Food Prices for Nutrition

Tufts UNIVERSITY

Use of ICP data in the Food Prices for Nutrition project

Briefing for the ICP Technical Advisory Group (TAG)
May 17, 2021

THE WORLD BANK
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INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI

The Food Prices for Nutrition project

Goal is use of retail food prices to guide policy

- Four year, $3 m. project funded by the Gates Foundation and UKAid (DFID/FCDO)
- Led by Tufts University, with IFPRI and the World Bank
- People are listed here: https://sites.tufts.edu/foodpricesfornutrition/team

Aims are to improve data and methods, country capacity and uptake

- Builds on long history + new work linking food prices to nutrition, often using ICP data
  - Diet costs & affordability, from Stigler 1945 to Allen 2017 and our own papers 2018-21
  - Price differences by food group, spatial and temporal variation, many new frontiers
- Three pillars to spur demand and supply of work linking food prices to health
  - Standardized data and methods
  - National user groups and country studies
  - Continued research to shift the frontier

World Bank roles

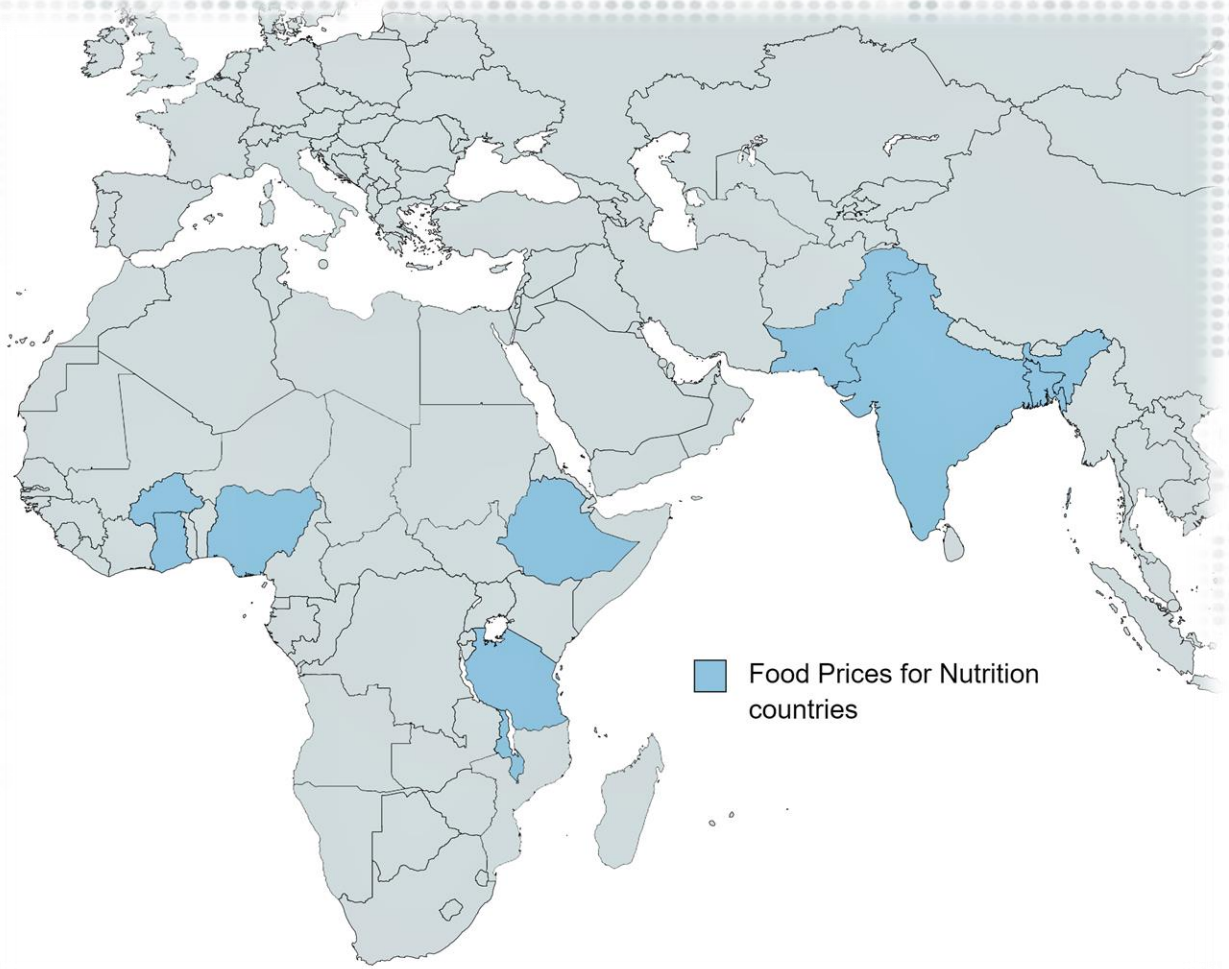
Global food price data hub

- Diet costs and metadata published on World Bank data platforms
- Software tools for calculating diet cost and affordability indices
- Possible food price data dissemination with registration

Online training course on the WB Open Learning Campus

- eLearning course to launch by August 31st, 2022
- Target users: government officials, program planners, researchers, and others
- Focus and modality: Construction of diet cost indices (Module 1) and applications to policymaking (Module 2), total length = 180 minutes

