Malnutrition Analysis 1

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Version: DevTreks 2.2.0

A. Introduction

This reference explains how to start to collect, measure, and analyze malnutrition data (**2***). DevTreks believes that all malnutrition data, from the nutritional status of Brooklyn kids to Nepalese farmworkers, has stories to tell and lessons to teach. Those lessons can only be learned when data about malnutrition is collected, measured, aggregated, analyzed, explained, and saved in online knowledge banks. Full, uniform, and accurate analyses of the nutritional status of Bangladeshi children, Appalachian seniors, California farmworkers, and Nicaraguan factory workers, should be one or two links away for everyone. If a malnutrition expert, business owner, parent, government official, or nonprofit member, needs to make a decision involving malnutrition, they should have ready access to the best data and advice available. This reference introduces another DevTreks way to build these types of knowledge banks.

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A. Background, Calculations, and Data URLs (4*)

The Malnutrition Calculation 1 reference explains the food nutrient calculations that will be analyzed in this reference. Appendix A in that reference introduces the background logic for conducting these studies. One of the initial food nutrition Input data sets consists of 7290 Inputs, each containing a food nutrition calculator that holds their USDA, Agricultural Research Service (ARS) Standard Reference (SR) nutrient composition. The localhost database includes two ARS food nutrition Input data sets. Only the SR Inputs have calculators attached (i.e. the FNDDS5 does not). They can be distinguished from the non-SR by their capitalized name. The introductory reference also explains how to manage nutrient data sets (i.e. bulk uploads).

All of the analysis displayed in this reference will be proforma sample data that demonstrates how to collect and analyze each type of dataset. This reference used the localhost (Version 1.6.5) and cloud (Version 2.1.0) deployments to document calculations. The video tutorial also uses Version 2.2.0 because of further advancements in code and tutorials. This data belongs to the Family Budgeting and Food Nutrition club (if necessary, switch default clubs).

The Malnutrition Analyzers demonstrated in this reference can be found at:

https://www.devtreks.org/hometreks/preview/smallholders/linkedviewgroup/Food Nutrition Analyzers Group/21/none

Sample data can be found at:

https://www.devtreks.org/hometreks/preview/farmworkers/input/BARLEY,PEARLED,RAW/2147395842/none/

https://www.devtreks.org/hometreks/preview/smallholders/output/BARLEY, PEARLED, RAW/2141211289/none/

https://www.devtreks.org/hometreks/select/farmworkers/outcomegroup/Food Subsistence Meals/38/none/

https://localhost:5001/hometreks/preview/farmworkers/outcomegroup/Crop Foods/41/none

https://www.devtreks.org/hometreks/preview/smallholders/operationgroup/Food Basic Stock Operations/759/none/

https://www.devtreks.org/hometreks/preview/smallholders/componentgroup/Food Subsistence Supplies/533/none/

https://www.devtreks.org/hometreks/preview/smallholders/budget/Food Nutrition Subsistence Stocks SR01/273083905/none

https://localhost:5001/hometreks/preview/farmworkers/budgetgroup/Food Nutrition, SR Budget Analyses/2140761977/none

https://www.devtreks.org/hometreks/preview/smallholders/investment/Food Supply Stock Budget/390/none

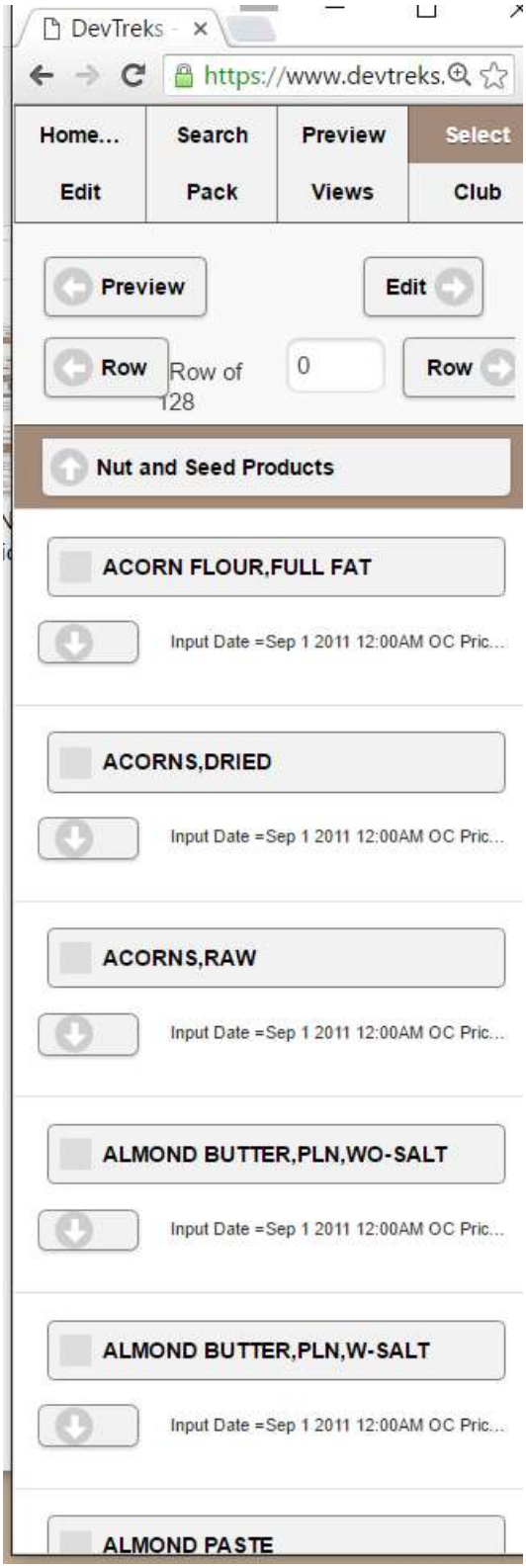
https://www.devtreks.org/hometreks/preview/smallholders/resourcegroup/Food Nutrition Tutorial/134/none/

https://www.devtreks.org/hometreks/preview/smallholders/linkedviewpack/Food Nutrition Tutorial 1/170/none

With the exception of Input and Output Analyses, NPV calculators must be run prior to running these analyzers. DevTreks convention is to use NPV calculators to pull fresh database data together prior to running analyses and to conduct basic benefit cost analysis. The NPV calculators do not rerun food nutrient calculations, but all of the analyzers explained in this reference do. The NPV calculators document the benefits and costs of the combinations of Inputs and Outputs (i.e. the cost of a localized meal).

B. Work Breakdown Structure (WBS) and Rules

Food Input data used the USDA, Agricultural Research Service Standard Reference (SR) WBS. The following image demonstrates how the SR WBS is used to structure Input data used in this reference. Although not shown in this image, we recommend including the year (2014 ACORN) in the names of Inputs, Outputs, Operations, Components, Outcomes, and Time Periods.


DevTreks
https://www.devtreks.
Home...
Search
Preview
Select
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Pack
Views
Club
Preview
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Row
Row of 128
0
Row
Nut and Seed Products
ACORN FLOUR,FULL FAT
Input Date =Sep 1 2011 12:00AM OC Pric...
ACORNS,DRIED
Input Date =Sep 1 2011 12:00AM OC Pric...
ACORNS,RAW
Input Date =Sep 1 2011 12:00AM OC Pric...
ALMOND BUTTER,PLN,WO-SALT
Input Date =Sep 1 2011 12:00AM OC Pric...
ALMOND BUTTER,PLN,W-SALT
Input Date =Sep 1 2011 12:00AM OC Pric...
ALMOND PASTE

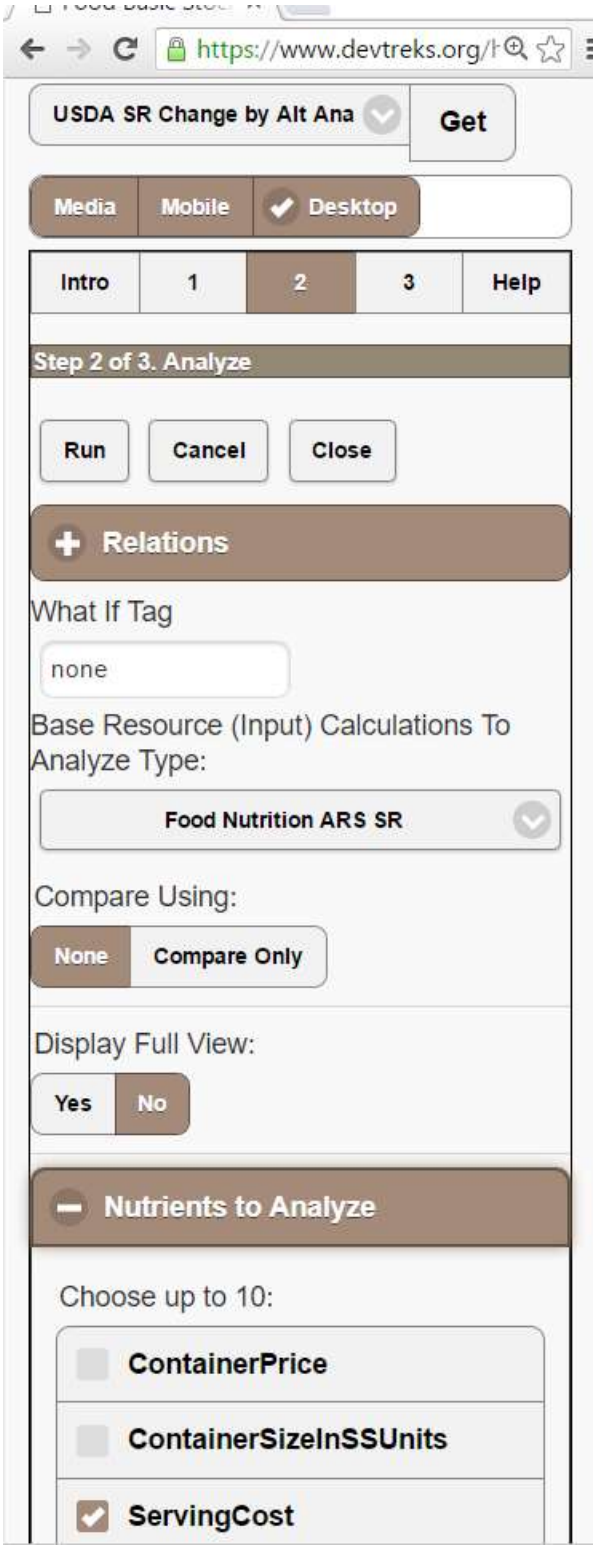
No WBS was found for Outputs, Outcomes, Operations, Components, Operating Budgets or Capital Budgets. The Ag Production Analysis 1, Construction Analysis 1, and Health Care Analysis 1 tutorials demonstrate how to structure full data sets to support the analyses shown in this reference. With the exception of Inputs, the actual data used in this analysis was structured for the purpose of testing these analyzers.

C. Multipliers

Appendix A. Multipliers, documents how base element multipliers (i.e. Input.Times, Output.CompositionAmount, Outcome.Amount …), can be used to adjust the aggregated unit food nutrition calculations contained in Inputs and Outputs.

