



Cost and Affordability of Healthy Diets Globally

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and team

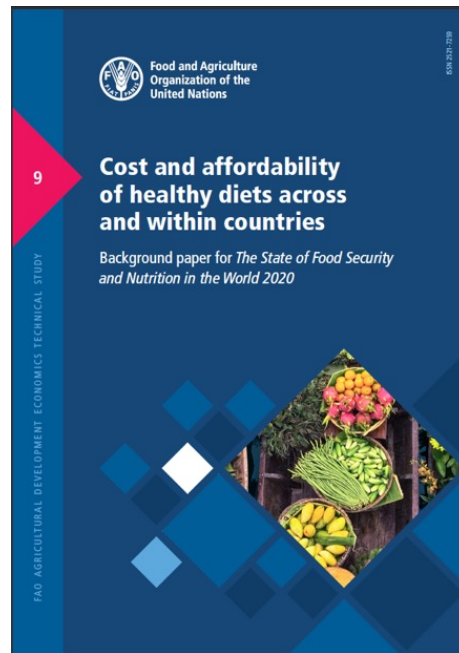
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sites.tufts.edu/foodpricesfornutrition



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

- Used in the UN State of Food Security and Nutrition in the World (2020 2021, 2022 forthcoming), joining other food security metrics



Herforth, A., Bai, Y., Venkat, A., Mahrt, K., Ebel, A. & Masters, W.A. 2020.

<https://doi.org/10.4060/cb2431en>



<http://www.fao.org/publications/sofi/2020/en/>
<https://www.fao.org/publications/sofi/2021/en/>



“Estimates of the cost and affordability of healthy diets will be updated annually and disseminated in this report, reflecting the most recent data as they become available.”
-SOFI 2021, p29

Vision:

Food price measurement to match this aspiration

Food security is...

*when all people, at all times, have physical and economic access to sufficient, safe, **nutritious food to meet dietary needs** and food preferences for an active and healthy life.*

-- World Food Summit, 1996



Cost of a healthy diet as a standard of economic access to sufficient nutritious food

- Based on FBDG, which represent:
 - a realistic way for regular people to select nutrient-adequate diets
 - diets that protect health against NCDs
 - diets that are dignified and culturally appropriate
- Furthermore, in nations where FBDG have been elaborated, FBDG are the official policy standard for what constitutes dietary needs
 - social safety nets and nutrition education based on FBDG

Aim

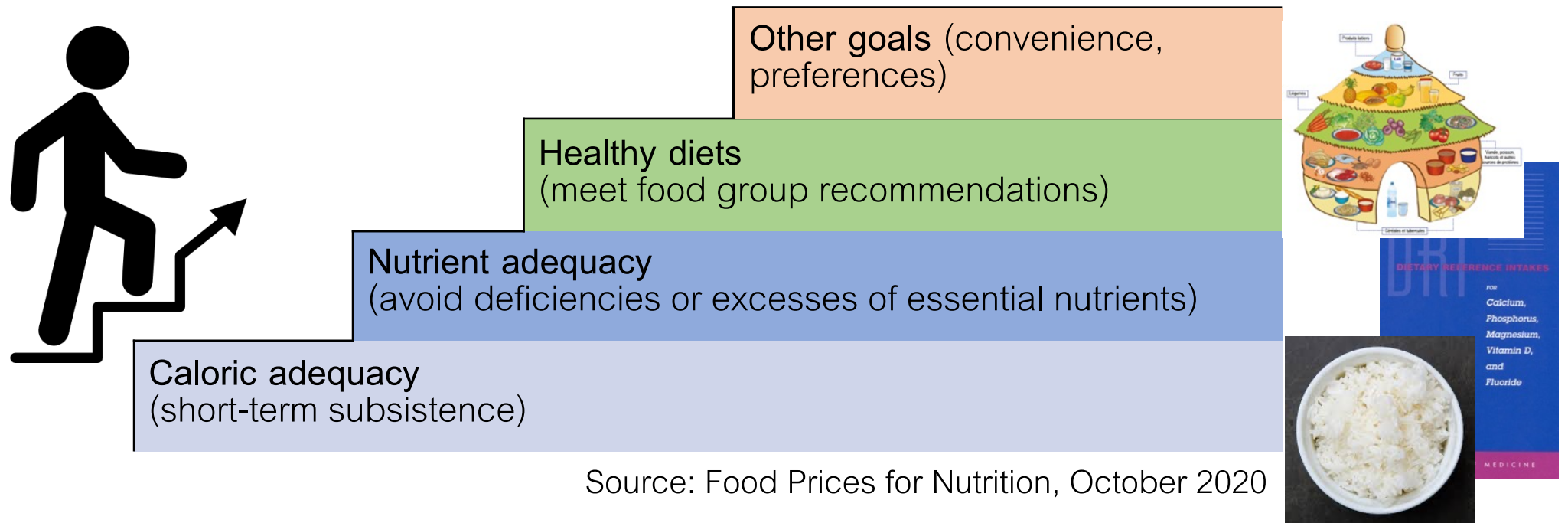
- If you went to an average market in any country, how much would it cost to obtain a diet that satisfies dietary guidelines? Nutrient requirements?
- How many people could not afford this cost?



The stairway of affordability, from subsistence to health

When all diets are affordable, food prices are one of many influences on food choice.

