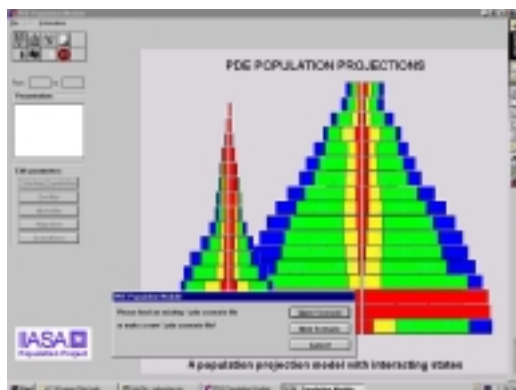


Population Project  
Leader: Dr. Wolfgang Lutz

## **Software for Population – Development – Environment (PDE) Analysis**

### **PDE POPULATION PROJECTIONS**



**A population projection model  
with interacting states**

**User's Manual**

By Martina Dippolt, Anne Goujon, and Annababette Wils

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## 1 INTRODUCTION

This software has been developed by IIASA's Population Project to be used as **Population Module** in multi-sector Population-Development-Environment (**PDE**) analysis. This tool can also be used independently of PDE analysis for simple and multi-state population projections – in case of several states that interact with each other.

The states can all be defined by the user. They can be regions, educational categories, ethnic or language groups, or other user-defined dimensions. The computer's memory is the only limit to be number of states that can be dealt by the software. It can easily handle 8-10 distinct states (for 5-year age groups) depending on the length of the projection period and the number of age groups.

Fertility, mortality and migration rates can be defined separately for all states. Also transitions between states can be defined by age and sex. The software is very user-friendly. All age specific rates can be defined numerically or graphically (by simply pulling down the curve with the mouse) or in terms of proportional changes of already defined age specific schedules. Changes can as well be defined for summary indicators such as total fertility rate, life expectancy, or net number of migrants. Over time rates can be changed by certain percentages per period or by interpolation between any points in time or by entering specific rates for each period. Both starting year and projection parameters can either be entered directly in the PDE Population Projections or in a spreadsheet to be read by the module.

Projection results can be presented in tabular and graphical form. The graphs are either moving age pyramids over time or total multi-state population for the projection period.

This manual will give a short survey of the different features of the software. It can also be accessed through the Help Function.

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## 2 INSTALLING PDE POPULATION PROJECTIONS

Double click on **setup.exe** for a first installation of the PDE Population Projections on your computer.

### 3 GRAPHICS AND RESULTS

Population projection results are available in three types of presentation:



#### Population pyramids

You have several buttons in the main window for the "animation" of the population pyramids.



shows you the next year's population pyramid



shows you all year's population pyramids by stepping through the time



stops a running presentation



shows you the previous population pyramid



Area chart of total population by state during projection period.

Click again to return to population pyramid



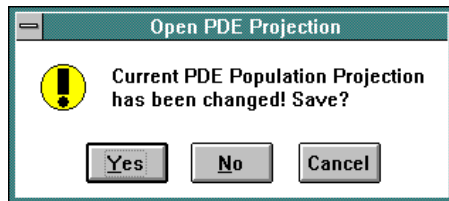
Table of output data

### 4 MANAGING POPULATION PROJECTIONS

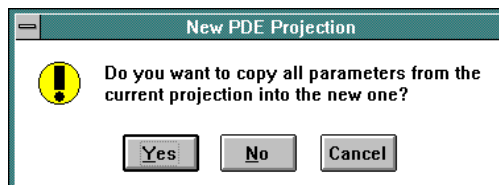
#### 4.1 Creating, opening and saving projects

