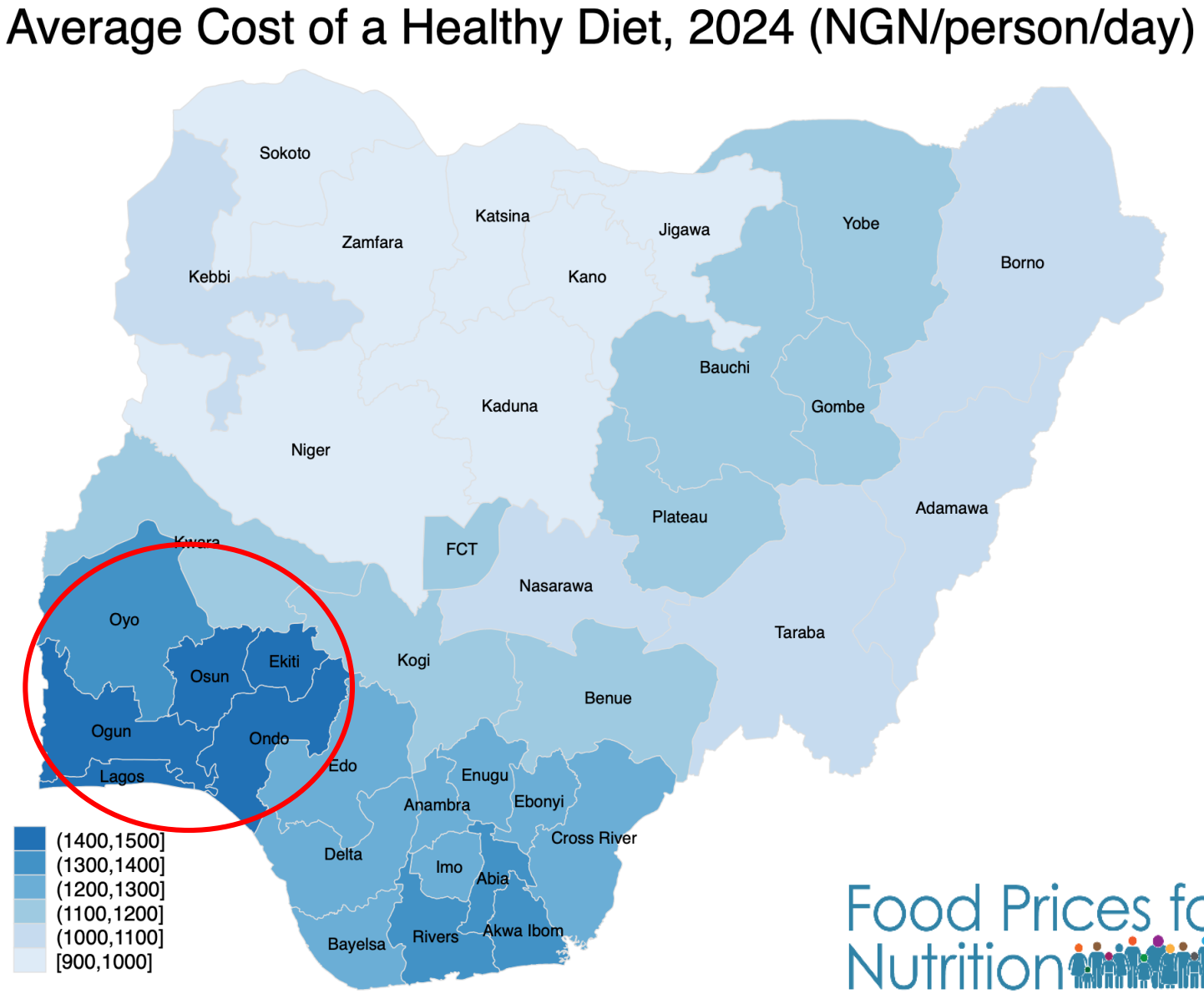
- ----- Food CPI
- ----- General CPI

**This shows the weighted average cost of a healthy diet using all items at each location, whereas CoHD uses only the least expensive locally available item*