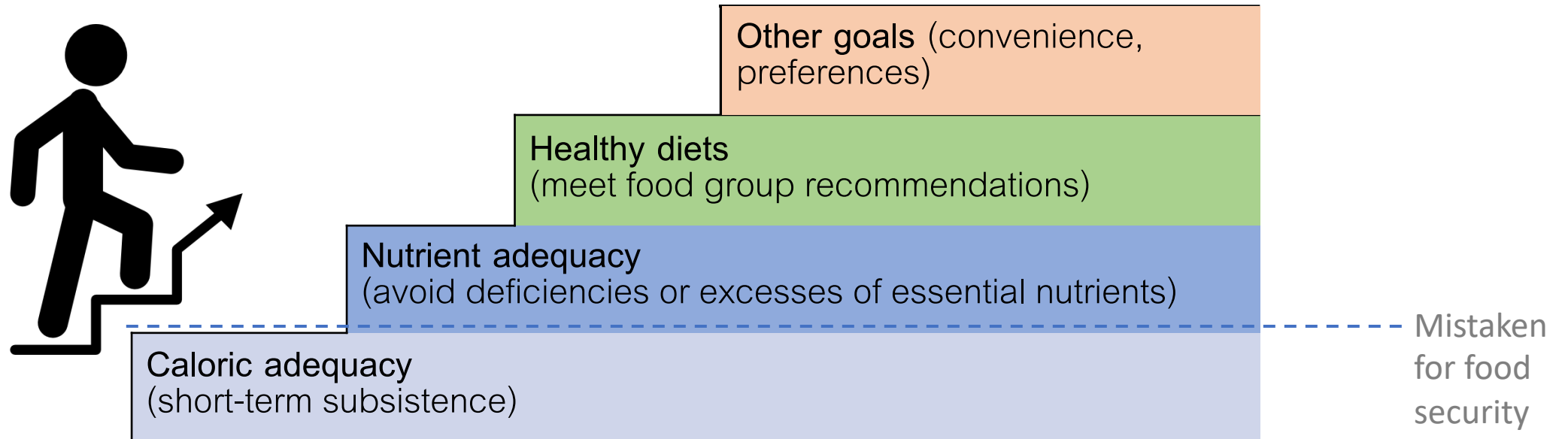
When healthy diets are unaffordable, food prices are an insurmountable barrier to improved diet quality.



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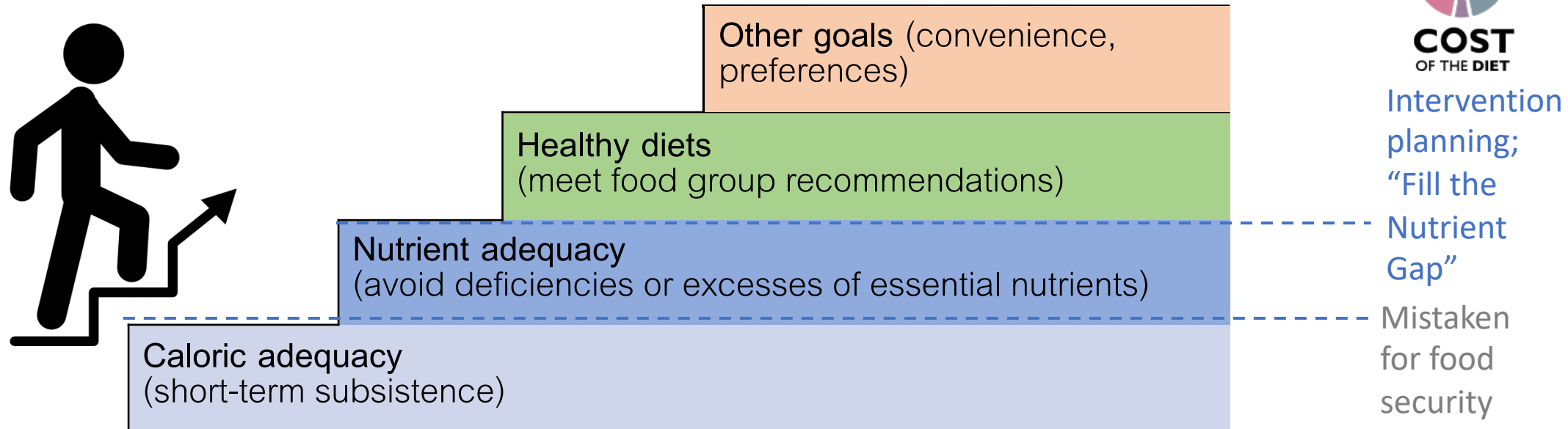


Source: Food Prices for Nutrition, August 2021

The stairway of affordability, from subsistence to health

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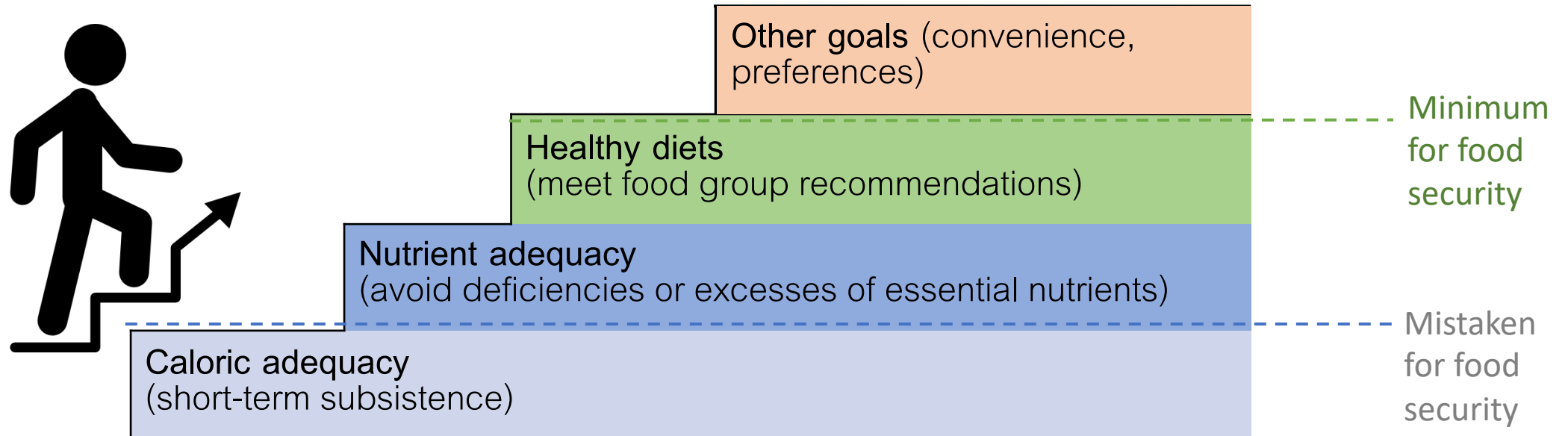