D. Analyzers

Malnutrition Totals, Statistics, Change, and Progress, Analyzers are available for examining Inputs, Outputs, Operations, Components, Outcomes, Operating Budgets, and Capital Budgets. Standard aggregators (Label, Group Id, and Type Id) can be used to aggregate the data being analyzed (see the Calculators and Analyzers tutorial). The following image shows that, with the exception of Totals Analyses, up to 10 nutrient properties can be chosen to analyze.


https://www.devtreks.org/
USDA SR Change by Alt Ana
Get
Media
Mobile
Desktop
Intro
1
2
3
Help
Step 2 of 3. Analyze
Run
Cancel
Close
Relations
What If Tag
none
Base Resource (Input) Calculations To Analyze Type:
Food Nutrition ARS SR
Compare Using:
None
Compare Only
Display Full View:
Yes
No
Nutrients to Analyze
Choose up to 10:
ContainerPrice
ContainerSizeInSSUnits
ServingCost

The following image makes the point that the 10 nutrient properties being studied should be consistent throughout the analyses being conducted. Source code users can change the number of nutrients being studied to any amount desired, but keep in mind the limitations of displaying html data. The number of observations used in any analysis will reflect the number of base elements being aggregated.

Appendix B. Analysis, explains how to use the Totals, Statistics, Incremental Change, and Progress, analyzers.

E. Performance Analysis

The data generated by analyzers can be used to carry out other types of Performance Analysis, such as input per unit output, output per unit input, and cost per unit output (see the Performance Analysis 1 reference). The IPCC WG1 2013 reference describes how Net Primary Productivity crop studies, that make use of water and nutrient budgeting techniques, will play increasingly important roles in future efforts to adapt to climate change impacts on crop productivity (and decreased pollution from runoff) (**5***).

F. Sustainable Food System Supply Chain Analysis (6*)

Version 2.1.0+ included a Social Performance Analysis tutorial demonstrating how to assess the sustainability of food systems. The first 2 paragraphs were taken from the Social Performance Analysis 2 reference. The 3rd paragraph was adapted from the Health Care Analysis reference.

Notarnicola et al (2017) review the state of LCA art in food system analysis and highlight the numerous challenges remaining to be tackled in this industry. These challenges include

- the need for dietary shifts to sustainable food systems
- field level LCAs that don't adequately address landscape level sustainability impacts on soil quality and fertility, land erosion, reduced ecosystem services, and biodiversity loss
- integration of social, economic, and cultural factors into LCA studies
- the reliance on average LCAs for predominant food production systems rather than the reality of extreme production variability
- technical deficiencies dealing with product quality, geographical contexts, temporal variability, machinery, functional units, ecosystem services and biodiversity
- consumer education that results in behavioral change
- missing supply chain phases such as food waste

- integration with "mixed methods explanatory approaches" used in food production studies
- accounting for accidents and disasters

Notarnicola et al (2017) point out that failure to address these challenges could surpass planetary food system sustainability, and therefore food security, needs. In the context of this reference, it's the job of social networks and clubs to address those challenges, including the development of open access, rather than commercial, sustainable food system databases that make all of their TEXT data available through URIs.

Even if the algorithms and techniques introduced in these tutorials were perfect, the food industry in many countries may still not deliver sustainable food system services better. Perfect software, technology, or algorithms, won't make any difference when the real issues involve institutional failure (**8***). This reference recommends consequential digital activism that allows consumers and "good actor" food industry professionals to independently assess the performance and accountability of all parts of the food system supply chain, from research to consumer consumption. The direct consequences need to lead to better decisions about purchases, penalties, punishments, incentives, and redistributions.

For example, Poore et al (2019) built the following international food supply chain database to demonstrate tying mitigation policies to agricultural externalities that include GHG emissions, eutrophying emissions, acidifying emissions, energy use, and freshwater withdrawals. The authors use the following statement to confirm their assessment of the sustainability of the whole supply chain:

"The system we assess begins with inputs (the initial effect of producer choice) and ends at retail (the point of consumer choice)."

	Per kg/litre of output (see reference flow)												
	GHG Emissions (kg CO_2 eq)	GHG SD (kg CO_2 eq)	n	Energy Use (MJ)	Energy Use Type	Acidifying Emissions (kg SO_2 eq)	Eutrophying Emissions (kg PO_4^{3-} eq)	Freshwater Withdr. (L)	New / Original Weight (%)	SD (%)	n	By-Product / Total Value (%)	SD (%)
Summary													
Note: Weighted average and standard deviations for GWP and conversions; functional unit is per output product of each stage (except animal processing, expressed per kg of retail weight)													
1 Cereals: Straw Production	-	0	-	- -		-	-	-	-	-	-	9%	5%
2 Maize: Straw/Stover Production	-	0	-	- -		-	-	-	-	-	-	12%	7%
3 Grain, Seeds and Legumes: Drying	1.13	0.50	2	10 -		4.4E-03	4.1E-04	-	-	-	-	-	
4 Maize Grain: Drying	0.29	0.13	2	5.94 -		1.9E-03	1.6E-04	-	-	-	-	-	
5 Groundnuts/Nuts: Deshelling	0.05	0.02	1	0.42 -		2.0E-04	1.6E-05	-	78%	-	1	6%	
6 Coffee: Wet/Dry Processing	1.33	1.51	59	- -		-	-	16	18%	-	2	-	
7 Milk: Beef Production	-	0	-	- -		-	-	-	-	-	-	9%	3%
8 Wheat, Rye: Milling	0.05	0.07	9	0.28 -		1.4E-04	1.6E-05	-	77%	3%	4	10%	0%
9 Wheat, Rye: Bread Making	0.17	0.21	2	0.27 -		3.1E-04	3.4E-05	1.93	133%	15%	6	0%	
10 Maize: Dry Milling	0.08	0.02	4	1.07 -		2.1E-04	3.8E-05	-	67%	8%	2	23%	2%
11 Barley: Malting, Mashing, Brewing	0.12	0.04	10	2.96 -		8.7E-04	1.4E-04	6.11	633%	376%	9	2%	
12 Oats: Peeling, Rolling	0.06	0.02	4	0.73 -		2.4E-04	2.8E-05	-	73%	6%	3	12%	1%
13 Rice: Dehulling, Milling, Polishing	0.06	0.05	6	0.20 -		2.1E-04	7.2E-05	-	57%	10%	8	17%	16%
14 Sugar Beet: Milling	0.28	0.14	10	2.16 -		6.4E-04	1.0E-04	10	14%	2%	8	16%	4%
15 Sugar Cane: Milling	0.03	0.00	2	5.21 -		8.1E-04	2.9E-03	6.95	10%	2%	4	4%	4%
16 Groundnuts: Roasting	0.39	0.39	2	- -		2.7E-03	3.3E-04	-	89%	-	1	0%	
17 Soybeans: Soymilk Production	0.16	0.07	2	1.48 -		1.1E-03	1.0E-04	1.15	817%	78%	19	33%	
18 Soybeans: Tofu Production	0.79	0.44	3	13 -		5.3E-03	2.0E-03	5.96	152%	19%	36	0%	
19 Crude Soybean Oil: Refining	0.11	0.12	3	1.90 -		6.5E-04	6.4E-04	0.45	96%	0%	3	0%	1%
20 Soybeans: Crushing & Refining	0.30	0.14	4	7.47 -		2.7E-03	9.9E-04	1.43	19%	1%	6	63%	4%

Rose et al (2019) use the following table to demonstrate how to use U.S.A food dietary databases to link the carbon footprint of consumer diets to consumer demographic and behavioral factors (i.e. SPA3's Social Impact Analysis). The authors use the following statement to confirm their focus on sustainable consumer diet choices:

"to assess the GHGE from individual self-selected diets in the United States and examine their association with nutritional quality of the diets, demographic patterns, and food-related behaviors."

Results

The average dietary GHGE of this US sample, including both consumed food and food losses, was 4.72 kg CO_2-eq per person per day (95% CI: 4.62, 4.82) and 2.21 kg CO_2-eq per person per 1000 kcal (95% CI: 2.17, 2.24). The frequency distribution of GHGE per 1000 kcal from these 1-d diets is shown in **Figure 2**. The sample was divided into quintile groups, and the cumulative GHGE from the lowest quintile group represented 8% of the total GHGE from diet, whereas for the top group it was 41%.

TABLE 3 Food group intakes by low- and high-dietary GHGE groups, adults ≥18 y, NHANES 2005–2010[1]

Food group	Unit[2]	Low-GHGE diet[3] (n = 3545)	High-GHGE diet[3] (n = 3303)	P[4]
Total fruit and vegetables[5]	cup eq/1000 kcal	1.19 ± 0.03	1.30 ± 0.03	0.007
Fruit	cup eq/1000 kcal	0.49 ± 0.02	0.46 ± 0.02	0.255
Vegetables[5]	cup eq/1000 kcal	0.71 ± 0.02	0.84 ± 0.02	<0.001
Total grains	oz eq/1000 kcal	3.60 ± 0.05	2.63 ± 0.03	<0.001
Whole grains	oz eq/1000 kcal	0.51 ± 0.02	0.28 ± 0.01	<0.001
Refined grains	oz eq/1000 kcal	3.09 ± 0.05	2.35 ± 0.03	<0.001
Protein foods: total[6]	oz eq/1000 kcal	2.37 ± 0.04	4.17 ± 0.04	<0.001
Animal protein foods	oz eq/1000 kcal	1.57 ± 0.03	3.79 ± 0.04	<0.001
Meat[7]	oz eq/1000 kcal	0.11 ± 0.01	2.26 ± 0.04	<0.001
Poultry	oz eq/1000 kcal	0.85 ± 0.03	0.33 ± 0.02	<0.001
Seafood	oz eq/1000 kcal	0.21 ± 0.01	0.41 ± 0.03	<0.001
Plant protein foods[8]	oz eq/1000 kcal	0.81 ± 0.04	0.37 ± 0.02	<0.001
Total dairy	cup eq/1000 kcal	0.54 ± 0.01	0.72 ± 0.02	<0.001
Oils	g/1000 kcal	12.86 ± 0.23	8.40 ± 0.14	<0.001
Solid fats	g/1000 kcal	14.67 ± 0.23	19.02 ± 0.16	<0.001
Added sugars	tsp eq/1000 kcal	10.46 ± 0.25	7.43 ± 0.15	<0.001

[1] Values are mean ± SE. CO_2-eq, carbon dioxide equivalent; cup eq, cup equivalent; GHGE, greenhouse gas emissions; oz eq, ounce equivalents; tsp eq, teaspoon equivalents.

[2] Units for food groups were developed by USDA in common units and on an equivalent basis to create nutritional homogeneity in groups that have foods with diverse water concentrations (e.g., juice, fruit, or dried fruit). Cup eq/1000 kcal refers to cup equivalents per 1000 kcal. For example, 1 cup equivalent of dairy is either 1 cup (245 g) of milk, yogurt, or fortified soy milk, ~1.5 oz of natural cheese, or ~2 oz of processed cheese. See (27) for additional details.

[3] Low-GHGE diets are defined as those in the lowest quintile of GHGE (kg CO_2-eq/1000 kcal per day). High-GHGE diets are defined as those in the highest quintile of GHGE per 1000 kcal per day.

[4] Determined by t test.

[5] Vegetable totals do not include legumes.

[6] The total protein foods group is a sum of animal and plant protein foods.

[7] The meat group includes beef, veal, other ruminant animals, pork, and game.

[8] The plant protein foods group includes all legumes, soybeans, nuts, and seeds.

