

## Purpose

The tool helps generate tables and charts of population and employment data - both historical and projected. Users can apply population projections from UN data, or add their own projections. In the projection sheet, indicators and charts guide users in developing consistent projections not only in terms of population, but also in terms of working age population, dependent population, labor force, and employment. Where possible, the data and projections are split between male and female to highlight any gender gaps. Output charts include population pyramids.

## Data

The tool uses value added, population, and employment data from the World Development Indicators (WDI) database. Users can also manually enter their own data.

WDI Data: <http://databank.worldbank.org/data/home.aspx>

Accessed 10 Jun 2023

In the Projection-feature, users can apply population projection data from the UN:

UN Projected Data: <http://esa.un.org/unpd/wpp/DVD/>

File version: POP/DB/WPP/Rev.2022/POP/F02-2 and 3  
(Dated July 2022. Last accessed Nov 2022)

## Step-by-Step

Follow the Step-by-Step instructions from sheet to sheet:

Step 1	Select Country
Step 2	Select Data
Step 3	Select Period
Step 4	Select Projection Assumptions
Step 5	Review Results
Step 6	Country Comparison
Export	Export Results

## Color coding

**123-ABC** Cells filled by the tool and can be modified by the user

All other cells filled by the tool and CANNOT be modified by the user

123-ABC	Do not modify	123-ABC	Do not modify
123-ABC	Do not modify	123-ABC	Do not modify
123-ABC	Do not modify	123-ABC	Do not modify
123-ABC	Do not modify	123-ABC	Do not modify
123-ABC	Do not modify	123-ABC	Do not modify

## Password Protection

To prevent the user from inadvertently overwriting formulas, a password is used protect all sheets.

If it becomes necessary to revise the structure of the file, use these buttons:

NB! The password is 'GROWTH' and must not be changed as it is included in macros.

All sheets: Unprotect

All sheets: Protect

## Contact Details

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## Documentation

No errors in reported in structural check

The tool helps generate tables and charts of population and employment data - both historical and projected. Users can apply population projections from UN data, or add their own projections. In the projection sheet, indicators and charts guide users in developing consistent projections not only in terms of population, but also in terms of working age population, dependent population, labor force, and employment. Where possible, the data and projections are split between male and female to highlight any gender gaps. Output charts include population pyramids.

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## Definitions & Concepts

### Compound Annual Growth Rate (CAGR)

Growth rate is calculated as a geometric average growth rate between the beginning and end year (t, t+T) using the compound average growth rate (CAGR) formula. For example, for value added growth (Y):

$$g_{t,t+T} = (Y_{t+T}/Y_t)^{\frac{1}{T}} - 1 \quad (\text{Eq. 1})$$

where

$g_{t,t+T}$  = Period average growth rate of value added between year t and t+T

$Y_t$  = Value added in year t

$Y_{t+T}$  = Value added in year t+T

### Projection

In Step 4 a the user can run analyses to project the value added, demographics, and employment for a selected period. Projected growth rates can include:

- \* Growth rates for the currently selected country (Total period, or Period 1, 2, or 3)
- \* Projected growth rates from UN data included in this current tool.  
UN data version: File version: POP/DB/WPP/Rev.2022/POP/F02-2 and 3 (Dated July 2022. Last accessed Nov 2022)  
File POP/7-2: Male & Female population by five-year age group, major area, region and country, 1950-2100 (thousands)
- \* Manually added growth rates

### Data Consistency and Combining Data Sources

On the 'Main Menu' sheet, the user can select which data source to use - 'Manual' or 'WDI'. If a mix of data sources is used, the following approach is used to establish a consistent data set:

- \* Consistency rule 1: Population (N) > Working Age Population (A) > Labor Force (L) > Employment (E)
- \* Consistency rule 2: Population (N) = Working Age Population (A) + Dependents (D)
- \* Consistency rule 3: Working Age Population (A) = Labor Force (L) + Outside Labor Force (O)
- \* Consistency rule 4: Labor Force (L) = Employed (E) + Unemployed (U)
- \* Consistency rule 5: Dependents (D) = Youth (<15 yrs) + Old Age. Depending on WAP definition, D = ages <15 and + 64, or just <15.
- \* Consistency rule 6: In each category, Total = Male (M) + Female (F)

[Click to jump to overall consistency test](#)

To meet these consistency rules the following prorating approaches are used:

- \* Using WDI data to prorate Manual data:

$$WAP_{Manual} = \frac{WAP_{DataBank}}{N_{DataBank}} N_{Manual}$$

$$LF_{Manual} = \frac{LF_{DataBank}}{WAP_{DataBank}} WAP_{Manual}$$

$$E_{Manual} = \frac{E_{DataBank}}{LF_{DataBank}} LF_{Manual}$$

- \* Using WDI data to prorate Manual data:

$$WAP_{DataBank} = \frac{WAP_{Manual}}{N_{Manual}} N_{DataBank}$$

$$LF_{DataBank} = \frac{LF_{Manual}}{WAP_{Manual}} WAP_{DataBank}$$

$$E_{DataBank} = \frac{E_{Manual}}{LF_{Manual}} LF_{DataBank}$$

- \* For data disaggregated by gender **no proration** is used to ensure that "Male + Female = Total":

- Population data by gender are used directly if available in the selected source.
- WAP data by gender are used directly from selected source ONLY if the same source is used for Population data.
- LF data by gender are used directly from selected source ONLY if the same source is used for both Population and WAP data.
- Employment data by gender are used directly from selected source ONLY if the same source is used for Population, WAP, and LF data.
- Unemployment data by gender are calculated as: Labor Force less Employment by gender.
- Outside Labor Force data by gender are calculated as: WAP less Labor Force by gender.
- Youth Dependents data by gender are used directly from selected source ONLY if the same source is used for Population data.
- Old Age Dependents data by gender are calculated as: Population less WAP less Youth Dependents by gender.