Food Prices for Nutrition

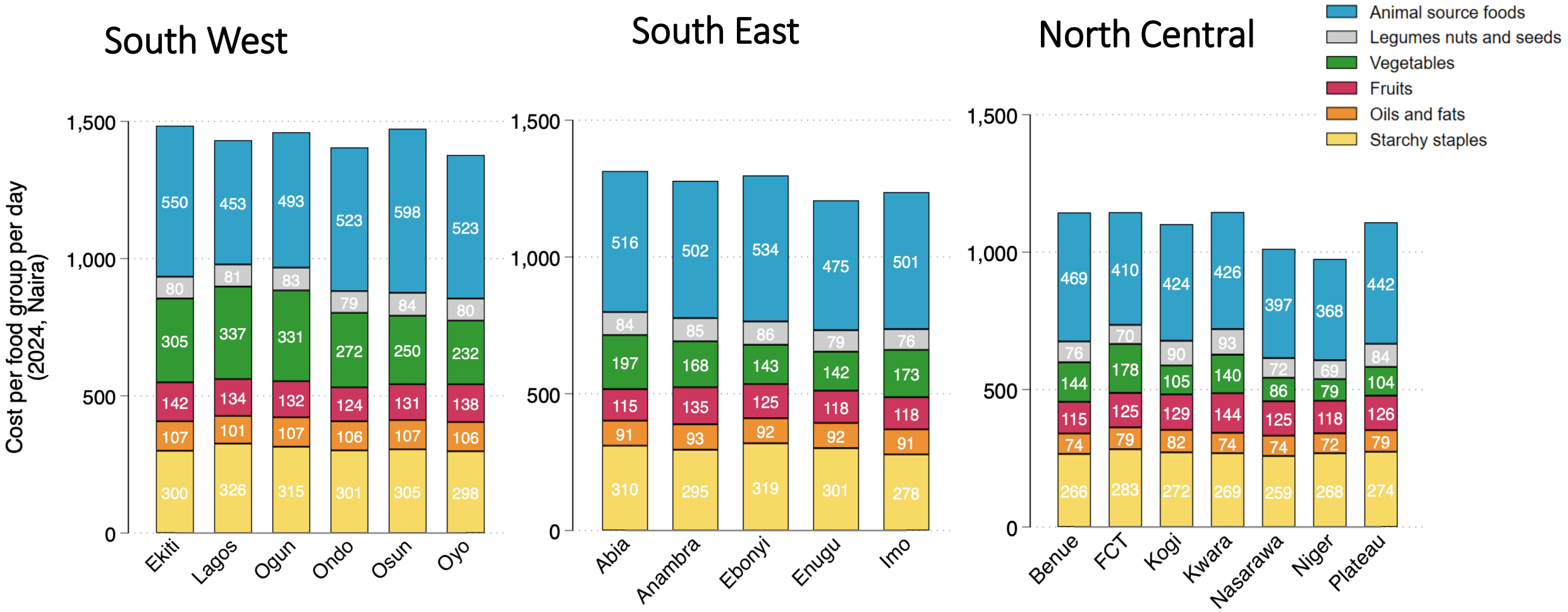
CoHD Findings: CoHD Varies Widely Across States

In Nigeria, least-cost diets were significantly more expensive in the Southwest zone in 2024