In keeping with the sustainability spirit of both studies, Version 2.2.0 investigated whether the "Extra" food nutrient calculator properties could be used to study simple "carbon footprints" (i.e. GHG emission and Energy Use). The following food nutrient Operating Budget and Emission Balance Budget confirms that these properties support the calculation of final environmental footprint balances. Although these numbers are fictitious, databases similar to the 2 previous datasets can be used to set these properties to actual amounts.

https://localhost:5001/hometreks/preview/farmworkers/budget/Nutrition Budget 01 Benchmark/273083912/none

Budget : Nutrition Budget 01 Benchmark

Nutrition Details

Container Size : 57.000	Serving Cost : 2.879
USDA Servings Per Cont : 57.000	Servings Per Cont : -84.230
Serving Size Unit : cup	Serving Size : 30.920
Water g : -117.922	Energy Kcal : -246.553
Protein g : 57.122	
Lipid g : 14.028	Ash g : 7.928
Carbohydrate g : -159.599	Fiber (TD) : -31.941
Sugar (Tot) g : 12.079	Calcium mg : 25.502
Iron mg : -2.230	Magnesium mg : -130.823
Phosphorus mg : 509.249	Potassium mg : -748.867
Sodium mg : 4,537.606	Zinc mg : -0.258
Copper mg : -1.035	Manganese mg : -1.763
Selenium pg : 66.380	Vitamin C mg : -122.669
Thiamin mg : 0.202	Riboflavin mg : 0.431
Niacin mg : 25.310	Panto mg : -0.055
Vitamin B6 mg : -1.309	Folate (Tot) pg : 16.771
Folic Acid pg : 95.256	Food Folate pg : -78.485
Folate (DFE) pg : 83.110	Choline (Tot) mg : 25.761
Vitamin B12 pg : 1.932	
Vitamin A (IU) : -40.469	Vitamin A (RAE) : 1.742
Retinol pg : 3.402	Alpha Carotene pg : 0.000
Beta Carotene pg : -27.807	Beta Crypt pg : 0.000
Lycopene pg : 0.000	Lut Zea pg : -237.169
Vitamin E mg : 1.199	Vitamin D pg : 0.840
ViVitamin D (IU) : 25.200	Vitamin K pg : -13.442
Fatty Acid Sat g : 2.723	Fatty Acid Mono g : 4.864
Fatty Acid Poly g : 3.935	Cholesterol mg : 210.000
Extra 1 : 40.000	Extra 2 : 45.000

Description : v220e

Time Period : 2011 Nutrition A

Emission Balance Budget (Outputs are subtracted from Inputs)		
	GHG Emissions (Extra 1)	**Energy Use (Extra 2)**
Time Period 2011		
Outcome 01		
Output - Potato	0	0
Output - Barley	1	2
Outcome Total	1	2
Operation 01		
Input - Bread	5	5
Input - Turkey	10	10
Operation Total	15	15
Time Period Balance	14	13
Time Period 2012		
Outcome 01		
Output - Potato	1	2
Output - Barley	2	4
Outcome Total	3	6
Operation 01		
Input - Bread	10	20
Input - Turkey	20	20
Operation Total	30	40
Time Period Balance	27	34
Time Period 2013		
Outcome 01		
Output - Potato	2	4
Output - Barley	1	2
Outcome Total	3	6
Operation 01		
Input - Bread	1	2
Input - Turkey	1	2
Operation Total	2	4
Time Period Balance	-1	-2
Budget Balance	40	45

Poore et al (2019) recommend using this type of approach to help producers identify and adopt sustainable mitigation practices and to assist consumers make sustainable purchases. Rose et al. (2018) recommend using this type of approach to help targeted consumers eat more sustainable

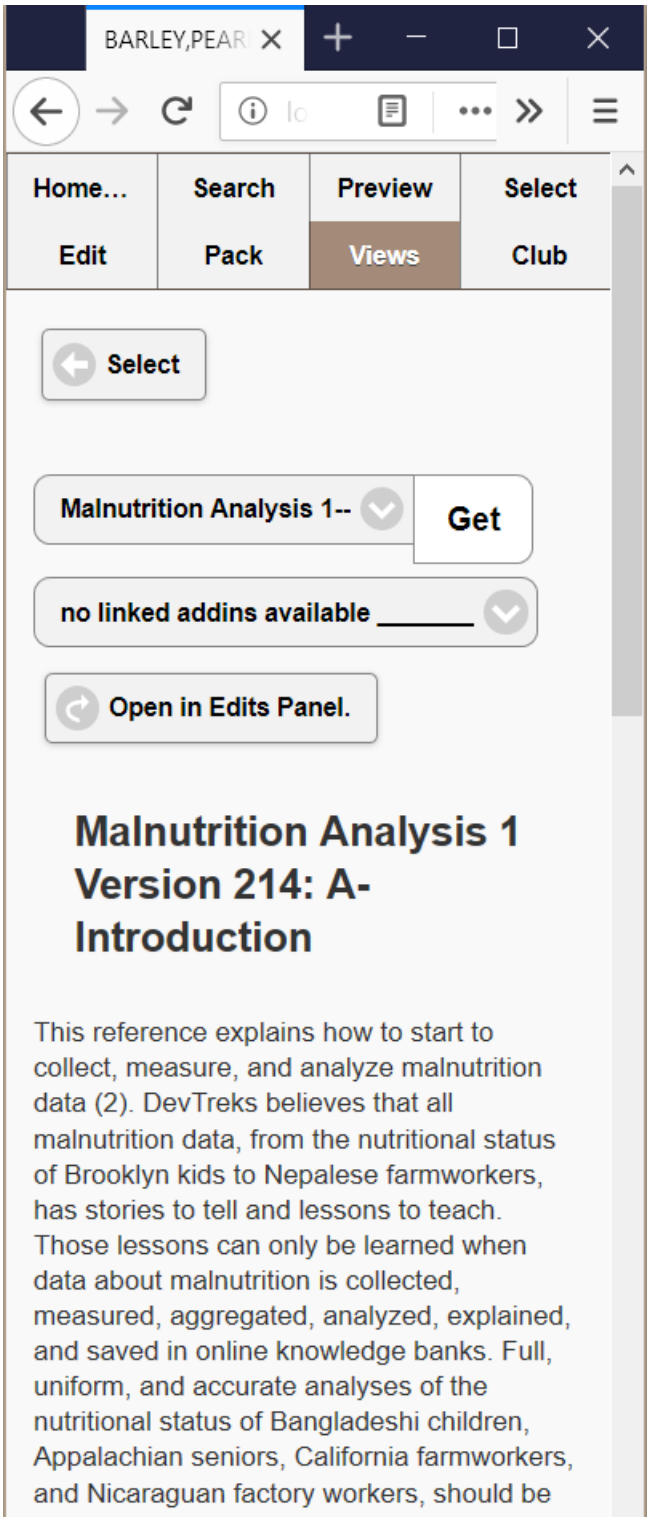
diets. These new datasets and examples demonstrate that consequential digital activism is not only possible –it's under way (refer to Footnotes **7** and **8** in the associated Calculation reference).

G. Multimedia (Resources)

All analysis should be accompanied by multimedia that help to explain the malnutrition intervention. The multimedia can include graphs and other visual aids that help users to interpret all of the data. The economic and nutritional characteristics of the following types of agricultural production, in this case a mixed vegetable crop, are easier to interpret with fuller multimedia support.

H. Stories (Linked Views)

All analysis should be accompanied by stories that explain the malnutrition intervention.


BARLEY,PEAR
Home...
Search
Preview
Select
Edit
Pack
Views
Club
Select
Malnutrition Analysis 1--
Get
no linked addins available _____
Open in Edits Panel.
Malnutrition Analysis 1 Version 214: A-Introduction
This reference explains how to start to collect, measure, and analyze malnutrition data (2). DevTreks believes that all malnutrition data, from the nutritional status of Brooklyn kids to Nepalese farmworkers, has stories to tell and lessons to teach. Those lessons can only be learned when data about malnutrition is collected, measured, aggregated, analyzed, explained, and saved in online knowledge banks. Full, uniform, and accurate analyses of the nutritional status of Bangladeshi children, Appalachian seniors, California farmworkers, and Nicaraguan factory workers, should be

I. Knowledge Bank Standards

All malnutrition data should be entered into online knowledge banks (i.e. production servers as contrasted to development servers) that can be used to analyze malnutrition. That structured evidence must be passed down to future generations. These knowledge banks aggregate and analyze all of the data in a network. Future references will discuss how these knowledge banks will evolve (i.e. supply chain sustainability forecasts) to support future decision making needs. The flexibility offered by DevTreks in documenting malnutrition means that networks need to develop "rules" explaining the "standards" that should be followed by clubs in their network. The "standards" make it possible to build knowledge banks.

Summary

Clubs using DevTreks can start to carry out the basic analysis of malnutrition. Clubs can solicit help understanding malnutrition better and share structured evidence explaining malnutrition. Networks can build knowledge banks that explain malnutrition and pass that knowledge down to future generations. The result may be Congolese smallholders who raise healthier children, Pacific Islander adults who tackle obesity more effectively, inner city school administrators who deliver better malnutrition programs, consumers who only purchase sustainable products, producers who ensure the sustainability of their full supply chains, investors who only invest in sustainable companies, and people who improve the sustainability of their lives and livelihoods.

Footnotes

1. Although the author has studied malnutrition as an important, but ancillary topic, in his agricultural science education at Cornell University, USA (B.S.) and U.C. Davis, USA, (M.S.), he is not an expert in the field. The tools introduced in this reference were kept basic for that reason.
2. In the course of building the tools introduced in this reference, several additional tools were investigated. The most promising tracked household food nutrient consumption and

production. The Malnutrition Calculation reference discusses domain-specific software patterns versus alternative designs in greater depth.

3. Nutrient stock budgets are commonly used to study soil and plant nutrient balances for managing crop nutrients. Refer to Footnote 2.
4. A small, limited amount of nutritional data was used to test the analyzers in this reference. In addition, not every feasible way to run an analysis was tested. These analyzers will continue to be tested with additional data sets in future upgrades.
5. Although these types of studies are becoming more important, researchers have been conducting them for years –the author spent the summer of 1978 working on a Cornell University research farm experiment involving corn yield and C02 use.
6. Monetary compensation for software development has never been a priority for DevTreks. We believe malnutrition is a public goods problem that is best tackled with public goods software. But we recognize that the private sector is better at attracting the resources that are needed to tackle these types of global problems. We encourage software companies to investigate business models that provide them with fair compensation while still addressing public goods problems (i.e. unless their primary motivations involve money, greed, self-interest, or narrow-mindedness).

References

The references used in this tutorial can be found in the Malnutrition Calculation 1 reference.

References Note

We try to use references that are open access or that do not charge fees.

Improvements, Errors, and New Features

Please notify DevTreks (devtrekkers@gmail.com) if you find errors in these references. Also please let us know about suggested improvements or recommended new features.

A video tutorial explaining this reference can be found at:

https://www.devtreks.org/commontreks/preview/commons/resourcepack/Malnutrition Analysis 1/450/none/

Appendix A. Multipliers

The following examples use an Operating Budget Analysis of a Turkey slice Input to explain how multipliers work. All multipliers come from the before-aggregated elements. The blue motif reflects 2014 documentation.

The following image displays the initial Turkey Breast Input example explained in the Malnutrition Calculation 1. No multipliers have been used in this analysis.

Version 2.1.0 retested the Outcomes to verify that the multipliers work.

The following image shows that when the Input.OCAmount property is changed from 1 to 2, the food nutrients, serving size, and serving cost properties double.

