

# The Cost and Affordability of Preparing a Basic Meal Around the World



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## 1 Introduction

A nutritious diet is essential for an active and healthy life, but is unaffordable for about 3 billion people, almost 40% of the world's population, who have insufficient income to afford enough of even the least costly foods needed for a healthy diet (FAO et al. 2020). The unaffordability of nutritious foods prevents many people from consuming a healthy diet, but market prices for raw agricultural produce are not the only barrier to improved diet quality. To form an inclusive and sustainable food system for all, policies and programs should address other obstacles, such as:

- the time burden and fuel use needed to cook safe and nutritious meals at home, especially in households with poor kitchen facilities and other constraints,

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- high prices of healthy items that would be lightly processed in ways that preserve and enhance nutritional value while reducing the time and fuel required for meal preparation, and
- the rapidly growing availability of ultra-processed foods whose convenience, taste and brand reputation meet some of peoples' immediate wants and needs, but are linked to displacement of minimally processed foods and diet-related disease later in life.

This chapter extends earlier work on market prices such as Bai et al. (2021b), Herforth et al. (2020), Hirvonen et al. (2020), Masters et al. (2018), and others, to consider the hidden costs of meal preparation, including home-cooked versus pre-cooked versions of similar foods, as well as the relative costs of plant- and animal-sourced ingredients.



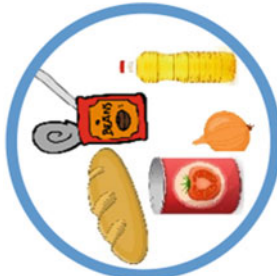
Focusing on the hidden costs of meal preparation that affect food choice complements other work on true cost accounting, including research on external harms from unhealthy or unsustainable foods and cooking methods, as well as the external benefits of healthier or more sustainable practices, as described in a separate chapter of this book. In that chapter, we use the data and methods developed for SOFI 2020 and related work from a larger project on Food Prices for Nutrition (2021).

To illustrate how meal preparation costs could influence food choice, we use the “Basic Plate” approach developed by the World Food Programme (WFP 2017), identifying the most affordable ingredients for a typical meal that might be consumed in any country of the world. The baseline meal consists of a starchy staple made from 75 g of a dry cereal grain or equivalent, accompanied by a bean or lentil stew made from 57.25 g of dry pulses, cooked with onions (16.25 g) and tomatoes (55 g) in a vegetable oil (28.13 g). Such a meal would contain about one-third of an adult's daily energy requirement, and is not itself a healthy diet. To meet all needs, a person's overall diet would require greater diversity, including additional vegetables and fruits, but those complements to the basic meal are often more location-specific, as shown in our previous work, such as Herforth et al. (2020).

Measuring the market prices and hidden costs of preparing a single basic plate allows us to begin addressing the diverse costs of meal preparation, accounting for differences across countries and among households in time use, cooking fuel and other aspects of nutrient preservation and delivery. Using global data, we compare the most affordable basic plate with pulses to alternative meals that use animal-sourced foods (red meat, poultry, or fish), and alternative meals that would reduce the energy and time required for meal preparation by using lightly processed, often pre-cooked versions of various foods such as bread or canned fish, beans, and tomatoes.

The composition of each basic plate used for this study is shown in Table 1. To begin, we identify the most affordable items from which to prepare these basic plates in 168 countries around the world, using nationally representative retail prices for calendar year 2017 provided by government statistical organizations through the World Bank's International Comparison Program (ICP 2021). Details on the food items are shown in annex Tables A1 and A2, while the least costly items in each

**Table 1** Basic and alternative versions of the WFP plate of food

Basic plate	Animal-sourced foods	Lightly processed foods
 <p>Pulses &amp; beans Plant oils Onions Tomatoes Starchy staples</p>	 <p>Replace pulses with animal-sourced foods, including red meat, poultry, and fish</p>	 <p>Replace raw with pre-cooked foods such as canned beans instead of dry pulses, canned tomatoes or fish instead of fresh or dried and salted fish, and bread instead of other starchy staples</p>

Note: Each basic plate allows for substitution of the most affordable item available in that country for the starchy staple (75 g of a dry cereal grain or equivalent, totaling 270 kcal) with a stew made from pulses (57.25 g of a dry bean or equivalent, totaling 191 kcal), tomatoes (55 g = 10 kcal) and onion (16.25 g = 6.5 kcal) in vegetable oil (28.1 g = 242 kcal). Available foods and their prices are from ICP (2021), matched to food composition using methods detailed in Food Prices for Nutrition (2021)

country drawn from the candidate foods in each category are listed in Tables A3 and A4.

To assess affordability, we divided the cost of each plate by average total spending per person in that country, as measured by Gross National Income (GNI) per capita in real purchasing power parity (PPP) terms. All prices and costs reported here are in PPP dollars for 2017, so they can be directly compared to the international poverty line of \$1.90/day and other benchmarks expressed in real PPP dollars. As shown in Table 2, we find that the average cost of the most affordable items with which to prepare the basic plate is \$0.71, excluding costs of meal preparation. Choosing lightly processed, often pre-cooked foods such as canned beans, fish or tomatoes and bread more than doubles that cost to \$1.77/day. Substituting animal-source foods also raises the cost substantially to \$1.03 for a plate with red meat, \$1.07 with poultry, and \$1.30 with fish. For the plates with animal-sourced foods, however, the pre-cooked or more convenient foods are actually less costly at face value.

