WUR-LICT – WUR - Living Income Calculation Tool

Application Guide

A tool for living income benchmarking of rural households in low-income countries.

WUR-LICT Application Guide

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Introduction

The WUR Living Income Calculation Tool (WUR-LICT) was developed to easily benchmark minimum income for a decent living according to the Declaration of Human Rights (1948). The description and justification for this approach is described in the paper:

Gerrie W. J. van de Ven, Anne de Valença, Wytze Marinus, Ilse de Jager, Katrien K. E. Descheemaeker, Willem Hekman, Beyene Teklu Mellisse, Frederick Baijukya, Mwantumu Omari & Ken E. Giller. Living income benchmarking of rural households in low-income countries, 2020. Food Security. http://link.springer.com/article/10.1007/s12571-020-01099-8

This guide will lead you step by step through the use of the WUR-LICT interface. The interface gives access to the survey tool (Living Income Survey: Online Resource 2) and the Living Income Diet Tool for calculating a nutritious diet at minimum cost (Online Resource 3 and 4). The interface contains the data from three rural areas where the tool was tested in the East African highlands: Lushoto District in Tanzania, and Isingiro District in Uganda, and Sidama Zone in Ethiopia. You can use these data as they are, modify them or start an entirely new case by providing all the data for the area of interest, run the Living Income Diet Tool and obtain the final results.

The interface can be navigated through the tabs at the top of the screen. The first tabs (from GENERAL INFORMATION up to EDUCATION) represent the survey tool. The tool contains guidelines and data forms to collect all required data for determining the living income for rural households in low-income countries. Subsequently, the COLLECT NUTRIENTS tab utilizes the USDA database so as to collect nutrient information for the selected foods. When all the necessary nutrients are collected, the Living Income Diet Tool can be run and the final results can be viewed in the final tab RESULTS. From this final tab, you can also obtain the results as a pdf report.

Installation and Getting Started

How to install WUR-LICT:
Download the latest version of the interface WUR-LICT Setup.zip from the PPS model portal here. Unpack the WUR-LICT.zip (right-mouse button → *7-Zip* → *Extract files...* → choose an appropriate location and click on Ok). Double click the WUR-LICT Setup.exe and follow the instructions to install. When the installation is finished, the interface will automatically open and the application will be installed on your machine for later use as a normal Windows 10 application.

How to start from a pre-existing project:
Load a pre-existing project from the list on the **Start here** section of the Welcome Tab. You have three pre-existing projects to choose from Uganda, Tanzania and Ethiopia.
Navigate through the different tabs to see the pre-filled data. In the Collect Nutrients tab, press FIND DIET and you will be transferred to the RESULTS tab where a full report of the study along with the results will be waiting for you.

You can save your progress at any time by returning to the Welcome tab and saving the project in the **Data management** section. From this section, you can also load a project that is stored on your computer.

Welcome tab

The first tab of the application, the Welcome tab, presents a short introduction to the interface. Here you find the **Data management** and **Start here** sections.

Save progress

In the Data management section, you can save your current progress by clicking **Save Project**. In the dropdown menu, you need to provide a name for the new project and then press the **Save Project** button to save the project in the desired location on your local machine. The project will be saved as a JSON file.

Load a project

In the Data management section, you can load an existing project that you have created and it is saved on your local machine. First, click in the Load Project. In the dropdown menu, press **Choose File**. Find the desired JSON file and open it. The project will be automatically loaded.

General Information tab

The General Information tab contains all the general information related to the case study like location, date, etc.

Household Size & Composition tab

The Household Size and Composition tab contains the size and composition of the reference household.

Food tab

The Food tab contains the food price survey. Data is collected about the prices of the two cheapest (per kg) and one of the most commonly consumed food products of all essential food groups available in local markets and shops, the places where households commonly shop for cheap foods. The food data can be edited from the Food Data table. To add information to the table, you need to click the Edit button in the first column of every food on the table. The following columns of the chosen food can now be edited:

- **Food Product:** The name of the food.
- **Weight per price:** The weight of the food.
- **Unit of weight:** The unit of weight in which the price is provided. It can be either in kilograms, grams or litres.
- **Current median price:** Up to 10 current prices of the food from different vendors. When you finish editing the food, it automatically calculates the average of the provided current prices.

- **Common median price:** Up to 10 common prices throughout the year from the same vendors' location as the current prices. When you finish editing the food, it automatically calculates the average of the provided common prices.

After editing the above columns and pressing Save (tick button), the rest of the columns below will be automatically calculated:

- **Difference current price from common price (%):** The difference between the common and the current price.
- **Current price justified? If >25% difference, then use normal price:** The two possible values here are either "Current Price" if the difference between the current and common price is lower than 25% or "Common Price" if the difference is higher.
- **Correct Price for model:** The value here is either the current price if the difference between the current and common price is lower than 25% or "Common Price" if the difference is higher.

Housing tab

The Housing tab contains information about housing costs. In the **Housing Standards** table, you can observe the international standards for decent housing and then edit the local standards based on secondary reports and observations of e.g. local material availability in the studied area.

In the **Housing Costs data** table, you can provide up to 10 values for each Cost item. To edit the prices, you need to press the action button in the first column of each row. The last column of each row will be automatically calculated when finishing editing by the median value of the provided prices.

