User Guide: Thrifty Food Plan Calculator

Parke Wilde and Hayley Fryling
Friedman School of Nutrition Science and Policy, Tufts University

Introduction

The United States Department of Agriculture (USDA)'s Thrifty Food Plan (TFP) is the model diet used to determine the maximum benefit for the Supplemental Nutrition Assistance Program (SNAP), the largest and most important food security and anti-hunger program in the United States. The TFP is developed using a mathematical algorithm that identifies a food consumption bundle that is as similar as possible to the average current consumption of a healthy-eating population, while still meeting cost and nutrition constraints (Wilde and Llobrera, 2009; USDA, 2021; Zhao et al., 2024).

Historically, updates to the TFP in 1999 and 2006 left the real (inflation-adjusted) value of the SNAP maximum benefit unchanged. However, in the most recent update in 2021, USDA researchers concluded that the previous cost constraint was insufficient to purchase an adequate diet while meeting nutrient requirements and dietary guidelines. As a result, they increased the cost target until an adequate diet became feasible, leading to an average 21% increase in the SNAP maximum benefit (USDA, 2021). The real-world policy impact of the 2021 revision was greater than any previous revision, sparking enormous public interest in understanding how the TFP is developed. Transparency is a key feature of the TFP, and USDA publicly shares its data, programming details, and methodologies for researchers (Government Accountability Office, 2022; USDA, 2021; Zhao et al., 2024).

This user guide introduces an updated version of the **TFP Calculator,** a simple Excel-based tool that allows you to create your own TFP-style model diets. The calculator uses nearly the same price, food composition, consumption, and dietary guidance data as USDA's 2021 TFP reevaluation, but differs slightly from USDA's mathematical algorithm, explained in the Discussion and Use Cases section of this guide. After entering your model diet's daily calorie consumption for 97 modeling categories and selecting an age-sex demographic group and cost reference period, the calculator will show how your model diet compares to the official TFP model diet in relation to daily cost, food group, energy and nutrient requirements, and distance from current consumption. At a time when large cuts to SNAP benefits are being considered in the U.S. Congress, the **TFP Calculator** may be used to understand and assess the adequacy of the maximum SNAP benefit under varying assumptions about prices, nutrition standards, and consumer preferences.

The Excel File and Worksheet Contents

The TFP Calculator Excel file and the User Guide Word file can be found at https://sites.tufts.edu/tfpcalculator/. The Excel file contains various worksheets, accessible by clicking the tabs at the bottom of the Excel window.

The key worksheets are further described below:

- *Instructions* – An explanation of the file's worksheets and a brief list of step-by-step instructions.
- *Your Model Diet* - The entry page for your model diet, including the selection of your age-sex demographic group and cost reference period, and entry of your diet's daily calorie consumption.
- *Output* – A summary display comparing your model diet to the TFP constraints, including cost, food group, energy and nutrient requirements, and distance from current consumption.
- *Common Foods* - A reference sheet describing the common food items belonging to the 97 modeling categories as documented in the 2021 TFP Report.
- *Sources of Nutrients* – A reference sheet showing the nutrient content per 100 grams for each of the 97 modeling categories, presented as the amount of each nutrient per dollar and per 1,000 kilocalories.
- *Intermediate Computations* - Various tabs in white are merely intermediate computations, which can be ignored by most users.

In this Excel file, blue cells may be modified by you. All other cells are either row or column titles, references, or calculations automatically populated based on your entry.
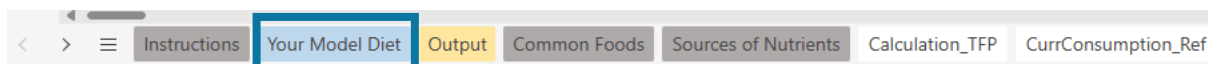
Steps to Design Your Model Diet

Your Model Diet Entry

1. Download and Save the File

To begin, download the original Excel file and save a copy with a new name on your computer.

2. Navigate to the Worksheet Titled *Your Model Diet*

To enter your model diet, click the blue-colored tab labeled *Your Model Diet* at the bottom of the Excel window.

