

# Supplementary Information to: Nutritional Value Score rates foods based on global health priorities

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## Methods

### Food composition data

All food composition data are publicly available in the Extended Data Excel File. The first two tabs, 'Indonesian FCT' and 'Bangladeshi FCT', correspond with the final food composition databases used for analysis. They include all unprocessed, minimally processed, and processed sentinel foods listed in the country-adapted Diet Quality Questionnaires for Indonesia and Bangladesh ([dietquality.org](http://dietquality.org)), with the exception of sago porridge, papaya leaves, mangosteen, green mango and green papaya in Indonesia, and of pa ruti, arum, khichuri, koromcha, and lassi in Bangladesh. We were unable to include these foods as they were not available in either USDA databases<sup>1</sup> or national food composition tables for Indonesia and Bangladesh<sup>2</sup>. We also excluded sausages as these are often ultra-processed and our analysis did not include ultra-processed foods.

The third and fourth tabs, 'Plant foods\_granular data' and 'Animal foods\_granular data', present nutrient values for all individual food items included under aggregate sentinel foods (for example, clams, mussels, oysters, and scallops for bivalve mollusks), and for different cooking methods and cuts (in the case of meat) for the same food (for example, omelet, scrambled, fried, and hard-boiled for eggs).

The fifth tab, 'ALA values\_USDA&literature', includes values for ALA either from USDA databases (our preferred option when available) or from scientific literature. We aimed to obtain ALA values for *at least* one food per Diet Quality Questionnaire question, so that we could use them as a proxy for all other foods included under the same question. However, when this was not possible (for example, for question 9 on citrus fruits or question 15 on yogurt), we used the broader food group (or sub-group) average ALA value (in this example, the average ALA values for fruits and dairy, respectively).

Finally, the sixth tab, 'DIAAS values\_literature', presents values for DIAAS obtained from scientific literature. For fruits and vegetables we used food group average values, assuming that DIAAS values do not show large variation across specific fruits and vegetables. For all other food groups, we aimed to obtain DIAAS values for *at least* one food per Diet Quality Questionnaire question, so that we could use them as a proxy for all other foods included under the same question. The only cases in which this was not possible were questions 14 on cheese and 15 on yogurt, for which we used DIAAS values for cow and/or sheep milk as proxies.

### Dietary reference intakes

**Table 1 | Recommended intakes for vitamins for adults (men and women) aged  $\geq 18$  years.**

| <b>Vit A<br/>(mcg<br/>RAE)</b>  | <b>Vit C<br/>(mg)</b> | <b>Vit D<br/>(mcg)</b> | <b>Vit E<br/>(mg)</b> | <b>Thiamin<br/>(mg)</b> | <b>Riboflavin<br/>(mg)</b> | <b>Niacin<br/>(mg)</b> | <b>Vit B<sub>6</sub><br/>(mg)</b> | <b>Folate<br/>(mcg<br/>DFE)</b> | <b>Vit B<sub>12</sub><br/>(mcg)</b> | <b>Choline<br/>(mg)</b> |
|---|-----------------------|------------------------|-----------------------|-------------------------|----------------------------|------------------------|-----------------------------------|---------------------------------|-------------------------------------|-------------------------|
| 700   | 102.5                 | 16.25                  | 15                    | 1.15                    | 1.6                        | 15                     | 1.65                              | 330                             | 2.4                                 | 400                     |
| <p>Recommended intakes for vitamin A, vitamin C, riboflavin, vitamin B<sub>6</sub>, folate, and choline are from the European Food Safety Authority<sup>3</sup>. Recommended intakes for vitamin D, vitamin E, thiamin, niacin, and vitamin B<sub>12</sub> are from the Institute of Medicine<sup>4</sup>. Abbreviations: DFE, dietary folate equivalent; RAE, retinol activity equivalent; Vit, vitamin.</p> |                       |                        |                       |                         |                            |                        |                                   |                                 |                                     |                         |

**Table 2 | Recommended intakes for minerals for adults (men and women) aged  $\geq 18$  years.**

| Iron (mg) <sup>a</sup>  |       |       | Zinc (mg) <sup>b</sup> |      |      |      | Calcium (mg) | Potassium (mg) | Magnesium (mg) |
|---|-------|-------|------------------------|------|------|------|--------------|----------------|----------------|
| 20%   | 15%   | 10%   | R                      | SR   | SU   | U    |              |                |                |
| 8.17  | 12.25 | 16.33 | 8.45                   | 10.5 | 12.5 | 14.5 | 960          | 3000           | 366.25         |
| <p>Recommended intakes for iron, zinc, and calcium are from the European Food Safety Authority<sup>3</sup>. Recommended intakes for potassium, and magnesium are from the Institute of Medicine<sup>4</sup>. <sup>a</sup>The percentages indicated represent different levels of bioavailability, which translate into different RNIs (the higher the bioavailability of iron in diets, the lower the amount needed to meet daily requirements).</p> <p><sup>b</sup>Assuming 300 mg phytate/day and 44% absorption for refined (R) diets, 600 mg phytate/day and 35% absorption for semi-refined (SR) diets, 900 mg phytate/day and 30% absorption for semi-unrefined (SU) diets, and 1,200 mg phytate/day and 26% absorption for unrefined (U) diets. Abbreviations: R, refined; SR, semi-refined; SU, semi-unrefined; U, unrefined.</p> |       |       |                        |      |      |      |              |                |                |

## Additional results figures for Indonesia

### Nutritional Value Scores by food group

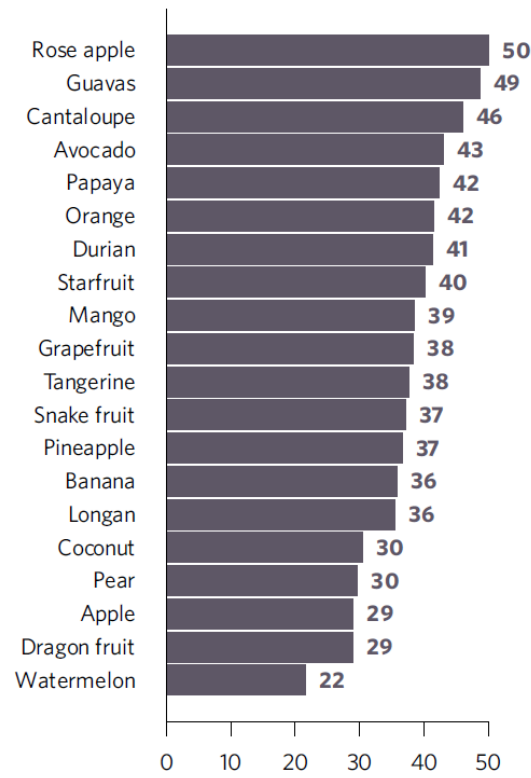


Figure 1 | Nutritional Value Scores for common Indonesian fruits.

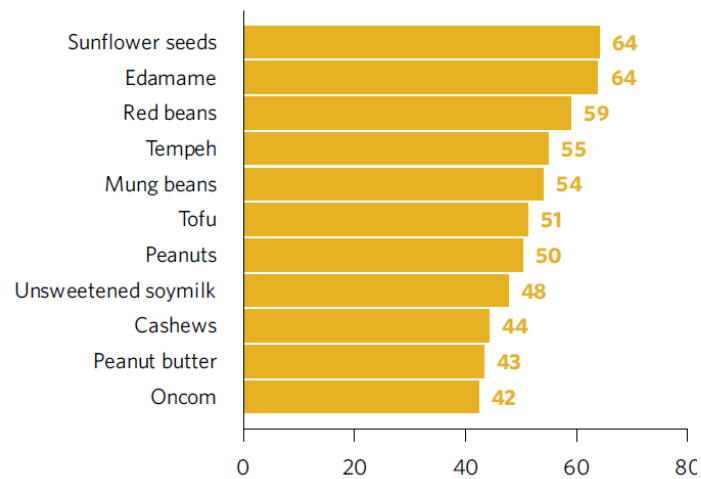
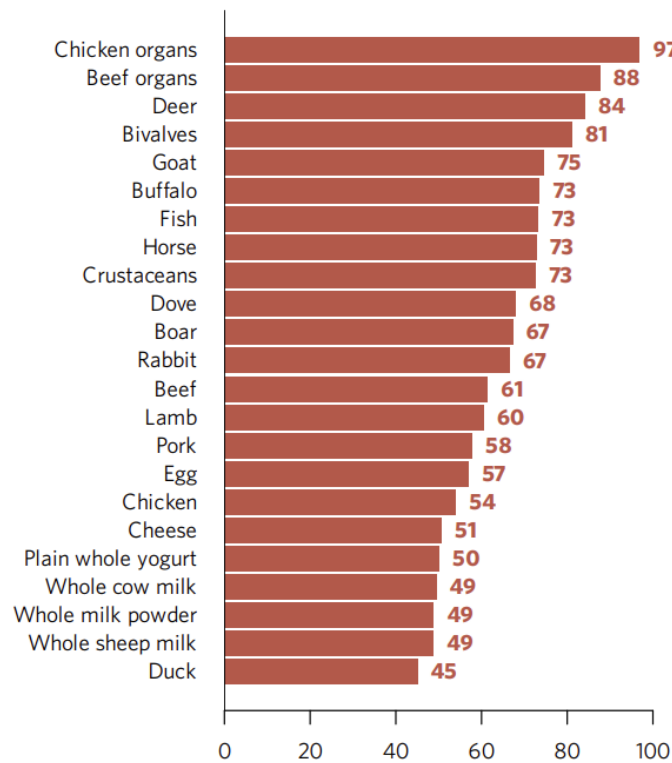
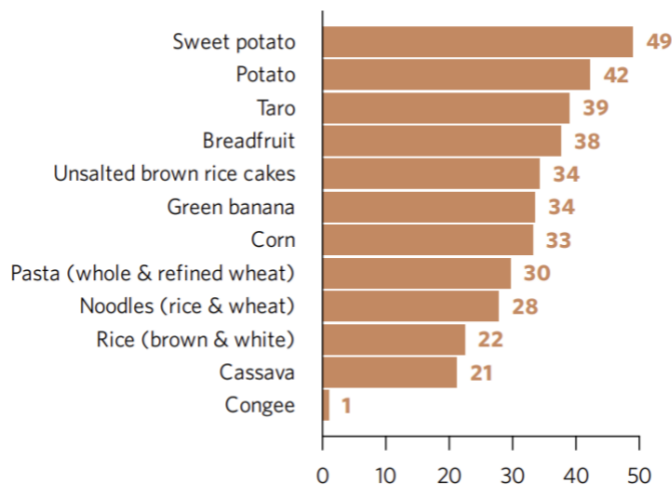