Source: Food Prices for Nutrition, August 2021

The stairway of affordability, from subsistence to health

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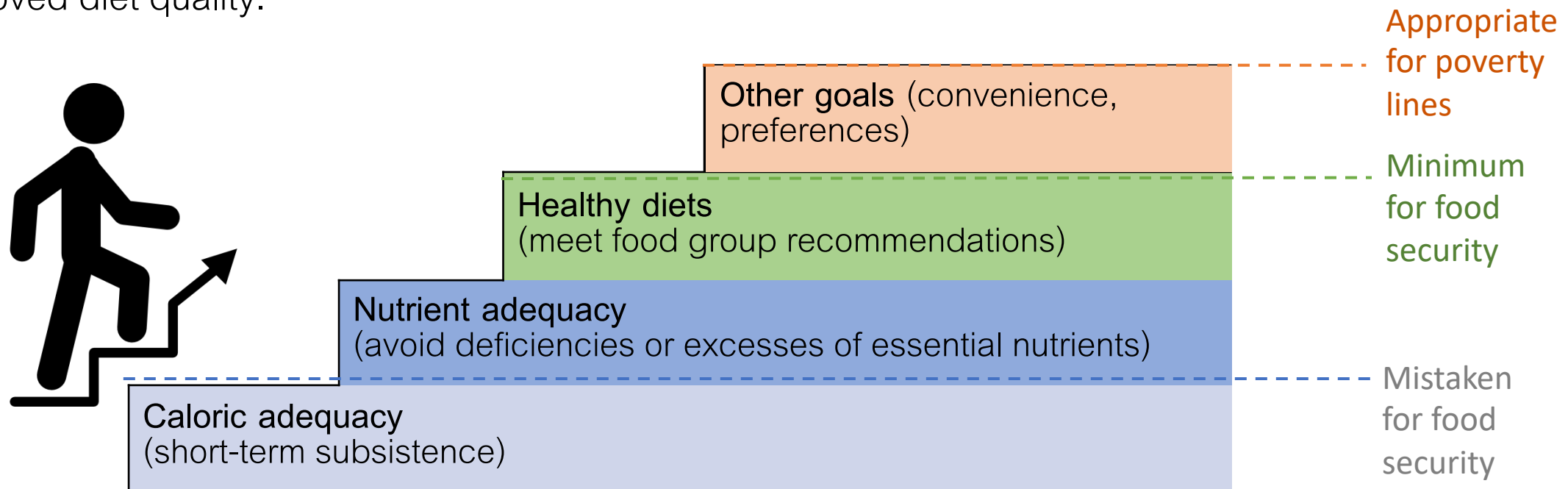


Source: Food Prices for Nutrition, August 2021

The stairway of affordability, from subsistence to health

When all diets are affordable, food prices are one of many influences on food choice.

When healthy diets are unaffordable, food prices are an insurmountable barrier to improved diet quality.



Source: Food Prices for Nutrition, August 2021

Least-cost diets

- Diet cost in each place is based on the cheapest combination of foods that meets the criteria for the diet
- No standard set of items in the least-cost basket: Food items chosen would vary by time and place, drawing on locally-available or seasonal items

Our estimates provide a **lower bound** on the cost per day of meeting each dietary standard.

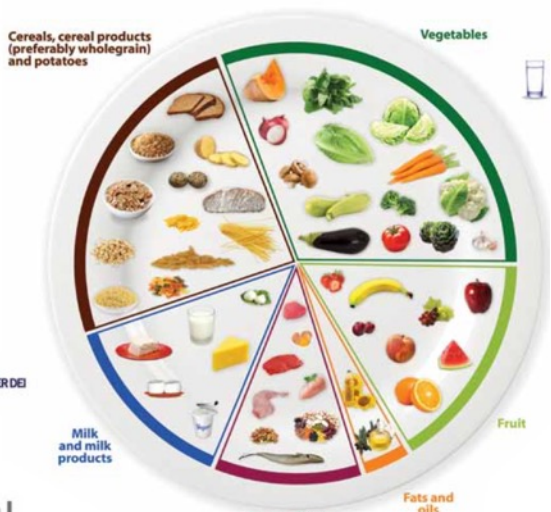
- Taste, preferences, and convenience add to the cost, and would raise the number of people who cannot afford the diet

Most common items in cost of healthy diet by state in India

State name	Starchy staples	Proteins	Dairy	Fruit	Vegetables	Leafy vegetables
Andhra Pradesh	Bajra, Ragi, Maize	Peas, Gram, Gram dal	Milk (buffalo), Milk (cow), Curd	Banana, Guava, Papaya (ripe)	Gourd, Onion, Tomato	Gogukura, Amranth (chaulai), Palak
Assam	Rice (coarse), Paddy, Bread	Peas, Khesari dal, Gram	Milk (cow), Curd, Milk (buffalo)	Banana, Papaya (ripe), Pineapple	Gourd, Pumpkin, Radish	Bhaji sageaves, Mustard leaves, Gogukura
Bihar	Maize, Paddy, Wheat (coarse)	Peas, Khesari dal, Pea dal	Milk (cow), Milk (buffalo), Ghol (lassi)	Banana, Guava, Papaya (ripe)	Radish, Gourd, Pumpkin	Bhaji sageaves, Palak, Amranth (chaulai)
Chhattisgarh	Bread, Rice (coarse), Wheat (coarse)	Peas, Khesari dal, Gram	Milk (cow), Milk (buffalo), Curd	Banana, Guava, Papaya (ripe)	Radish, Onion, Gourd	Bhaji sageaves, Palak, Amranth (chaulai)
Delhi	Bajra, Wheat (coarse), Jowar	Gram, Peas, Pea dal	Ghol (lassi), Milk (buffalo), Milk (cow)	Banana, Guava, Pineapple	Radish, Onion, Carrot	Amranth (chaulai), Bhaji sageaves, Mustard leaves
Gujarat	Bajra, Maize, Jowar	Peas, Gram, Urd (whole)	Milk (buffalo), Milk (cow), Curd	Banana, Papaya (ripe), Guava	Onion, Radish, Tomato	Palak, Bhaji sageaves, Amranth (chaulai)
Haryana	Bajra, Wheat (coarse), Barley	Gram, Peas, Gram dal	Milk (buffalo), Milk (cow), Curd	Banana, Guava, Papaya (ripe)	Radish, Onion, Carrot	Palak, Mustard leaves, Bhaji sageaves
Himachal Pradesh	Wheat atta, Maize atta, Rice (coarse)	Gram dal, Besan (ground gram dal), Urd (whole)	Milk (cow), Curd, Ghol (lassi)	Banana, Guava, Mango	Onion, Pumpkin, Carrot	Palak, Bhaji sageaves, Amranth (chaulai)