3. Select an Age-Sex Demographic Group and Cost Reference Period

At the top of the *Your Model Diet* worksheet, click the blue cell in row 6 to select an age-sex demographic group, such as "Female, 20 - 50 yrs", or "Reference Family of Four" from the drop-down menu.

The drop-down menu includes the four age-sex groups that represent the TFP Reference Family of Four: a man and a woman, aged 20 to 50, and two children, one aged 6 to 8 and the other aged 9 to 11. Each age-sex group has its own current and TFP-modeled consumption for each of the 97 modeling categories, as well as TFP constraints, including cost, food group, energy, and nutrient requirements.
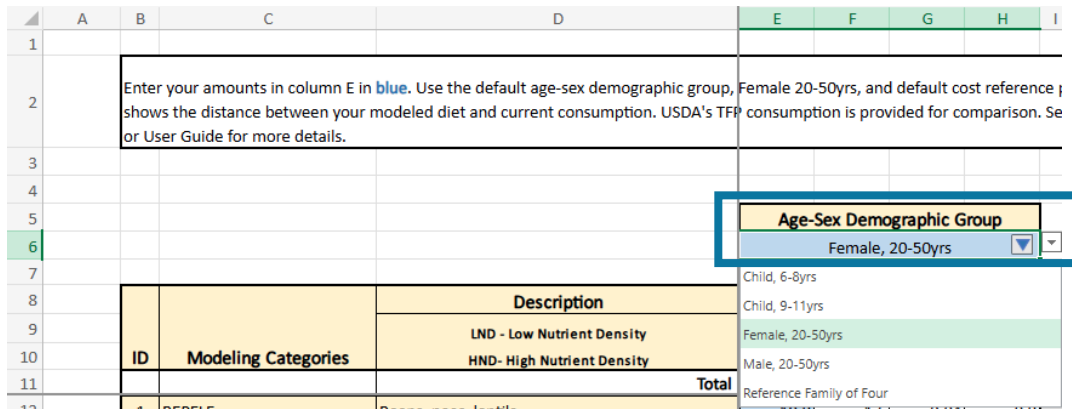
Click the other blue cell in row 6 to select the year to which you want the food prices adjusted for inflation: June 2021, matching the 2021 TFP Report, or the most recent June 2024.
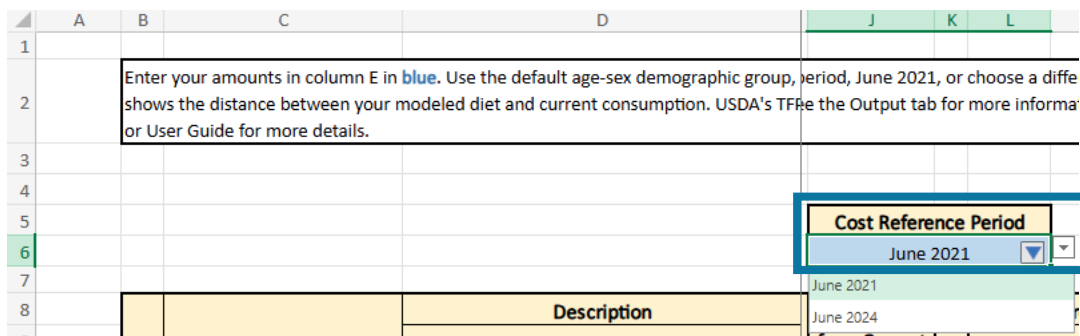
4. Enter Daily Calorie Consumption for the 97 Modeling Categories

On the *Your Model Diet* worksheet, enter your model diet's daily calorie consumption in the blue cells in column E. Each cell corresponds to one of the 97 modeling categories. When entering your model diet's calorie consumption, ensure that your daily intake reflects an average across a full week's menu. This is important because the TFP diet requires a

combination of multiple food groups to meet all nutrient and food group requirements within a day's calorie intake.