Figure 2 | Nutritional Value Scores for common Indonesian pulses, nuts, and seeds.



**Figure 3 | Nutritional Value Scores for common Indonesian animal source foods.**



**Figure 4 | Nutritional Value Scores for common Indonesian starchy staples.**

## Results for Bangladesh

### Component nutritional scores

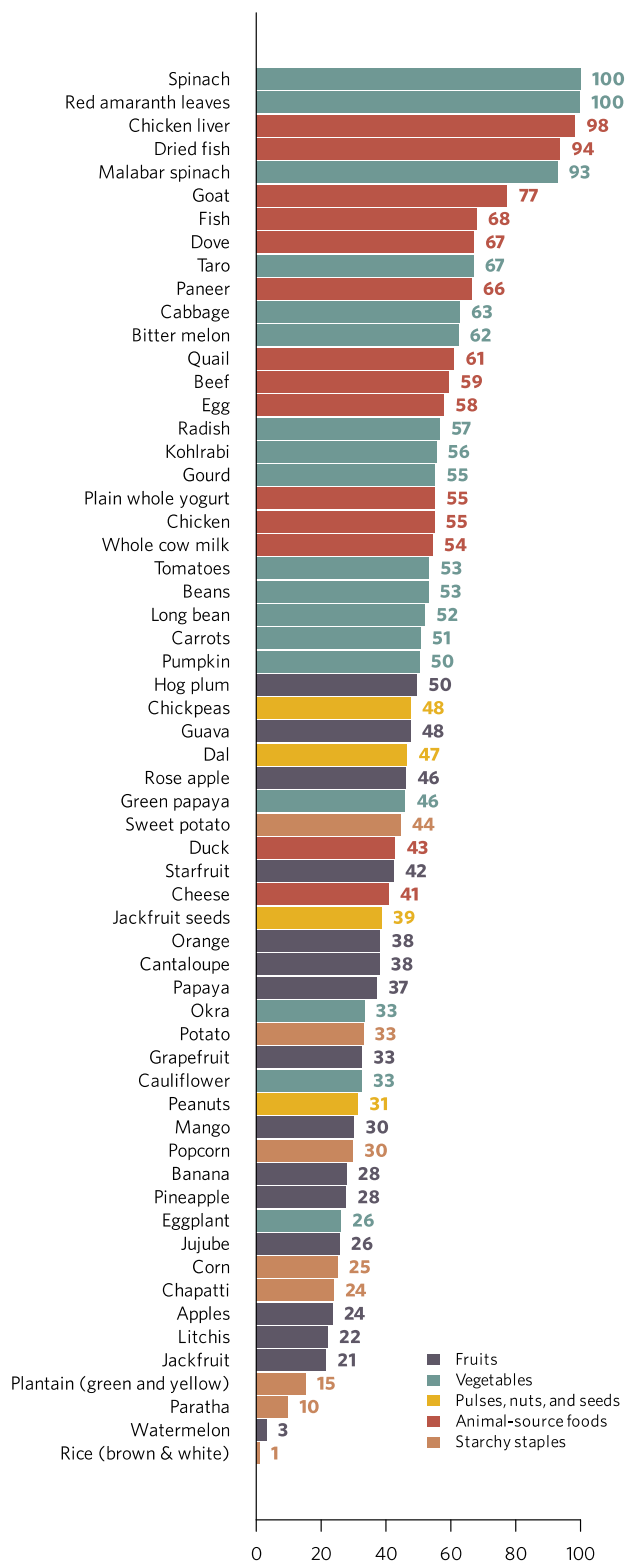
**Table 3 | Component scores, Nutrient Density Scores and Nutritional Value Scores for common Bangladeshi foods**

| Food                    | Vitamin score | Mineral score | Essential amino acid score | n-3 fatty acid score | Fiber score | Nutrient ratio score | Nutrient Density Score | Nutritional Value Score |
|-------------------------|---------------|---------------|----------------------------|----------------------|-------------|----------------------|------------------------|-------------------------|
| Spinach                 | 74            | 90            | 52                         | 25                   | 68          | 93                   | 92                     | 100                     |
| Red amaranth leaves     | 63            | 100           | 40                         | 17                   | 97          | 99                   | 87                     | 100                     |
| Chicken liver           | 100           | 57            | 91                         | 1                    | 1           | 94                   | 96                     | 98                      |
| Amaranth leaves         | 64            | 91            | 46                         | 26                   | 92          | 95                   | 86                     | 98                      |
| Dried fish              | 43            | 91            | 95                         | 100                  | 1           | 55                   | 100                    | 94                      |
| Malabar spinach         | 75            | 75            | 40                         | 27                   | 67          | 94                   | 82                     | 93                      |
| Goat                    | 38            | 53            | 100                        | 1                    | 1           | 100                  | 66                     | 77                      |
| Fish                    | 39            | 18            | 80                         | 78                   | 1           | 88                   | 55                     | 68                      |
| Dove                    | 37            | 46            | 81                         | 11                   | 1           | 86                   | 58                     | 67                      |
| Taro shoots             | 38            | 46            | 35                         | 20                   | 82          | 93                   | 48                     | 67                      |
| Paneer                  | 45            | 49            | 89                         | 3                    | 1           | 68                   | 65                     | 66                      |
| Cabbage                 | 41            | 40            | 36                         | 15                   | 61          | 91                   | 45                     | 63                      |
| Bitter melon            | 35            | 46            | 31                         | 15                   | 69          | 91                   | 44                     | 62                      |
| Quail                   | 37            | 34            | 80                         | 8                    | 1           | 83                   | 52                     | 61                      |
| Beef                    | 31            | 41            | 85                         | 2                    | 1           | 75                   | 53                     | 59                      |
| Egg                     | 46            | 15            | 69                         | 12                   | 1           | 90                   | 45                     | 58                      |
| Radish                  | 25            | 39            | 34                         | 18                   | 62          | 91                   | 37                     | 57                      |
| Calabash                | 22            | 46            | 32                         | 19                   | 51          | 87                   | 38                     | 56                      |
| Kohlrabi                | 32            | 34            | 34                         | 11                   | 59          | 89                   | 37                     | 56                      |
| Pointed gourd           | 24            | 37            | 31                         | 11                   | 63          | 95                   | 34                     | 55                      |
| Plain whole yogurt      | 21            | 25            | 68                         | 13                   | 1           | 100                  | 37                     | 55                      |
| Chicken                 | 25            | 21            | 86                         | 11                   | 1           | 87                   | 42                     | 55                      |
| Whole cow milk          | 27            | 20            | 66                         | 11                   | 1           | 100                  | 36                     | 54                      |
| Whole sheep & goat milk | 24            | 19            | 72                         | 8                    | 1           | 100                  | 36                     | 54                      |
| Tomatoes                | 37            | 33            | 33                         | 15                   | 33          | 82                   | 39                     | 53                      |
| Green beans             | 31            | 25            | 36                         | 9                    | 68          | 90                   | 32                     | 53                      |
| Long bean               | 30            | 36            | 39                         | 7                    | 35          | 81                   | 38                     | 52                      |
| Carrots                 | 36            | 22            | 36                         | 1                    | 58          | 86                   | 32                     | 51                      |
| Pumpkin                 | 42            | 37            | 33                         | 1                    | 24          | 70                   | 41                     | 50                      |
| Hog plum                | 26            | 43            | 25                         | 17                   | 27          | 77                   | 37                     | 50                      |
| Chickpeas               | 19            | 31            | 40                         | 4                    | 65          | 81                   | 29                     | 48                      |
| Guava                   | 29            | 19            | 26                         | 5                    | 73          | 89                   | 25                     | 48                      |
| Dal                     | 23            | 28            | 26                         | 5                    | 68          | 85                   | 26                     | 47                      |