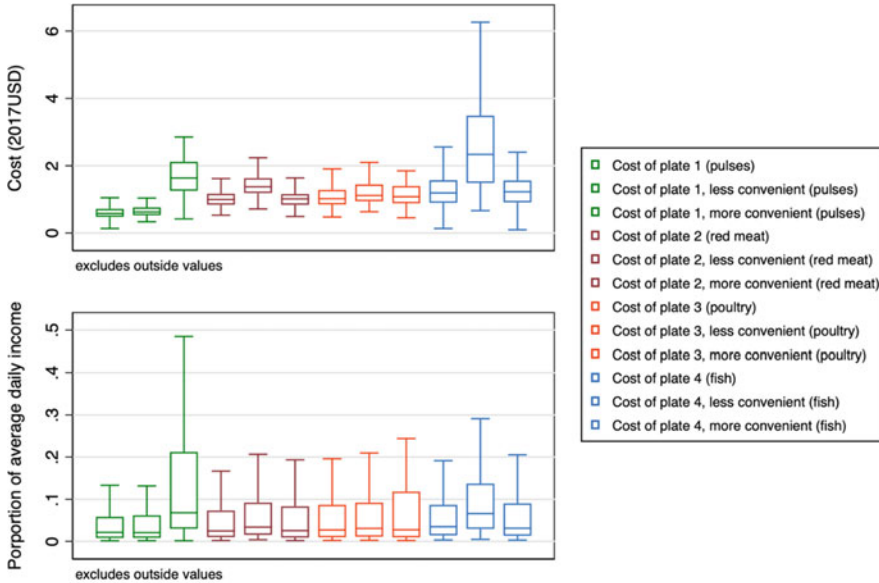
The cost of each of the basic and alternative plates generally takes a small portion of each country's total national average income, but it takes a large fraction of the international poverty line at \$1.90/day and often exceeds the daily income of resource-poor households. In one-fourth of countries where these foods are least affordable, the basic plate costs about 6% or more of average daily income, meaning the value of all goods and services in that society. That cost rises to 20% of all goods and services if the meal is made with lightly processed items and 10% of all goods and services if the plate includes red meat, poultry or fish. The plate is also slightly more expensive when using fresh fish instead of tinned fish (Fig. 1).

When considering the cost per meal shown above, it is important to note that this basic plate meets about one-third of daily caloric needs in a safe and acceptable manner, but other foods would be needed to meet nutritional needs for an active and healthy life. For example, comparing this basic meal to an entire day's diet that would meet requirements specified in a variety of national food-based dietary guidelines (FBDGs), the meal contains about 80% of what would be an entire day's recommended intake of vegetable oil (28 out of 35 g in a typical FBDG), but only 23% of the day's protein-rich foods (57 of 250 g), and 24% of the day's vegetables (71 of 300 g), as well as none of the recommended fruit or dairy and other foods. Analysis of the overall cost of a healthy diet is outside the scope of this chapter and is addressed in earlier work, such as Herforth et al. (2020).

**Table 2** Global average cost per day of the WFP basic plate and alternatives (2017 USD)

	Basic plate	With animal-source foods		
	Pulses	Red meat	Poultry	Fish
With most affordable items	0.71	1.03	1.07	1.30
With pre-cooked, packaged items	1.77	1.03	1.16	1.32
With raw or whole items	0.73	1.44	1.21	2.64

Note: Data shown are the mean over 168 countries for which all required data are available



Note: Data shown are the range of meal costs across 168 countries with available data. For each type of meal, the box shows median meal costs and its interquartile range from the 25th to 75th percentile (at the middle, top and bottom of each box), and whiskers show the outer range of 1.5 times that interquartile range. Outliers beyond the range are omitted for visual clarity

**Fig. 1** Global range of costs of the WFP basic plate and alternatives (2017 USD)

## 2 Price Premiums for the Most Affordable Items in Each Category

To address food choice within the overall diet, we examine the added cost of lightly processed items and alternative proteins at the item level. Pulses are only slightly more costly than starchy staples per calorie (a difference of about \$0.001/kcal, or \$0.10 per 100 kcal). Red meat and poultry are about \$0.50 per 100 kcal more expensive than starchy staples, as are onions, while including tomatoes adds roughly \$1.80 per 100 kcal. All of those premiums are for the raw form of the product.

Using canned beans instead of dry beans adds as much cost as switching to red meat or poultry, which have about the same cost in whole raw form versus a lightly processed and packaged version (for example, ground beef is not systematically more or less expensive than beef for stew). On the other hand, fish and tomatoes are much less expensive when purchased in lightly processed canned form, making tinned fish about the same cost per 100 kcal as uncooked raw red meat or poultry (Fig. 2).