By default, the values in this column are pre-filled with USDA's estimates of current consumption for Americans in the selected age-sex group whose diets are sufficiently healthy, based on data from the National Health and Nutrition Examination Survey (NHANES) (USDA, 2021). These estimates for each age-sex group will be lower than the actual energy requirement due to underreporting on dietary recalls for NHANES. This underreporting can result from factors such as poor recall, social desirability bias, and inaccurate portion size estimation. If you use these default calorie values as a starting point, you will need to increase your model diet's calorie consumption across all TFP categories to meet energy requirements. Additionally, the daily calories cell for the TFP category BEV_DIET is locked at zero, as many diet beverages do not contain calories and cannot be a source of food energy in your model diet.

After editing the values in column E, selecting a new age-sex group will no longer automatically update the column with default current consumption values. If you ever want to reset the default values, close your file without saving and reopen the original file.

Based on your calorie entry in column E, columns F, G, and H will display the percent of daily calories, daily cost and percent of daily cost provided by each of the 97 modeling categories.

	A	B	C	D	E	F	G	H
1								
2			Enter your amounts in column E in blue. Use the default age-sex demographic group, Female 20-50yrs, and default cost referenc shows the distance between your modeled diet and current consumption. USDA's TFP consumption is provided for comparison. or User Guide for more details.					
3								
4								
5					Age-Sex Demographic Group			
6					Female, 20-50yrs		▼	
7								
8				Description	Your Model Diet			
9				LND - Low Nutrient Density	Daily Calories		Daily Cost	
10		ID	Modeling Categories	HND- High Nutrient Density	kcal	%	$	%
11				Total	1206.1	100.0	4.79	100.0
12		1	BEPELE	Beans, peas, lentils	19.8	1.6	0.04	0.8
13		2	BEV_COFTEA_LND	Coffee & Tea, LND	13.0	1.1	0.05	1.0
14		3	BEV_COFTEA_HND	Coffee & Tea, HND	1.4	0.1	0.07	1.4
15		4	BEV_DIET	Diet beverages (*zero calories, not editable)	0.0	0.0	0.00	0.0

5. <u>Observe Your Model Diet's Distance from Current Consumption</u>

Based on your model diet, column J displays the distance between your model diet and USDA's current consumption estimate for a population in the selected age-sex group with comparatively good Healthy Eating Index (HEI) scores (USDA, 2021). We slightly simplified USDA's approach to computing this distance: we use the same list of 97 modeling

categories for the distance function and the cost and nutrition constraints (Zhao et al., 2024).

If your model diet matches current consumption, the distance value will be zero. If your model diet differs greatly from current consumption, the distance value will be a large positive number. This column can be used to assess which TFP modeling categories are contributing the most to distance from current consumption, with larger positive values indicating greater dissimilarities.

|	ID	Modeling Categories	Description LND - Low Nutrient Density HND- High Nutrient Density	Your Model Diet				Distance from Current Consumption
				Daily Calories		Daily Cost		
				kcal	%	$	%	
			Total	1206.1	100.0	4.79	100.0	0.0
	1	BEPELE	Beans, peas, lentils	19.8	1.6	0.04	0.8	0.0
	2	BEV_COFTEA_LND	Coffee & Tea, LND	13.0	1.1	0.05	1.0	0.0
	3	BEV_COFTEA_HND	Coffee & Tea, HND	1.4	0.1	0.07	1.4	0.0
	4	BEV_DIET	Diet beverages (*zero calories, not editable)	0.0	0.0	0.00	0.0	0.0

6. Refer to Current and TFP Consumption References

When entering your model diet, refer to the values in columns L through T for current and TFP-modeled consumption references. These references include the same four columns: daily calorie intake, percent of daily calories, daily cost, and percent of daily cost for each of the 97 modeling categories. As a reminder, the current consumption daily calorie estimate for each age-sex group will be lower than the energy requirement due to underreporting on dietary recalls for NHANES. The TFP's daily calorie consumption is based on USDA's model results from the most recent update in 2021. You may find it helpful to refer to these values to assist with creating your model diet.