Cost of a Healthy Diet can be calculated in two ways

- **National:** adherence to national FBDG
 - most appropriate when the indicator will be used for policy coherence within a country.
 - “What actions in the food system and agriculture need to be taken to improve access to healthy diets, as defined by our own national FBDG?”
- **Global (SOFI reports):** Healthy Diet Basket
 - a global standard set of criteria that represents commonalities across most FBDG globally, created for the purpose of calculating and comparing the cost and affordability of healthy diets across countries.
 - Necessary for comparisons across countries, as published in *The State of Food Security and Nutrition in the World* reports.



Malta



India



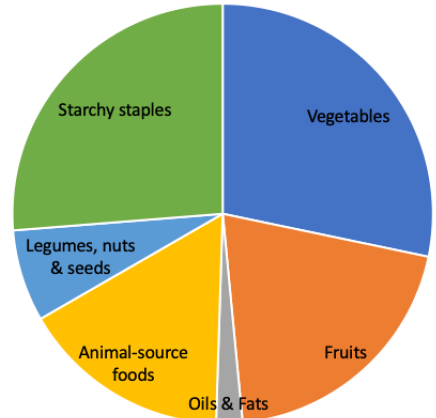
Jamaica



Argentina



Vietnam

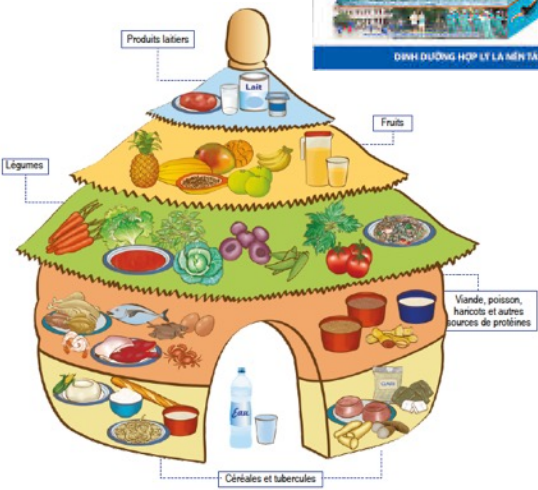


U.S.A.



China

盐	<6克
油	25-30克
奶及奶制品	300克
大豆及豆类	25-35克
畜肉类	40-75克
水产品	40-75克
蛋类	40-50克
蔬菜类	300-500克
水果类	200-350克
谷薯类	250-400克
坚果和豆类	50-100克
水	1500-1700毫升