<i>Menu command</i>	<i>Description</i>
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<b>File new</b>	Closes the current project, prompting you to save any file changes,
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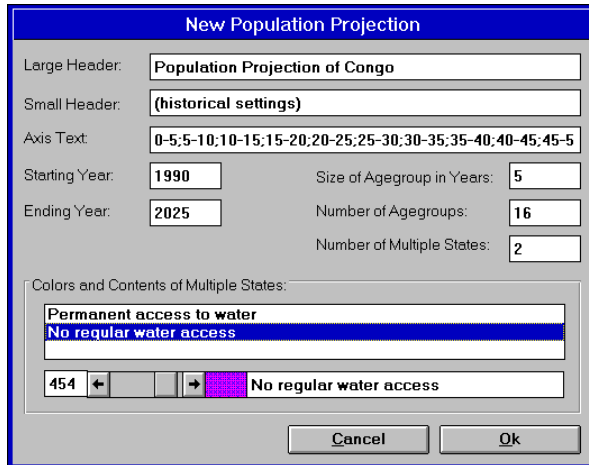
<b>File new (end)</b>	also prompting you to copy the current project's complete data into the new projection - which can be very useful when you want to change only a few parameters in the current projection and save the new one under another file name -
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then creates a new projection file according to your general projection settings

**Menu  
command**

**Description**



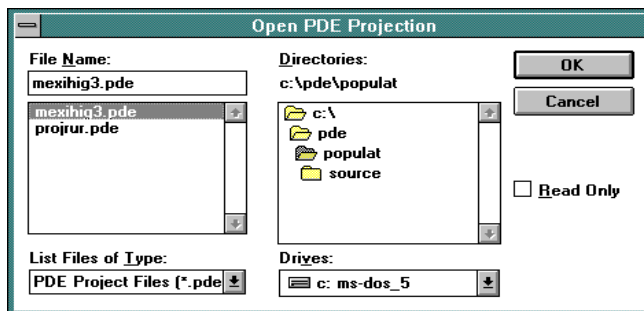
The period between ‘Starting Year’ and ‘Ending Year’ must be a multiple of the ‘Size of Age Group in Years’ parameter.

The size of age groups can be single year, five years or any other size. There is no limit to the number of multi-states but your computer’s memory. For multi-state projection purposes, the choice of 5-year age groups is recommended as it increases the possible number of multi-states. For instance with a 60 MB memory, and 5-year age groups, the software can combine up to 21 age groups, 10 multi-states for a projection period of 35 years. With 100 single year age groups, the PDE Population Projections can only manage two multi-states.

If the dimensions of the projections are too large a button will prompt you to change projections settings.

**File open**

Closes the current project, prompting you to save any changes, then opens an existing project (\*.PDE) - according to your selection. This process can take a few seconds as the population of the entire projection period is calculated immediately after loading the projection file.



**Menu description**

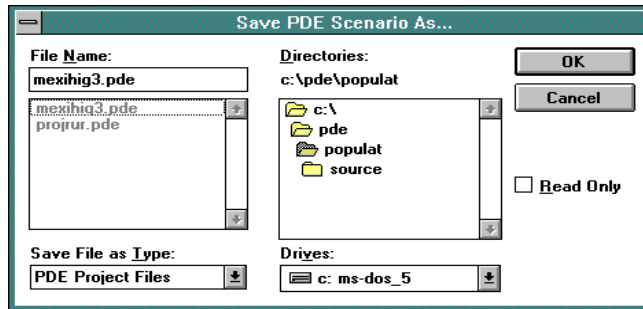
**Description**

File save scenario

Updates the projection file of the current population projection.

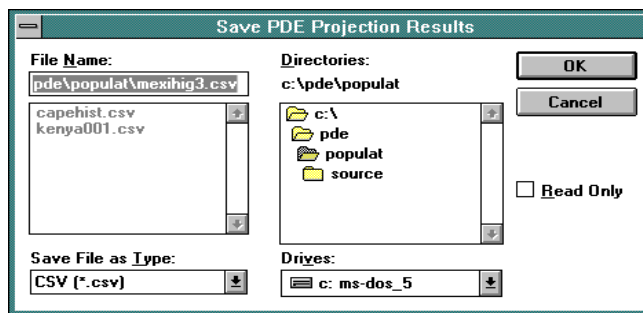
File save scenario as

Updates the projection file of the current population, saving the file under a file name you specify.