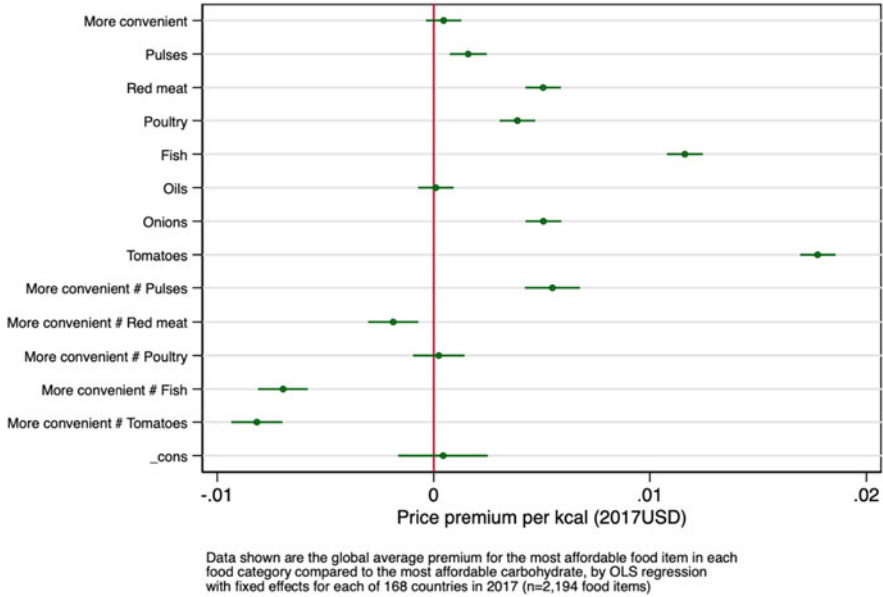


Fig. 2 Average premium required to obtain the least costly item with each attribute

### 3 The Hidden Cost of Home Cooking: Time and Fuel Use

Our analysis of ingredient prices reveals that preparing a basic plate with pre-cooked pulses such as canned beans is much more expensive than the plate with dried pulses, while the same with canned fish is less expensive than with fresh fish. Moreover, preparing the plate with pre-cooked pulses raises its costs beyond using the most affordable fish as the protein component. Given the high preparation time and cost of cooking for meals using dried pulses, and the high environmental impacts of animal-sourced food production, the high cost of helpful, healthy processing could be an important obstacle to inclusive and sustainable dietary transformation.

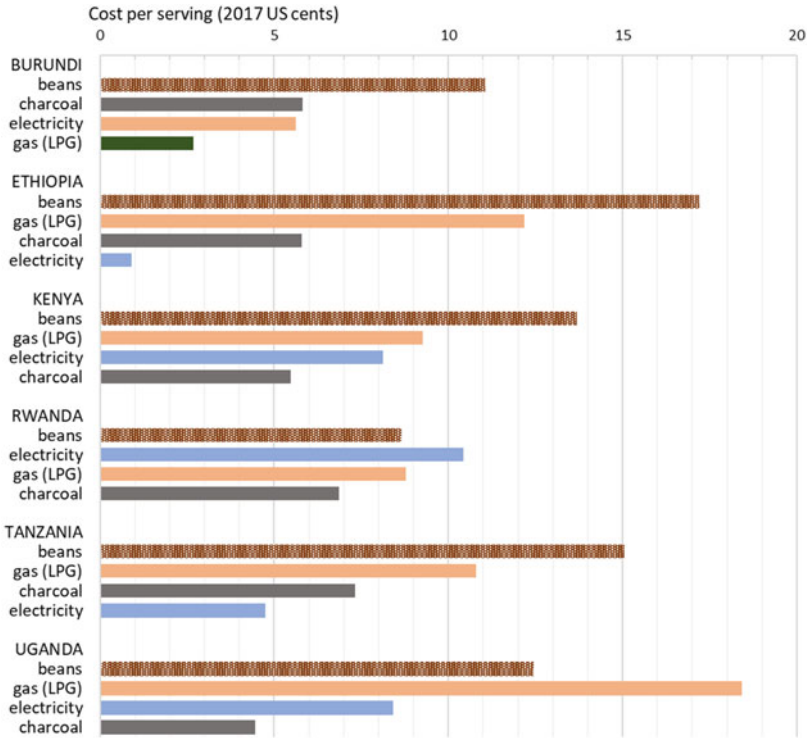
Data on the time and resources required for food acquisition and meal preparation across countries are not yet available. Still, we can begin to illustrate differences in the cost of meal preparation by focusing on energy use for cooking beans in East Africa, extending our previous research on food price variation in this region (Bai et al. 2020). We focus on the portion of the pulse in the basic plate, because preparing and cooking dry beans for a meal requires considerable time and fuel. Home-cooked beans have similar nutritional composition to tinned beans that are available in retail food outlets. We cannot account for all factors that go into meal preparation, but can use this example to address differences in fuel cost as one influence on the cost and affordability of each food.

To compare the cost of cooking beans or other pulses, we focus on the fuel needed to cook dry beans in East Africa, as estimated by MECS (2019), which is a simplified version of more detailed analyses such as Nerini et al. (2017). To compute fuel cost per serving, we consider the quantity of fuel needed to cook 500 g of dry beans (enough for 8.7 servings in the basic plate), which is estimated by MECS (2019) to require 0.675 kg of charcoal, 0.2 kg of gas (LPG), or 1.5 kWh of electricity when using the most common, conventional types of stove in this region. On a per-serving basis, that amounts to 77 g of charcoal, 23 g of LPG gas, or 0.17 kWh. We applied this estimate to six East African countries that are likely to use similar food preparation technologies and techniques – Burundi, Ethiopia, Kenya, Rwanda, Tanzania, and Uganda. The mix of fuels and cooking methods actually used vary widely, with the fraction of households that have access to electricity in 2017 ranging from a majority of households in Kenya (63.6) to a smaller proportion in Ethiopia (44.3), Rwanda (34.1), Tanzania (32.7), Uganda (31.8) and Burundi (9.3), as reported in World Bank (2021).