Input : 2011 TURKEY BREAST,SLICED,PREPACKAGED

Nutrition Details

Container Size : 20.000	Serving Cost : 2.400
USDA Servings Per Cont : 20.000	Servings Per Cont : 2.000
Serving Size Unit : slice	Serving Size : 20.000
Water g : 227.160	Energy Kcal : 297.000
Protein g : 48.900	
Lipid g : 6.450	Ash g : 9.960
Carbohydrate g : 7.500	Fiber (TD) : 0.000
Sugar (Tot) g : 3.690	Calcium mg : 27.000
Iron mg : 1.050	Magnesium mg : 60.000
Phosphorus mg : 708.000	Potassium mg : 1,491.000
Sodium mg : 2,784.000	Zinc mg : 2.550
Copper mg : 0.075	Manganese mg : 0.042
Selenium pg : 57.000	Vitamin C mg : 0.000
Thiamin mg : 0.114	Riboflavin mg : 0.165
Niacin mg : 22.356	Panto mg : 0.906
Vitamin B6 mg : 0.597	Folate (Tot) pg : 12.000
Folic Acid pg : 0.000	Food Folate pg : 12.000
Folate (DFE) pg : 12.000	Choline (Tot) mg : 99.300
Vitamin B12 pg : 1.380	
Vitamin A (IU) : 0.000	Vitamin A (RAE) : 0.000
Retinol pg : 0.000	Alpha Carotene pg : 0.000
Beta Carotene pg : 0.000	Beta Crypt pg : 0.000
Lycopene pg : 0.000	Lut Zea pg : 0.000
Vitamin E mg : 0.390	Vitamin D pg : 0.600
ViVitamin D (IU) : 18.000	Vitamin K pg : 0.000
Fatty Acid Sat g : 1.503	Fatty Acid Mono g : 1.728
Fatty Acid Poly g : 1.608	Cholesterol mg : 150.000
Extra 1 : 0.000	Extra 2 : 0.000
Description : v165d	

The following image shows that when the Input.Times property is changed from 1 to 2, all of the Input and Operation properties double (Output.Times work similarly).

Operation : 2011 Turkey Packaged Meat Sandwich

Nutrition Details

Input : 2011 BREAD,OAT BRAN

Nutrition Details

Input : 2011 TURKEY BREAST,SLICED,PREPACKAGED

Nutrition Details

Container Size : 40.000
USDA Servings Per Cont : 40.000
Serving Size Unit : slice
Water g : 454.320
Protein g : 97.800
Lipid g : 12.900
Carbohydrate g : 15.000
Sugar (Tot) g : 7.380
Iron mg : 2.100
Phosphorus mg : 1,416.000
Sodium mg : 5,568.000
Copper mg : 0.150
Selenium pg : 114.000
Thiamin mg : 0.228
Niacin mg : 44.712
Vitamin B6 mg : 1.194
Folic Acid pg : 0.000
Folate (DFE) pg : 24.000
Vitamin B12 pg : 2.760
Vitamin A (IU) : 0.000
Retinol pg : 0.000
Beta Carotene pg : 0.000
Lycopene pg : 0.000
Vitamin E mg : 0.780
ViVitamin D (IU) : 36.000
Fatty Acid Sat g : 3.006
Fatty Acid Poly g : 3.216
Extra 1 : 0.000
Description : v165d

Serving Cost : 4.800
Servings Per Cont : 4.000
Serving Size : 40.000
Energy Kcal : 594.000

Ash g : 19.920
Fiber (TD) : 0.000
Calcium mg : 54.000
Magnesium mg : 120.000
Potassium mg : 2,982.000
Zinc mg : 5.100
Manganese mg : 0.084
Vitamin C mg : 0.000
Riboflavin mg : 0.330
Panto mg : 1.812
Folate (Tot) pg : 24.000
Food Folate pg : 24.000
Choline (Tot) mg : 198.600

Vitamin A (RAE) : 0.000
Alpha Carotene pg : 0.000
Beta Crypt pg : 0.000
Lut Zea pg : 0.000
Vitamin D pg : 1.200
Vitamin K pg : 0.000
Fatty Acid Mono g : 3.456
Cholesterol mg : 300.000
Extra 2 : 0.000

Time Period : 2012 Crops and Meals

The following image shows that when the Operation.Amount property is changed from 1 to 2, all of the Input and Operation properties double (Outcome/Component.Amounts work similarly).

Operation : 2011 Turkey Packaged Meat Sandwich

Nutrition Details

Container Size : 132.000
USDA Servings Per Cont : 132.000
Serving Size Unit : slice
Water g : 952.299
Protein g : 205.919
Lipid g : 30.166
Carbohydrate g : 69.492
Sugar (Tot) g : 22.400
Iron mg : 7.296
Phosphorus mg : 2,971.907
Sodium mg : 11,539.846
Copper mg : 0.434
Selenium pg : 257.768
Thiamin mg : 0.956
Niacin mg : 94.218
Vitamin B6 mg : 2.460
Folic Acid pg : 55.566
Folate (DFE) pg : 167.070
Vitamin B12 pg : 5.520
Vitamin A (IU) : 4.961
Retinol pg : 1.985
Beta Carotene pg : 0.000
Lycopene pg : 0.000
Vitamin E mg : 1.997
ViVitamin D (IU) : 72.000
Fatty Acid Sat g : 6.704
Fatty Acid Poly g : 8.113
Extra 1 : 0.000
Description : v165e

Serving Cost : 9.903
Servings Per Cont : 37.714
Serving Size : 83.500
Energy Kcal : 1,422.171

Ash g : 41.328
Fiber (TD) : 4.465
Calcium mg : 172.496
Magnesium mg : 274.729
Potassium mg : 6,109.861
Zinc mg : 11.083
Manganese mg : 0.941
Vitamin C mg : 0.000
Riboflavin mg : 1.003
Panto mg : 4.200
Folate (Tot) pg : 128.372
Food Folate pg : 72.806
Choline (Tot) mg : 411.687

Vitamin A (RAE) : 1.985
Alpha Carotene pg : 0.000
Beta Crypt pg : 0.000
Lut Zea pg : 45.644
Vitamin D pg : 2.400
Vitamin K pg : 1.191
Fatty Acid Mono g : 8.490
Cholesterol mg : 600.000
Extra 2 : 0.000

Input : 2011 BREAD,OAT BRAN

Nutrition Details

Input : 2011 TURKEY BREAST,SLICED,PREPACKAGED

Nutrition Details

Container Size : 80.000
USDA Servings Per Cont : 80.000
Serving Size Unit : slice
Water g : 908.640
Protein g : 195.600
Lipid g : 25.800
Carbohydrate g : 30.000
Sugar (Tot) g : 14.760
Iron mg : 4.200
Phosphorus mg : 2,832.000
Sodium mg : 11,136.000
Copper mg : 0.300

Serving Cost : 9.600
Servings Per Cont : 8.000
Serving Size : 80.000
Energy Kcal : 1,188.000

Ash g : 39.840
Fiber (TD) : 0.000
Calcium mg : 108.000
Magnesium mg : 240.000
Potassium mg : 5,964.000
Zinc mg : 10.200
Manganese mg : 0.168

The following before and after images show that when the TimePeriod.Amount property is changed from 1 to 2, the Input and Operation properties don't change but the TimePeriod properties all double. Again, the before-aggregated TimePeriod multipliers are used.

Time Period : 2011 Crops and Meals

Nutrition Details

Container Size : 105.000
USDA Servings Per Cont : 105.000
Serving Size Unit : potato, large (3in to 4-1-4in dia)
Water g : 722.636
Protein g : 190.419
Lipid g : 28.757
Carbohydrate g : -56.577
Sugar (Tot) g : 19.442
Iron mg : 2.637
Phosphorus mg : 2,593.160
Sodium mg : 11,514.241
Copper mg : -0.285
Selenium pg : 219.237
Thiamin mg : 0.544
Niacin mg : 86.697
Vitamin B6 mg : 1.384
Folic Acid pg : 55.566
Folate (DFE) pg : 99.790
Vitamin B12 pg : 5.520
Vitamin A (IU) : -22.574
Retinol pg : 1.985
Beta Carotene pg : -15.768
Lycopene pg : 0.000
Vitamin E mg : 1.949
ViVitamin D (IU) : 72.000
Fatty Acid Sat g : 6.388
Fatty Acid Poly g : 7.434
Extra 1 : -1.000
Description : v165e

Serving Cost : 9.328
Servings Per Cont : 4.714
Serving Size : 82.000
Energy Kcal : 857.074

Ash g : 37.229
Fiber (TD) : -17.223
Calcium mg : 110.286
Magnesium mg : 132.076
Potassium mg : 4,664.743
Zinc mg : 8.151
Manganese mg : -0.804
Vitamin C mg : -54.520
Riboflavin mg : 0.801
Panto mg : 3.099
Folate (Tot) pg : 61.092
Food Folate pg : 5.526
Choline (Tot) mg : 340.400

Vitamin A (RAE) : 0.985
Alpha Carotene pg : 0.000
Beta Crypt pg : 0.000
Lut Zea pg : -136.497
Vitamin D pg : 2.400
Vitamin K pg : -6.268
Fatty Acid Mono g : 8.335
Cholesterol mg : 600.000
Extra 2 : -2.000

Outcomes

After

Time Period : 2011 Crops and Meals

Nutrition Details

Container Size : 210.000
USDA Servings Per Cont : 210.000
Serving Size Unit : potato, large (3in to 4-1-4in dia)
Water g : 1,445.271
Protein g : 380.838
Lipid g : 57.514
Carbohydrate g : -113.153
Sugar (Tot) g : 38.883
Iron mg : 5.274
Phosphorus mg : 5,186.320
Sodium mg : 23,028.482
Copper mg : -0.570
Selenium pg : 438.475
Thiamin mg : 1.087
Niacin mg : 173.393
Vitamin B6 mg : 2.768
Folic Acid pg : 111.132
Folate (DFE) pg : 199.580
Vitamin B12 pg : 11.040
Vitamin A (IU) : -45.148
Retinol pg : 3.969
Beta Carotene pg : -31.535
Lycopene pg : 0.000
Vitamin E mg : 3.898
ViVitamin D (IU) : 144.000
Fatty Acid Sat g : 12.775
Fatty Acid Poly g : 14.868
Extra 1 : -2.000
Description : v165f

Serving Cost : 18.656
Servings Per Cont : 9.429
Serving Size : 164.000
Energy Kcal : 1,714.147

Ash g : 74.459
Fiber (TD) : -34.447
Calcium mg : 220.573
Magnesium mg : 264.153
Potassium mg : 9,329.487
Zinc mg : 16.301
Manganese mg : -1.609
Vitamin C mg : -109.040
Riboflavin mg : 1.602
Panto mg : 6.199
Folate (Tot) pg : 122.185
Food Folate pg : 11.053
Choline (Tot) mg : 680.800

Vitamin A (RAE) : 1.969
Alpha Carotene pg : 0.000
Beta Crypt pg : 0.000
Lut Zea pg : -272.993
Vitamin D pg : 4.800
Vitamin K pg : -12.535
Fatty Acid Mono g : 16.670
Cholesterol mg : 1,200.000
Extra 2 : -4.000

Outcomes

Appendix B. Malnutrition Analysis

This Appendix explains how to conduct Totals, Statistics, Incremental Change, and Progress, analyses of the food nutrition Input and Output calculations documented in the sibling Malnutrition Calculation reference. The following images come from both localhost:5001 and cloud datasets. No major attempt is made to keep the 2 datasets fully consistent with one another.

a. Totals Analyses

A Totals Analysis sums all nutrient properties for every base element in an analysis. All analyzers run this analysis for each aggregated base element before carrying out additional calculations. All totals derive from initial malnutrition calculations. Malnutrition calculations are run prior to summing the calculations.