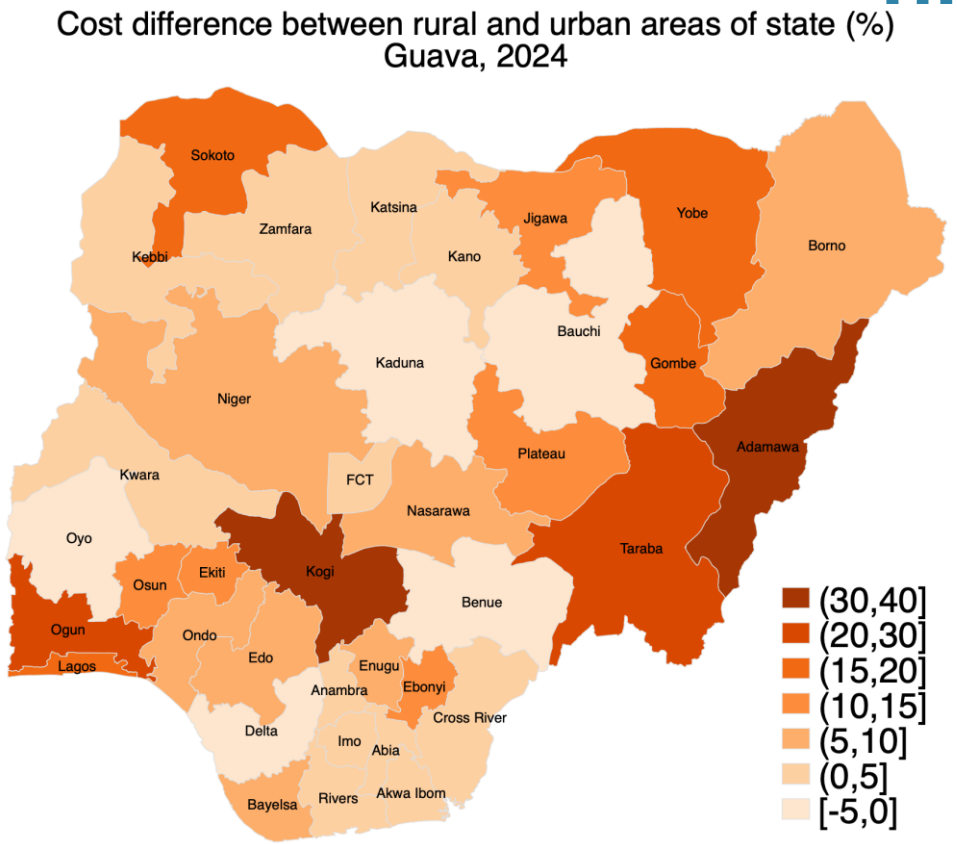
Food Prices for Nutrition

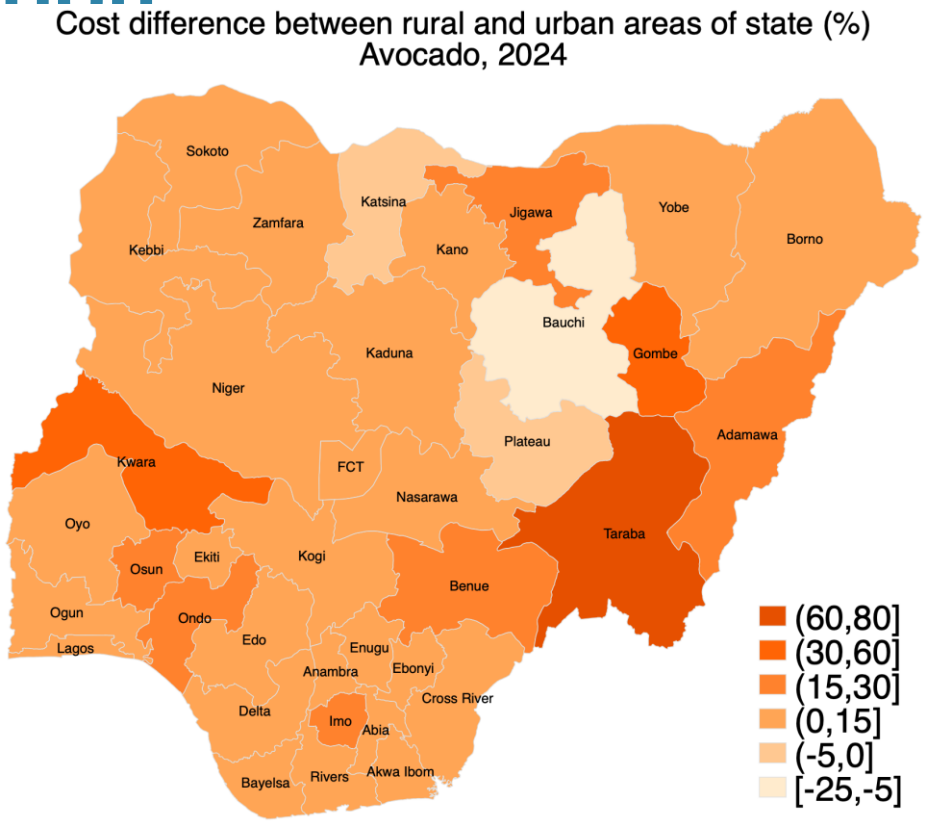
CoHD Findings: Food group costs were significantly higher in South East and South West than in nearby North Central states for vegetables and ASF



