

Table S1. Reported foods in National Dietary Survey (2018-2018) and its respective groups for optimization model input.

Foods	Groups
Rice	Rice
Whole rice	Rice
Olive oil	Olive Oil
Sugar-sweetened beverages	Sugar-sweetened beverages (SSB)
Cookies	Cookies
Cakes	Cakes
Beef	Red meats
Liver	Red meats
Other animal meats	Red meats
Pork	Red meats
Processed meat	Red meats
Sweets	Sweets
Sauces and condiments	Fast foods
Snacks	Fast foods
Pineapple	Fruits and Vegetables (FV)
Acai Berry	Fruits and Vegetables (FV)
Acerola	Fruits and Vegetables (FV)
Plum	Fruits and Vegetables (FV)
Banana	Fruits and Vegetables (FV)
Cashew	Fruits and Vegetables (FV)
Khaki	Fruits and Vegetables (FV)
Star fruit	Fruits and Vegetables (FV)
Coconut	Fruits and Vegetables (FV)
Earl fruit	Fruits and Vegetables (FV)
Cupuaçu	Fruits and Vegetables (FV)
Fig	Fruits and Vegetables (FV)
Guava	Fruits and Vegetables (FV)
Soursop	Fruits and Vegetables (FV)
Jackfruit	Fruits and Vegetables (FV)
Kiwi	Fruits and Vegetables (FV)
Orange	Fruits and Vegetables (FV)
Lemon	Fruits and Vegetables (FV)
Apple	Fruits and Vegetables (FV)
Papaya	Fruits and Vegetables (FV)
Mango	Fruits and Vegetables (FV)
Passion fruit	Fruits and Vegetables (FV)
Watermelon	Fruits and Vegetables (FV)
Melon	Fruits and Vegetables (FV)
Other fruits	Fruits and Vegetables (FV)
Pear	Fruits and Vegetables (FV)
Peach	Fruits and Vegetables (FV)
Strawberry	Fruits and Vegetables (FV)
Tangerine	Fruits and Vegetables (FV)
Grape	Fruits and Vegetables (FV)
Avocado	Fruits and Vegetables (FV)
Continues...	

Table S1. Reported food list in National Dietary Survey (2018-2018) and its respective groups for optimization model input (continuation).

Foods	Groups
Pumpkin	Fruits and Vegetables (FV)
Zucchini	Fruits and Vegetables (FV)
Eggplant	Fruits and Vegetables (FV)
Beet	Fruits and Vegetables (FV)
Broccoli	Fruits and Vegetables (FV)
Onion	Fruits and Vegetables (FV)
Carrot	Fruits and Vegetables (FV)
Chayote	Fruits and Vegetables (FV)
Cauliflower	Fruits and Vegetables (FV)
Peas	Fruits and Vegetables (FV)
Scarlet eggplant	Fruits and Vegetables (FV)
Gherkin	Fruits and Vegetables (FV)
Corn	Fruits and Vegetables (FV)
Palm Heart	Fruits and Vegetables (FV)
Cucumber	Fruits and Vegetables (FV)
Pequi or Souari nut	Fruits and Vegetables (FV)
Bell pepper	Fruits and Vegetables (FV)
Okra	Fruits and Vegetables (FV)
Radish	Fruits and Vegetables (FV)
Milkweed	Fruits and Vegetables (FV)
Tomato	Fruits and Vegetables (FV)
Pods	Fruits and Vegetables (FV)
Chard	Fruits and Vegetables (FV)
Cress	Fruits and Vegetables (FV)
Lettuce	Fruits and Vegetables (FV)
Endive	Fruits and Vegetables (FV)
Chicory	Fruits and Vegetables (FV)
Kale	Fruits and Vegetables (FV)
Spinach	Fruits and Vegetables (FV)
Mustard Leaf	Fruits and Vegetables (FV)
Cabbage	Fruits and Vegetables (FV)
Arugula	Fruits and Vegetables (FV)
Serralha	Fruits and Vegetables (FV)
American taro	Fruits and Vegetables (FV)
Chicken	Chicken
Yogurt	Dairy
Milk	Dairy
Non-fat milk	Dairy
Cheese	Dairy
Fava bean	Beans
Beans	Beans
Chickpeas	Beans
Lentil	Beans
Margarine	Margarine
Continues...	