File save results

Saves the projection results in CSV-format. This file-format can be read by many other spreadsheet programs, e.g. MS Excel - so projection output is available for further graphic purposes



File exit

Closes PDE Population Projections, prompting you to save any changes of the current projection file.

## 4.2 Editing projection and graphs parameters

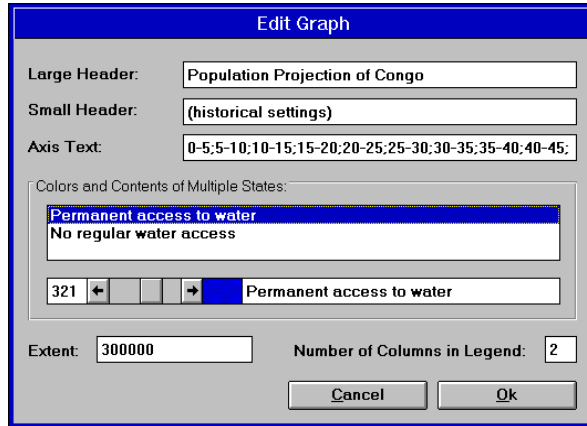
Projection parameters can be edited directly within the PDE Population Projections (see below) or from any spreadsheet program (see section 4.3.)

**Menu  
command**

**Description**

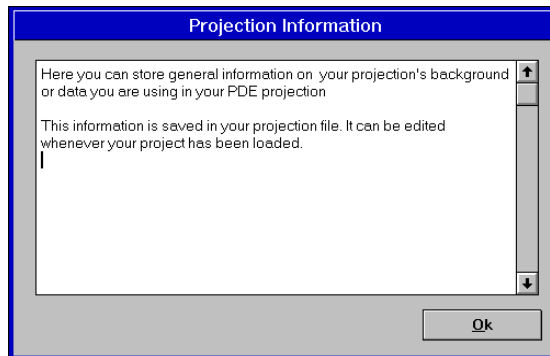
**Edit graph**

Enables you to change graphs parameters e.g. colors and texts.



**Edit story**

Can be used to store individual background information or data descriptions on your projection; will be saved in the project file.



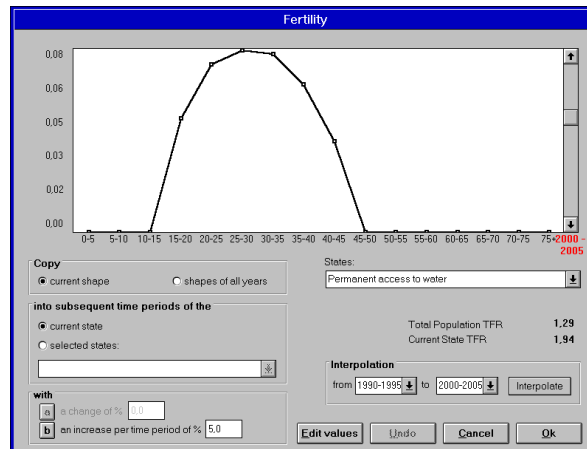
**Edit  
population**

Enables you to edit the starting population of all states.

Starting Population						
State	Sex	Year	20-25	25-30	30-35	35-40
Permanent access to water	Males	1990	60000	55000	50000	45000
Permanent access to water	Females	1990	60000	55000	50000	45000
No regular water access	Males	1990	120000	110000	100000	90000
No regular water access	Females	1990	120000	110000	100000	90000

**Menu command**    **Description**

**Edit fertility**        Enables you to change period age specific fertility rates of all multi-states.



**Edit mortality**        Enables you to change period age and sex specific mortality rates of all multi-states.

**Edit migration**        Enables you to change period age specific net migration flows of all multi-states. Migration flows are expressed in absolute number of net migrants.