## Documentation

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## Data Requirements

### Total Value Added Data

In the case of WDI data, 'Total Value Added' is obtained from the data series 'GDP' measured in million constant 2015 USD. Data points are excluded for years and countries where no GDP data exist.

WDI Data:

<http://databank.worldbank.org/data/home.aspx>

[Click to jump to selection cell](#)

[Click to jump to country list](#)

### Employment and Population Data

This file includes population, working age population, labor force, and employment, data from WDI measured in 1,000 people. The population aged 15-64 is selected as the working age population in this tool. One can also select to use population aged 15+. Data points are excluded for specific years if population, working age population, labor force, and total employment data are not available. WDI, and Health, Nutrition, and Population Data: <http://databank.worldbank.org/data/home.aspx>

This file includes projected population data from UN at the following scenarios: Low Fertility, Medium Fertility, and High Fertility.

File POP/7-2: Male & Female population by five-year age group, major area, region and country, 1950-2100 (thousands)

UN Data: <http://esa.un.org/unpd/wpp/DVD/>

The user may elect to enter their own data for Value Added, population and employment ensuring that they use million constant 2015 USD terms to enable country comparisons. Employment data entered manually by the user should be measured in thousands or millions of people to enable comparisons with WDI data. Units for manual data can be selected on the "Manual Data" sheet. If necessary, the user can also add up to 5 new countries on the "Manual Data" sheet. These countries are then added to the drop-down menu on the "Main Menu" and "Country Comparison" sheets.

### Country Naming Convention

Note that many data sources use different notations for the same country or region. In this tool, country names and 3-letter country codes are standardized to follow WDI's notations for individual countries and aggregates. Some additional countries and aggregates were added to cover UN data. The table starting Row 383 also includes WDI's SNA Price Valuation by country (VAB or VAP).

[Click to jump to list](#)

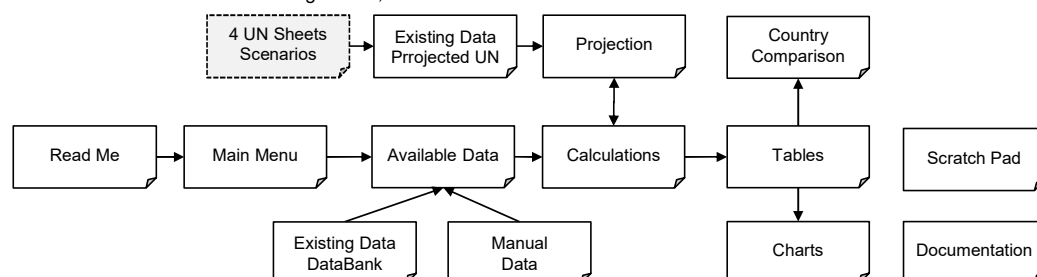
This tool does not aggregate any data. All aggregated data are downloaded "as is" from WDI and UN. Here are weblinks listing which countries are included in the different WDI and UN aggregates:

<http://data.worldbank.org/about/country-classifications/country-and-ler>

<http://esa.un.org/unpd/wpp/Download/Other/Documentation/>

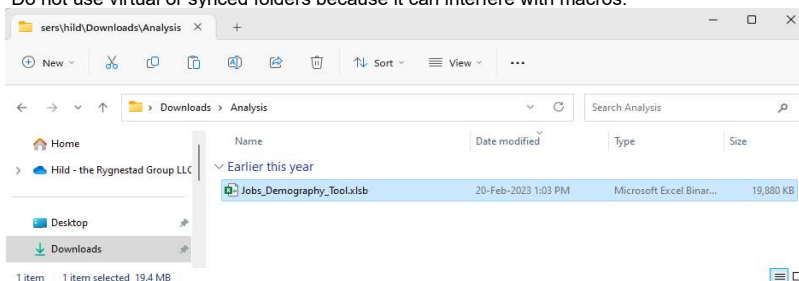
## Excel File Structure

This Excel file includes the following sheets, and the arrows illustrate the main flow of data between them.

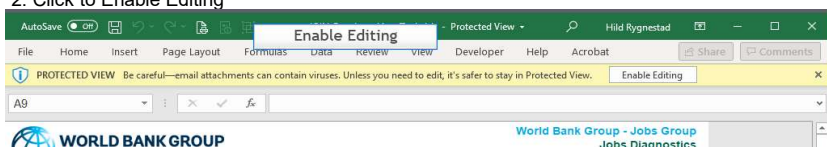


## Troubleshoot Opening Excel File and Enabling Macros

1. Make sure the Excel file is saved in a physical folder on your computer. Do not use virtual or synced folders because it can interfere with macros.



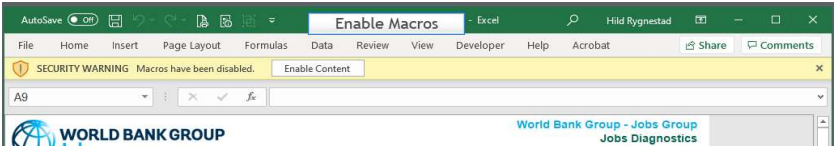
2. Click to Enable Editing



Documentation

No errors in reported in structural check

3. Click to Enable Macros



4. If the above does not work, you may be receiving "BLOCKED CONTENT" message.



For an individual file, such as a file downloaded from an internet location or an email attachment the user has saved to their local device, the simplest way to unblock macros is to remove "Mark of the Web". To remove, right-click on the file, choose Properties, and then select the Unblock checkbox on the General tab. Finally, return to points 2 and 3 above.