For each country, we compare the fuel costs for cooking to the cost of the food itself. In each case, the least costly pulse in the dataset is spotted beans, whose nationally-representative cost per 57 g serving in 2017 USD ranged from 8.6 cents in Rwanda to 17.2 cents in Ethiopia. We then compare that to the cost of each type of fuel. The results shown in Fig. 3 reveal no consistent ranking in fuel costs, but in two cases (Rwanda electricity and Uganda gas), the cost of fuel exceeds the cost of the beans themselves.

Our analysis so far focuses only on meal costs at national average market prices for ingredients and fuel. How each food is actually cooked varies with household circumstances, including the availability of kitchen equipment, local variation in costs at each time and place, and cultural or demographic factors that influence each household's division of labor related to meal preparation. Home cooking may also impose large health costs from indoor smoke, and how foods are prepared and served or stored can also have important consequences for foodborne illness and food waste, as well as externalities associated with deforestation and emissions. Reducing the inequities and total costs associated with inefficient cooking might sometimes be possible with innovations in food processing that would preserve and even enhance the nutritional value of foods. For the basic meal with pulses in East Africa, however, using canned beans would cost roughly 3–4 times the cost of dry beans, plus the required cooking fuel, at a price per serving that ranges from \$1.25 in Kenya to \$1.37 in Tanzania, \$1.42 in Burundi and Ethiopia, \$1.55 in Uganda and \$1.66 in Rwanda.

This case study is just one small step towards including the costs of meal preparation in future work on the cost and affordability of a healthy diet. In so doing, we build on a long and diverse literature on meal preparation as a determinant of diet quality and health outcomes, and studies of cooking fuel as a driver of household health and environmental harms. Regarding diet quality in low- and middle-income countries, the recent literature was pioneered by Kennedy and Reardon (1994) on how urbanization in Kenya and Burkina Faso led to shifts from coarse to refined grains, and includes many papers on how time use in rural



Note: Data shown are the nationally-representative retail price of 57.25g for the most affordable kind of pulse, which, in each country, is spotted beans, compared to the cost of fuel use quantities from MECS (2019) and prices from ICP (2021), as detailed in the text.

Fig. 3 Cost per serving of the most affordable pulse and fuel for a plate of beans in East Africa

households relates to nutrition as reviewed by Johnston et al. (2018), plus later contributions on time use that include Seymour et al. (2019, 2020) and Vemireddy and Pingali (2021). Similar issues arise in studies of time use and diet quality for higher-income settings, such as Raschke (2012), Smith et al. (2013), Yang et al. (2015), and Carpio et al. (2020) in the US, or Mackay et al. (2017) in New Zealand. Regarding the health effects of indoor smoke and the environmental consequences of wood and charcoal, several studies address the prevalence of each fuel type and the drivers of change (Heltberg 2004; Bonjour et al. 2013; Shupler et al. 2019), in some cases tracing their effects to time management and fuel choice (Anderman et al. 2015).

This chapter links meal preparation to the cost and affordability of healthier diets, focusing on the relative cost of raw ingredients as opposed to pre-cooked and packaged foods, and comparing the ingredient costs to fuel costs for beans in East



Africa. To address how the costs of meal preparation and the increasing availability of processed foods affect food choice, it will be especially important to identify forms of food processing that preserve and enhance nutritional values, as opposed to the growing health risks associated with existing types of ultra-processed food that have been shown in observational studies reviewed by Pagliai et al. (2021) and Lane et al. (2021), as well as one randomized control trial. The need for policies and programs to distinguish between healthier and less healthy packaged foods is important for the food safety agenda (Jaffee et al. 2020), and could help ensure that food system transformations bring healthy and nutritious diets within reach for all people at all times, in every country of the world.

## 4 Opportunities for Action

A basic plate of healthy food is unaffordable for many of the world's most resource-poor households, due not only to the high cost of growing or purchasing raw ingredients, but also the high cost of meal preparation within the home. Government policies and programs could build on past work such as the SOFI 2020 report, CFS (2021) and other initiatives to ensure food security for all through two specific kinds of action suggested by our findings:

1. **revised poverty lines and safety nets** to ensure that all people at all times can acquire the foods needed for a healthy diet, using locally appropriate criteria for targeting and forms of assistance, including cash transfers, vouchers and in-kind assistance; and
2. **improved cooking and processing** to reduce the health and environmental burdens of meal preparation, for example, through electrification using renewable energy sources, as well as support for helpful processing that preserves the nutritional value of foods, in distinction to ultra-processing that may remove beneficial components and add attributes that are associated with illness later in life, and displacement of minimally processed healthy foods.