Operating and Capital Budgets will subtract Outcome sums from Operation/Component sums. The subtraction can serve as a simplified nutrient stock budget where the amount of nutrients entering a system is offset by the amount of nutrients leaving a system (**3***). In this type of nutrient stock budgeting, Inputs are credits to the system while Outputs are debits to the system. For example, a common definition of calorie balance (USDA, 2010) is: "The balance between the calories consumed in food and the calories expended through physical activity and metabolic processes".

Operating Budgets use the techniques explained for analyzing food production and consumption in the Malnutrition Calculation 1 reference (see the examples for Food Consumed Nutrient Content and Food Produced or Expended Nutrient Content). If food production Outputs are left out of an Operating Budget, the result will be a summation of all the food nutrients consumed in Inputs. If food consumption Inputs are left out of a budget, the result will be a summation of all the food nutrients produced or expended in Outputs (but they're still subtracted from Inputs with a zero amount, resulting in negative numbers).

Capital Budgets use the techniques explained for analyzing food supplies in the Malnutrition Calculation 1 reference (see the examples for Food Supply Container Nutrient Content and Food

Distribution Container Nutrient Content). If food supply Outputs are left out of Capital Budgets, the result will be a summation of all the food nutrients supplied in Inputs. If food supply Inputs are left out of a budget, the result will be a summation of all the food nutrients distributed in Outputs.

The following Operation Totals Analysis shows that summations of Inputs and Outputs with different units of measure will have good food nutritional totals and Serving Costs but not necessarily Container Size, USDA Servings per Container, Serving Size Units, or Serving Sizes. The individual Inputs and Outputs still have legitimate values for those properties.

Operation									
2012 Turkey Packaged Meat Sandwich(Amount: 1.000; Date: 12/31/2012									
Container Size	**Serving Cost**	**USDA Servings Per Cont**	**Servings Per Cont**	**Serving Size Unit**	**Serving Size**	**Water g**	**Energy Kcal**	**Lipid g - Ash g**	**Protein g**
Carbohydrate g	**Fiber (TD) g**	**Sugar (Tot) g**	**Calcium mg**	**Iron mg**	**Magnesium mg**	**Phosphorus mg**	**Potassium mg**	**Sodium mg**	**Zinc mg**
Copper mg	**Manganese mg**	**Selenium pg**	**Vitamin C mg**	**Thiamin mg**	**Riboflavin mg**	**Niacin mg**	**Panto mg**	**Vitamin B6 mg**	**Folate (Tot) pg**
Folic Acid pg	**Food Folate pg**	**Folate (DFE) pg**	**Choline (Tot) mg**	**Vitamin B12 pg**	**Vitamin A (IU)**	**Vitamin A (RAE)**	**Retinol pg**	**Alpha Carotene pg**	**Beta Carotene pg**
Beta Crypt pg	**Lycopene pg**	**Lut Zea pg**	**Vitamin E mg**	**Vitamin D pg - IU**	**Vitamin K pg**	**Fatty Acid Sat g**	**Fatty Acid Mono g - Poly g**	**Cholesterol mg**	**Extra 1 - Extra 2**
66.000	5.192	66.000	17.000	slice	42.000	479.268	727.812	15.395 - 20.771	103.697
37.567	2.552	11.746	90.855	3.869	139.845	1,495.947	3,065.349	5,798.769	5.605
0.227	0.526	131.010	0.000	0.514	0.526	47.451	2.141	1.235	69.927
31.752	38.175	92.040	206.878	2.760	2.835	1.134	1.134	0.000	0.000
0.000	0.000	26.082	1.029	1.200-36.000	0.680	3.401	4.358-4.176	300.000	0.000-0.000
Description : This operation group is used in a DevTreks tutorial.v165d									
Input: 2012 BREAD,OAT BRAN									
26.000	0.192	26.000	13.000	oz	2.000	24.948	133.812	2.495 - 0.851	5.897
22.567	2.552	4.366	36.855	1.769	19.845	79.947	83.349	230.769	0.505
0.077	0.442	17.010	0.000	0.286	0.196	2.739	0.329	0.041	45.927
31.752	14.175	68.040	8.278	0.000	2.835	1.134	1.134	0.000	0.000
0.000	0.000	26.082	0.249	0.000-0.000	0.680	0.395	0.902-0.960	0.000	0.000-0.000
Description : This operation group is used in a DevTreks tutorial.v165d									
Input: 2012 TURKEY BREAST,SLICED,PREPACKAGED									
40.000	5.000	40.000	4.000	slice	40.000	454.320	594.000	12.900 - 19.920	97.800
15.000	0.000	7.380	54.000	2.100	120.000	1,416.000	2,982.000	5,568.000	5.100

The following Operating Budget Analysis demonstrates that although the Outcome and Output have positive nutritional summations, the Time Period has some negative numbers because the nutritional Outcome totals are being subtracted from the Operation totals.

DevTreks [US] https://www.devtreks.org/hometreks/search/farmworkers/operation/none/0/none

Time Period : 2011 Food Nutrient Stocks

-18.000	0.040	-18.000	-12.000	potato, large (3in to 4-1-4in dia)	-0.750	-12.878	-334.600	-1.788 - -1.339	-10.585
-71.430	-7.148	-0.784	-32.860	-2.716	-102.580	-327.580	-317.320	-1.420	-1.895
-0.298	-0.869	-36.946	0.000	-0.452	-0.112	-6.976	-0.074	-0.456	-0.340
0.000	-0.340	-0.340	-37.044	0.000	11.000	0.500	0.000	0.000	6.500
0.000	0.000	-156.800	-0.834	0.000-0.000	-2.156	-0.374	-0.229--0.861	0.000	-1.000- -3.000

Description : v165b

Outcomes

Outcome

2011 Food Produced SR01

Container Size	**Serving Cost**	**USDA Servings Per Cont**	**Servings Per Cont**	**Serving Size Unit**	**Serving Size**	**Water g**	**Energy Kcal**	**Lipid g - Ash g**	**Protein g**
Carbohydrate g	**Fiber (TD) g**	**Sugar (Tot) g**	**Calcium mg**	**Iron mg**	**Magnesium mg**	**Phosphorus mg**	**Potassium mg**	**Sodium mg**	**Zinc mg**
Copper mg	**Manganese mg**	**Selenium pg**	**Vitamin C mg**	**Thiamin mg**	**Riboflavin mg**	**Niacin mg**	**Panto mg**	**Vitamin B6 mg**	**Folate (Tot) pg**
Folic Acid pg	**Food Folate pg**	**Folate (DFE) pg**	**Choline (Tot) mg**	**Vitamin B12 pg**	**Vitamin A (IU)**	**Vitamin A (RAE)**	**Retinol pg**	**Alpha Carotene pg**	**Beta Carotene pg**
Beta Crypt pg	**Lycopene pg**	**Lut Zea pg**	**Vitamin E mg**	**Vitamin D pg - IU**	**Vitamin K pg**	**Fatty Acid Sat g**	**Fatty Acid Mono g - Poly g**	**Cholesterol mg**	**Extra 1 - Extra 2**
45.000	0.288	45.000	45.000	potato, large (3in to 4-1-4in dia)	2.000	237.496	723.698	2.617 - 4.883	21.130
158.638	21.037	3.343	80.570	6.125	205.733	595.828	1,622.438	22.525	3.763
0.807	1.954	56.626	54.520	0.769	0.257	12.195	1.034	1.402	56.120
0.000	56.120	56.120	89.431	0.000	5.535	0.000	0.000	0.000	2.768
0.000	0.000	258.940	0.871	0.000-0.000	8.514	0.568	0.309-1.260	0.000	3.000- 7.000

Description : v165b

Output : 2011 BARLEY, PEARLED, RAW

20.000	0.088	20.000	20.000	cup	1.000	17.923	510.600	2.368 -	15.540

The following Operations are children of the previous image's Time Period. The TimePeriod.Carbohydrate property is calculated as follows: -71.43 (TimePeriod.Carbo) = 87.2 (Operation.Carbo) – 158.6 (Outcome.Carbo).

Description : v210a									
Operations									
Operation									
2011 Subsistence Meal BM SR01									
Container Size	**Serving Cost**	**USDA Servings Per Cont**	**Servings Per Cont**	**Serving Size Unit**	**Serving Size**	**Water g**	**Energy Kcal**	**Lipid g - Ash g**	**Protein**
Carbohydrate g	**Fiber (TD) g**	**Sugar (Tot) g**	**Calcium mg**	**Iron mg**	**Magnesium mg**	**Phosphorus mg**	**Potassium mg**	**Sodium mg**	**Zinc mg**
Copper mg	**Manganese mg**	**Selenium pg**	**Vitamin C mg**	**Thiamin mg**	**Riboflavin mg**	**Niacin mg**	**Panto mg**	**Vitamin B6 mg**	**Folate**
Folic Acid pg	**Food Folate pg**	**Folate (DFE) pg**	**Choline (Tot) mg**	**Vitamin B12 pg**	**Vitamin A (IU)**	**Vitamin A (RAE)**	**Retinol pg**	**Alpha Carotene pg**	**Beta C pg**
Beta Crypt pg	**Lycopene pg**	**Lut Zea pg**	**Vitamin E mg**	**Vitamin D pg - IU**	**Vitamin K pg**	**Fatty Acid Sat g**	**Fatty Acid Mono g - Poly g**	**Cholesterol mg**	**Extra 1 2**
27.000	0.328	27.000	33.000	potato, large (3in to 4-1-4in dia)	1.250	224.618	389.098	0.829 - 3.544	10.545
87.208	13.889	2.559	47.710	3.409	103.153	268.248	1,305.118	21.105	1.868
0.509	1.084	19.680	54.520	0.317	0.146	5.219	0.960	0.946	55.780
0.000	55.780	55.780	52.387	0.000	16.535	0.500	0.000	0.000	9.268
0.000	0.000	102.140	0.038	0.000-0.000	6.358	0.194	0.080-0.399	0.000	2.000-4
Description : v210a									
Input : 2011 BARLEY,PEARLED,RAW									
2.000	0.188	2.000	8.000	cup	0.250	5.045	176.000	0.580 - 0.555	4.955
38.860	7.800	0.400	14.500	1.250	39.500	110.500	140.000	4.500	1.065

b. Statistics Analyses

A Statistics Analysis uses the Totals calculations to measure basic statistical properties of up to 10 aggregated food nutrition properties. Total, Median, Mean, Variance, and Standard Deviation statistics are generated for all of the nutrient properties in aggregated base elements. Nutrients are aggregated in two stages. The first stage uses the standard aggregators to aggregate the base elements. The second stage aggregates the same nutrients within each aggregated base element. The number of observations reflects the number of base elements being aggregated.

The following three images derive from a three year Operating Budget Statistical Analysis. They demonstrate that the nutritional composition of agricultural Outputs and food Inputs can be included in an analysis. The basic nutritional stock budgeting (Inputs minus Outputs equal current year nutrient stock contributions) is a good foundation for additional types of nutrition decision support tools (**3***).