Benin



Oman

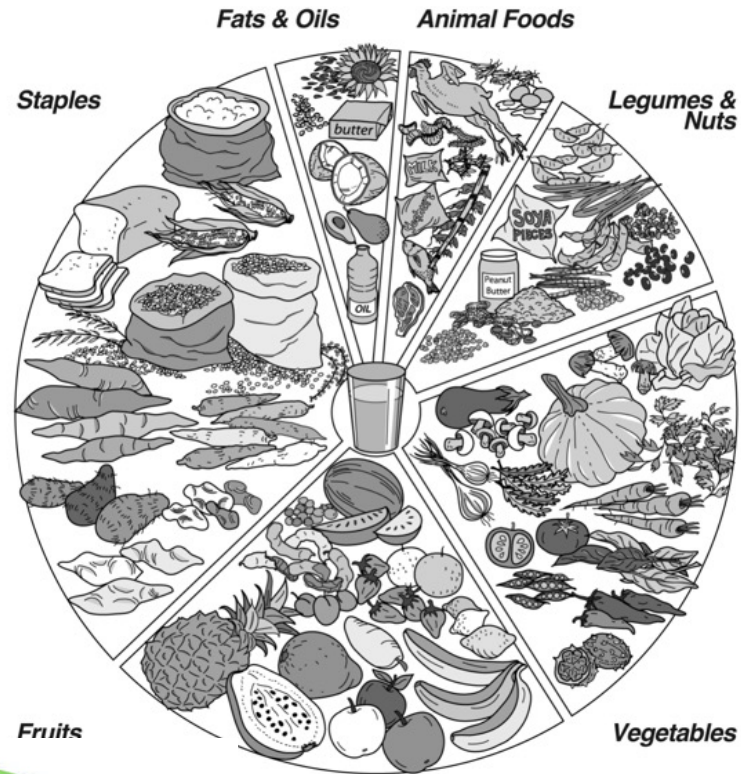


Netherlands

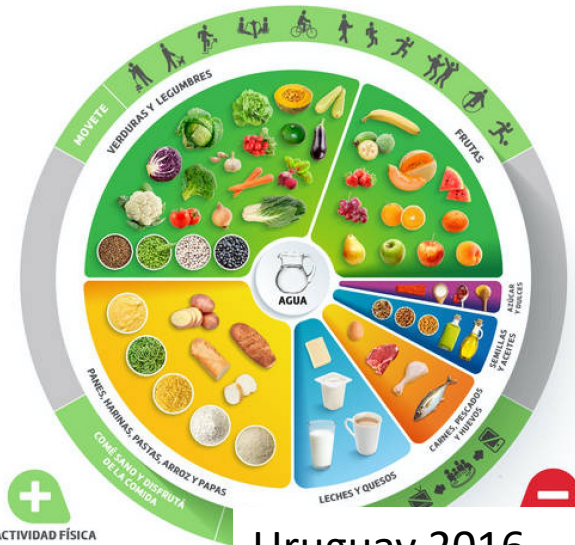
Qatar 2015



The Malawi Food Groups Circle



Canada 2018

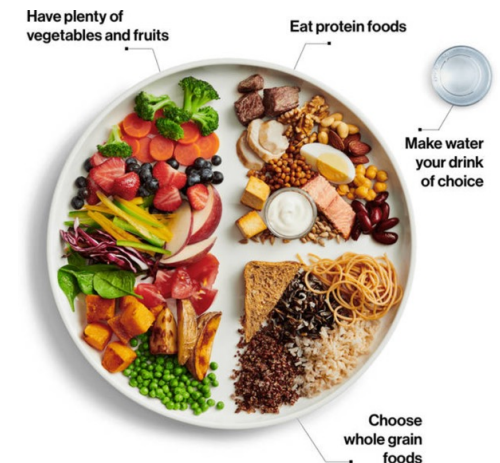
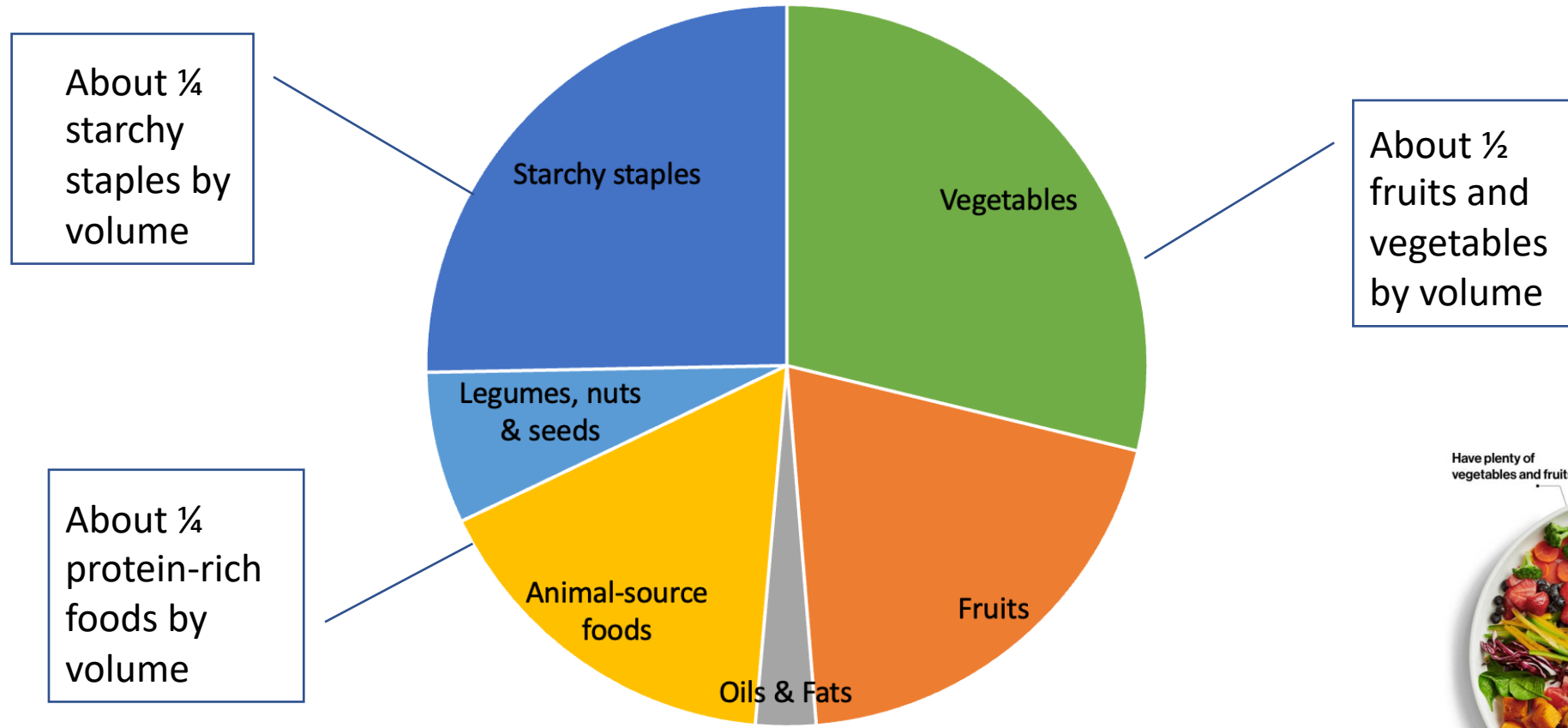