Priority countries for food price user groups & research uptake



Results are of global interest, but Gates/FCDO priorities for uptake and impact are:

- Bangladesh
- Burkina Faso
- Ethiopia
- Ghana
- India
- Malawi
- Nigeria
- Pakistan
- Tanzania

For diet costs & affordability, focus on three levels of diet quality

Cost of Caloric Adequacy – energy balance only

- Uses only the least expensive starchy staple at each time and place

Cost of Nutrient Adequacy – essential nutrients only

- Uses food composition data to identify least-cost source of 23 essential nutrients, staying within upper and lower bounds from U.S. Dietary Reference Intakes

Cost of a Healthy Diet – recommended by dietary guidelines

- Uses food group requirements from 10 national food-based dietary guidelines from around the world

Also many frontiers for new work

- Spatial and temporal variation of consumer costs by food group
- Price levels and variance by type of processing, market characteristics
- Labor cost of meal preparation, environmental and health externalities

Food price data sources

ICP global and regional datasets (hundreds of foods, all countries)

- Improvements under way for 2021 and beyond…

Market information and early warning systems (WPF, FAO & FEWS NET)

- High frequency data to help target agricultural assistance and food aid
- Only LMICs and fewer food items/groups, but individual market locations

National governments' food CPI and underlying item prices

- Nationally representative market locations + commonly consumed food items
- Item prices not fully disclosed for most of the countries in the world