The first of these potential game-changers calls on governments to make healthy diets affordable for all by using the minimal cost of a healthy diet to examine food poverty thresholds and inform eligibility for nutritional safety nets that provide cash transfers, vouchers, or in-kind support to supplement a household's own income or food production. Safety nets designed around access to a healthy diet can be the foundation for social inclusion, using twenty-first century data analysis to target and deliver assistance in all countries of the world. Recent improvements in market monitoring and analysis of diet costs allow governments to target and deliver nutrition assistance tailored to local needs, with food-based poverty lines to guide programme design parameters suited to each population, targeting by demographic group and delivering through locally adapted instruments, including cash, vouchers and in-kind assistance. As noted by Hendriks (2018), making healthy diets affordable by tackling poverty is a necessary, but not sufficient, step towards food security

and nutrition, which also requires improvements in the quality and price of available foods to enable behavior change for food and nutrition security of all people at all times.

The second of these game-changers addresses hidden costs in the “last mile” of food security for households to acquire foods and prepare each meal. Food acquisition and preparation often places high burdens on caregivers’ time and can impose additional financial costs for cooking fuel, equipment, and transportation. Governments should support the development of infrastructure that will reduce the burden of food acquisition and preparation, such as rural electrification, and support agri-food processing that reduces the time and fuel cost of home cooking while preserving the nutritional value of foods.

The main action step within the food system is to distinguish between helpful processing that preserves or even adds to the healthfulness of food versus harmful ultra-processing that transforms food, removing healthful aspects of foods such as whole grains and sometimes adding health risk factors such as refined carbohydrates and sugars, sodium, and trans fats. Actively making that distinction allows for support for the helpful kinds of healthy processing, often by local small and medium-sized enterprises (SMEs), while also using regulation and taxation to limit harmful forms of ultra-processing.

To guide these interventions, governments will need to continue investing in improved data collection regarding food prices, the externalities involved in true cost accounting, and the hidden costs of food acquisition and meal preparation within the home. Governments routinely collect nationally-representative market prices for a variety of foods each month to calculate their consumer price indexes, and international agencies such as the WFP, FAO and FEWS NET also collect rural market prices to target food assistance (Bai et al. 2021a). The World Bank is expanding its global office so that the ICP can focus on food prices and diet costs, in collaboration with national statistical organizations around the world (Food Prices for Nutrition 2021).

As shown in this chapter, governments can complement this work with attention to other barriers to affordability beyond market prices, such as the time and resources required for food acquisition, meal preparation and the use of cooking fuel. Accurately measuring these hidden costs is also helpful for true cost accounting of externalities associated with the environmental footprint of food production, processing, and distribution, as well as the health effects of food consumption. These costs differ among different types of agricultural ingredients, and also differ among types of processing. The hidden costs of meal preparation, as well as the environmental costs and health burden associated with diet-related disease, call for attention not only to different kinds of farm production, but also to a new kind of distinction between helpful, healthy kinds of food processing and ultra-processed foods that are an increasingly important cause of diet-related disease around the world.

In summary, the data described in this chapter lead to two game-changing actions:

- (i) the establishment of poverty lines and safety nets informed by the cost of a healthy diet to ensure that all people at all times can acquire the foods needed for

lifelong health, using appropriate targeting and forms of assistance, including cash transfers, vouchers, and in-kind assistance; and

- (ii) actions to reduce the burden of meal preparation for healthy diets through electrification using renewable energy sources, as well as support for helpful processing that preserves the nutritional value of foods, in distinction to ultra-processing that may remove beneficial components and add attributes that are associated with illness later in life.

Through these actions, governments can use new kinds of data and analytical methods to meet universal needs in locally appropriate ways, thereby ensuring food and nutrition security for all.

## Annex

**Table A1** Reference food items selected to convert food weight (g) to dietary energy (kcal)

Food category	Reference item	Food name in FCT	FCT code
Pulses	White beans, dried	Beans, white, mature seeds, raw	16,049
Oils	Vegetable oil	Vegetable oil, palm kernel	4513
Onions	Fresh onions	Onions, raw	11,282
Tomatoes	Fresh tomatoes, round	Tomatoes, red, ripe, raw, year-round average	11,529
Starchy staples	Medium-grain rice	Rice, white, medium-grain raw, unenriched	20,450

Note: FCT code numbers refer to the USDA SR28 database

**Table A2** Energy content of each item for isocaloric substitution within food categories

Food category	Weight (g) per serving	Kcal per 100 g	Kcal per serving
Pulses	57.25	333	190.6
Oils	28.13	862	242.5
Onions	16.25	40	6.5
Tomatoes	55.00	18	9.9
Starchy staples	75.00	360	270.0

Note: The quantity of oil from the original WFP basic plate has been reduced by 10% to more closely approximate daily lipid needs. Substitutions within food categories are among versions of the food with different moisture content, but similar nutrient density per calorie, for example, switching the 270 kcal of carbohydrate-rich starchy staples from dry raw rice grains to potatoes, or the 190.6 kcal of dry beans into 190.6 kcal of canned beans, or switching the 9.9 kcal of whole tomatoes with 9.9 kcal of concentrated tomato paste. Different items in the oils and onions categories are all roughly similar in weight per kcal, so either unit of measure would yield the same result

**Table A3** Macronutrient adequacy of the basic plate

Source	Protein	Lipids	Carbohydrates
Pulses	13.37	0.49	34.50
Oils	0.00	28.13	0.00
Onions	0.18	0.03	1.52
Tomatoes	0.48	0.11	2.14
Rice	4.96	0.44	59.51
Total	18.99	29.19	97.67
Total (kcal)	76	263	391
Percent of kilocalories	10.4%	36.0%	53.6%
Acceptable range	10–35%	20–35%	45–65%