Uruguay 2016



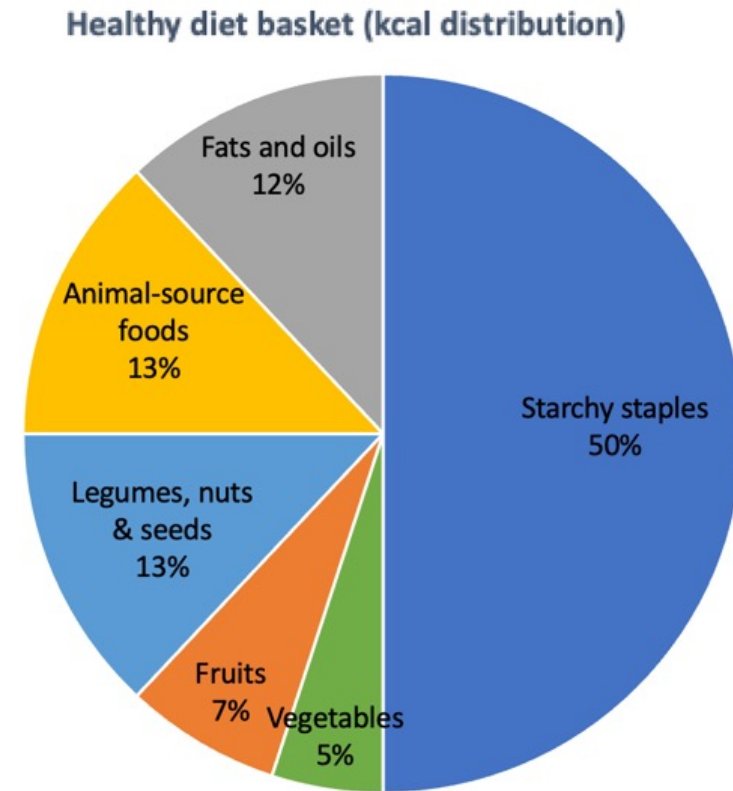
Ecuador 2020

Healthy Diet Basket reflects the commonalities across guidelines in terms of food group proportions



Composition of the Healthy Diet Basket

Food group	Min number of food items selected	Average energy content (kcal)	Average gram content by reference food (g)
Starchy staples	2	1160	322g dry rice
Vegetables	3	110	ave. 350g
Fruits	2	160	ave. 250g
Animal-source foods	2	300	210g egg
Legumes, nuts & seeds	1	300	85g dry bean
Oils and fats	1	300	34g oil
Total	11	2330	



Affordability of a healthy diet

- Affordability: comparison of cost relative to a defined income standard
- Choice of income indicator depends on data availability
 - Income
 - Wages
 - Food expenditures



Photo credit: KC Nwakalor/Bloomberg, Abuja, 2020

How many people cannot afford it?

- In LICs, people spend an average of 52% of expenditures on food
 - Calculated from national accounts data compiled by the World Bank ICP
- So, we compare the cost of each diet to 52% of income
 - Using World Bank estimated 2018 income distributions across 164 countries

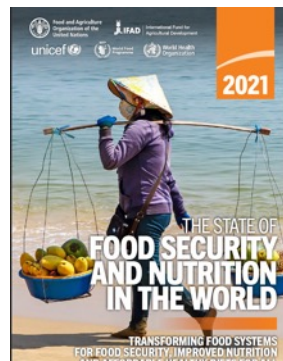
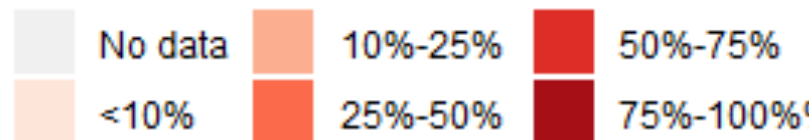
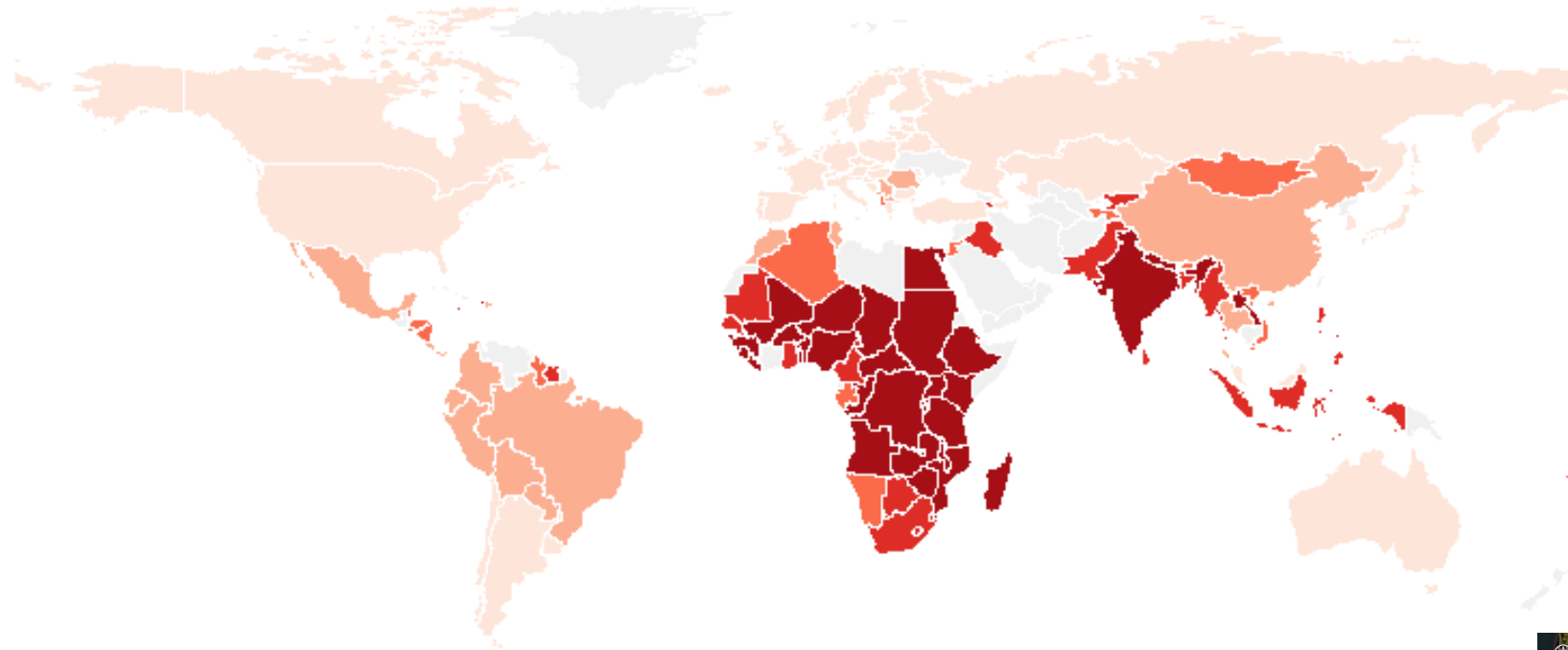
Global food price dataset