DevTreks -social bud

https://www.devtreks.org/hometreks/search/farmworke

Budget Group : Food Nutrition, Stock Budgets					
Name	Total	Mean	Median	Variance	Std Dev
Q Observations : 1					
ServingCost	-0.046	-0.046	-0.046	0.000	0.000
ActualServingSize	-3.200	-3.200	-3.200	0.000	0.000
Energ_Kcal	-1,320.779	-1,320.779	-1,320.779	0.000	0.000
Protein_g	-41.115	-41.115	-41.115	0.000	0.000
Carbohydrt_g	-283.578	-283.578	-283.578	0.000	0.000
Extra1	-23.000	-23.000	-23.000	0.000	0.000
Extra2	-28.500	-28.500	-28.500	0.000	0.000
Budget : Food Nutrition Subsistence Stocks SR01					
Name	Total	Mean	Median	Variance	Std Dev
Q Observations : 3					
ServingCost	-0.046	-0.015	-0.028	0.003	0.050
ActualServingSize	-3.200	-1.067	-1.000	0.126	0.355
Energ_Kcal	-1,320.779	-440.260	-452.580	10,013.970	100.070
Protein_g	-41.115	-13.705	-14.256	8.319	2.884
Carbohydrt_g	-283.578	-94.526	-96.744	487.130	22.071
Extra1	-23.000	-7.667	-8.000	42.333	6.506
Extra2	-28.500	-9.500	-9.000	45.750	6.764
Time Period : 2011 Food Nutrient Stocks					
Name	Total	Mean	Median	Variance	Std Dev
Q Observations : 1					
ServingCost	0.040	0.040	0.040	0.000	0.000
ActualServingSize	-0.750	-0.750	-0.750	0.000	0.000
Energ_Kcal	-334.600	-334.600	-334.600	0.000	0.000
Protein_g	-10.585	-10.585	-10.585	0.000	0.000

Outcomes					
Name	Total	Mean	Median	Variance	Std Dev
Outcome					
2011 Food Produced SR01					
Q Observations : 1					
ServingCost	0.288	0.288	0.288	0.000	0.000
ActualServingSize	2.000	2.000	2.000	0.000	0.000
Energ_Kcal	723.698	723.698	723.698	0.000	0.000
Protein_g	21.130	21.130	21.130	0.000	0.000
Carbohydrt_g	158.638	158.638	158.638	0.000	0.000
Extra1	3.000	3.000	3.000	0.000	0.000
Extra2	7.000	7.000	7.000	0.000	0.000
Name	Total	Mean	Median	Variance	Std Dev
Output : 2011 BARLEY, PEARLED, RAW					
Q Observations : 0					
ServingCost	0.088	0.000	0.000	0.000	0.000
ActualServingSize	1.000	0.000	0.000	0.000	0.000
Energ_Kcal	510.600	0.000	0.000	0.000	0.000
Protein_g	15.540	0.000	0.000	0.000	0.000
Carbohydrt_g	110.290	0.000	0.000	0.000	0.000
Extra1	2.000	0.000	0.000	0.000	0.000
Extra2	5.000	0.000	0.000	0.000	0.000
Output : 2011 POTATO, FLESH and SKN, RAW					
Q Observations : 0					
ServingCost	0.200	0.000	0.000	0.000	0.000
ActualServingSize	1.000	0.000	0.000	0.000	0.000
Energ_Kcal	213.098	0.000	0.000	0.000	0.000
Protein_g	5.590	0.000	0.000	0.000	0.000

Operations					
Name	Total	Mean	Median	Variance	Std Dev
Operation					
2011 Subsistence Meal BM SR01					
Q Observations : 1					
ServingCost	0.328	0.328	0.328	0.000	0.000
ActualServingSize	1.250	1.250	1.250	0.000	0.000
Energ_Kcal	389.098	389.098	389.098	0.000	0.000
Protein_g	10.545	10.545	10.545	0.000	0.000
Carbohydrt_g	87.208	87.208	87.208	0.000	0.000
Extra1	2.000	2.000	2.000	0.000	0.000
Extra2	4.000	4.000	4.000	0.000	0.000
Name	Total	Mean	Median	Variance	Std Dev
Input : 2011 BARLEY,PEARLED,RAW					
Q Observations : 0					
ServingCost	0.188	0.000	0.000	0.000	0.000
ActualServingSize	0.250	0.000	0.000	0.000	0.000
Energ_Kcal	176.000	0.000	0.000	0.000	0.000
Protein_g	4.955	0.000	0.000	0.000	0.000
Carbohydrt_g	38.860	0.000	0.000	0.000	0.000
Extra1	1.000	0.000	0.000	0.000	0.000
Extra2	2.000	0.000	0.000	0.000	0.000
Input : 2011 POTATO,FLESH and SKN,RAW					
Q Observations : 0					
ServingCost	0.140	0.000	0.000	0.000	0.000
ActualServingSize	1.000	0.000	0.000	0.000	0.000
Energ_Kcal	213.098	0.000	0.000	0.000	0.000

The following three year Outcome Statistical Analysis examines a potential crop output's nutritional properties. Outcomes can also be combinations of food nutrient Outputs that are expended (i.e. by physical activities and metabolic processes).

https://www.devtreks.org/hometreks/search/farmworke

Outcome Group					
Food Subsistence Meals					
Name	Total	Mean	Median	Variance	Std Dev
Q Observations : 3					
ServingCost	1.431	0.477	0.534	0.028	0.169
ActualServingSize	8.550	2.850	3.250	0.543	0.737
Energ_Kcal	2,878.118	959.373	1,064.445	41,819.974	204.499
Protein_g	83.119	27.706	30.606	32.583	5.708
Carbohydrt_g	633.269	211.090	234.558	2,071.005	45.508
Extra1	38.000	12.667	12.000	100.333	10.017
Extra2	54.000	18.000	16.000	147.000	12.124
Outcome					
2011 Food Produced SR01					
Name	Total	Mean	Median	Variance	Std Dev
Q Observations : 1					
ServingCost	0.288	0.288	0.288	0.000	0.000
ActualServingSize	2.000	2.000	2.000	0.000	0.000
Energ_Kcal	723.698	723.698	723.698	0.000	0.000
Protein_g	21.130	21.130	21.130	0.000	0.000
Carbohydrt_g	158.638	158.638	158.638	0.000	0.000
Extra1	3.000	3.000	3.000	0.000	0.000
Extra2	7.000	7.000	7.000	0.000	0.000
Name	Total	Mean	Median	Variance	Std Dev
Output : 2011 BARLEY, PEARLED, RAW					
Q Observations : 0					
ServingCost	0.088	0.000	0.000	0.000	0.000
ActualServingSize	1.000	0.000	0.000	0.000	0.000

c. Change Analyses

Change Analyzers can examine incremental changes in 10 food nutrition properties. A Change by Year Analysis measures incremental changes between aggregated nutrient properties that have different Years. A Change by Id Analysis measures incremental changes between nutrient properties that have different Ids. A Change by Alternative Type Analysis measures incremental changes between aggregated nutrient properties that have different Alternative Types. Changes are analyzed in ascending order (Id = 1,2,3; Year = 2000, 2001, 2002; AlternativeType = A, B, C). The first member of the sequence will be used as a "Base" element to make comparisons. The sibling sequence member immediately before the current sequence member will be used as an "x-1" (x minus 1) element to make comparisons. Gaps in the sequence, such as a missing Year, will be ignored.

The "Base" comparator's nutrient properties can be adjusted in Inputs or Outputs to targeted goals (i.e. USDA 2010 Nutritional Goals), resulting in analytic goal comparison. Further details about how Change Analyzers work can be found in the Change Analysis tutorial.

The following three year Input Change by Year Analysis tracks annual changes in food prices, serving costs, and nutrient properties. Under what circumstance might nutrient properties change?

Input Series	All	Alt. 0	Alt. 1	Alt. 2
Name		2011 BARLEY,PEARLED,RAW	2012 BARLEY,PEARLED,RAW	2013 BARLEY,PEARLED,RAW
Label		20005	20005	20005
Nutrient Details	**All**	**Alt. 0**	**Alt. 1**	**Alt. 2**
Observations		1	1	1
Alternative		A	B	C
Name		ContainerPrice	ContainerPrice	ContainerPrice
Total		1.75	1.55	1.50
Amount Change		0.00	0.00	-0.05
Percent Change		0.00	0.00	-3.23
Base Change		0.00	-0.20	-0.25
Base Percent Change		0.00	-11.43	-14.29
Name		ServingCost	ServingCost	ServingCost
Total		0.22	0.19	0.19
Amount Change		0.00	0.00	-0.01
Percent Change		0.00	0.00	-3.23
Base Change		0.00	-0.03	-0.03
Base Percent Change		0.00	-11.43	-14.29
Name		Protein_g	Protein_g	Protein_g
Total		4.96	4.96	4.96
Amount Change		0.00	0.00	0.00
Percent Change		0.00	0.00	0.00
Base Change		0.00	0.00	0.00
Base Percent Change		0.00	0.00	0.00
Name		Extra1	Extra1	Extra1
Total		3.00	10.00	1.00
Amount Change		0.00	0.00	-9.00

The following proforma Capital Budget Change by Year Analysis measures incremental changes in serving costs, and nutrient characteristics for three years of budgets. The Totals section mentions that Capital Budgets can be used to analyze food supplies, while Operating Budgets can be used to analyze food production and consumption.

Time Period	All	Alt. 0	Alt. 1	Alt. 2
Name		2011 Food Nutrition Capital Budget	2012 Food Nutrition Capital Budget	2013 Food Nutrition Capital Budget
Date		12/31/2011	12/31/2012	12/31/2013
Label		FN2011	FN2012	FN2013
Nutrient Details	**All**	**Alt. 0**	**Alt. 1**	**Alt. 2**
Observations		1	1	1
Alternative				
Name		ServingCost	ServingCost	ServingCost
Total		1.93	1.85	1.72
Amount Change		0.00	0.00	-0.13
Percent Change		0.00	0.00	-7.02
Base Change		0.00	-0.07	-0.20
Base Percent Change		0.00	-3.85	-10.60
Name		ActualServingSize	ActualServingSize	ActualServingSize
Total		13.25	13.03	11.05
Amount Change		0.00	0.00	-1.98
Percent Change		0.00	0.00	-15.20
Base Change		0.00	-0.22	-2.20
Base Percent Change		0.00	-1.66	-16.60
Name		Energ_Kcal	Energ_Kcal	Energ_Kcal
Total		830.68	639.26	587.09
Amount Change		0.00	0.00	-52.17
Percent Change		0.00	0.00	-8.16
Base Change		0.00	-191.43	-243.60
Base Percent Change		0.00	-23.04	-29.32
Name		Protein_g	Protein_g	Protein_g
Total		45.11	40.09	34.94
Amount Change		0.00	0.00	-5.15
Percent Change		0.00	0.00	-10.06

The following Operating Budget Change by Alternative Analysis measures incremental changes in food prices, serving costs, and nutrient characteristics for three alternative budgets. What may be the significance of having this type of data for every meal being produced in the world (or in your local house)?