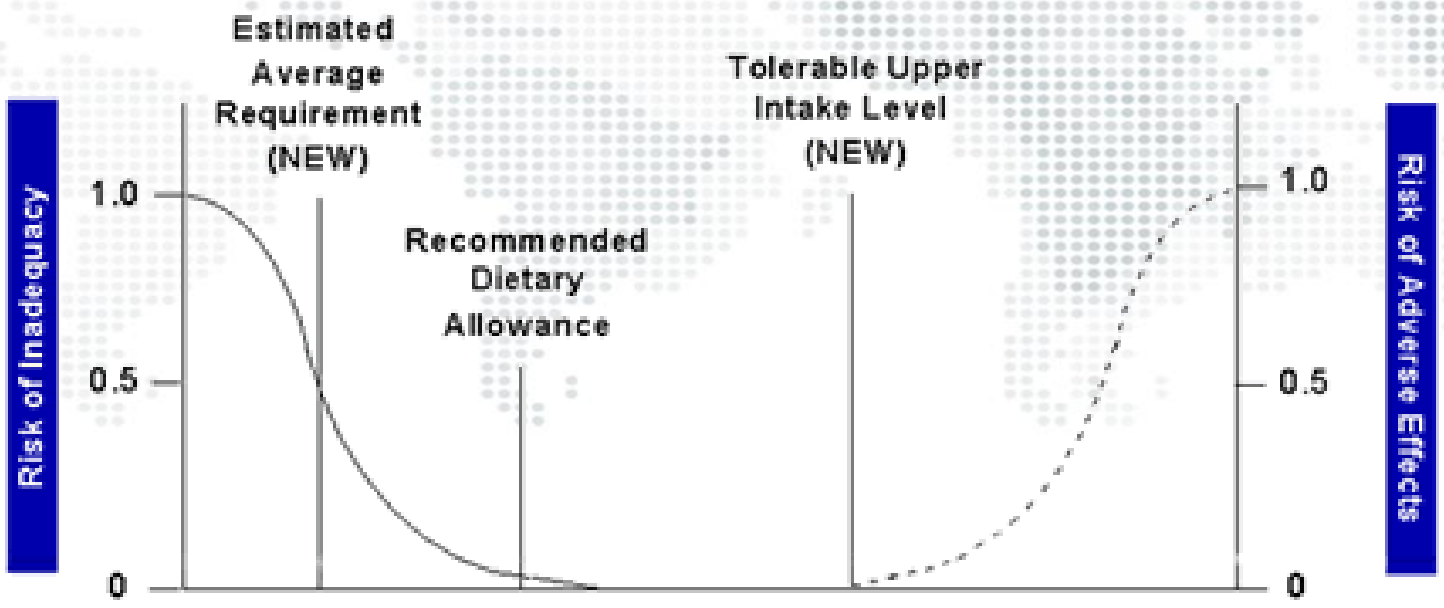
Our project's comparison of available prices forthcoming in *Food Policy*

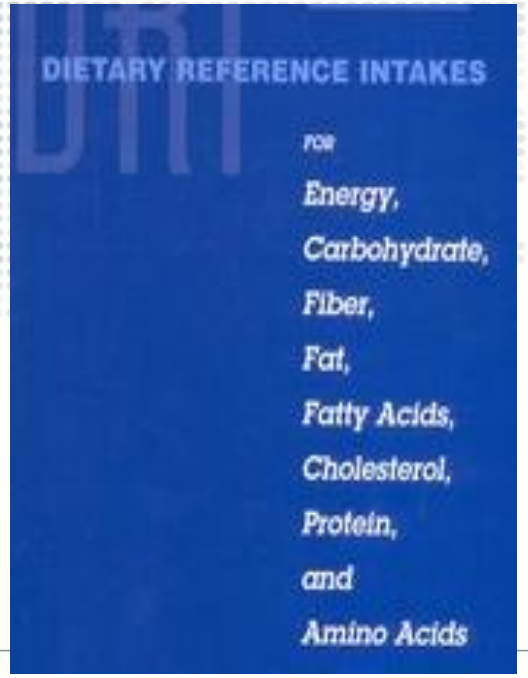
- Big challenge is item coverage, and whether missing prices = not available
- New work addresses seasonal stockouts in Malawi (Tufts) and Ethiopia (IFPRI)

Least-cost diets for nutrient adequacy

Selects foods based on 23 macro- and micronutrients

- Expands on Stigler 1945, Allen 2017 with new requirements and food composition data
- Updated data leads to greater similarity between modeled diets and actual food choice
- Least-cost foods for nutrient adequacy may not meet other known health needs