	ID	Modeling Categories	Description LND - Low Nutrient Density HND- High Nutrient Density	Current Consumption					TFP Consumption			
				Daily Calories		Daily Cost			Daily Calories		Daily Cost	
				kcal	%	$	%		kcal	%	$	%
			Total	1206.1	100.0	4.79	100.0		2177.5	100.0	6.81	100.0
	1	BEPELE	Beans, peas, lentils	19.8	1.6	0.04	0.8		84.8	3.9	0.17	2.5
	2	BEV_COFTEA_LND	Coffee & Tea, LND	13.0	1.1	0.05	1.0		0.0	0.0	0.00	0.0
	3	BEV_COFTEA_HND	Coffee & Tea, HND	1.4	0.1	0.07	1.4		2.6	0.1	0.12	1.8
	4	BEV_DIET	Diet beverages (*zero calories, not editable)	0.0	0.0	0.00	0.0		0.0	0.0	0.00	0.0

The Output and Comparison to TFP Constraints

1. Navigate to the Worksheet Titled *Output*

To compare your model diet to the TFP constraints, click the yellow-colored tab labeled *Output* at the bottom of the Excel window. The selections and values entered on the *Your Model Diet* worksheet will automatically calculate and display the values in the white and green cells.
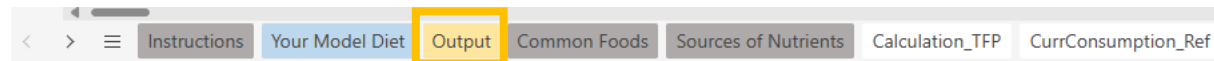
2. Confirm the Age-Sex Group and Cost Reference Period

At the top of the *Output* worksheet, the age-sex demographic group and cost reference period selected on the *Your Model Diet* worksheet will automatically populate in row 6. Confirm that this age-sex group and cost reference period represents the demographic and cost period for your model diet's calorie consumption. If it does not, return to the *Your Model Diet* worksheet and select the correct group and period using the drop-down menus.

3. Compare Your Model Diet to Various TFP Constraints

The remaining cells of this worksheet summarize how your model diet compares to various TFP constraints, including cost, food group, energy and nutrient requirements, and distance from current consumption.

Each constraint table follows a parallel set of columns described below:

- "Your Model Diet's Daily Cost or Intake": Your model diet's daily cost or intake value (servings, calories, grams, etc.) for the selected age-sex group.
- "TFP Constraint or Dietary Pattern Reference": The daily TFP constraint or dietary pattern reference for the selected age-sex group.
- "Percent of Constraint (%)": The percent of how closely your model diet aligns with the TFP constraint or dietary pattern reference; 100% indicates that your entry is exactly equal to the constraint or reference, <100% indicates below the constraint or reference, >100% indicates above the constraint or reference. Green cells indicate that your model diet meets the TFP constraint or dietary pattern reference.

3a. Cost Constraint:

At the top of the *Output* worksheet, the "Cost Constraint" table compares your model diet's daily cost to the cost constraint in the TFP. The TFP constraint value is the upper limit.

	B	C	D	E
8		**Cost Constraint**		
9		**Your Model Diet's Daily Cost**	**TFP Constraint**	**Percent of Constraint (%)**
10	Cost ($)	5.57	8.00	69.62

3b. Food Group Constraints:

On the *Output* worksheet, the "Food Group Constraints" table compares your model diet's daily servings to one of three dietary patterns in the Dietary Guidelines for Americans (DGA), 2020 – 2025. The references for broad food groups are listed for vegetables, fruits, grains, dairy, protein foods, and oil, with subgroups categories below each broad category. The dietary pattern reference values are lower limits, except for refined grains, the value is the upper limit, as this food group should be limited in consumption.