Food Prices for Nutrition

Availability and price differences between urban and rural areas suggest need for improved preservation and distribution

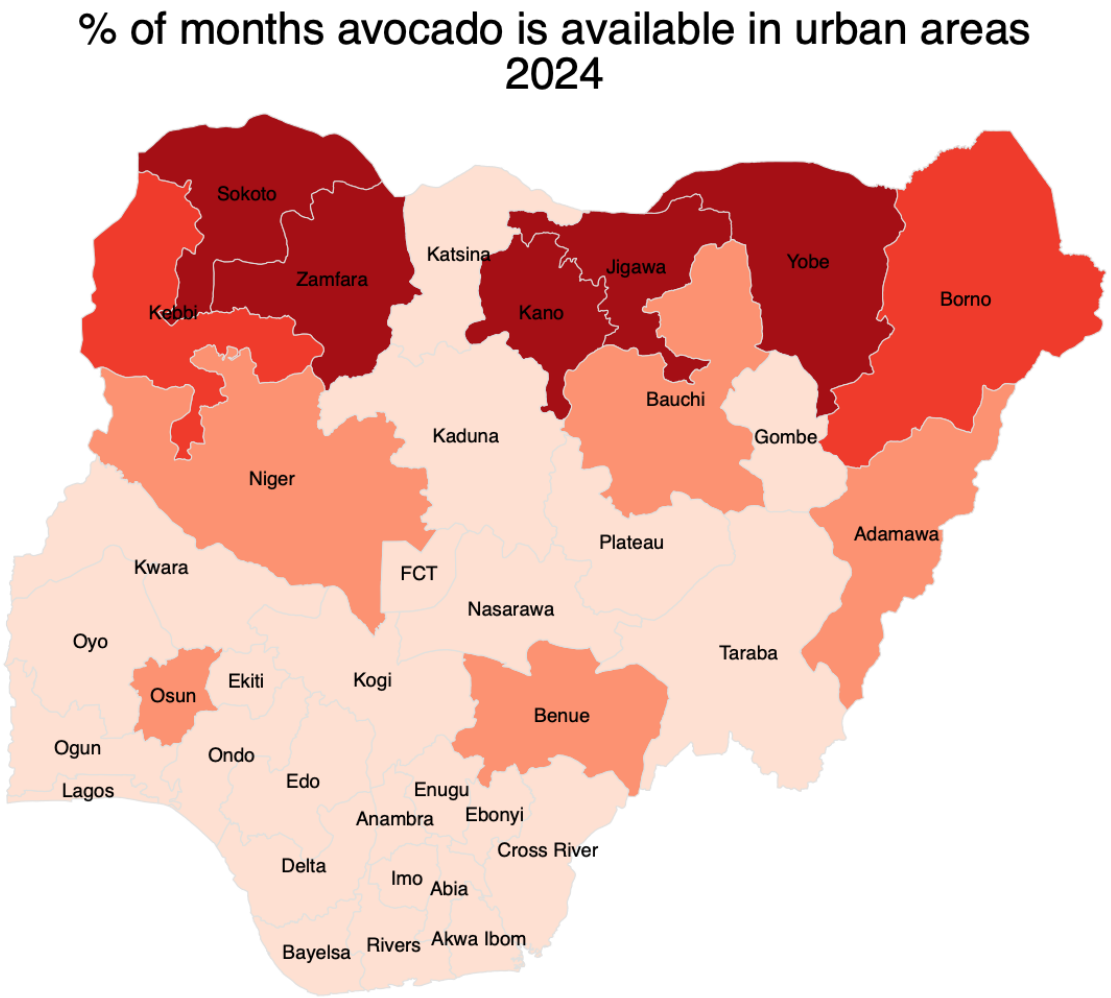


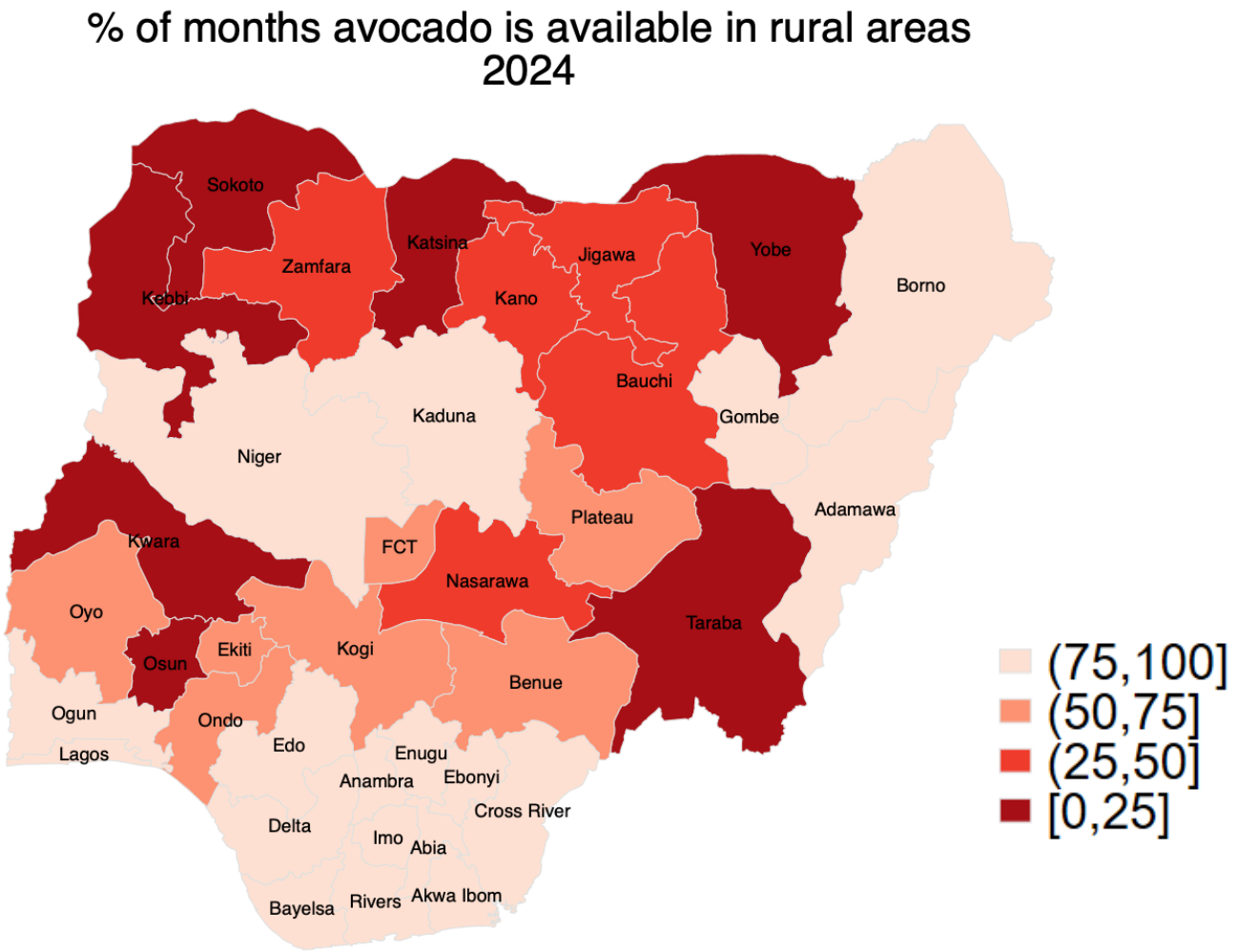


- Large price differences between rural and urban areas of the same state
- In Kwara state, avocados are more expensive in urban areas than in rural areas, but guavas cost nearly the same in both rural and urban areas.

Food Prices for Nutrition

Availability and price differences between urban and rural areas suggest need for improved preservation and distribution