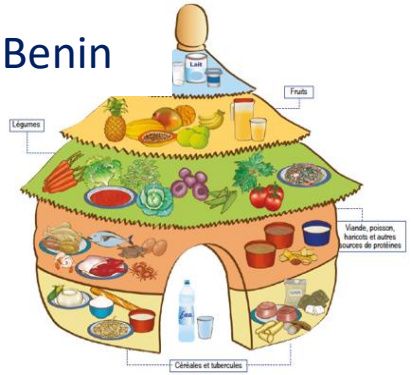


Least-cost healthy diets

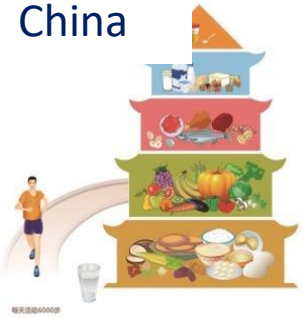
Selects foods based on diversity within and between food groups

Argentina

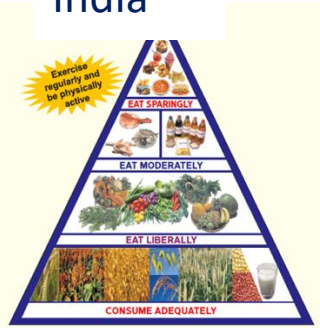
Benin



China



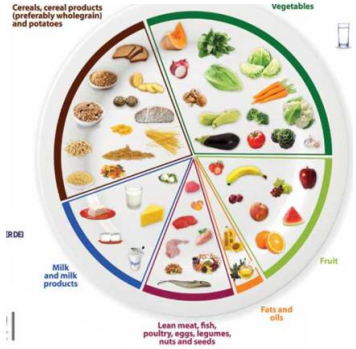
India



Jamaica

Netherlands

Malta



Oman

U.S.A.

Vietnam

(EAT-Lancet)

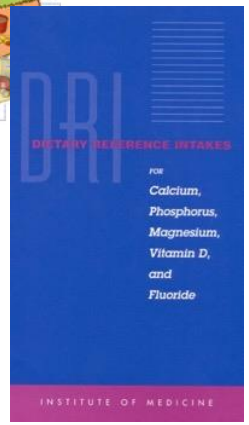
The stairway of diet costs, from subsistence to health

Other goals (food safety, convenience, preferences)

Healthy diets
(meet food group recommendations)

Nutrient adequacy
(avoid deficiencies or excesses of essential nutrients)

Caloric adequacy
(short-term subsistence)



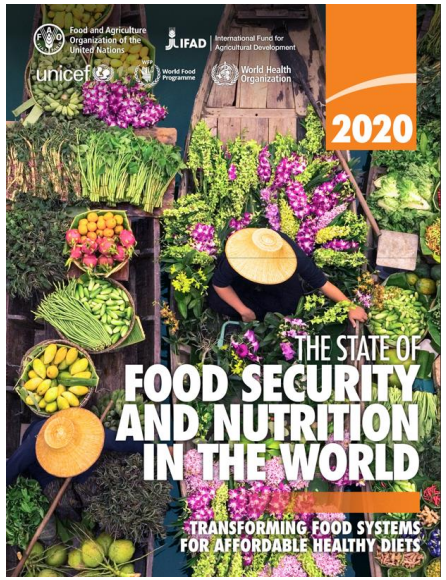
Source: https://sites.tufts.edu/foodpricesfornutrition

Project aims | methods & data | example results

Three billion people could not afford a healthy diet in 2017

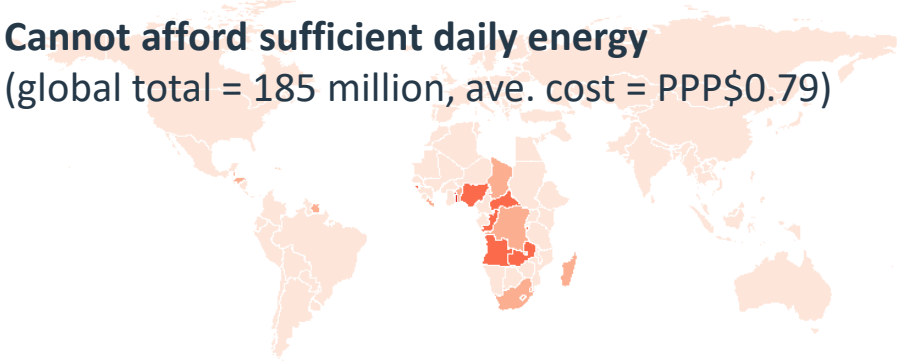
Complements WB metrics for income poverty:
~690 m. below $1.90/day (World Bank)