Note: Data shown are grams of each macronutrient from each food and in total for the basic meal. The bottom row shows the Acceptable Macronutrient Distribution Range (AMDR), as specified by the Dietary Reference Intakes of the U.S. Institute of Medicine (2005). Composition of each food is based on the USDA National Database for Standard Reference, Release 28 (SR-28) and the reference food items listed in Table A1

**Table A4** Items selected for the basic plate and its variants, by food category (n = 152)

Food	Raw (more work required)	Transformed (less time required)
Starchy staples	Long-grain rice, not parboiled, WKB	Short pasta, BL
	Fresh sweet potatoes	Baguette, BNR
	Wheat flour, not self-rising, BL	Bread, white, loaf, BNR
	Brown flour	Lebanese bread
	Long-grain rice, parboiled, WKB	Spaghetti, WKB
	Maize grains, white	Egg noodles, WKB
	Maize, BL	Samoon bread
	Wheat	Instant noodles, any flavor, WKB
	Medium-grain rice, BNR	Dried noodles, WKB
	Broken rice, 25%, BNR	Vermicelli, BL
	Sticky rice, WKB	Roll, BNR
	Short-grain rice, BNR	Bread, whole wheat, loaf, BNR
	Long-grained rice-25–50 KG, BNR	Round bread
	White rice #3, BNR	Bread, white, sliced, WKB
	Wheat flour, loose, BNR	Spaghetti, BL
	Corn (maize) flour, white, WKB	Short pasta, WKB
	Maize flour, yellow	Lasagna (sheets)
	Wholemeal flour, Atta, BL	Sliced brown bread (AFR)
	Oats, rolled, WKB	Couscous, BNR
	White rice #1, BNR	Sliced brown bread (WAS)
White rice #10, prepacked, BL	Spaghetti, BARILLA	
Wheat semolina (suji), WKB	Bread unpacked	
Plantains, fresh green		
Long grain rice, family pack, WKB		

(continued)

**Table A4** (continued)

Food	Raw (more work required)	Transformed (less time required)
Pulses	Spotted beans	Green peas, tinned, WKB
	Dried peas, WKB (CIS)	Hommus
	Peas (AFR)	White beans in tomato sauce, tinned, HEINZ
	Dhal, Khesari, BL	
	Peas (WAS)	
	Green/mung beans, dried, BL	
	Dhal, Split peas, BL	
	Dried broad beans	
	Moong dahl, loose, BL	
	Dhal, Musur, BL	
	White beans, dried, BL	Canned black beans
Onions	Fresh onions	–
Tomatoes	Fresh tomatoes, round	Tomato paste, WKB
		Tomato paste (large), WKB
		Chopped tomatoes, BL
Oils	Soybean oil, WKB	–
	Palm oil unrefined, BL	–
	Peanut oil, WKB	–
	Vegetable oil, WKB	–
	Palm oil, WKB	–
	Olive oil, extra virgin, WKB	–
	Sunflower oil, WKB	–
	Corn oil, WKB	–
Cottonseed oil (CIS)	–	
Fish	Squid	Mackerel fillet, tinned, in tomato sauce, WKB
	Fresh small sardines	Dried sardines, BNR
	Carp	Sardines, tinned, with skin, in vegetable oil, WKB
	Tuna steaks	Salty herring (CIS)
	Rainbow-trout ( <i>Salmo gairdneri</i> )	Tuna flakes, tinned, WKB
	Red snapper	Dried small fish, BNR
	Mackerel, un-cleaned	Mackerel fillet, tinned, in vegetable oil, WKB
	Tilapia	Dried Machoiron, BNR
	Sea bass	Dried shrimp, BNR
	Red snapper (AFR)	Fishball, BNR
	Cod ( <i>gadus morhua</i> )	Salted and semi-dried fish, BL
	Tuna steak	Mackerel in vegetable oil, WKB
Shrimp, whole, fresh	Sardines in tomato sauce, WKB	
Small fresh fish	Smoked shrimp/prawns, BNR	

(continued)

**Table A4** (continued)

Food	Raw (more work required)	Transformed (less time required)
	Catfish	
	Fissikh	
	Black pomfret	
	Tuna	
	Sunflower oil, BL	
Poultry	Chicken, whole, fresh	Chicken, whole, frozen
	Chicken legs	Chicken burger
	Chicken, live	Chicken, non-specific cuts, frozen
	Whole duck, fresh	Canned chicken
	Chicken breast, with skin and bones	Breakfast sausage, chicken, BNR
	Native house chicken, fresh	
	Chicken wings (WAS)	
	Chicken, traditionally bred, live	
Red meat	Chicken, non-specific cuts, fresh	
	Beef, center brisket	Sausage
	Beef liver, BNR	Sausages, whole/frankfurter
	Pork, loin chop	Beef, minced
	Veal breast, with bones	BEEF SAUSAGE
	Pork, belly (C)	Salami, sold loose
	Beef, rump steak	Pork ham, pressed, WKB
	Sirloin steak	Bacon, smoked, WKB
	Lamb, whole leg	Luncheon meat
	Beef, with bones	Canned beef, chunks, WKB
	Pork, shoulder	Sliced ham, pork, WKB
	Pork, ribs	Beef merguez (spiced)
	Pork liver, BNR	Burger
	Mutton, mixed cut	
	Mutton tripe	
	Pork thigh, with bones	
	Pork, fillet	
	Beef without bones	
	Mutton chop	