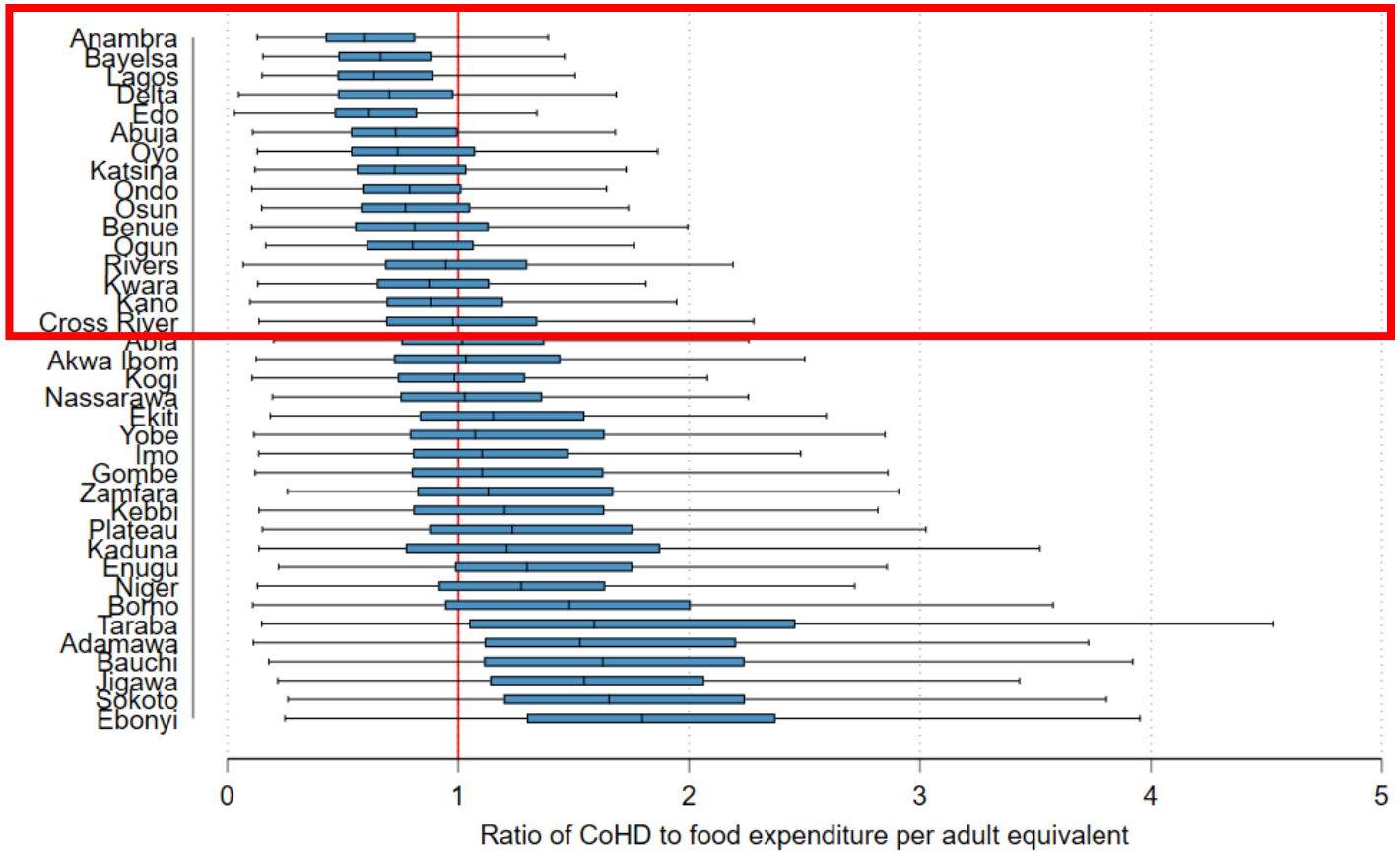


- Avocados are more unavailable in rural than in urban areas.

Food Prices for Nutrition

Comparisons of CoHD to food expenditure can indicate where there is room for demand shifts

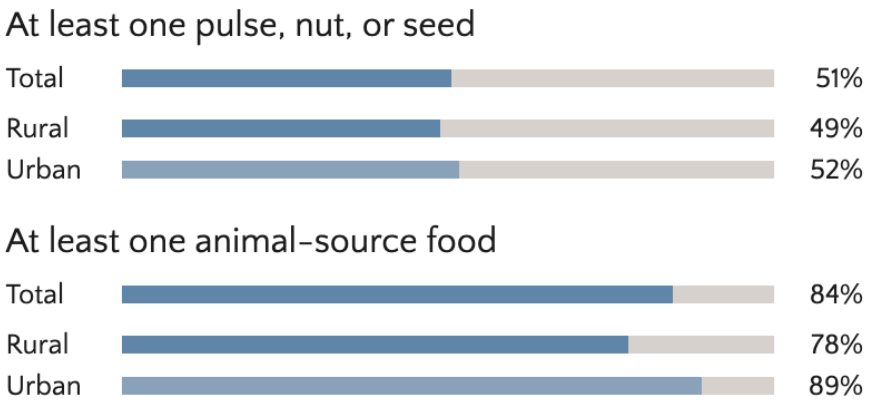
- When healthy diets are unaffordable, simply educating people will not be effective
- In some states, the majority of households spend more on food than average CoHD