Joins other FAO metrics for food insecurity:
~653 m. undernourished (PoU, from 1960s)
~1.9 b. experience food insecurity (FIES)



Note: All data are for 2017, to ensure comparability
Source: FAO, IFAD, UNICEF, WFP and WHO (2020). *The State of Food Security and Nutrition in the World 2020*, FAO, Rome. Details at https://sites.tufts.edu/foodpricesfornutrition

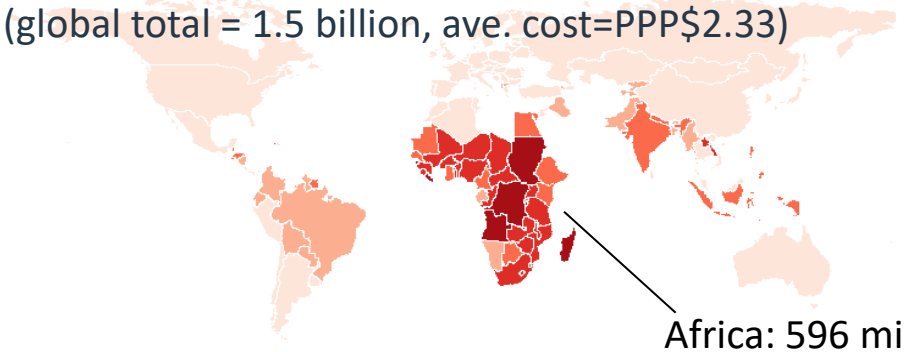
Cannot afford sufficient daily energy
(global total = 185 million, ave. cost = PPP$0.79)



Percent of population, by country in 2017

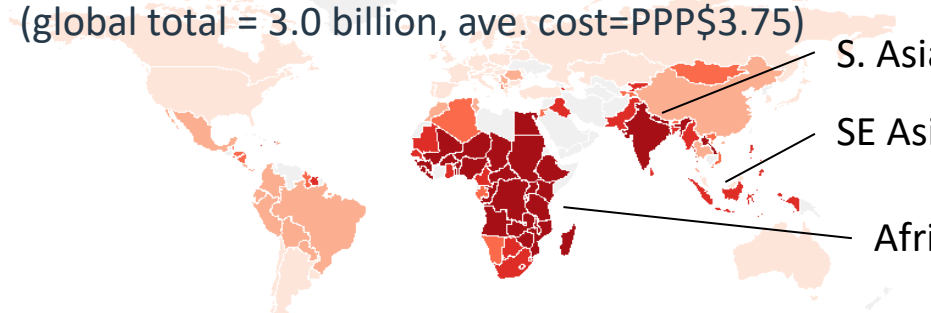
- No data
- <10%
- 10%-25%
- 25%-50%
- 50%-75%
- 75%-100%%

Cannot afford a nutrient-adequate diet
(global total = 1.5 billion, ave. cost=PPP$2.33)



Africa: 596 million

Cannot afford a healthy diet
(global total = 3.0 billion, ave. cost=PPP$3.75)