**Table A5** Candidate food items whose prices and availability are reported in ICP 2017

Food	Raw (more work required)	Transformed (less work required)
Pulses	Dhal, Khesari, BL	Canned black beans
	Dhal, Musur, BL	Foul Medammas, canned
	Dhal, Split peas, BL	Frozen peas, small/fine, WKB
	Dried broad beans	Green peas, tinned, WKB
	Dried peas, WKB (CIS)	Hommus
	Green beans (pulses)	White beans in tomato sauce, tinned, HEINZ
	Green/mung beans, dried, BL	
	Moong dahl, loose, BL	
	Peas (AFR)	
	Peas (WAS)	
	Spotted beans	
White beans, dried, BL		
Red meat	Beef liver, BNR	Beef sausage
	Beef without bones	Bacon, smoked, WKB
	Beef, silverside (F2a)	Beef merguez (spiced)
	Beef, sirloin steak (H1)	Beef, cubes for stew or curry
	Beef, center brisket	Beef, fillet, frozen, tenderloin
	Beef, center brisket, with bones (B2)	Beef, minced
	Beef, fillet, tenderloin	Burger
	Beef, rump steak	Canned beef, chunks, WKB
	Beef, with bones	Corned beef, WKB
	Beef, without bones, non-specific cut	Ham, air dried, sold loose
	Buffalo, without bones, non-specific cut	Ham, from the thigh, cooked and smoked, sold loose
	Goat leg	Luncheon meat
	Goat, mixed cut, with bones	Pork ham, pressed, WKB
	Lamb liver	Pork, schnitzel/escalope (A)
	Lamb, chops	Salami, WKB
	Lamb, hindLeg (hindquarters A)	Salami, sold loose
	Lamb, whole leg	Sausage
	Live goat	Sausage, frankfurter/wiener type, artificial skin, WKB
	Live sheep	Sausage, fresh and raw, sold loose
	Mutton tripe	Sausages, whole/frankfurter
	Mutton chop	Sliced ham, pork, WKB
	Mutton chops	Veal, schnitzel/escalope (A5)
	Mutton, mixed cut	
Mutton/goat liver, BNR		
Pork liver, BNR		
Pork loin, without bones		
Pork thigh, with bones		

(continued)

**Table A5** (continued)

Food	Raw (more work required)	Transformed (less work required)
	Pork, belly (C)	
	Pork, collar (B1)	
	Pork, fillet	
	Pork, joint piece for roasting (B2)	
	Pork, loin chop	
	Pork, ribs	
	Pork, shoulder	
	Pork, with bones, non-specific cut	
	Pork, without bones, non-specific cut	
	Round steak	
	Sirloin steak	
	Veal breast, with bones	
	Veal chops	
	Veal, loin (B2)	
	Veal, with bones	
Poultry	Chicken breast, with skin or bones	Breakfast sausage, chicken, BNR
	Chicken breast, without skin or bones	Canned chicken
	Chicken legs	Chicken breast, fillets, shreds or dices
	Chicken wings (ASI)	Chicken burger
	Chicken wings (WAS)	Chicken nuggets/dippers, frozen, WKB
	Chicken, traditionally bred, live	Chicken soup
	Chicken, for roasting, free range	Chicken, non-specific cuts, frozen
	Chicken, live	Chicken, whole, frozen
	Chicken, non-specific cuts, fresh	Grilled/roasted chicken
	Chicken, whole, fresh	Ham, Turkey, WKB
	Native house chicken, fresh	Luncheon chicken
	Turkey	
	Turkey breast, fillet	
	Whole duck, fresh	
Fish	Black pomfret	Breaded fish fillet (Cod), 2–5 pieces, frozen, WKB
	Capitaine	Breaded fish fillet (Pollock), 2–4 pieces, frozen, WKB
	Carp	Calamari rings, frozen, WKB
	Catfish	Canned sprats in oil, WKB (CIS)
	Cod (gadus morhua)	Cod (Gadus morhua), frozen, WKB
	Fissikh	Cold-smoked salmon, WKB
	Fresh small sardines	Dried Machoirion, BNR

(continued)