Table S1. Reported food list in National Dietary Survey (2018-2018) and its respective groups for optimization model input (continuation).

Foods	Groups
Pasta	Pasta
Nuts	Nuts
Peanut	Nuts
Egg	Eggs
Breads	Breads
Fish	Fish and seafood
Seafood	Fish and seafood
Manioc flour	Tubers
Yam	Tubers
Tubers	Tubers

Table S2. Pesticides residues origin and its extrapolations.

Foods or food groups	Origin
Pineapple	PARA's residues database
Zucchini	PARA's residues database
Lettuce	PARA's residues database
Garlic	PARA's residues database
Rice	PARA's residues database
Banana	PARA's residues database
Potato	PARA's residues database
Sweet Potato	PARA's residues database
Beet	PARA's residues database
Onion	PARA's residues database
Carrot	PARA's residues database
Chayote	PARA's residues database
Kale	PARA's residues database
Beans	PARA's residues database
Guava	PARA's residues database
Orange	PARA's residues database
Apple	PARA's residues database
Papaya	PARA's residues database
Manioc	PARA's residues database
Mango	PARA's residues database
Corn	PARA's residues database
Strawberry	PARA's residues database
Cucumber	PARA's residues database
Bell pepper	PARA's residues database
Cabbage	PARA's residues database
Tomato	PARA's residues database
Wheat	PARA's residues database
Grape	PARA's residues database
Cashew	LabTox's residues database
Khaki	LabTox's residues database
Soursop	Pineapple residues
Pumpkin	Zucchini residues
Whole rice	Rice residues
Lemon	Orange residues
Tangerine	Orange residues
Pear	Apple residues
Yam	Manioc residues
Cassava flour	Manioc residues
Wheat flour	Wheat residues
Peas	Bean's residues
Fava bean	Bean's residues
Chickpeas	Bean's residues
Lentil	Bean's residues
Pods	Bean's residues
Meats (Beef, pork, chicken, and fish)	5% of garlic pesticide residues
Cake	50% of wheat flour pesticide residues
Pasta	50% of wheat flour pesticide residues
Continues...	

Table S2. Pesticides residues origin and its extrapolations (continuation).

Foods or food groups	Origin
Cookies	50% of wheat flour pesticide residues
Bread	50% of wheat flour pesticide residues
Snacks	50% of wheat flour pesticide residues
Acerola	Fruits average pesticide residues
Avocado	Fruits average pesticide residues
Plum	Fruits average pesticide residues
Peach	Fruits average pesticide residues
Passion fruit	Fruits average pesticide residues
Watermelon	Fruits average pesticide residues
Melon	Fruits average pesticide residues
Acai Berry	Fruits average pesticide residues
Earl fruit	Fruits average pesticide residues
Cupuaçu	Fruits average pesticide residues
Kiwi	Fruits average pesticide residues
Gherkin	Fruits average pesticide residues
Region fruits	Fruits average pesticide residues
Pequi or Souari nut	Fruits average pesticide residues
Star fruit	Fruits average pesticide residues
Jackfruit	Fruits average pesticide residues
Fig	Fruits average pesticide residues
Chard	Leafy vegetables average pesticide residues
Cress	Leafy vegetables average pesticide residues
Endive	Leafy vegetables average pesticide residues
Chicory	Leafy vegetables average pesticide residues
Broccoli	Leafy vegetables average pesticide residues
Cauliflower	Leafy vegetables average pesticide residues
Spinach	Leafy vegetables average pesticide residues
Mustard Leaf	Leafy vegetables average pesticide residues
Milkweed	Leafy vegetables average pesticide residues
American taro	Leafy vegetables average pesticide residues
Arugula	Leafy vegetables average pesticide residues
Okra	Non-starchy Vegetable's average pesticide residues
Eggplant	Non-starchy Vegetable's average pesticide residues
Scarlet eggplant	Non-starchy Vegetable's average pesticide residues
Palm Heart	Tuber average pesticide residues
Radish	Tuber average pesticide residues
Regional tubers	Tuber average pesticide residues

Table S3. Food groups for acceptability constraints on optimization models.