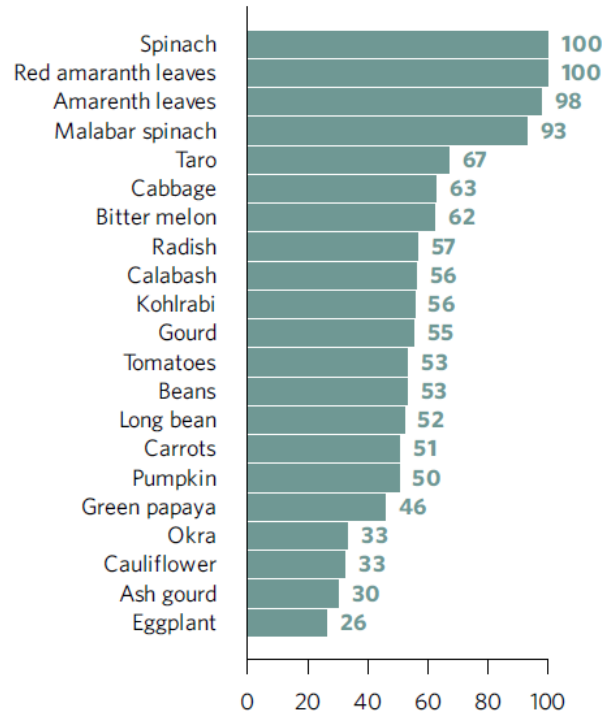
| Food                        | Vitamin score | Mineral score | Essential amino acid score | n-3 fatty acid score | Fiber score | Nutrient ratio score | Nutrient Density Score | Nutritional Value Score |
|-----------------------------|---------------|---------------|----------------------------|----------------------|-------------|----------------------|------------------------|-------------------------|
| Rose apple                  | 25            | 13            | 29                         | 32                   | 53          | 88                   | 25                     | 46                      |
| Green papaya                | 19            | 32            | 31                         | 10                   | 37          | 84                   | 28                     | 46                      |
| Sweet potato                | 29            | 16            | 57                         | 1                    | 31          | 72                   | 32                     | 44                      |
| Duck                        | 22            | 20            | 69                         | 1                    | 1           | 69                   | 34                     | 43                      |
| Starfruit                   | 16            | 10            | 28                         | 27                   | 65          | 90                   | 18                     | 42                      |
| Cheese                      | 19            | 37            | 88                         | 3                    | 1           | 30                   | 46                     | 41                      |
| Malta orange                | 30            | 10            | 24                         | 10                   | 40          | 81                   | 21                     | 40                      |
| Jackfruit seeds             | 47            | 33            | 59                         | 2                    | 14          | 11                   | 50                     | 39                      |
| Orange                      | 25            | 12            | 24                         | 11                   | 42          | 79                   | 20                     | 38                      |
| Cantaloupe                  | 34            | 20            | 24                         | 14                   | 20          | 61                   | 28                     | 38                      |
| Papaya                      | 26            | 16            | 23                         | 12                   | 32          | 73                   | 22                     | 37                      |
| Okra                        | 22            | 15            | 30                         | 4                    | 21          | 66                   | 21                     | 33                      |
| Potato                      | 14            | 17            | 58                         | 3                    | 20          | 53                   | 25                     | 33                      |
| Grapefruit                  | 23            | 10            | 24                         | 15                   | 26          | 69                   | 18                     | 33                      |
| Cauliflower                 | 27            | 8             | 31                         | 4                    | 20          | 67                   | 20                     | 33                      |
| Peanuts                     | 35            | 45            | 28                         | 2                    | 54          | 1                    | 41                     | 31                      |
| Mango                       | 29            | 6             | 24                         | 9                    | 24          | 60                   | 19                     | 30                      |
| Ash gourd                   | 26            | 32            | 32                         | 20                   | 88          | 3                    | 34                     | 30                      |
| Popcorn                     | 10            | 39            | 20                         | 2                    | 100         | 29                   | 23                     | 30                      |
| Banana                      | 14            | 13            | 24                         | 4                    | 30          | 63                   | 14                     | 28                      |
| Pineapple                   | 22            | 8             | 24                         | 6                    | 24          | 60                   | 15                     | 28                      |
| Eggplant                    | 13            | 6             | 29                         | 4                    | 22          | 65                   | 11                     | 26                      |
| Custard apple               | 15            | 15            | 24                         | 4                    | 26          | 55                   | 15                     | 26                      |
| Jujube                      | 16            | 9             | 24                         | 12                   | 24          | 55                   | 15                     | 26                      |
| Corn                        | 13            | 13            | 14                         | 2                    | 29          | 64                   | 10                     | 25                      |
| Java plumb                  | 7             | 6             | 25                         | 15                   | 28          | 65                   | 9                      | 25                      |
| Chapatti                    | 18            | 20            | 6                          | 2                    | 68          | 41                   | 14                     | 24                      |
| Apples                      | 2             | 2             | 22                         | 6                    | 39          | 76                   | 2                      | 24                      |
| Litchis                     | 18            | 6             | 24                         | 14                   | 19          | 46                   | 14                     | 22                      |
| Jackfruit                   | 18            | 17            | 26                         | 5                    | 17          | 34                   | 18                     | 21                      |
| Plantain (green and yellow) | 11            | 12            | 24                         | 3                    | 23          | 28                   | 12                     | 15                      |
| Paratha                     | 3             | 11            | 1                          | 1                    | 66          | 28                   | 1                      | 10                      |
| Watermelon                  | 1             | 1             | 23                         | 3                    | 5           | 19                   | 1                      | 3                       |
| Rice (brown & white)        | 1             | 4             | 19                         | 1                    | 13          | 9                    | 2                      | 1                       |



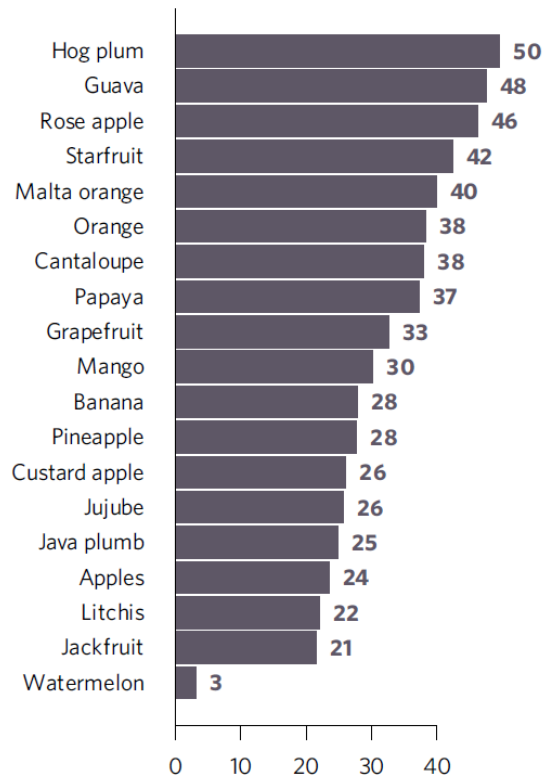
## Nutritional Value Scores across all food groups and by food group



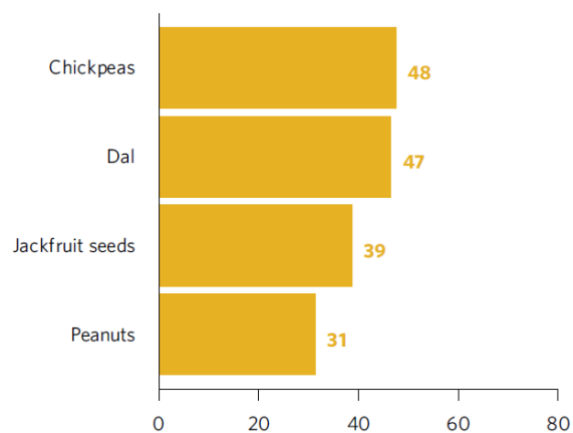
**Figure 5 | Nutritional Value Scores for common Bangladeshi foods.** This figure includes most, though not all, foods analyzed for Bangladesh.