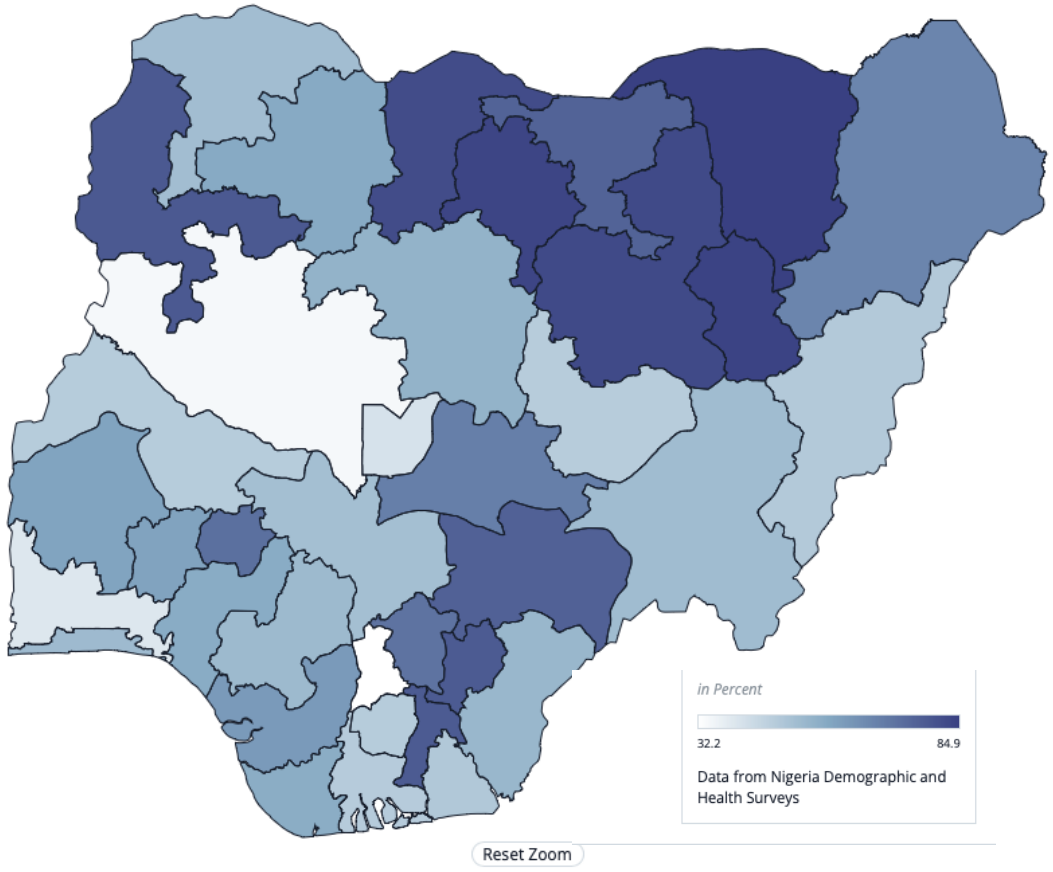
Higher values of ratio → healthy diets are increasingly unaffordable

Consumption data can help identify displacement of low-cost healthy items among those who can afford them

- Global Diet Quality Project data from 2021 reveal possibilities:
  - Shift some ASF consumption to LNS; possible economically and positive nutritionally



Consumption of at least one pulse, nut, or seed in females



Source: Food systems dashboard

Conclusions: Data About CoHD is a Big Value Added

"[It is crucial] to invest in data. Data gaps undermine our ability to target resources, develop policies and track accountability. Without good data, we're flying blind. If you can't see it, you can't solve it"

Kofi Annan, February 2018

CoHD allows us to see food insecurity much more clearly

It increases our ability to target resources, develop policies, and track accountability for food security

Acknowledgements


Thank
You