**Edit transitions**        Enables you to change period age and sex specific transition rates of all multi-states.

*For methods about editing and changing parameter values see section 5. How to use the PDE Edit windows.*

### 4.3 Editing projection parameters in a spreadsheet

Scenario files (\*.PDE) can be opened and edited in a spreadsheet. These files have a CSV-format, that is colon or semi-colon delimited text (depending on your list separator – check in control panel window).

An example file has been installed together with the PDE Population Projections. It is named **example.pde**. It contains the projection from 1994 to 2044 of the population of country X divided into four educational categories and 17 five-year age groups. This file can be both opened by the PDE Population Projections and a spreadsheet program. Since version 2.0, the first column contains the data description

Once the file has been edited, save it again in CSV-format. Projection results can then be retrieved with the PDE Population Projections by opening the file with the software.

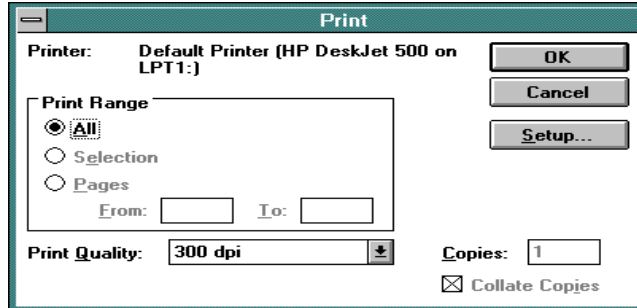
## 4.4 Printing projection graphs

**Menu  
command**

**Description**

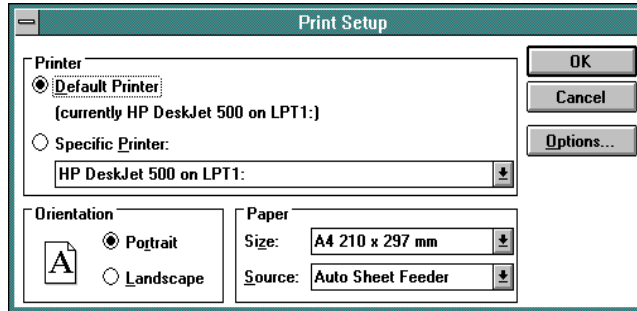
**File print**

Prints the currently visible graph - population pyramid or total population area chart - on the default printer.



**File printer  
setup**

Specifies how output should be printed. You can change printers, formats and other printer-specific options. Graphs can only be printed with a PostScript printer



Graphs can be retrieved into any document e.g. MS Word by double-clicking directly on the graphs and pasting them into the document where it can be cropped and resized.

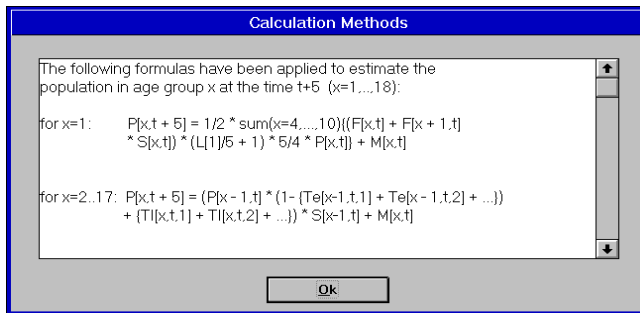
## 4.5 Getting information

**Menu command**    *Description*

**Information Calculation**    Shows you general information about methods and input parameters used to calculate population projections in the PDE Population Projections.



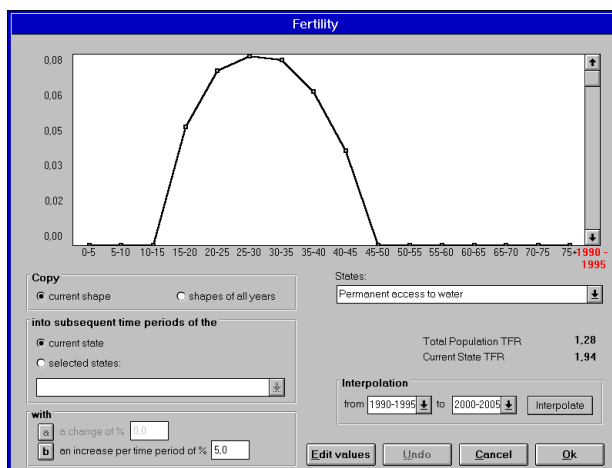
**About**    Gives a short source reference.