S. Asia: 1.3 billion

SE Asia: 326 million

Africa: 829 million

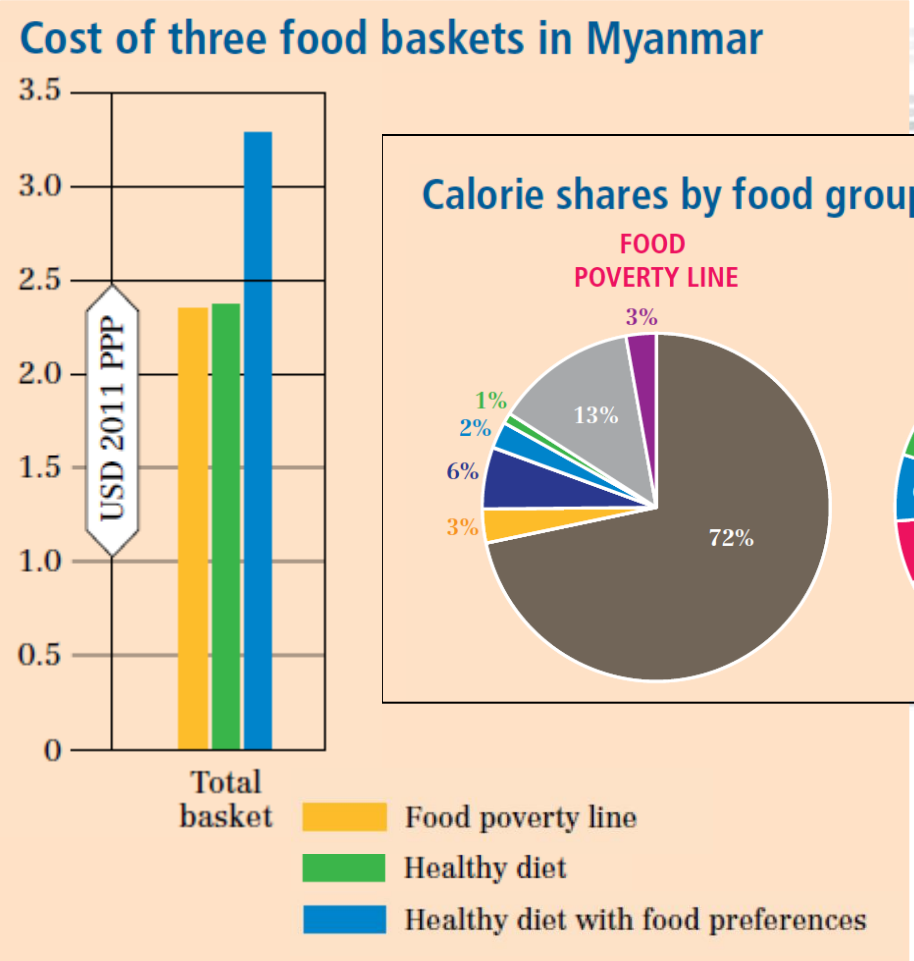
Poverty lines could be based on healthy diet costs

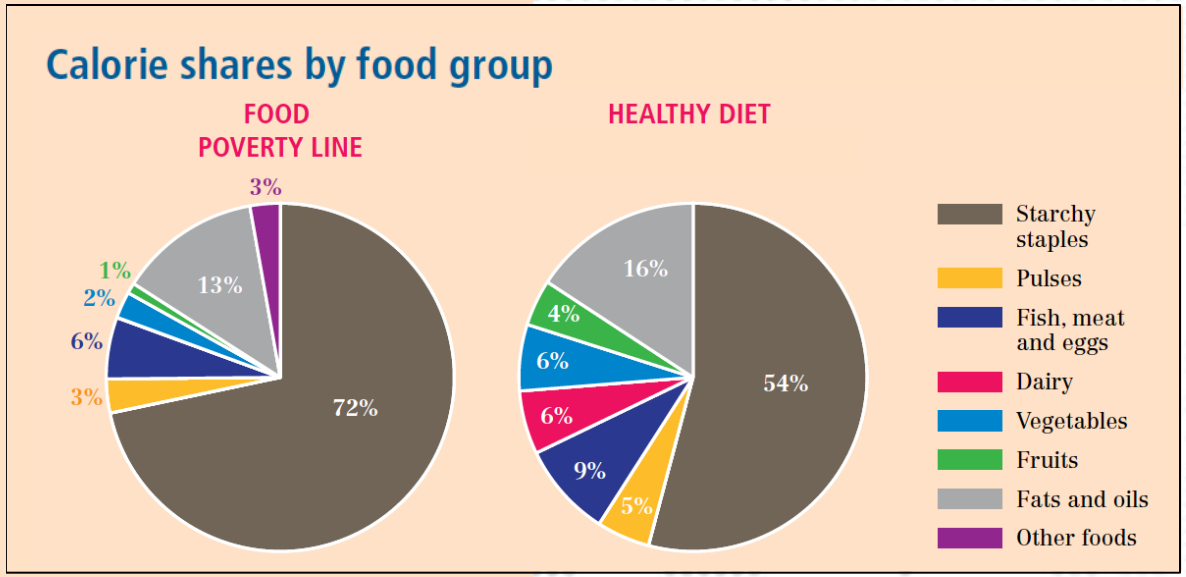
Dietary guidelines could be used to construct poverty lines and safety nets around the cost of a healthy diet