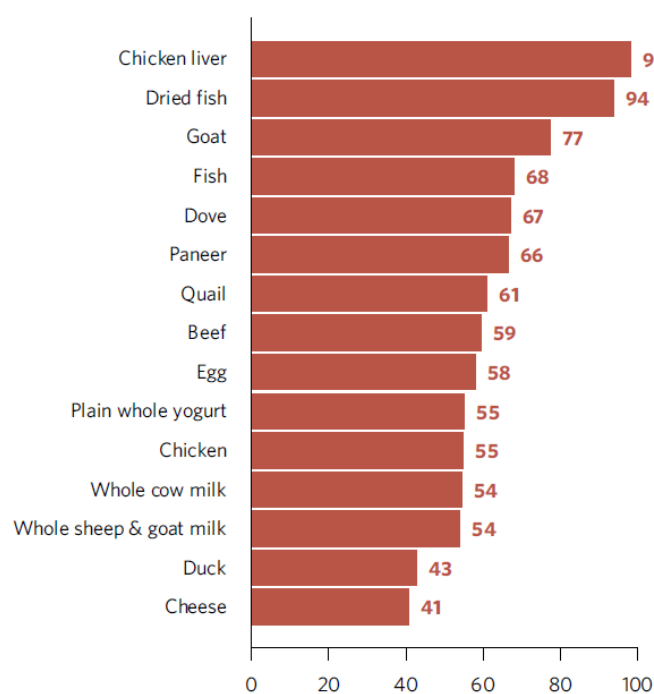
**Figure 6 | Nutritional Value Scores for common Bangladeshi vegetables.**



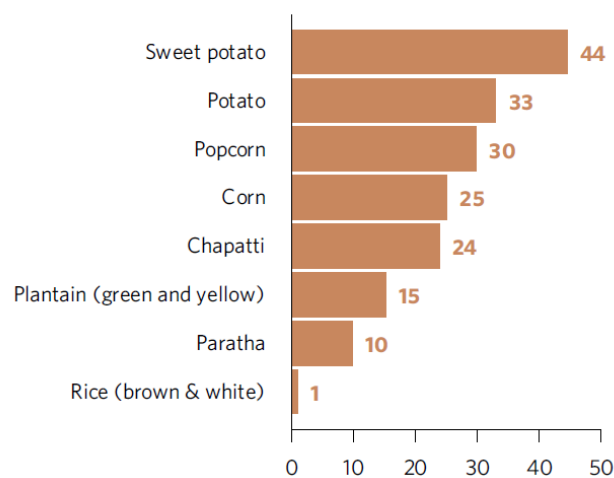
**Figure 7 | Nutritional Value Scores for common Bangladeshi fruits.**



**Figure 8 | Nutritional Value Scores for common Bangladeshi pulses, nuts, and seeds.**

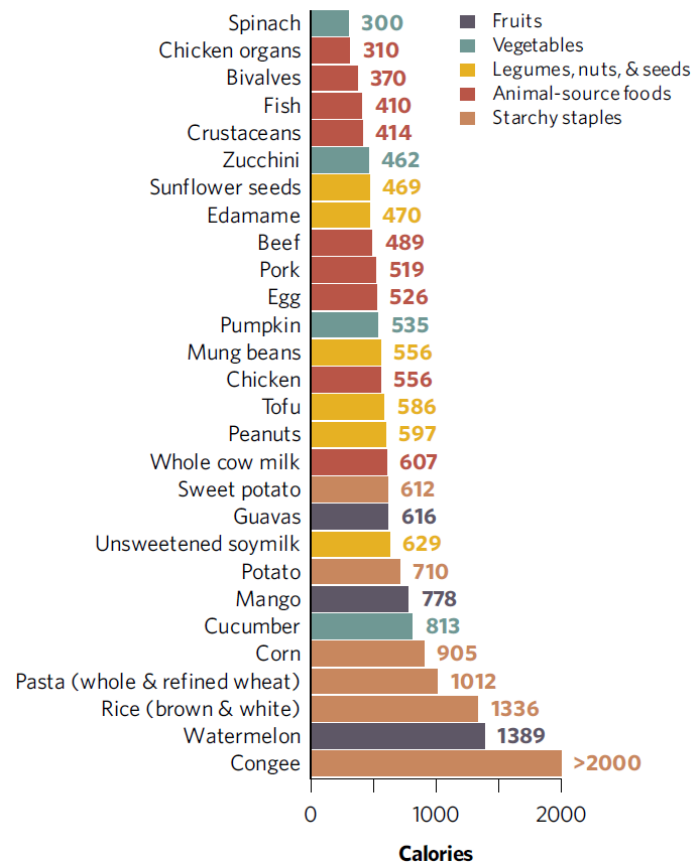


**Figure 9 | Nutritional Value Scores for common Bangladeshi animal source foods.**



**Figure 10 | Nutritional Value Scores for common Bangladeshi starchy staples.**

## Implications for life cycle assessment



**Figure 11 | Calories of Indonesian foods needed for a Nutritional Value Score of 100.** The Nutritional Value Score rates foods by nutritional value. It is scaled from 1 (lowest) to 100 (highest).

## Sensitivity analyses

The final analysis capped micronutrients at 100% of the RNI per 300 Calories and per 231 grams. Capping at 50% of the RNI made no change (5 foods) or increased the NVS of all foods except for chicken organs, oncom, watermelon, sunflower seeds, apple, beef organs, rice, pear, and dragon fruit (Table 4). In general, capping at 50% of the RNI favors foods with a balance of many micronutrients (for example, milk and eggs). In contrast, capping at 200% of the RNI made no change (8 foods) or decreased the NVS of all foods except for oncom, beef organs, watermelon, bivalves, apple, rice, pear, and dragon fruit (Table 5). The NVS for foods with a balance of many micronutrients like milk and eggs decreased when capping at 200% of the RNI instead of 100%.

In general, capping has differential effects on foods with a balance of micronutrients verses foods with a high quantity of one or two micronutrients. To demonstrate, the NVS for eggs in the final analysis was 57, increased to 65 when capping at 50% of the RNI, and decreased to 51 when capping at 200% of the RNI. Conversely, the NVS for beef organs (very high in vitamin A) was 88 in the final analysis, decreased to 87 when capping at 50% of the RNI, and increased to 91 when capping at 200% of the RNI.

**Table 4 | Vitamin and mineral scores, Nutrient Density Scores and Nutritional Value Scores for common Indonesian foods when capping micronutrients at 100% and 50% of RNIs**

| Food                | Vitamin score (100%) | Vitamin score (50%) | Mineral score (100%) | Mineral score (50%) | Nutrient Density Score (100%) | Nutrient Density Score (50%) | Nutritional Value Score (100%) | Nutritional Value Score (50%) |
|---------------------|----------------------|---------------------|----------------------|---------------------|-------------------------------|------------------------------|--------------------------------|-------------------------------|
| Spinach             | 79                   | 86                  | 100                  | 100                 | 96                            | 100                          | 100                            | 100                           |
| Chicken organs      | 100                  | 100                 | 72                   | 58                  | 100                           | 94                           | 97                             | 90                            |
| Drumstick leaves    | 77                   | 82                  | 66                   | 85                  | 77                            | 89                           | 82                             | 89                            |
| Pumpkin leaves      | 65                   | 71                  | 72                   | 79                  | 76                            | 82                           | 86                             | 88                            |
| Beef organs         | 86                   | 94                  | 59                   | 56                  | 88                            | 90                           | 88                             | 87                            |
| Bivalves            | 39                   | 58                  | 63                   | 65                  | 74                            | 85                           | 81                             | 87                            |
| Water spinach       | 68                   | 76                  | 73                   | 73                  | 77                            | 81                           | 85                             | 86                            |
| Deer                | 64                   | 72                  | 65                   | 65                  | 82                            | 86                           | 84                             | 85                            |
| Chinese broccoli    | 62                   | 74                  | 60                   | 71                  | 66                            | 77                           | 78                             | 84                            |
| Chinese cabbage     | 62                   | 70                  | 71                   | 72                  | 74                            | 78                           | 82                             | 83                            |
| Sweet potato leaves | 54                   | 77                  | 55                   | 66                  | 60                            | 77                           | 73                             | 83                            |
| Crustaceans         | 42                   | 62                  | 40                   | 54                  | 63                            | 80                           | 73                             | 82                            |
| Fish                | 50                   | 69                  | 21                   | 31                  | 63                            | 77                           | 73                             | 81                            |
| Cassava leaves      | 50                   | 60                  | 65                   | 85                  | 62                            | 76                           | 72                             | 80                            |
| Broccoli            | 60                   | 76                  | 42                   | 62                  | 55                            | 72                           | 69                             | 79                            |
| Buffalo             | 53                   | 58                  | 43                   | 59                  | 66                            | 77                           | 73                             | 79                            |
| Horse               | 40                   | 54                  | 56                   | 64                  | 67                            | 77                           | 73                             | 78                            |
| Boar                | 41                   | 64                  | 35                   | 48                  | 59                            | 76                           | 67                             | 78                            |
| Dove                | 41                   | 60                  | 54                   | 59                  | 62                            | 74                           | 68                             | 75                            |
| Goat                | 42                   | 50                  | 61                   | 60                  | 68                            | 71                           | 75                             | 75                            |