	B	C	D	E
12		**Food Group Constraints**		
13		**Your Model Diet's Daily Servings**	**Healthy US-Style Reference** ▼	**Percent of Constraint (%)**
14	Vegetables (cup eq)	1.35	3.00	45.11
15	Dark-Green Vegetables	0.24	0.29	82.17
16	Red/Orange Vegetables	0.27	0.86	31.22
17	Beans, Peas, Lentils	0.10	0.29	36.01
18	Starchy Vegetables	0.37	0.86	43.02
19	Other Vegetables	0.37	0.71	52.43
20	Fruits (cup eq)	0.71	2.00	35.39
21	Grains (oz eq)	3.32	7.00	47.42
22	Whole Grains	0.50	3.50	14.38
23	Refined Grains	2.82	3.50	80.45
24	Dairy (cup eq)	0.80	3.00	26.75
25	Protein Foods (oz eq)	3.80	6.00	63.26
26	Meat, Poultry, Eggs	2.33	4.00	58.22
27	Seafood	0.70	1.29	54.12
28	Nuts, Seeds, Soy Products	0.77	0.71	108.31
29	Eggs	0.44	-	-
30	Beans, Peas, Lentils	-	-	-
31	Soy Products	0.11	-	-
32	Nuts, Seeds	0.66	-	-
33	Oil (g)	20.08	29.00	69.24
34	**Note:** Reference daily serving amounts are lower bounds for all food groups except for refined grains, which have an upper bound of 3.50 oz. In the "Percent of Constraint" column, green shading means the dietary reference or TFP constraint is met. For most food groups, green appears when the value is 100% or above, as the goal is to meet or exceed the reference amount. For refined grains, green appears when the value is below 100%, as the goal is to stay under the reference amount. In the USDA's model, refined grains should constitute less than half of total grain consumption. A dash (-) in the reference amount indicates no reference value exists for that food subgroup in the selected dietary pattern. In vegetarian diets, beans, peas, and lentils are sometimes counted as part of the protein foods group; however, this calculator does not include data on their daily protein servings in column C, so they are counted only toward vegetable servings.			

USDA uses the DGA's Healthy US-Style Dietary Pattern to model the TFP; however, the DGAs include two other dietary patterns commonly consumed by Americans: the Healthy Vegetarian Dietary Pattern and the Healthy Mediterranean Dietary Pattern, also known as the Dietary Pattern High in Fruits, Seafood, and Healthy Oils. At the top of the table, click the blue cell in row 13 to select a dietary pattern, such as "Healthy US-Style Reference", from the drop-down menu.

The drop-down menu includes the three dietary patterns reported in the DGAs. Each dietary pattern has its own servings reference for each broad food group and subgroup categories. A dash (-) in the reference column means the selected pattern does not have a reference value for that food subgroup category. In vegetarian diets, beans, peas, and

lentils are sometimes counted as part of the protein foods group; however, this calculator lacks data on their daily protein servings in column C, so they are only counted toward vegetable servings.

3c. Energy Constraint:

On the *Output* worksheet, the "Energy Constraint" table compares your model diet's daily calories to the energy constraint in the TFP. The TFP constraint value is the lower limit.

	A	B	C	D	E
36		Energy Constraint			
37			Your Model Diet's Daily Calories	TFP Constraint	Percent of Constraint (%)
38		Calories (kcal)	1206.14	2200.00	54.82

3d. Nutrient Constraints:

On the *Output* worksheet, the "Macronutrient Constraints" and "Micronutrient Constraints" tables compare your model diet's daily grams or intake to nutrient constraints in the TFP. In contrast to other constraint tables, the macronutrient table uses a range of values as the TFP constraint is based on the Acceptable Macronutrient Distribution Ranges (AMDR) for the selected age-sex group. This table contains an additional column called "Within ADMR Range (Yes/No)" that signifies if the TFP constraint is being met, indicated by a "Yes". The micronutrient reference values are lower limits, except for sodium and added sugars, these values are the upper limits, as these nutrients should be limited in consumption.