- For global analysis, we have used the World Bank's International Comparison Program (ICP) dataset from 2017
 - Unique dataset
 - Global and regional lists for 2017 include 680 foods & non-alcoholic beverages in 173 countries



About 3 billion people globally lack sufficient income to purchase least-cost healthy diets

% of population who cannot afford healthy diet

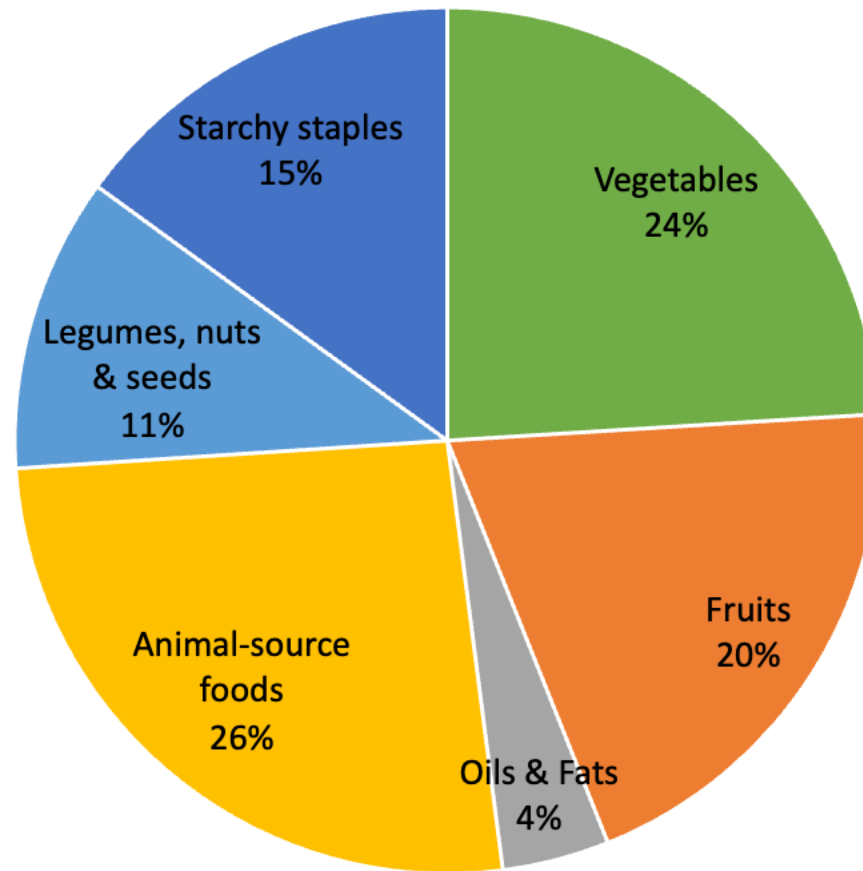


Comparison of cost to food expenditures

- The ratio of the diet costs to observed per capita per day food expenditure from national accounts
- Example:
 - If the cost of a healthy diet per capita per day in 2017 is about \$3.11
 - And the food expenditure per capita per day in 2017 is about \$1.42
 - $3.11/1.42=2.19$
 - The cost of a healthy diet is about 219% of the observed food expenditure per capita per day.

High cost of non-staples

Starchy staples and oils account for <20% of the cost



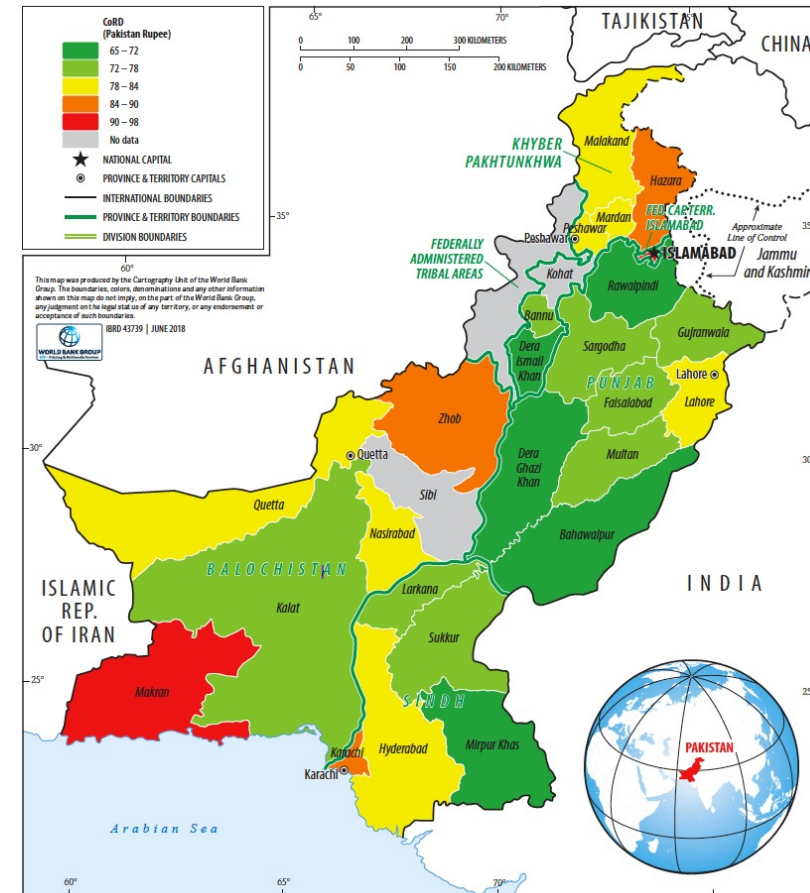
Fruits and vegetables account for >40% of the cost