Healthcare tab

The Healthcare tab contains all household out-of-pocket expenses to cover basic health care. In question 7A, you can choose if health care insurance is available for the reference household or not. If yes, the value of the insurance and the covered health care services can be indicated. Otherwise, you can go directly to section 8. In section 8, you can edit the three most common diseases, the average treatment per disease and the number of treatments necessary. In the **Average Treatment Cost** and **Average Number of Treatments** tables, you can provide 4 values for each type by pressing the Edit button in the first column of each row. The median value of the provided numbers will be automatically calculated in the final column.

Education tab

The Education tab includes all annual household-out-of-pocket expenses to cover decent public primary and lower secondary education for all children of the reference household.
In section 9, the years of primary and lower secondary education can be edited from the respective fields.

In the **Primary Education** table of section 10, you can specify up to three cost items and then provide the cost for each item from up to 10 parents/carers. When finish editing each row, the median value of the last column with be automatically calculated.

You can repeat the same process for the **Lower Secondary Education** table.

Collect Nutrients tab

The Collect Nutrients tab, enables you to collect all the nutrient information. The Nutrient Table will be already filled with the foods that you have provided in the Food tab. Each food has the following columns:

- **Food:** Name of the food as provided in the Food tab.
- **Use:** You can choose to consider (Yes) or not (No) the specific food in the calculations for a nutritious diet at minimum cost.
- **USDA ID (optional):** If you would like the application to scan the USDA database and fill in the nutrient information automatically, you need to provide here the USDA ID of your food. The ID can be found either from the website of the United States Department of Agriculture or by using the **USDA ID finder** tool that is included in this tab (more on that below).
- **Cost:** The cost of the food per unit of weight should be pre-filled from the Food tab table. If not, you can edit it here.
- **Columns from calcium, Ca (mg/100g) up to zinc, Zn (mg/100g) (Optional):** The nutrient information of the food. If you provide a USDA ID, you can leave these columns empty. When you finish editing all the foods, you can press the DOWNLOAD NUTRIENTS button below the table and the interface will automatically fill these columns for you based on the provided USDA ID. If the USDA ID is not available or the application failed to fill some of the nutrients, you always fill them manually. If a specific nutrient doesn't apply to the food, you can leave it empty.
- **Waste description (Optional):** The parts of the food that are usually waste.
- **Waste factor (Optional):** The percentage of the food that is usually waste from 0 to 1.
- **Food group USDA (Optional):** The food group of the food in the USDA database.
- **Full name (Optional):** The full name of the food.

As mentioned above, the nutrient information can be filled either manually or by providing just a USDA ID for each food and pressing the **DOWNLOAD NUTRIENTS** button below the table. To assist in finding the USDA IDs, the application includes the **USDA ID finder** tool. You can open the tool by pressing the dropdown button right above the Nutrient Table. Then, you can search the ID of food by filling in the name of the food and pressing the **SEARCH** button. The application will scan the USDA database and will return all foods that include the name of the food. You can find a full list of the nutrients for each entry by clicking the arrow at the start of the desired row. When you find the best possible match for your food, just copy the USDA ID into the USDA ID column of the food inside the Nutrient Table.

When you have finished editing the Nutrient Table, you can press the **FIND DIET** button. The application will try to find the minimum cost of a nutritious diet by solving the minimization problem using a linear algorithm (complex method). If a solution is found, you will be redirected in the RESULTS tab where you will be able to review your input data and the final results.

Results tab

The result tab summarises the input data and presents the final results. The tables provide the following information:

- **General Information:** The data from the GENERAL INFORMATION tab.
- **Reference household size and composition:** The data from the HOUSEHOLD SIZE & COMPOSITION tab. Male Adults Equivalent (MAE) and Adult Equivalent (AE) are also calculated. For more information on the equations used, you can press the INFORMATION ABOUT HOUSEHOLD AND COMPOSITION button below the table.
- **Food Costs:** The table highlights the resulting diet of the minimisation algorithm in green. For each food, there is information about the price in local currency, the consumption in grams per day, the cost in local currency per day and the cost in USD per day. Some extra costs are also included in the table and finally, the two last rows present the daily and yearly cost of the food in USD and local currency. For more information on the equations used, you can press the INFORMATION ABOUT FOOD TABLE button below the table.
- **Housing Costs:** The data from the HOUSING tab. The last row presents the annual cost in USD and local currency. For more information on the equations used, you can press the INFORMATION ABOUT THE HOUSING COST TABLE button below the table.
- **Non-food non-housing (NFNH) costs:** The data from the HEALTHCARE and EDUCATION tabs. For each category, it summarises the annual costs in USD and local currency. For more information on the equations used, you can press the INFORMATION ABOUT THE HEALTHCARE AND EDUCATION TABLE button below the table.
- **Total living income:** The table sums the daily and annual costs in USD and local currency for each category.
- **Living income relative:** The table presents the percentage of the total living income per category.

Except for reviewing the results here, you can also download a PDF report of the results by pressing the **Generate PDF Report** button.

We hope you will find the tool useful. If you have any questions, comments or suggestions for improvement of the tool please contact:
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