-- For example, Myanmar now uses a basic needs poverty line based on actual expenditure shares

-- Using least-cost items in each food group to form a healthy diet alters weights, and coincidentally in this case does not alter the overall level

-- Using expenditure weights (among the poorest) within food groups would raise diet costs and the level of the poverty line





Source: Herforth, A., Bai, Y., Venkat, A., Mahrt, K., Ebel, A. & Masters, W.A. 2020. Cost and affordability of healthy diets across and within countries. Background paper for The State of Food Security and Nutrition in the World 2020. FAO Agricultural Development Economics Technical Study No. 9. Rome, FAO. https://doi.org/10.4060/cb2431en

Price dynamics (e.g. seasonality) differ by food group

Price dynamics vary significantly, even after accounting for substitution between items to meet nutrient needs

-- Predictable variation in prices due to high storage and transport costs

-- Some variation across countries in least-cost sources of required nutrients

-- Opportunities for smoothing and market integration for year-round access to nutritious diets

-- Analyzing retail price data across countries opens many new frontiers

SCIENCE ADVANCES | RESEARCH ARTICLE

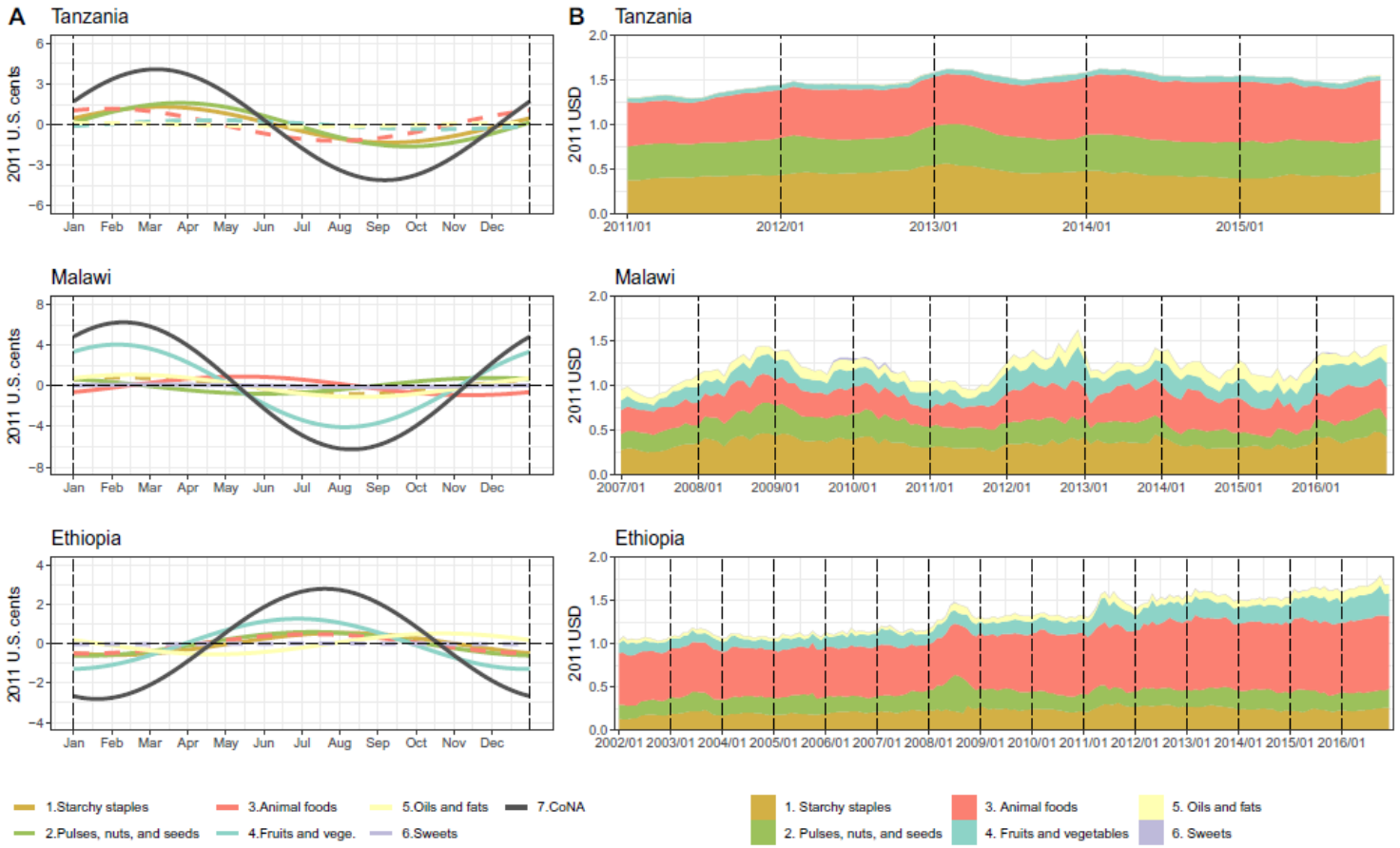


Fig. 3. Seasonality in diet costs by food group over time. (**A**) Estimated harmonic seasonality over a 1-year cycle for the overall CoNA and for the selected components of that diet from each of the six food groups. Dashed lines are not statistically significantly different from zero. (**B**) Contribution of each food group to the CoNA each month, averaged over all marketplaces in the country shown. Diet costs are converted to USD at PPP exchange rates.