Budget Group : Food Nutrition, SR Budget Analyses ; 06/09/2014				
Budget	All	Alt. 0	Alt. 1	Alt. 2
Name		Nutrition Budget 01 Benchmark	Nutrition Budget 02 Actual	Nutrition Budget 03 Actual
Date		06/09/2014	06/09/2014	06/09/2014
Label		SR100	SR100	SR100
Nutrient Details	All	Alt. 0	Alt. 1	Alt. 2
Observations		1	1	1
Alternative		A	B	C
Name		ContainerPrice	ContainerPrice	ContainerPrice
Total		-6.65	-10.51	-9.17
Amount Change		0.00	0.00	1.34
Percent Change		0.00	0.00	12.75
Base Change		0.00	-3.86	-2.52
Base Percent Change		0.00	-58.05	-37.89
Name		ServingCost	ServingCost	ServingCost
Total		2.88	4.37	3.89
Amount Change		0.00	0.00	-0.49
Percent Change		0.00	0.00	-11.16
Base Change		0.00	1.49	1.01
Base Percent Change		0.00	51.93	34.97
Name		Energ_Kcal	Energ_Kcal	Energ_Kcal
Total		-246.55	-344.63	-368.55
Amount Change		0.00	0.00	-23.92
Percent Change		0.00	0.00	-6.94
Base Change		0.00	-98.08	-121.99
Base Percent Change		0.00	-39.78	-49.48
Name		Protein_g	Protein_g	Protein_g
Total		57.12	86.78	76.85
Amount Change		0.00	0.00	-9.94
Percent Change		0.00	0.00	-11.45

d. Progress 1 Analyses

A Progress 1 Analysis uses the Totals calculations to measure actual versus planned progress for up to 10 aggregated food nutrition properties. Base elements that have a Target Type property set to “benchmark” act as a comparator for base elements using a Target Type property set to “actual”. The “benchmark” comparators displayed below are also used to test the other analyzers and do not have typical benchmark amounts.

The “Benchmark” comparator’s nutrient properties can be adjusted in Inputs or Outputs to targeted goals (i.e. USDA 2010 Nutritional Goals), resulting in analytic target comparison. Further details about how Progress Analyzers work can be found in the Earned Value Management Analysis tutorial.

The following three year Input Analysis shows that the benchmark comparator is a 2011 Input. Both the 2012 and 2013 actual Inputs are being compared to the 2011 comparator.

Name	Plan Period	Plan Full	Plan Cumul	Actual Period	Actual Cumul	Actual Period Change	Actual Cumul Change	Plan P Percent ; Plan C Percent	Plan Full Percent
Input Series: 2011 BARLEY,PEARLED,RAW									
Date : 09/01/2011 ; Observations: 1; Target : benchmark									
ContainerPrice	1.75	1.75	1.75	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
ServingCost	0.22	0.22	0.22	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
ActualServingSize	0.25	0.25	0.25	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
ActualServingsPerContainer	8.00	8.00	8.00	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Energ_Kcal	176.00	176.00	176.00	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Protein_g	4.96	4.96	4.96	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Cholestrl_mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Extra1	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Input Series: 2012 BARLEY,PEARLED,RAW									
Date : 09/01/2012 ; Observations: 1; Target : actual									
ContainerPrice	1.75	1.75	1.75	1.55	1.55	-0.20	-0.20	88.57 ; 88.57	88.57
ServingCost	0.22	0.22	0.22	0.19	0.19	-0.03	-0.03	88.57 ; 88.57	88.57
ActualServingSize	0.25	0.25	0.25	0.25	0.25	0.00	0.00	100.00 ; 100.00	100.00
ActualServingsPerContainer	8.00	8.00	8.00	8.00	8.00	0.00	0.00	100.00 ; 100.00	100.00
Energ_Kcal	176.00	176.00	176.00	176.00	176.00	0.00	0.00	100.00 ; 100.00	100.00
Protein_g	4.96	4.96	4.96	4.96	4.96	0.00	0.00	100.00 ; 100.00	100.00
Cholestrl_mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Extra1	3.00	3.00	3.00	10.00	10.00	7.00	7.00	333.33 ; 333.33	333.33
Input Series: 2013 BARLEY,PEARLED,RAW									
Date : 09/01/2013 ; Observations: 1; Target : actual									
ContainerPrice	1.75	1.75	1.75	1.50	3.05	-0.25	1.30	85.71 ; 174.29	174.29
ServingCost	0.22	0.22	0.22	0.19	0.38	-0.03	0.16	85.71 ; 174.29	174.29
ActualServingSize	0.25	0.25	0.25	0.25	0.50	0.00	0.25	100.00 ; 200.00	200.00
ActualServingsPerContainer	8.00	8.00	8.00	8.00	16.00	0.00	8.00	100.00 ; 200.00	200.00
Energ_Kcal	176.00	176.00	176.00	176.00	352.00	0.00	176.00	100.00 ; 200.00	200.00

The following three year Output Analysis shows that the benchmark comparator is a 2011 Output. Both the 2012 and 2013 actual Outputs are being compared to the 2011 comparator. This view uses the “compare only” option.

Output Series	All	Alt. 0	Alt. 1	Alt. 2
Name		2011 BARLEY, PEARLED, RAW	2012 BARLEY, PEARLED, RAW	2013 BARLEY, PEARLED, RAW
Label		20005	20005	20005
Nutrient Details	**All**	**Alt. 0**	**Alt. 1**	**Alt. 2**
Observations		1	1	1
Target		benchmark	actual	actual
Name		ContainerPrice	ContainerPrice	ContainerPrice
Plan Period		1.50	1.50	1.50
Plan Full		1.50	1.50	1.50
Plan Cumul		1.50	1.50	1.50
Actual Period		0.00	1.75	2.00
Actual Cumul		0.00	1.75	3.75
Actual Period Change		0.00	0.25	0.50
Actual Cumul Change		0.00	0.25	2.25
Plan P Percent		0.00	116.67	133.33
Plan C Percent		0.00	116.67	250.00
Plan Full Percent		0.00	116.67	250.00
Name		ServingCost	ServingCost	ServingCost
Plan Period		0.19	0.19	0.19
Plan Full		0.19	0.19	0.19
Plan Cumul		0.19	0.19	0.19
Actual Period		0.00	0.25	0.30
Actual Cumul		0.00	0.25	0.55
Actual Period Change		0.00	0.06	0.11
Actual Cumul Change		0.00	0.06	0.36
Plan P Percent		0.00	130.67	160.00
Plan C Percent		0.00	130.67	290.67
Plan Full Percent		0.00	130.67	290.67
Name		ActualServingSize	ActualServingSize	ActualServingSize

The following three year Outcome Analysis shows that the benchmark comparator is a 2011 Outcome. Both the 2012 and 2013 actual Outcomes are being compared to the 2011 comparator. What may be the significance of having this type of data available for every combination of crops being grown in the world (or at your local organic farmers market)?

Outcome

2011 Barley and Potato Crops(Amount: 1.000; Date: 12/31/2011 Label: FN350

Name	Plan Period	Plan Full	Plan Cumul	Actual Period	Actual Cumul	Actual Period Change	Actual Cumul Change	Plan P Percent ; Plan C Percent	Plan Full Percent
Date : 12/31/2011 ; Observations: 1; Target : benchmark									
ServingCost	0.58	0.58	0.58	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
ActualServingSize	1.50	1.50	1.50	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Energ_Kcal	565.10	565.10	565.10	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Protein_g	15.50	15.50	15.50	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Carbohydrt_g	126.07	126.07	126.07	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Cholestrl_mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Extra1	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00

Outcome

2012 Barley and Potato Crops(Amount: 1.000; Date: 12/31/2012 Label: FN350

Name	Plan Period	Plan Full	Plan Cumul	Actual Period	Actual Cumul	Actual Period Change	Actual Cumul Change	Plan P Percent ; Plan C Percent	Plan Full Percent
Date : 12/31/2012 ; Observations: 1; Target : actual									
ServingCost	0.58	0.58	0.58	0.41	0.41	-0.17	-0.17	71.30 ; 71.30	71.30
ActualServingSize	1.50	1.50	1.50	1.03	1.03	-0.47	-0.47	68.67 ; 68.67	68.67
Energ_Kcal	565.10	565.10	565.10	356.94	356.94	-208.15	-208.15	63.16 ; 63.16	63.16
Protein_g	15.50	15.50	15.50	9.74	9.74	-5.76	-5.76	62.85 ; 62.85	62.85
Carbohydrt_g	126.07	126.07	126.07	79.78	79.78	-46.28	-46.28	63.29 ; 63.29	63.29
Cholestrl_mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 ; 0.00	0.00
Extra1	1.00	1.00	1.00	3.00	3.00	2.00	2.00	300.00 ; 300.00	300.00

Outcome

2013 Barley and Potato Crops(Amount: 1.000; Date: 12/31/2013 Label: FN350

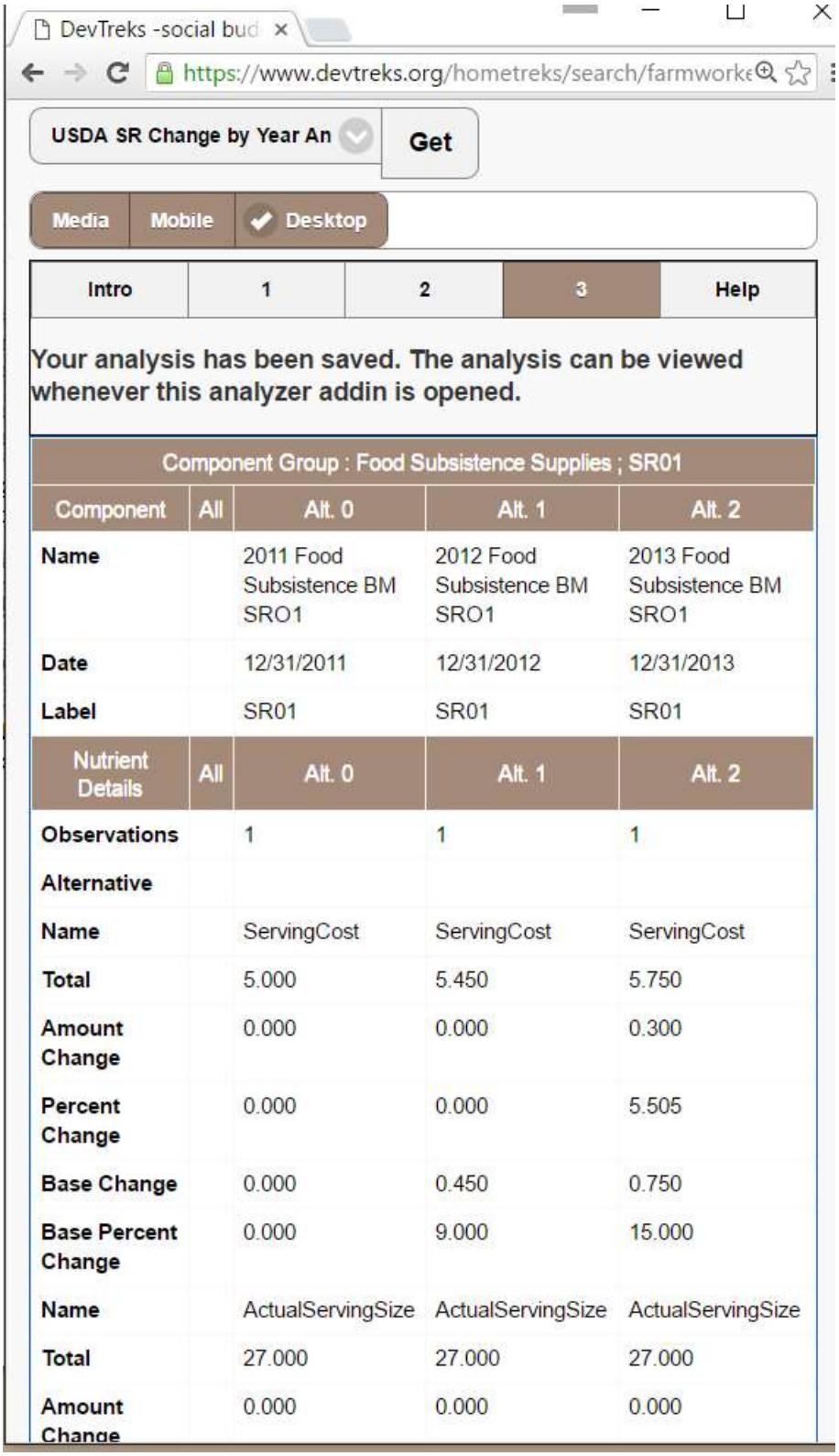
Name	Plan Period	Plan Full	Plan Cumul	Actual Period	Actual Cumul	Actual Period Change	Actual Cumul Change	Plan P Percent ; Plan C Percent	Plan Full Percent
Date : 12/31/2013 ; Observations: 1; Target : actual									
ServingCost	0.58	0.58	0.58	0.42	0.83	-0.16	0.26	73.04 ; 144.35	144.35
ActualServingSize	1.50	1.50	1.50	0.80	1.83	-0.70	0.33	53.33 ; 122.00	122.00
Energ_Kcal	565.10	565.10	565.10	317.75	674.69	-247.35	109.59	56.23 ; 119.39	119.39

The following three year Operation Analysis compares a 2011 Operation benchmark comparator to 2012 and 2013 actual Operations. What might be changing in this diet to cause this type of progress?