| Food                   | Vitamin<br>score<br>(100%) | Vitamin<br>score<br>(50%) | Mineral<br>score<br>(100%) | Mineral<br>score<br>(50%) | Nutrient<br>Density<br>Score<br>(100%) | Nutrient<br>Density<br>Score<br>(50%) | Nutritional<br>Value<br>Score<br>(100%) | Nutritional<br>Value<br>Score<br>(50%) |
|------------------------|----------------------------|---------------------------|----------------------------|---------------------------|--|---------------------------------------|---|--|
| Edamame                | 32                         | 45                        | 45                         | 67                        | 48                                     | 65                                    | 64                                      | 75                                     |
| Rabbit                 | 43                         | 52                        | 36                         | 54                        | 59                                     | 72                                    | 67                                      | 74                                     |
| Red beans              | 30                         | 46                        | 35                         | 54                        | 39                                     | 56                                    | 59                                      | 69                                     |
| Zucchini               | 47                         | 57                        | 51                         | 59                        | 52                                     | 61                                    | 65                                      | 69                                     |
| Cabbage                | 43                         | 57                        | 43                         | 55                        | 46                                     | 59                                    | 62                                      | 69                                     |
| Bitter melon           | 37                         | 50                        | 50                         | 55                        | 46                                     | 55                                    | 62                                      | 67                                     |
| Pork                   | 44                         | 61                        | 26                         | 38                        | 51                                     | 66                                    | 58                                      | 66                                     |
| Egg                    | 51                         | 69                        | 18                         | 26                        | 46                                     | 59                                    | 57                                      | 65                                     |
| Beef                   | 35                         | 46                        | 48                         | 51                        | 55                                     | 63                                    | 61                                      | 64                                     |
| Tempeh                 | 17                         | 30                        | 42                         | 61                        | 40                                     | 56                                    | 55                                      | 64                                     |
| Mung bean<br>sprouts   | 37                         | 50                        | 38                         | 57                        | 40                                     | 56                                    | 55                                      | 64                                     |
| Green beans            | 33                         | 53                        | 27                         | 45                        | 33                                     | 52                                    | 53                                      | 64                                     |
| Lamb                   | 38                         | 47                        | 42                         | 49                        | 54                                     | 62                                    | 60                                      | 64                                     |
| Pumpkin                | 45                         | 59                        | 40                         | 54                        | 43                                     | 57                                    | 56                                      | 64                                     |
| Tomatoes               | 39                         | 56                        | 35                         | 48                        | 40                                     | 55                                    | 55                                      | 64                                     |
| Long bean              | 30                         | 44                        | 40                         | 57                        | 38                                     | 53                                    | 54                                      | 63                                     |
| Sunflower<br>seeds     | 55                         | 59                        | 69                         | 68                        | 66                                     | 67                                    | 64                                      | 63                                     |
| Chicken                | 29                         | 42                        | 25                         | 36                        | 42                                     | 55                                    | 54                                      | 61                                     |
| Plain whole<br>yogurt  | 22                         | 35                        | 25                         | 47                        | 34                                     | 51                                    | 50                                      | 61                                     |
| Radish                 | 26                         | 35                        | 42                         | 58                        | 35                                     | 47                                    | 53                                      | 60                                     |
| Whole sheep<br>milk    | 25                         | 45                        | 19                         | 36                        | 33                                     | 51                                    | 49                                      | 60                                     |
| Carrots                | 38                         | 55                        | 24                         | 35                        | 33                                     | 46                                    | 52                                      | 59                                     |
| Whole cow<br>milk      | 27                         | 41                        | 20                         | 38                        | 33                                     | 49                                    | 49                                      | 59                                     |
| Whole milk<br>powder   | 23                         | 37                        | 22                         | 42                        | 33                                     | 49                                    | 49                                      | 59                                     |
| Mung beans             | 22                         | 26                        | 28                         | 42                        | 32                                     | 41                                    | 54                                      | 59                                     |
| Chayote                | 31                         | 40                        | 35                         | 47                        | 34                                     | 45                                    | 53                                      | 59                                     |
| Tofu                   | 7                          | 12                        | 43                         | 63                        | 35                                     | 47                                    | 51                                      | 58                                     |
| Unsweetened<br>soymilk | 18                         | 34                        | 17                         | 35                        | 31                                     | 48                                    | 48                                      | 58                                     |
| Winged beans           | 10                         | 17                        | 51                         | 72                        | 36                                     | 49                                    | 50                                      | 58                                     |
| Mushrooms              | 34                         | 50                        | 24                         | 39                        | 30                                     | 45                                    | 48                                      | 57                                     |
| Rose apple             | 28                         | 42                        | 14                         | 24                        | 25                                     | 37                                    | 50                                      | 57                                     |
| Sweet potato           | 32                         | 46                        | 18                         | 28                        | 32                                     | 43                                    | 49                                      | 55                                     |
| Tree fern              | 46                         | 59                        | 3                          | 6                         | 31                                     | 39                                    | 52                                      | 55                                     |
| Guavas                 | 32                         | 44                        | 21                         | 31                        | 27                                     | 37                                    | 49                                      | 54                                     |
| Peanuts                | 40                         | 49                        | 55                         | 60                        | 48                                     | 55                                    | 50                                      | 53                                     |
| Duck                   | 26                         | 43                        | 23                         | 33                        | 35                                     | 48                                    | 45                                      | 53                                     |
| Cheese                 | 22                         | 30                        | 44                         | 46                        | 48                                     | 53                                    | 51                                      | 52                                     |
| Red pepper             | 47                         | 61                        | 10                         | 17                        | 29                                     | 39                                    | 47                                      | 52                                     |

| Food                                | Vitamin<br>score<br>(100%) | Vitamin<br>score<br>(50%) | Mineral<br>score<br>(100%) | Mineral<br>score<br>(50%) | Nutrient<br>Density<br>Score<br>(100%) | Nutrient<br>Density<br>Score<br>(50%) | Nutritional<br>Value<br>Score<br>(100%) | Nutritional<br>Value<br>Score<br>(50%) |
|-------------------------------------|----------------------------|---------------------------|----------------------------|---------------------------|--|---------------------------------------|---|--|
| Cantaloupe                          | 36                         | 48                        | 21                         | 29                        | 30                                     | 39                                    | 46                                      | 51                                     |
| Avocado                             | 23                         | 41                        | 18                         | 26                        | 21                                     | 33                                    | 43                                      | 51                                     |
| Potato                              | 16                         | 28                        | 20                         | 30                        | 25                                     | 36                                    | 42                                      | 49                                     |
| Durian                              | 29                         | 47                        | 15                         | 22                        | 22                                     | 34                                    | 41                                      | 48                                     |
| Luffa                               | 16                         | 28                        | 24                         | 33                        | 22                                     | 32                                    | 42                                      | 48                                     |
| Papaya                              | 28                         | 35                        | 17                         | 28                        | 23                                     | 32                                    | 42                                      | 47                                     |
| Peanut butter                       | 34                         | 44                        | 48                         | 52                        | 41                                     | 48                                    | 43                                      | 46                                     |
| Orange                              | 27                         | 35                        | 13                         | 21                        | 21                                     | 29                                    | 42                                      | 46                                     |
| Taro                                | 17                         | 31                        | 19                         | 28                        | 17                                     | 29                                    | 39                                      | 45                                     |
| Cauliflower                         | 29                         | 48                        | 9                          | 14                        | 20                                     | 32                                    | 39                                      | 45                                     |
| Cashews                             | 16                         | 26                        | 76                         | 70                        | 46                                     | 48                                    | 44                                      | 44                                     |
| Green pepper                        | 29                         | 37                        | 8                          | 13                        | 20                                     | 26                                    | 40                                      | 43                                     |
| Cucumber                            | 9                          | 17                        | 22                         | 36                        | 18                                     | 29                                    | 37                                      | 43                                     |
| Mango                               | 31                         | 44                        | 7                          | 11                        | 19                                     | 28                                    | 39                                      | 43                                     |
| Starfruit                           | 18                         | 22                        | 10                         | 18                        | 16                                     | 22                                    | 40                                      | 43                                     |
| Grapefruit                          | 24                         | 33                        | 10                         | 17                        | 18                                     | 26                                    | 38                                      | 42                                     |
| Tangerine                           | 22                         | 32                        | 11                         | 19                        | 17                                     | 26                                    | 38                                      | 42                                     |
| Breadfruit                          | 13                         | 23                        | 17                         | 25                        | 15                                     | 24                                    | 38                                      | 42                                     |
| Snake fruit                         | 26                         | 34                        | 35                         | 42                        | 31                                     | 38                                    | 37                                      | 41                                     |
| Oncom                               | 1                          | 1                         | 53                         | 52                        | 35                                     | 34                                    | 42                                      | 40                                     |
| Banana                              | 15                         | 24                        | 15                         | 23                        | 15                                     | 23                                    | 36                                      | 40                                     |
| Pineapple                           | 24                         | 31                        | 8                          | 13                        | 17                                     | 22                                    | 37                                      | 39                                     |
| Green banana                        | 14                         | 25                        | 18                         | 27                        | 16                                     | 26                                    | 34                                      | 39                                     |
| Longan                              | 26                         | 34                        | 9                          | 14                        | 17                                     | 24                                    | 36                                      | 39                                     |
| Corn                                | 14                         | 26                        | 14                         | 22                        | 12                                     | 21                                    | 33                                      | 38                                     |
| Unsalted<br>brown rice<br>cakes     | 16                         | 21                        | 38                         | 44                        | 26                                     | 32                                    | 34                                      | 36                                     |
| Eggplant                            | 14                         | 26                        | 7                          | 10                        | 12                                     | 19                                    | 33                                      | 36                                     |
| Coconut                             | 1                          | 1                         | 20                         | 27                        | 11                                     | 14                                    | 30                                      | 31                                     |
| Pasta (whole<br>& refined<br>wheat) | 5                          | 8                         | 13                         | 19                        | 8                                      | 13                                    | 30                                      | 31                                     |
| Pear                                | 2                          | 2                         | 4                          | 7                         | 4                                      | 5                                     | 30                                      | 29                                     |
| Noodles (rice<br>& wheat)           | 4                          | 6                         | 11                         | 16                        | 5                                      | 9                                     | 28                                      | 29                                     |
| Dragon fruit                        | 2                          | 2                         | 4                          | 7                         | 3                                      | 5                                     | 29                                      | 28                                     |
| Apple                               | 2                          | 4                         | 2                          | 3                         | 4                                      | 5                                     | 29                                      | 28                                     |
| Cassava                             | 11                         | 19                        | 8                          | 12                        | 3                                      | 8                                     | 21                                      | 24                                     |
| Rice (brown<br>& white)             | 2                          | 3                         | 5                          | 7                         | 2                                      | 3                                     | 22                                      | 22                                     |
| Watermelon                          | 2                          | 2                         | 1                          | 1                         | 1                                      | 1                                     | 22                                      | 20                                     |
| Congee                              | 6                          | 8                         | 2                          | 5                         | 7                                      | 9                                     | 1                                       | 1                                      |