## 5 HOW TO USE THE PDE EDIT WINDOWS

### 5.1 Preparing individual scenario settings

If you want to change total fertility rates (TFR), life expectancies (LE), migration values or transition rates, you will need the following guidelines for the use of the "edit parameters"-mode. It is important to note that fertility, mortality, and transition rates are expressed in terms of period rates and migration is expressed in terms of absolute number of net migrants for the period.



### Selecting states to edit:

In the list box on the right side you select the state, which then is the currently active state for further changes. To inform you immediately about the results when you make changes to parameters, you can use the indicators (TFR, LE and net migration) below this list box.

### Viewing all periods values:

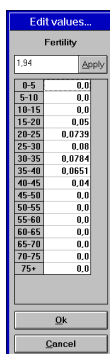
To change values of other years you just scroll the vertical scroll bar on the right of the graph. This also gives you the possibility to watch the development of the parameters within the projection period. In following periods the initial periods values are drawn in the background in gray color. The currently active period is indicated below the vertical scroll bar. To edit all parameter values of any period, you just scroll the horizontal scroll bar over the graph, which is only visible if the number of age groups exceeds a certain limit.

## 5.2 Setting, copying and changing parameters

### Changing parameters:

You have two possible methods to change values in an edit window:

1. Click the button "Edit values" to open the input dialog, where you can just enter your new values.



In the case of fertility, mortality and migration you have the possibility to set the state's TFR, LE and net migration to a desired value by clicking the button "Apply" - so all values are multiplied by the appropriate factor.

This input dialog can also be opened by just double-clicking the line graph on any place within the graph rectangle.

2. Just click the left mouse button when moving over a knot in the line graph, then drag it to a new position, finally release the mouse button when the knot is at the desired position.

**Copying parameters:**

- A) If you want to copy the current period's shape into the following periods of the currently active state you select:
1. "current shape" in the "copy-window"
  2. "current state" in the "into-window"
  3. male or female in the "into-window"
  4. if the values shall increase or decrease (negative percent values!) in the next periods you change the growth rate in the **b**-option of the "with-window"
  5. then press the **b**-button to accept your settings and to start copying
- B) If you want to copy the current period's shape into the following periods of any other state you select:
1. "current shape" in the "copy-window"
  2. "selected states" in the "into-window"
  3. then select the destination states from the list box in the "into-window" (use the shift-key for multiple selection)
  4. male or female in the "into-window"
  5. if the values shall increase or decrease (negative percent values!) in the next periods you change the growth rate in the **b**-option of the "with-window"
  6. then press the **b**-button to accept your settings and to start copying
- C) If you want to change just the level of all period's values of the currently active state, but not the trend of the curves within the age groups you select:
1. "all years shapes" in the "copy-window"
  2. "current state" in the "into-window"
  3. male or female in the "into-window"
  4. you change the growth rate in the **a**-option of the "with-window"
  5. then press the **a**-button to accept your settings and to start copying
- D) If you want to copy all period's values of the current state into any other state you select:
1. "all years shapes" in the "copy-window"
  2. "selected states" in the "into-window"
  3. then select the destination states from the list box in the "into-window" (use the shift-key for multiple selection)
  4. male or female in the "into-window"
  5. if the values shall increase or decrease (negative percent values!) in the other states you change the growth rate in the **a**-option of the "with-window"
  6. then press the **a**-button to accept your settings and to start copying

**Interpolation:**

Moreover you can interpolate the values between two curves (linear interpolation). Just select the starting and the ending period in the "Interpolation"-window and click the button "Interpolate" - so the values will increase from period to period by the same factor.