	A	B	C	D	E	F
40		Macronutrients Constraints				
41			Your Model Diet's Daily Grams	Percent of Daily Calories (%)	TFP Constraint (% of daily calories)	Within ADMR Range (Yes/No)
42		Fat (g)	51.72	38.59	20% to 35%	No
43		Saturated Fat (g)	15.88	11.85	less than 10%	No
44		18:2 Linoleic Acid (g)	11.19	8.35	5% to 10%	Yes
45		18:3 Linolenic Acid (g)	1.11	0.83	0.6% to 1.2%	Yes
46		Carbohydrates (g)	144.75	48.00	45% to 65%	Yes
47		Protein (g)	45.89	15.22	10% to 35%	Yes

	A	B	C	D	E
49			**Micronutrients Constraints**		
50			Your Model Diet's Daily Intake	TFP Constraint	Percent of Constraint (%)
51		Calcium (mg)	532.97	1000.00	53.30
52		Choline (mg)	202.76	425.00	47.71
53		Copper (mg)	0.70	0.90	77.57
54		Fiber (g)	11.64	30.80	37.79
55		Folate (mcg DFE)	319.25	400.00	79.81
56		Iron (mg)	8.50	18.00	47.23
57		Magnesium (mg)	173.81	320.00	54.32
58		Niacin (mg)	14.42	14.00	103.03
59		Phosphorus (mg)	803.89	700.00	114.84
60		Potassium (mg)	1653.35	2600.00	63.59
61		Riboflavin (mg)	1.19	1.10	107.82
62		Thiamin (mg)	0.90	1.10	82.22
63		Vitamin A (mcg RAE)	480.32	700.00	68.62
64		Vitamin B6 (mg)	1.32	1.30	101.77
65		Vitamin B12 (mcg)	2.92	2.40	121.82
66		Vitamin C (mg)	65.92	75.00	87.89
67		Vitamin E (mg)	7.10	12.75	55.67
68		Vitamin K (mcg)	109.78	90.00	121.98
69		Zinc (mg)	6.10	8.00	76.28
70		Sodium (mg)	1746.41	3072.00	56.85
71		Added sugars (g)	39.45	55.00	71.73
72		**Note:** Reference daily intake amounts represent lower bounds for all micronutrients except for sodium and added sugar, where each are the upper bound. In the "Percent Constraint" column, green shading means that the dietary recommendation or TFP constraint is met. For most micronutrients, green appears when the value is 100% or above, as the goal is to consume at least the reference amount. For sodium and added sugars, green appears when the value is below 100%, as the goal is to consume less than the reference amoount.			

3e. Distance from Current Consumption:

At the bottom of the *Output* worksheet, the "Distance from Current Consumption" table compares your model diet to the current consumption of Americans in the selected age-sex group. If your model diet matches current consumption, which is the default setting when you open a new spreadsheet, the value in cell C75 for "Your Model Diet" is zero. If instead your model diet differs greatly from current consumption, the value in cell C75 will be a large positive number.

You can compare your model diet with the USDA's TFP model diet by referring to the values in cells C75 and C76. If the value in cell C75 is larger than the value in cell C76 for the "TFP Model", your model diet is farther than the TFP model diet from current consumption. Conversely, if the value in cell C75 is smaller than the value in cell C76, your model diet is closer than the TFP model diet to current consumption.

	A	B	C
74		**Distance from Current Consumption**	
75		Your Model Diet	0.00
76		TFP Model Diet	4883.63

Reference Worksheets

Common Foods Worksheet

For detailed descriptions of the 97 TFP modeling categories, click the gray-colored tab labeled *Common Foods* at the bottom of the Excel window. The *Common Foods* worksheet provides additional definitions for TFP categories labeled with "HND" (higher nutrient density) or "LND" (lower nutrient density) at the end of their names. This worksheet also lists common food items associated with each of the TFP categories, as documented in the

2021 TFP Report. These details can help you select the appropriate TFP categories when considering the types of foods you are including in your model diet.