**Table 5 | Vitamin and mineral scores, Nutrient Density Scores and Nutritional Value Scores for common Indonesian foods when capping micronutrients at 100% and 200% of RNIs**

| <b>Food</b>         | <b>Vitamin score (100%)</b> | <b>Vitamin score (200%)</b> | <b>Mineral score (100%)</b> | <b>Mineral score (200%)</b> | <b>Nutrient Density Score (100%)</b> | <b>Nutrient Density Score (200%)</b> | <b>Nutritional Value Score (100%)</b> | <b>Nutritional Value Score (200%)</b> |
|---------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|--------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|
| Spinach             | 79                          | 76                          | 100                         | 100                         | 96                                   | 96                                   | 100                                   | 100                                   |
| Chicken organs      | 100                         | 100                         | 72                          | 69                          | 100                                  | 100                                  | 97                                    | 97                                    |
| Beef organs         | 86                          | 85                          | 59                          | 67                          | 88                                   | 92                                   | 88                                    | 91                                    |
| Bivalves            | 39                          | 33                          | 63                          | 68                          | 74                                   | 75                                   | 81                                    | 82                                    |
| Pumpkin leaves      | 65                          | 51                          | 72                          | 71                          | 76                                   | 69                                   | 86                                    | 81                                    |
| Chinese cabbage     | 62                          | 56                          | 71                          | 66                          | 74                                   | 70                                   | 82                                    | 80                                    |
| Water spinach       | 68                          | 55                          | 73                          | 65                          | 77                                   | 68                                   | 85                                    | 79                                    |
| Deer                | 64                          | 50                          | 65                          | 49                          | 82                                   | 68                                   | 84                                    | 74                                    |
| Drumstick leaves    | 77                          | 67                          | 66                          | 47                          | 77                                   | 64                                   | 82                                    | 73                                    |
| Chinese broccoli    | 62                          | 51                          | 60                          | 43                          | 66                                   | 54                                   | 78                                    | 69                                    |
| Fish                | 50                          | 39                          | 21                          | 16                          | 63                                   | 57                                   | 73                                    | 69                                    |
| Crustaceans         | 42                          | 35                          | 40                          | 30                          | 63                                   | 56                                   | 73                                    | 67                                    |
| Horse               | 40                          | 34                          | 56                          | 43                          | 67                                   | 58                                   | 73                                    | 67                                    |
| Cassava leaves      | 50                          | 47                          | 65                          | 50                          | 62                                   | 53                                   | 72                                    | 66                                    |
| Goat                | 42                          | 27                          | 61                          | 48                          | 68                                   | 56                                   | 75                                    | 66                                    |
| Buffalo             | 53                          | 39                          | 43                          | 32                          | 66                                   | 55                                   | 73                                    | 65                                    |
| Sweet potato leaves | 54                          | 40                          | 55                          | 40                          | 60                                   | 47                                   | 73                                    | 64                                    |
| Rabbit              | 43                          | 36                          | 36                          | 28                          | 59                                   | 53                                   | 67                                    | 62                                    |
| Broccoli            | 60                          | 50                          | 42                          | 28                          | 55                                   | 44                                   | 69                                    | 61                                    |
| Edamame             | 32                          | 29                          | 45                          | 34                          | 48                                   | 42                                   | 64                                    | 60                                    |
| Boar                | 41                          | 25                          | 35                          | 27                          | 59                                   | 48                                   | 67                                    | 60                                    |
| Dove                | 41                          | 26                          | 54                          | 42                          | 62                                   | 50                                   | 68                                    | 59                                    |
| Sunflower seeds     | 55                          | 45                          | 69                          | 62                          | 66                                   | 59                                   | 64                                    | 59                                    |
| Bitter melon        | 37                          | 32                          | 50                          | 42                          | 46                                   | 41                                   | 62                                    | 59                                    |
| Zucchini            | 47                          | 38                          | 51                          | 38                          | 52                                   | 42                                   | 65                                    | 58                                    |
| Beef                | 35                          | 27                          | 48                          | 38                          | 55                                   | 48                                   | 61                                    | 56                                    |
| Cabbage             | 43                          | 38                          | 43                          | 28                          | 46                                   | 38                                   | 62                                    | 56                                    |
| Lamb                | 38                          | 29                          | 42                          | 33                          | 54                                   | 46                                   | 60                                    | 55                                    |
| Red beans           | 30                          | 19                          | 35                          | 26                          | 39                                   | 30                                   | 59                                    | 53                                    |



| <b>Food</b>            | <b>Vitamin<br/>score<br/>(100%)</b> | <b>Vitamin<br/>score<br/>(200%)</b> | <b>Mineral<br/>score<br/>(100%)</b> | <b>Mineral<br/>score<br/>(200%)</b> | <b>Nutrient<br/>Density<br/>Score<br/>(100%)</b> | <b>Nutrient<br/>Density<br/>Score<br/>(200%)</b> | <b>Nutritional<br/>Value<br/>Score<br/>(100%)</b> | <b>Nutritional<br/>Value Score<br/>(200%)</b> |
|------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|--|---|---|
| Egg                    | 51                                  | 35                                  | 18                                  | 14                                  | 46   | 37   | 57  | 51  |
| Pork                   | 44                                  | 27                                  | 26                                  | 21                                  | 51   | 42   | 58  | 51  |
| Tempeh                 | 17                                  | 11                                  | 42                                  | 34                                  | 40   | 34   | 55  | 51  |
| Mung beans             | 22                                  | 16                                  | 28                                  | 21                                  | 32   | 27   | 54  | 50  |
| Radish                 | 26                                  | 22                                  | 42                                  | 33                                  | 35   | 30   | 53  | 49  |
| Cheese                 | 22                                  | 15                                  | 44                                  | 44                                  | 48   | 46   | 51  | 49  |
| Tree fern              | 46                                  | 38                                  | 3                                   | 2                                   | 31   | 28   | 52  | 49  |
| Chicken                | 29                                  | 18                                  | 25                                  | 19                                  | 42   | 36   | 54  | 49  |
| Tomatoes               | 39                                  | 29                                  | 35                                  | 24                                  | 40   | 31   | 55  | 49  |
| Pumpkin                | 45                                  | 34                                  | 40                                  | 28                                  | 43   | 33   | 56  | 49  |
| Oncom                  | 1                                   | 1                                   | 53                                  | 68                                  | 35   | 43   | 42  | 49  |
| Carrots                | 38                                  | 33                                  | 24                                  | 16                                  | 33   | 28   | 52  | 48  |
| Tofu                   | 7                                   | 5                                   | 43                                  | 33                                  | 35   | 30   | 51  | 48  |
| Sweet potato           | 32                                  | 29                                  | 18                                  | 14                                  | 32   | 29   | 49  | 47  |
| Rose apple             | 28                                  | 22                                  | 14                                  | 9                                   | 25   | 20   | 50  | 47  |
| Chayote                | 31                                  | 24                                  | 35                                  | 22                                  | 34   | 26   | 53  | 47  |
| Mung bean<br>sprouts   | 37                                  | 25                                  | 38                                  | 25                                  | 40   | 29   | 55  | 47  |
| Long bean              | 30                                  | 19                                  | 40                                  | 28                                  | 38   | 28   | 54  | 47  |
| Guavas                 | 32                                  | 29                                  | 21                                  | 15                                  | 27   | 24   | 49  | 47  |
| Green beans            | 33                                  | 21                                  | 27                                  | 18                                  | 33   | 24   | 53  | 46  |
| Winged beans           | 10                                  | 7                                   | 51                                  | 40                                  | 36   | 29   | 50  | 46  |
| Peanuts                | 40                                  | 30                                  | 55                                  | 48                                  | 48   | 41   | 50  | 45  |
| Plain whole<br>yogurt  | 22                                  | 14                                  | 25                                  | 15                                  | 34   | 26   | 50  | 45  |
| Whole cow<br>milk      | 27                                  | 17                                  | 20                                  | 12                                  | 33   | 26   | 49  | 44  |
| Unsweetened<br>soymilk | 18                                  | 12                                  | 17                                  | 10                                  | 31   | 26   | 48  | 44  |
| Whole sheep<br>milk    | 25                                  | 16                                  | 19                                  | 11                                  | 33   | 26   | 49  | 44  |
| Red pepper             | 47                                  | 39                                  | 10                                  | 7                                   | 29   | 25   | 47  | 44  |
| Whole milk<br>powder   | 23                                  | 15                                  | 22                                  | 13                                  | 33   | 25   | 49  | 44  |
| Cashews                | 16                                  | 10                                  | 76                                  | 77                                  | 46   | 44   | 44  | 43  |
| Cantaloupe             | 36                                  | 31                                  | 21                                  | 14                                  | 30   | 25   | 46  | 43  |
| Mushrooms              | 34                                  | 22                                  | 24                                  | 17                                  | 30   | 22   | 48  | 42  |
| Duck                   | 26                                  | 16                                  | 23                                  | 19                                  | 35   | 29   | 45  | 41  |
| Papaya                 | 28                                  | 24                                  | 17                                  | 12                                  | 23   | 19   | 42  | 40  |