**Table A5** (continued)

Food	Raw (more work required)	Transformed (less work required)
	Giant shrimp	Dried sardines, BNR
	Grouper (Hamour) fish	Dried shrimp, BNR
	Lobster	Dried small fish, BNR
	Mackerel, un-cleaned	Fish fingers, BL
	Mud crab	Fish fingers, from fillet, WKB
	Mullet	Fishball, BNR
	Prawns/shrimp, medium	Hake ( <i>Merluccius merluccius</i> ), Alaska Pollock ( <i>Theragra chalcogramma</i> ), fillet, frozen, WKB
	Prawns/shrimp, small	Mackerel fillet, tinned, in tomato sauce, WKB
	Rainbow-trout ( <i>Salmo gairdneri</i> )	Mackerel fillet, tinned, in vegetable oil, WKB
	Red snapper (AFR)	Mackerel in vegetable oil, WKB
	Red snapper	Pangasius catfish ( <i>Pangasius hypophthalmus</i> ), fillet, frozen, BL
	Safi	Salmon in natural juice, WKB (CIS)
	Sea bass	Salted and semi-dried fish, BL
	Sea crab	Salty herring (CIS)
	Sea lobster	Sardines in tomato sauce, WKB
	Shrimp, whole, fresh	Sardines, tinned, with skin, in vegetable oil, WKB
	Small fresh fish	Shrimp, peeled, frozen
	Sole	Smoked mackerel ( <i>Scomber scombrus</i> ), fillet, WKB
	Spanish mackerel	Smoked shrimp/prawns, BNR
	Squid	Tinned pink tuna (Skipjack, <i>Thunnus Thynn</i> , Albacares = yellow fin), WKB
	Squid, small	Tinned sardines, in olive oil, with skin and bones, WKB
	Tilapia	Tinned tuna flakes, in vegetable oil, BL
	Tuna	Tuna flakes, tinned, WKB
	Tuna fish fresh	Tuna in vegetable oil, exclude tuna steaks, WKB
	Tuna steak	
	Tuna steaks	
	White pomfret	
Carbo- hydrates (starchy staples)	Basmati rice, WKB	Baguette, BNR
	Broken rice, 25%, BNR	Bread unpacked
	Brown flour	Bread, mixed
	Brown rice, family pack, BL	Bread, multicorn
	Brown rice, loose	Bread, multicorn, industrially packed, WKB
	Buckwheat (CIS)	Bread, white, industrially packed, WKB
	Corn	Bread, white, loaf, BNR
	Corn (maize) flour, loose, BL	Bread, white, sliced, WKB
	Corn (maize) flour, white, WKB	Bread, white, toast, large pack, WKB
Egyptian rice	Bread, white, unsliced, WKB	

(continued)

**Table A5** (continued)

Food	Raw (more work required)	Transformed (less work required)
	Fresh cassava/manioc/yuca	Bread, white, large loaf
	Fresh potatoes, brown	Bread, whole wheat, loaf, BNR
	Fresh potatoes, industrially packed	Burger bread
	Fresh potatoes, white	Couscous, BNR
	Fresh sweet potatoes	Dried noodles, WKB
	Fresh taro	Egg noodles, WKB
	Hard loose bulgur	Fresh rice noodles, BL
	Jasmine rice, WKB	Instant noodles, cup, WKB
	Long grain rice, family pack, WKB	Instant noodles, any flavor, WKB
	Long-grain rice, not parboiled, BL or WKB	Lasagna
	Long-grained rice-25-50 KG, BNR	Lasagna (sheets)
	Long-grain rice, parboiled, WKB	Lebanese bread
	Maize flour white (Maizena)	Long-grain rice, parboiled in cooking bags
	Maize flour, yellow	Roll or bun, prepacked, BNR
	Maize grains, white	Roll, BNR
	Maize, BL	Roll, multicorn
	Medium-grain rice, BNR	Round bread
	Millet (CIS)	Samoon bread
	Millet, sorghum, BL	Short pasta, BL
	Oats, Quaker	Short pasta, WKB
	Oats, rolled, WKB	Sliced brown bread (AFR)
	Plantains, fresh green	Sliced brown bread (WAS)
	Plantains, fresh ripe	Spaghetti, BARILLA
	Premium rice #1, prepacked, BL	Spaghetti, BL
	Premium rice #2, prepacked, BL	Spaghetti, WKB
	Premium rice #3, BNR	Sweet bread
	Premium rice #4, BNR	Uncle Ben's rice
	Rice flour, Atta, WKB	Vermicelli, BL
	Risotto rice, WKB	Wheat tortillas, WKB
	Round-grain rice, WKB	
	Short-grain rice, BNR	
	Sticky rice, WKB	
	Sun white Rice - Australia	
	Wheat	
	Wheat flour, WKB	
	Wheat flour, loose, BNR	
	Wheat flour, not self-rising, BL	
	Wheat semolina (suji), WKB	
	White rice #1, #3 or #5, BNR	

(continued)

**Table A5** (continued)

Food	Raw (more work required)	Transformed (less work required)
	White rice #10, prepacked, BL	
	White rice #7, prepacked, BL	
	White rice #8, prepacked, BL	
	White rice #9, prepacked, BL	
	Wholemeal flour, Atta, BL	
Oils	Coconut oil, BL	
	Corn oil	
	Corn oil, WKB	
	Cottonseed oil (CIS)	
	Olive oil, extra virgin, BL	
	Olive oil, extra virgin, WKB	
	Olive oil, standard, WKB	
	Palm oil unrefined, BL	
	Palm oil, WKB	
	Peanut oil, WKB	
	Soybean oil, WKB	
	Sunflower oil, BL	
	Sunflower oil, WKB	
	Tahina	
Vegetable oil, WKB		
Onions	Fresh leek	
	Fresh onions	
Tomatoes	Fresh tomato cluster	Chopped tomatoes, BL
	Fresh tomatoes, round	Chopped tomatoes, WKB
		Tomato paste (large), WKB
		Tomato paste, WKB
		Tomato puree (Passata di Pomodoro), WKB

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