	A	B	C	D	E	F
1						
2			Use this reference sheet to understand the definitions of HND (higher nutrient density) and LND (lower nutrient density) for TFP categories with these labels, as well as the common food items associated with each category. See the User Guide for more details.			
3						
4						
5		ID	Modeling Categories	Description	Abbreviation Definitions	Common Food Items
6		1	BEPELE	Beans, peas, lentils	Beans, peas, lentils	beans (white, black, brown, fava, pink, pinto, and kidney), dried beans (cowpeas, chickpeas, and split peas), lentils, edamame, noodles made with soy or mung beans
7		2	BEV_COFTEA_LND	Coffee & Tea, LND	Coffee & Tea, lower nutrient density (>0 g added sugars/100 g)	coffee (Turkish, Cuban, macchiato, café con leche, latte, café mocha, iced, frozen coffee drinks, lightened, sweetened, bottled/canned coffee), tea (hot or iced tea, brewed/bottled and sweetened, tea/ lemonade blends)

The nutrient composition and price for each of the 97 TFP modeling categories are averaged across all the foods in that category. For example, the model uses the average price and nutrients per 100 grams of all the fruits included in the modeling category "Fruit_HND_HICOST" (ID 23), such as grapes, blueberries, strawberries, mangoes, and pineapple. In the real world, these fruits have different prices and nutrient characteristics. As a result, the TFP Calculator is best used for understanding the tradeoffs between different TFP modeling categories, rather than between individual foods within the same TFP modeling category.

Sources of Nutrients Worksheet

For detailed information on the nutritional composition of the 97 TFP modeling categories, click the gray-colored tab labeled *Sources of Nutrients* at the bottom of the Excel window. The *Sources of Nutrients* worksheet displays the average cost and nutrient composition of macronutrients, food groups, and selected micronutrients for each TFP category. This worksheet is designed to help you adjust your model diet to meet challenging TFP constraints. You can use the filtering feature to identify which TFP categories provide the most or least of a given nutrient, either by cost (nutrient per dollar) or by calorie (nutrient per 1,000 kcal).

Each nutrient or food group follows a parallel set of columns described below:

- "g, cup eq., mg, etc.": The average amount of the nutrient or food group per 100 grams.
- "per $": The average amount of the nutrient or food group per dollar.
- "per 1,000 kcal": The average amount of the nutrient or food group per 1,000 kcal.

In this tab, use the filter arrows in the blue cells in row 8, to sort and rank the TFP categories based on various macronutrient, food group, and micronutrient characteristics.

- Using "per $": To address the challenge of meeting a nutrient or food group reference while staying within the TFP cost constraint, click the filter arrow under

the "per $" title for the nutrient or food group of interest. Then select "Sort Largest to Smallest". This will display TFP categories that provide the highest amount of that nutrient at the lowest cost at the top of the list. Consider increasing the calorie contribution of the top-ranked TFP categories to better balance both cost and nutrient constraints in your model diet.

- Using "per 1,000 kcal": To address the challenge of meeting a nutrient or food group reference while increasing total calories of your model diet, click the filter arrow under the "per 1,000 kcal" title for the nutrient or food group of interest. Then select "Sort Largest to Smallest". This will display TFP categories that provide the highest amount of that nutrient with the most calories at the top of the list.

	A	B	C	D	E	F	G	H	I
1									
2			Use this reference sheet to help you adjust your model diet to meet challenging TFP constraints. Click the filter arrows in the blu... you rank the "per $" row from "Sort Largest to Smallest" the worksheet will display TFP categories that provide the highest amo... Smallest" the worksheet will display TFP cateogries that provide the highest amount of that nutrient with the most calories at th...						
3									
4									
5									
6				Cost	Energy		Fat		
7		ID	Modeling Categories	$	kcal	per $	g	per $	per 1000 kcal
8									
9		1	BEPELE	0.36	157.31	433.59	3.29	9.06	20.90
10		2	BEV_COFTEA_LND	0.16	34.20	219.70	0.13	0.86	3.90
11		3	BEV_COFTEA_HND	0.06	1.16	17.91	0.01	0.22	12.01
12		4	BEV_DIET	0.12	1.66	13.57	0.01	0.11	7.98

Discussion and Use Cases

As noted in the introduction, this TFP Calculator uses nearly the same data as the 2021 TFP reevaluation but differs slightly from USDA's mathematical algorithm for determining the TFP model diet. The differences between this calculator and USDA's official TFP model are described below.