| Food                          | Vitamin score (100%) | Vitamin score (200%) | Mineral score (100%) | Mineral score (200%) | Nutrient Density Score (100%) | Nutrient Density Score (200%) | Nutritional Value Score (100%) | Nutritional Value Score (200%) |
|-------------------------------|----------------------|----------------------|----------------------|----------------------|-------------------------------|-------------------------------|--------------------------------|--------------------------------|
| Green pepper                  | 29                   | 27                   | 8                    | 6                    | 20                            | 19                            | 40                             | 40                             |
| Avocado                       | 23                   | 15                   | 18                   | 14                   | 21                            | 16                            | 43                             | 40                             |
| Potato                        | 16                   | 10                   | 20                   | 15                   | 25                            | 21                            | 42                             | 40                             |
| Orange                        | 27                   | 22                   | 13                   | 9                    | 21                            | 17                            | 42                             | 39                             |
| Starfruit                     | 18                   | 16                   | 10                   | 7                    | 16                            | 14                            | 40                             | 39                             |
| Peanut butter                 | 34                   | 26                   | 48                   | 41                   | 41                            | 35                            | 43                             | 39                             |
| Luffa                         | 16                   | 11                   | 24                   | 16                   | 22                            | 16                            | 42                             | 39                             |
| Durian                        | 29                   | 18                   | 15                   | 12                   | 22                            | 16                            | 41                             | 37                             |
| Grapefruit                    | 24                   | 20                   | 10                   | 6                    | 18                            | 15                            | 38                             | 37                             |
| Taro                          | 17                   | 11                   | 19                   | 15                   | 17                            | 13                            | 39                             | 36                             |
| Mango                         | 31                   | 23                   | 7                    | 5                    | 19                            | 15                            | 39                             | 36                             |
| Breadfruit                    | 13                   | 9                    | 17                   | 13                   | 15                            | 12                            | 38                             | 36                             |
| Tangerine                     | 22                   | 16                   | 11                   | 8                    | 17                            | 14                            | 38                             | 35                             |
| Longan                        | 26                   | 25                   | 9                    | 6                    | 17                            | 17                            | 36                             | 35                             |
| Pineapple                     | 24                   | 20                   | 8                    | 6                    | 17                            | 14                            | 37                             | 35                             |
| Cauliflower                   | 29                   | 18                   | 9                    | 7                    | 20                            | 15                            | 39                             | 35                             |
| Cucumber                      | 9                    | 6                    | 22                   | 14                   | 18                            | 14                            | 37                             | 34                             |
| Snake fruit                   | 26                   | 23                   | 35                   | 26                   | 31                            | 26                            | 37                             | 34                             |
| Banana                        | 15                   | 10                   | 15                   | 11                   | 15                            | 11                            | 36                             | 34                             |
| Eggplant                      | 14                   | 9                    | 7                    | 6                    | 12                            | 10                            | 33                             | 31                             |
| Green banana                  | 14                   | 9                    | 18                   | 14                   | 16                            | 13                            | 34                             | 31                             |
| Unsalted brown rice cakes     | 16                   | 11                   | 38                   | 32                   | 26                            | 22                            | 34                             | 31                             |
| Corn                          | 14                   | 9                    | 14                   | 11                   | 12                            | 8                             | 33                             | 31                             |
| Coconut                       | 1                    | 1                    | 20                   | 17                   | 11                            | 10                            | 30                             | 30                             |
| Pear                          | 2                    | 1                    | 4                    | 3                    | 4                             | 4                             | 30                             | 30                             |
| Apple                         | 2                    | 2                    | 2                    | 1                    | 4                             | 4                             | 29                             | 30                             |
| Dragon fruit                  | 2                    | 1                    | 4                    | 3                    | 3                             | 3                             | 29                             | 29                             |
| Pasta (whole & refined wheat) | 5                    | 3                    | 13                   | 10                   | 8                             | 7                             | 30                             | 29                             |
| Noodles (rice & wheat)        | 4                    | 3                    | 11                   | 8                    | 5                             | 5                             | 28                             | 28                             |
| Rice (brown & white)          | 2                    | 2                    | 5                    | 4                    | 2                             | 2                             | 22                             | 23                             |
| Watermelon                    | 2                    | 1                    | 1                    | 1                    | 1                             | 2                             | 22                             | 23                             |
| Cassava                       | 11                   | 7                    | 8                    | 7                    | 3                             | 1                             | 21                             | 20                             |

| Food   | Vitamin score (100%) | Vitamin score (200%) | Mineral score (100%) | Mineral score (200%) | Nutrient Density Score (100%) | Nutrient Density Score (200%) | Nutritional Value Score (100%) | Nutritional Value Score (200%) |
|--------|----------------------|----------------------|----------------------|----------------------|-------------------------------|-------------------------------|--------------------------------|--------------------------------|
| Congee | 6                    | 4                    | 2                    | 1                    | 7                             | 7                             | 1                              | 1                              |

When shifting weights of dietary attributes toward protection against NCDs, the NVS for most foods increased, especially for plant-based foods (Table 6). The NVS for some animal source foods decreased, particularly organ meats and deer. In contrast, when shifting weights of dietary attributes toward nutrient density, the NVS for most foods decreased, especially for nutrient-poor fruits and starchy staples; the NVS for chicken organs increased.

**Table 6 | Nutritional Value Scores for common Indonesian foods when shifting the weights of dietary attributes toward protection against NCDs and nutrient density, as compared to the original algorithm.**

| Food                | Nutritional Value Score (NCD-focused) | Nutritional Value Score (nutrient-density-focused) | Nutritional Value Score (original) |
|---------------------|---------------------------------------|--|------------------------------------|
| Spinach             | 100                                   | 100  | 100                                |
| Chicken organs      | 78                                    | 100  | 97                                 |
| Beef organs         | 74                                    | 88   | 88                                 |
| Pumpkin leaves      | 96                                    | 81   | 86                                 |
| Water spinach       | 92                                    | 81   | 85                                 |
| Deer                | 74                                    | 83   | 84                                 |
| Chinese cabbage     | 89                                    | 77   | 82                                 |
| Drumstick leaves    | 79                                    | 79   | 82                                 |
| Bivalves            | 93                                    | 76   | 81                                 |
| Chinese broccoli    | 90                                    | 71   | 78                                 |
| Goat                | 70                                    | 70   | 75                                 |
| Buffalo             | 70                                    | 68   | 73                                 |
| Fish                | 92                                    | 66   | 73                                 |
| Sweet potato leaves | 86                                    | 65   | 73                                 |
| Horse               | 69                                    | 69   | 73                                 |
| Crustaceans         | 83                                    | 66   | 73                                 |
| Cassava leaves      | 75                                    | 64   | 72                                 |
| Broccoli            | 82                                    | 59   | 69                                 |
| Dove                | 66                                    | 63   | 68                                 |
| Boar                | 68                                    | 61   | 67                                 |
| Rabbit              | 66                                    | 61   | 67                                 |

| <b>Food</b>           | <b>Nutritional<br/>Value Score<br/>(NCD-<br/>focused)</b> | <b>Nutritional<br/>Value Score<br/>(nutrient-<br/>density-<br/>focused)</b> | <b>Nutritional<br/>Value Score<br/>(original)</b> |
|-----------------------|---|---|---|
| Zucchini              | 74  | 55  | 65  |
| Sunflower<br>seeds    | 68  | 68  | 64  |
| Edamame               | 82  | 53  | 64  |
| Cabbage               | 78  | 51  | 62  |
| Bitter melon          | 80  | 50  | 62  |
| Beef                  | 59  | 56  | 61  |
| Lamb                  | 59  | 55  | 60  |
| Red beans             | 88  | 46  | 59  |
| Pork                  | 58  | 52  | 58  |
| Egg                   | 62  | 47  | 57  |
| Pumpkin               | 62  | 44  | 56  |
| Tomatoes              | 68  | 42  | 55  |
| Tempeh                | 70  | 44  | 55  |
| Mung bean<br>sprouts  | 64  | 43  | 55  |
| Mung beans            | 86  | 40  | 54  |
| Chicken               | 61  | 44  | 54  |
| Long bean             | 67  | 41  | 54  |
| Radish                | 71  | 40  | 53  |
| Chayote               | 73  | 39  | 53  |
| Green beans           | 75  | 38  | 53  |
| Tree fern             | 76  | 37  | 52  |
| Carrots               | 70  | 37  | 52  |
| Tofu                  | 66  | 38  | 51  |
| Cheese                | 48  | 48  | 51  |
| Peanuts               | 58  | 50  | 50  |
| Rose apple            | 88  | 34  | 50  |
| Plain whole<br>yogurt | 60  | 36  | 50  |
| Winged beans          | 60  | 37  | 50  |
| Whole cow<br>milk     | 59  | 35  | 49  |
| Sweet potato          | 64  | 36  | 49  |
| Whole milk<br>powder  | 59  | 35  | 49  |
| Whole sheep<br>milk   | 59  | 35  | 49  |