Name	Energ_Kcal	Energ_Kcal	Energ_Kcal
Plan Period	265.59	265.59	265.59
Plan Full	265.59	265.59	265.59
Plan Cumul	265.59	265.59	265.59
Actual Period	0.00	727.81	269.34
Actual Cumul	0.00	727.81	997.15
Actual Period Change	0.00	462.23	3.75
Actual Cumul Change	0.00	462.23	731.57
Plan P Percent	0.00	274.04	101.41
Plan C Percent	0.00	274.04	375.45
Plan Full Percent	0.00	274.04	375.45
Name	Protein_g	Protein_g	Protein_g
Plan Period	29.61	29.61	29.61
Plan Full	29.61	29.61	29.61
Plan Cumul	29.61	29.61	29.61
Actual Period	0.00	103.70	26.19
Actual Cumul	0.00	103.70	129.89
Actual Period Change	0.00	74.09	-3.42
Actual Cumul Change	0.00	74.09	100.28
Plan P Percent	0.00	350.21	88.46
Plan C Percent	0.00	350.21	438.68
Plan Full Percent	0.00	350.21	438.68
Name	Carbohydrt_g	Carbohydrt_g	Carbohydrt_g
Plan Period	23.50	23.50	23.50
Plan Full	23.50	23.50	23.50
Plan Cumul	23.50	23.50	23.50
Actual Period	0.00	37.57	28.39

The following three year Component Analysis compare a 2011 benchmark Component to 2012 and 2013 actual Components. Components can be analyzed using the techniques explained for

analyzing food supplies in the Malnutrition Calculation 1 reference (see the Food Container Nutrient Content Example).



Component Group : Food Subsistence Supplies ; SR01				
Component	All	Alt. 0	Alt. 1	Alt. 2
Name		2011 Food Subsistence BM SRO1	2012 Food Subsistence BM SRO1	2013 Food Subsistence BM SRO1
Date		12/31/2011	12/31/2012	12/31/2013
Label		SR01	SR01	SR01
Nutrient Details	All	Alt. 0	Alt. 1	Alt. 2
Observations		1	1	1
Alternative				
Name		ServingCost	ServingCost	ServingCost
Total		5.000	5.450	5.750
Amount Change		0.000	0.000	0.300
Percent Change		0.000	0.000	5.505
Base Change		0.000	0.450	0.750
Base Percent Change		0.000	9.000	15.000
Name		ActualServingSize	ActualServingSize	ActualServingSize
Total		27.000	27.000	27.000
Amount Change		0.000	0.000	0.000

The following three year Capital Budget Analysis shows that the benchmark comparator is a 2011 Capital Budget. Both the 2012 and 2013 actual Budgets are being compared to the 2011 comparator. All three Time Periods are being compared because they have the same Labels and the 2011 Time Period has a Target Type = “benchmark” while 2012 and 2013 have Target Types = “actual”.

Time Period	All	Alt. 0	Alt. 1	Alt. 2
Name		2011 Food Nutrition Capital Budget	2012 Food Nutrition Capital Budget	2013 Food Nutrition Capital Budget
Date		12/31/2011	12/31/2012	12/31/2013
Label		FN200	FN200	FN200
Nutrient Details	**All**	**Alt. 0**	**Alt. 1**	**Alt. 2**
Observations		1	1	1
Target		benchmark	actual	actual
Name		ContainerPrice	ContainerPrice	ContainerPrice
Plan Period		-1.85	-1.85	-1.85
Plan Full		-1.85	-1.85	-1.85
Plan Cumul		-1.85	-1.85	-1.85
Actual Period		0.00	-2.25	-2.55
Actual Cumul		0.00	-2.25	-4.80
Actual Period Change		0.00	-0.40	-0.70
Actual Cumul Change		0.00	-0.40	-2.95
Plan P Percent		0.00	-121.62	-137.84
Plan C Percent		0.00	-121.62	-259.46
Plan Full Percent		0.00	-121.62	-259.46
Name		ServingCost	ServingCost	ServingCost
Plan Period		0.78	0.78	0.78
Plan Full		0.78	0.78	0.78
Plan Cumul		0.78	0.78	0.78
Actual Period		0.00	1.03	0.88
Actual Cumul		0.00	1.03	1.91
Actual Period Change		0.00	0.26	0.11
Actual Cumul Change		0.00	0.26	1.14
Plan P Percent		0.00	132.95	113.63

The following Operating Budget Analysis compares progress using a benchmark Budget 1 with 3 Time Periods and two actual Budgets, each with 3 Time Periods. At the Budget Level of this analysis, the cumulative progress of actual Budgets 2 and 3 are displayed.

Budget Group : Food Nutrition, SR Budget Analyses ; 06/09/2014				
Budget	All	Alt. 0	Alt. 1	Alt. 2
Name		Nutrition Budget 01 Benchmark	Nutrition Budget 02 Actual	Nutrition Budget 03 Actual
Date		06/10/2014	06/10/2014	06/10/2014
Label		SR100	SR100	SR100
Nutrient Details	All	Alt. 0	Alt. 1	Alt. 2
Observations		1	1	1
Target		benchmark	actual	actual
Name		ContainerPrice	ContainerPrice	ContainerPrice
Plan Period		-10.75	-10.75	-10.75
Plan Full		-10.75	-10.75	-10.75
Plan Cumul		-10.75	-10.75	-10.75
Actual Period		0.00	-10.51	-9.17
Actual Cumul		0.00	-10.51	-19.68
Actual Period Change		0.00	0.24	1.58
Actual Cumul Change		0.00	0.24	-8.93
Plan P Percent		0.00	-97.77	-85.30
Plan C Percent		0.00	-97.77	-183.07
Plan Full Percent		0.00	-97.77	-183.07
Name		ServingCost	ServingCost	ServingCost
Plan Period		4.87	4.87	4.87
Plan Full		4.87	4.87	4.87
Plan Cumul		4.87	4.87	4.87
Actual Period		0.00	4.37	3.89
Actual Cumul		0.00	4.37	8.26
Actual Period Change		0.00	-0.50	-0.99
Actual Cumul Change		0.00	-0.50	3.38
Plan P Percent		0.00	89.71	79.70
Plan C Percent		0.00	89.71	169.42
Plan Full Percent		0.00	89.71	169.42

The Time Periods in the analysis line up because of the way both Target Type and Label properties were set. At the Time Period Level of this analysis, actual Budget 3's Time Periods are being compared to benchmark Budget 1's Time Periods (2011 Time Period Labels = FN2011, 2012 Time Period Labels = FN2012 …). Actual Budget 2's Time Periods don't factor in these displayed numbers. Note Budget 2 and 3 use many of the exact same Operations and Outcomes.

Time Period	All	Alt. 0	Alt. 1	Alt. 2
Name		2013 Nutrition C	2013 Actual Nutrition C	2013 Nutrition C
Date		12/31/2013	12/31/2013 12:00:00 AM	12/31/2013 12:00:00 AM
Label		FN2013	FN2013	FN2013
Nutrient Details	**All**	**Alt. 0**	**Alt. 1**	**Alt. 2**
Observations		1	1	1
Target		benchmark	actual	actual
Name		ContainerPrice	ContainerPrice	ContainerPrice
Plan Period		-4.80	-4.80	-4.80
Plan Full		-10.75	-10.75	-10.75
Plan Cumul		-10.75	-10.75	-10.75
Actual Period		0.00	-5.10	-5.10
Actual Cumul		0.00	-10.51	-9.17
Actual Period Change		0.00	-0.30	-0.30
Actual Cumul Change		0.00	0.24	1.58
Plan P Percent		0.00	-106.25	-106.25
Plan C Percent		0.00	-97.77	-85.30
Plan Full Percent		0.00	-97.77	-85.30
Name		ServingCost	ServingCost	ServingCost
Plan Period		1.91	1.91	1.91
Plan Full		4.87	4.87	4.87
Plan Cumul		4.87	4.87	4.87
Actual Period		0.00	1.76	1.76
Actual Cumul		0.00	4.37	3.89
Actual Period Change		0.00	-0.15	-0.15
Actual Cumul Change		0.00	-0.50	-0.99
Plan P Percent		0.00	92.17	92.17
Plan C Percent		0.00	89.71	79.70
Plan Full Percent		0.00	89.71	79.70
Name		Energ_Kcal	Energ_Kcal	Energ_Kcal

The Outcomes and Operations in the analysis line up because of the way both Target Type and Label properties were set. At the Outcome and Operations Level of this analysis, actual Budget 3's Outcomes are being compared to benchmark Budget 1's Outcomes (Budget 1, 2011Time Period OC 1 Label = SR01, Budget 3, 2012 Time Period OC 1 Label = SR01 …). As with Time Periods, Actual Budget 2's Outcomes and Operations don't factor in these displayed numbers. Note Budget 2 and 3 use many of the exact same Operations and Outcomes.

Outcome	All	Alt. 0	Alt. 1	Alt. 2
Name		2013 Outcome, BM	2013 Crop Actual	2013 Crop Actual
Date		12/31/2013	12/31/2013 12:00:00 AM	12/31/2013 12:00:00 AM
Label		SR01	SR01	SR01
Nutrient Details	**All**	**Alt. 0**	**Alt. 1**	**Alt. 2**
Observations		1	1	1
Target		benchmark	actual	actual
Name		ContainerPrice	ContainerPrice	ContainerPrice
Plan Period		8.00	8.00	8.00
Plan Full		15.25	8.00	8.00
Plan Cumul		8.00	8.00	8.00
Actual Period		0.00	16.00	16.00
Actual Cumul		0.00	16.00	16.00
Actual Period Change		0.00	8.00	8.00
Actual Cumul Change		0.00	8.00	8.00
Plan P Percent		0.00	200.00	200.00
Plan C Percent		0.00	200.00	200.00
Plan Full Percent		0.00	200.00	200.00
Name		ServingCost	ServingCost	ServingCost
Plan Period		0.42	0.42	0.42
Plan Full		0.83	0.42	0.42
Plan Cumul		0.42	0.42	0.42
Actual Period		0.00	0.84	0.84
Actual Cumul		0.00	0.84	0.84
Actual Period Change		0.00	0.42	0.42
Actual Cumul Change		0.00	0.42	0.42
Plan P Percent		0.00	200.00	200.00
Plan C Percent		0.00	200.00	200.00
Plan Full Percent		0.00	200.00	200.00
Name		Energ_Kcal	Energ_Kcal	Energ_Kcal