- *Inflation Price Adjustments:* This calculator allows you to adjust food prices for inflation by selecting the target year. If you want to match the 2021 Thrifty Food Plan (TFP) reevaluation, select June 2021. To align with the most recent SNAP benefit adjustment and current food prices, select June 2024.

- *Reference Family of Four Group:* If your model diet uses the "Reference Family of Four" as the demographic group, the food group, energy, and nutrient requirements are summed across all four family members. USDA has a different procedure for developing the TFP model diet for the Reference Family, which is not replicated in this calculator. For more information, please refer to the 2021 TFP Report on the USDA's website.

- *Exclusion of Practicality Constraints:* Unlike USDA's approach, this calculator does not include the practicality constraints used when modeling the TFP diet. These constraints are included in the USDA's model to align the TFP diet more closely with typical consumption patterns and preferences. The USDA applies 31 practicality constraints. For example, the TFP diet must include a variety of protein sources rather than relying primarily on low-cost options like eggs, legumes, beans, peas, and nuts. Also, not all fruit servings in the TFP diet can come from fruit juice. A recent study published in *Food Policy* by researchers at Tufts University, Penn State, and Duke University highlighted the significant impact of these practicality constraints on the TFP diet's cost. For reference: Zhao, Y., Fan, L., Wilson, N.L., Valderrama, A.V. and Wilde, P., 2025. Variations on the Thrifty Food Plan: Model diets that satisfy cost and nutrition constraints. Food Policy, 130, p.102781.

This TFP Calculator allows you to gain insights into how the USDA calculates the TFP model diet. By exploring the calculator, you will develop a deeper understanding of the various cost and nutritional constraints that must be met when calculating the TFP, including meeting dietary recommendations for food groups and other common micronutrients. You can also explore which modeling categories the TFP relies on the most for daily caloric intake to minimize the daily cost per person.

In addition, this calculator allows you to design your own model diet and explore how dietary changes may influence your ability to meet the TFP cost and nutrient constraints. Some examples of dietary shifts include:

1. **Plant-based or vegetarian diets**: If you reduce or eliminate meat and increase plant-based protein sources such as legumes, and nuts, how does this affect your ability to meet both cost and micronutrient constraints? Which modeling categories did you use to provide the most daily calories, and how did they help you stay within the TFP cost constraint?

2. **Pescatarian diets:** If you remove meat and incorporate more fish and seafood into your model diet, how does this impact your ability to meet cost and micronutrient constraints?

3. **Lactose-free and gluten-free diets:** If you reduce or eliminate lactose and gluten-containing foods, how does this affect your ability to meet both the cost and food group constraints?

By using this calculator, you can model a variety of diets and address important questions about the feasibility and challenges of designing a model diet that meets TFP constraints.

Feedback and Contact

If you face any challenges using the TFP Calculator or would like to share your model diet with us, please send a copy of your Excel file as an email attachment to hayley.fryling@tufts.edu or parke.wilde@tufts.edu. We would love to hear about your experience using this tool and the tradeoffs you faced while trying to stay within the TFP constraints.

References

Government Accountability Office (GAO), 2022. Thrifty Food Plan: Better Planning and Accountability Could Help Ensure Quality of Future Reevaluations. Washington, DC (Dec)

U.S. Department of Agriculture, 2021. Thrifty Food Plan, 2021. August 2021. FNS-916. Available at https://FNS.usda.gov/TFP.

Wilde, P.E. and Llobrera, J., 2009. Using the thrifty food plan to assess the cost of a nutritious diet. J Consum Aff. 43(2), pp.274-304.

Zhao, Y., Fan, L., Wilson, N.L., Valderrama, A.V. and Wilde, P., 2025. Variations on the Thrifty Food Plan: Model diets that satisfy cost and nutrition constraints. Food Policy, 130, p.102781.