| <b>Food</b>                     | <b>Nutritional<br/>Value Score<br/>(NCD-<br/>focused)</b> | <b>Nutritional<br/>Value Score<br/>(nutrient-<br/>density-<br/>focused)</b> | <b>Nutritional<br/>Value Score<br/>(original)</b> |
|---------------------------------|---|---|---|
| Guavas                          | 75  | 33  | 49  |
| Mushrooms                       | 62  | 33  | 48  |
| Unsweetened<br>soymilk          | 67  | 34  | 48  |
| Red pepper                      | 60  | 32  | 47  |
| Cantaloupe                      | 60  | 31  | 46  |
| Duck                            | 50  | 35  | 45  |
| Cashews                         | 42  | 43  | 44  |
| Peanut butter                   | 49  | 41  | 43  |
| Avocado                         | 70  | 26  | 43  |
| Papaya                          | 61  | 26  | 42  |
| Luffa                           | 63  | 25  | 42  |
| Oncom                           | 48  | 34  | 42  |
| Potato                          | 57  | 28  | 42  |
| Orange                          | 64  | 24  | 42  |
| Durian                          | 61  | 25  | 41  |
| Green pepper                    | 59  | 23  | 40  |
| Starfruit                       | 70  | 22  | 40  |
| Taro                            | 63  | 22  | 39  |
| Cauliflower                     | 54  | 22  | 39  |
| Mango                           | 56  | 21  | 39  |
| Grapefruit                      | 58  | 21  | 38  |
| Breadfruit                      | 63  | 19  | 38  |
| Tangerine                       | 58  | 20  | 38  |
| Snake fruit                     | 41  | 29  | 37  |
| Cucumber                        | 53  | 19  | 37  |
| Pineapple                       | 56  | 19  | 37  |
| Banana                          | 56  | 18  | 36  |
| Longan                          | 51  | 19  | 36  |
| Unsalted<br>brown rice<br>cakes | 44  | 26  | 34  |
| Green banana                    | 49  | 17  | 34  |
| Corn                            | 54  | 14  | 33  |
| Eggplant                        | 53  | 14  | 33  |

| Food                          | Nutritional Value Score (NCD-focused) | Nutritional Value Score (nutrient-density-focused) | Nutritional Value Score (original) |
|-------------------------------|---------------------------------------|--|------------------------------------|
| Coconut                       | 60                                    | 16   | 30                                 |
| Pear                          | 61                                    | 8  | 30                                 |
| Pasta (whole & refined wheat) | 51                                    | 11   | 30                                 |
| Apple                         | 59                                    | 8  | 29                                 |
| Dragon fruit                  | 58                                    | 8  | 29                                 |
| Noodles (rice & wheat)        | 50                                    | 8  | 28                                 |
| Rice (brown & white)          | 42                                    | 3  | 22                                 |
| Watermelon                    | 40                                    | 2  | 22                                 |
| Cassava                       | 39                                    | 3  | 21                                 |
| Congee                        | 1                                     | 1  | 1                                  |

Winsorising the NVS by truncating outliers at the 5<sup>th</sup> and 95<sup>th</sup> percentiles decreased the NVS for most foods but increased it for some of the most nutrient dense foods, except for spinach which received the top score in the final analysis (Table 7). In general, the rank of foods stayed similar, but more foods achieved the minimum and maximum scores.

**Table 7 | Nutritional Value Scores for common Indonesian foods when winsorizing the NVS by truncating outliers at the 5<sup>th</sup> and 95<sup>th</sup> percentiles, as compared to the original algorithm.**

| Food             | Nutritional Value Score (winsorized) | Nutritional Value Score (original) |
|------------------|--------------------------------------|------------------------------------|
| Spinach          | 100                                  | 100                                |
| Chicken organs   | 100                                  | 97                                 |
| Beef organs      | 100                                  | 88                                 |
| Pumpkin leaves   | 100                                  | 86                                 |
| Water spinach    | 100                                  | 85                                 |
| Deer             | 99                                   | 84                                 |
| Chinese cabbage  | 96                                   | 82                                 |
| Drumstick leaves | 96                                   | 82                                 |
| Bivalves         | 94                                   | 81                                 |
| Chinese broccoli | 88                                   | 78                                 |
| Goat             | 82                                   | 75                                 |
| Buffalo          | 81                                   | 73                                 |
| Fish             | 80                                   | 73                                 |

| <b>Food</b>            | <b>Nutritional<br/>Value Score<br/>(winsorized)</b> | <b>Nutritional<br/>Value Score<br/>(original)</b> |
|------------------------|---|---|
| Sweet potato<br>leaves | 80  | 73  |
| Horse                  | 79  | 73  |
| Crustaceans            | 79  | 73  |
| Cassava<br>leaves      | 77  | 72  |
| Broccoli               | 72  | 69  |
| Dove                   | 71  | 68  |
| Boar                   | 70  | 67  |
| Rabbit                 | 68  | 67  |
| Zucchini               | 65  | 65  |
| Sunflower<br>seeds     | 64  | 64  |
| Edamame                | 63  | 64  |
| Cabbage                | 61  | 62  |
| Bitter melon           | 61  | 62  |
| Beef                   | 59  | 61  |
| Lamb                   | 58  | 60  |
| Red beans              | 55  | 59  |
| Pork                   | 53  | 58  |
| Egg                    | 51  | 57  |
| Pumpkin                | 50  | 56  |
| Tomatoes               | 48  | 55  |
| Tempeh                 | 48  | 55  |
| Mung bean<br>sprouts   | 47  | 55  |
| Mung beans             | 46  | 54  |
| Chicken                | 46  | 54  |
| Long bean              | 46  | 54  |
| Radish                 | 45  | 53  |
| Chayote                | 44  | 53  |
| Green beans            | 44  | 53  |
| Tree fern              | 42  | 52  |
| Carrots                | 42  | 52  |
| Tofu                   | 41  | 51  |
| Cheese                 | 40  | 51  |
| Peanuts                | 39  | 50  |

| <b>Food</b>            | <b>Nutritional<br/>Value Score<br/>(winsorized)</b> | <b>Nutritional<br/>Value Score<br/>(original)</b> |
|------------------------|---|---|
| Rose apple             | 39  | 50  |
| Plain whole<br>yogurt  | 39  | 50  |
| Winged beans           | 39  | 50  |
| Whole cow<br>milk      | 38  | 49  |
| Sweet potato           | 37  | 49  |
| Whole milk<br>powder   | 37  | 49  |
| Whole sheep<br>milk    | 37  | 49  |
| Guavas                 | 37  | 49  |
| Mushrooms              | 35  | 48  |
| Unsweetened<br>soymilk | 35  | 48  |
| Red pepper             | 33  | 47  |
| Cantaloupe             | 32  | 46  |
| Duck                   | 30  | 45  |
| Cashews                | 29  | 44  |
| Peanut butter          | 27  | 43  |
| Avocado                | 27  | 43  |
| Papaya                 | 26  | 42  |
| Luffa                  | 25  | 42  |
| Oncom                  | 25  | 42  |
| Potato                 | 25  | 42  |
| Orange                 | 24  | 42  |
| Durian                 | 24  | 41  |
| Green pepper           | 22  | 40  |
| Starfruit              | 22  | 40  |
| Taro                   | 20  | 39  |
| Cauliflower            | 19  | 39  |
| Mango                  | 19  | 39  |
| Grapefruit             | 18  | 38  |
| Breadfruit             | 17  | 38  |
| Tangerine              | 17  | 38  |
| Snake fruit            | 16  | 37  |
| Cucumber               | 16  | 37  |
| Pineapple              | 15  | 37  |



| <b>Food</b>                         | <b>Nutritional<br/>Value Score<br/>(winsorized)</b> | <b>Nutritional<br/>Value Score<br/>(original)</b> |
|-------------------------------------|---|---|
| Banana                              | 14  | 36  |
| Longan                              | 13  | 36  |
| Unsalted<br>brown rice<br>cakes     | 11  | 34  |
| Green banana                        | 10  | 34  |
| Corn                                | 9   | 33  |
| Eggplant                            | 8   | 33  |
| Coconut                             | 4   | 30  |
| Pear                                | 3   | 30  |
| Pasta (whole<br>& refined<br>wheat) | 3   | 30  |
| Apple                               | 2   | 29  |
| Dragon fruit                        | 2   | 29  |
| Noodles (rice<br>& wheat)           | 1   | 28  |
| Rice (brown<br>& white)             | 1   | 22  |
| Watermelon                          | 1   | 22  |
| Cassava                             | 1   | 21  |
| Congee                              | 1   | 1   |

Each sensitivity analysis had different effects. Capping micronutrients at 50% of the RNI favored foods containing a balance of micronutrients, while capping at 200% favored foods with very high quantities of one or two vitamins and minerals. Shifting the weights of dietary attributes had a large effect on the NVS. Plant-based foods tended to score much higher on the NCD-focused NVS while nutrient dense plant and animal source foods scored higher on the nutrient density focused NVS. Winsorizing did not impact the relative ranking but moved foods near the highest and lowest NVS closer to each extremes. These sensitivity analyses reinforced our choice of capping, dietary attribute weights, and not capping. However, we suggest considering more NCD-focused dietary attribute weights in contexts where noncommunicable diseases are a larger problem than undernutrition, including most high-income countries.

## References

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