Other retail price data sources

- National Statistical Offices (CPI data), or Market Information Systems (MIS)

Variation across space with monthly price data: Pakistan example

- National Bureau of Statistics data for 40 cities, 2017
- Vegetables, dairy, and fruit are most variable across regions
 - Perishability and transport?
- Availability: prices for dark green leafy vegetables seasonally missing in Pakistan



Other retail price data sources

- National Statistical Offices (CPI data), or Market Information Systems (MIS)
- Retail prices collected within research studies or projects
 - Data should cover several different items from each food group, of standard quality (not discount, not premium)
 - Food items selected should be commonly consumed items in lower income households
 - Rule of thumb: If you want to calculate the Cost of a Healthy Diet, need at least ~20-30 foods, and at least the number of items required in each food group (1-3 items per group)
- Activity in this session to demonstrate how to calculate the Cost of a Healthy Diet from your own data, or other data

Next: quick poll, and practice calculating!

Food Prices for Nutrition



- **William Masters**, Principal Investigator
 - **Anna Herforth**, Co-Director
 - **Julia Matteson**, Project Coordinator
 - **Rachel Gilbert**, Graduate researcher
 - **Elena Martinez**, Graduate researcher
 - **Jessica Wallingford**, Graduate researcher
 - **Leah Costlow**, Graduate researcher
 - **Aishwarya Venkat**, Graduate researcher
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- **Nada Hamadeh**, Lead Economist and Program Manager, **ICP Global Office**
 - **Marko Rissanen**, Senior Statistician and Team Lead
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 - **Kalle Hirvonen**, Senior Research Fellow
 - **Lieven Huybregts**, Senior Research Fellow
 - **Keith Wiebe**, Senior Research Fellow
 - **David Laborde**, Senior Research Fellow

Supporters



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Food
Prices for
Nutrition



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Innovative Methods and Metrics for
Agriculture and Nutrition Actions



Food Prices for Nutrition

- A four-year project to promote use of food prices to measure diet costs and affordability (2020-2024)
- Building on two previous projects to develop the price indices and diet cost metrics
2015-2017 Indicators of Affordability for Nutritious Diets in Africa (IANDA)



2017-2020 Changing Access to Nutritious Diets in Africa and South Asia (CANDASA)



Indicators of Affordability of Nutritious Diets in Africa (IANDA)

Using government food price and market data, IANDA developed metrics of the availability and affordability of nutritious, diverse foods in markets and diets throughout the year.

The vision of this project was to transform food price monitoring to represent the foods people need for healthy and active lives. Abundant food price data are collected routinely in virtually all countries. Yet only the prices of starchy staples and economically important commodities have been widely used for decision-making.

IANDA aimed to harness existing food price data for nutrition, so that governments, agriculture projects, and researchers can track access to nutritious diets. Four innovative metrics were developed under IANDA:

- **The Cost of Recommended Diet (CoRD)** indicator shows the cost of meeting food-based dietary recommendations, which is the most intuitive way to understanding economic access to adequate food. It can also show which food groups are most expensive.
- **The Nutritious food Price Index (NPI)** is designed as a counterpart to a country's consumer price index (CPI) for food. Closely related to CoRD, the NPI provides an alternative weighting system based on food group requirements and consumer preferences within food groups, thus providing an index of the food prices from a nutritional standpoint.

- **The Cost of Nutrient Adequacy (CoNA)** indicator can be used for advocacy and shows the minimum cost of achieving adequacy of energy and essential nutrients.
- **The Cost of Dietary Diversity (CoDD)** indicator is an index of the cost of meeting the Minimum Dietary Diversity for Women of reproductive age (MDD-W).

Researchers used a participatory process in Ghana and Tanzania, holding two workshops in each country with the people and institutions who collect food price data, as well as end-users of the data. This process was necessary to ensure that the metrics would be feasible with existing systems, and would serve the needs of national policymakers and program planners across agriculture, nutrition, and health sectors.

Price indexes developed by IANDA can guide public investment, policies and programs that make high-quality diets more accessible year-round. Institutionalized measurement of people's access to nutritious diets, and not only calories, is important for consistency with our globally-shared value of "access by all people, at all times, to safe, sufficient food that meets dietary needs and food preferences for a healthy and active life."¹

¹ FAO (1996). Rome declaration on world food security and World Food Summit plan of action.

Project facts



PRINCIPAL INVESTIGATORS:

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Anna Herforth, Columbia University



COLLABORATORS:

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Daniel Sarpong, University of Ghana
Fulgence Joseph Mishili, Sokoine University of Agriculture
Joyce Kinabo, Sokoine University of Agriculture
Rebecca Heidkamp, Johns Hopkins University



DURATION:

24 months
(from September 2015)



COUNTRIES OF RESEARCH:

Ghana, Tanzania



GRANT VALUE:

£249,887

COST OF DATA COLLECTION:

£0

SUBSEQUENT FUNDING ACHIEVED:

800,000 USD
+ 3 million USD

Thanks also to in-country partners

- Especially Daniel Sarpong (University of Ghana), Joyce Kinabo and Fulgence Mishili (Sokoine University of Agriculture), and govt data collectors (John Nortey, Ghana MoFA)
- 2016: Workshops in Dar es Salaam and Accra to convene national and regional food price data stakeholders and end-users
- 2017: Second workshops in both countries to share suite of indicators
- 2018: Third workshop in Accra



Food Prices for Nutrition

Project purpose: Scale up monitoring and analysis of food prices, to guide agricultural production and food markets for improved nutrition

Support use of new metrics in high-priority countries

Build a global system to monitor change in food prices for nutrition

Analyze change in cost and affordability of healthy diets

Actively disseminate tools and results on food prices, diet costs, and affordability



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