Foods	Constraint groups
Beans	Beans
Chickpeas	Beans
Fava bean	Beans
Lentil	Beans
Breads	Breads
Cakes	Cakes
Cookies	Cookies
Cheese	Dairy
Milk	Dairy
Non-fat milk	Dairy
Yogurt	Dairy
Egg	Eggs
Sauces and condiments	Fast foods
Snacks	Fast foods
Acai Berry	Fruits
Acerola	Fruits
Apple	Fruits
Avocado	Fruits
Banana	Fruits
Cashew	Fruits
Coconut	Fruits
Cupuaçu	Fruits
Earl fruit	Fruits
Fig	Fruits
Grape	Fruits
Guava	Fruits
Jackfruit	Fruits
Khaki	Fruits
Kiwi	Fruits
Lemon	Fruits
Mango	Fruits
Melon	Fruits
Orange	Fruits
Other fruits	Fruits
Papaya	Fruits
Passion fruit	Fruits
Peach	Fruits
Pear	Fruits
Pineapple	Fruits
Plum	Fruits
Soursop	Fruits
Star fruit	Fruits
Strawberry	Fruits
Tangerine	Fruits
Watermelon	Fruits
American taro	Leafy vegetables
Arugula	Leafy vegetables
Continues...	

Table S3. Food groups for acceptability constraints on optimization models (continuation).

Foods	Constraint groups
Cabbage	Leafy vegetables
Chard	Leafy vegetables
Chicory	Leafy vegetables
Cress	Leafy vegetables
Endive	Leafy vegetables
Kale	Leafy vegetables
Lettuce	Leafy vegetables
Mustard Leaf	Leafy vegetables
Serralha	Leafy vegetables
Spinach	Leafy vegetables
Margarine	Margarine
Beef	Meats
Chicken	Meats
Fish	Meats
Liver	Meats
Other animal meats	Meats
Pork	Meats
Processed meat	Meats
Seafood	Meats
Non-Classified	Non-Classified
Nuts	Nuts
Peanut	Nuts
Olive oil	Olive Oil
Pasta	Pasta
Rice	Rice
Whole rice	Rice
Sugar-sweetened beverages	Sugar-sweetened beverages (SSB)
Sweets	Sweets
Manioc flour	Tubers
Tubers	Tubers
Yam	Tubers
Beet	Vegetables
Bell pepper	Vegetables
Broccoli	Vegetables
Carrot	Vegetables
Cauliflower	Vegetables
Chayote	Vegetables
Corn	Vegetables
Cucumber	Vegetables
Eggplant	Vegetables
Gherkin	Vegetables
Milkweed	Vegetables
Okra	Vegetables
Onion	Vegetables
Palm Heart	Vegetables
Peas	Vegetables
Pequi or Souari nut	Vegetables
Continues...	

Table S3. Food groups for acceptability constraints on optimization models (continuation).

Foods	Constraint groups
Pods	Vegetables
Pumpkin	Vegetables
Radish	Vegetables
Scarlet eggplant	Vegetables
Tomato	Vegetables
Zucchini	Vegetables

Table S4. Summary of residue data obtained from the Program on Pesticide Residue Analysis in Food (PARA) from 2013 to 2018, and LabTox from 2010 to 2012.

Food	Samples analyzed	Positive samples (≥LOD)	% of positive samples
Apple	764	712	93
Strawberry	157	146	93
Papaya	722	590	82
Khaki	67	51	76
Tomato	1046	656	63
Beans	764	434	57
Orange	1126	557	49
Bell pepper	569	264	46
Corn	729	332	46
Kale	228	97	43
Wheat	506	212	42
Carrot	871	327	38
Lettuce	734	254	35
Grape	543	185	34
Cucumber	487	161	33
Cashew	43	12	28
Pineapple	587	135	23
Zucchini	216	48	22
Cabbage	491	100	20
Banana	501	99	20
Guava	689	125	18
Rice	1075	194	18
Mango	569	94	17
Beetroot	618	83	13
Onion	495	48	10
Potatoes	742	51	7
Garlic	365	19	5
Sweet Potatoes	315	13	4
Chayote	288	9	3
Manioc	470	14	3
Total	16667	6022	36