Bai, Y., Naumova, E.N. and Masters, W.A., 2020. Seasonality of diet costs reveals food system performance in East Africa. *Science Advances*, 6(49), p.eabc2162.

Next steps for the Food Prices for Nutrition project

Modeling future scenarios (with IFPRI)

- Simulate changes in climate and resources, income and demography, trade policy…
- Integrate diet quality metrics for distance of actual consumption from healthy diets

Monitoring healthy diet cost & affordability (with the WB and FAO)

- Use sentinel items for each food group in each country, based on cost & popularity
- Link to national statistical organizations to compile latest CPI prices

Recommendations for the UN Food System Summit (with WFP, others)

- Poverty lines and safety nets that are informed by the cost of healthy diets
- Analysis of meal preparation costs and role of helpful, healthy food processing

Advancing the frontier of food price analysis

- Impacts of COVID, climate shocks on food prices
- Premiums/discounts associated with food processing

Implications for ICP and the World Bank

-- Food prices and diet costs can play a big role for policies & programs

- Poverty lines and safety nets to meet SDGs and national goals
- Agriculture & food policy to stabilize and reduce diet costs
- Monitoring of supply chain disruption, inflationary pressure, other shocks & trends

-- Food price data collection and use can be vastly improved

- Quick reporting of countries' CPI prices by item (subset of items)
- Expansion and standardization of items to track cost of healthy diets
- Use of retail prices to study policy impacts on diet & health outcomes