EUROPE

Data Presentation System
for Health Indicators

Developer's Manual

(Version 2.0)

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ABSTRACT

The purpose of the data presentation system (DPS) is to display any statistical data available by geographical region in a user-friendly, graphical form. It is a tool which can provide quick and easy access to a large amount of routinely collected statistical data and help to make use of this information. Version 2 of the data presentation system (DPS-2) was developed in 2002 as a 32-bit application and includes new features. The DPS-2 package consists of two parts: (a) a developer's part, a set of program modules for initial installation and for setting up a specific application of DPS; (b) a user's part, specifically designed DPS-2 application and appropriate data files produced using the developer's program modules. This manual describes only the developer's part of the package. The generic user manual for DPS-2 itself is available on-line under the DPS-2 menu item HELP and can be modified, e.g. translated into the national language.

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Introduction

The purpose of the Data Presentation System (DPS) is to display any statistical data available by geographical region in a user-friendly, graphical form. It is a tool which can provide quick and easy access to a large amount of routinely collected statistical data and help to make use of this information. The first version of DPS was developed in the early 1990s for the WHO European "Health for All" database (HFA-DB) off-line version (see www.euro.who.int/HFADB). Many countries also started to use DPS for their national health indicator databases to facilitate access to and use of their national health statistics.

DPS has been further developed by the WHO Regional Office for Europe to assist countries in making better use of health data in decision-making and in the monitoring and management of health at national and local levels. DPS-2 is a simple but effective tool with which to enhance national health information systems by making routine data easier for everybody to access and use. An additional, indirect benefit is that feedback from users promotes the availability and quality of data.

Previous versions of DPS were 16-bit applications, and some users have recently begun to experience problems with DPS running under some newer versions of Windows. Also, certain other improvements to DPS have been planned for some time. As a result, in 2002 it was decided to rewrite DPS completely as a 32-bit application with improvements. The DPS developer's manual has been modified to reflect new features in DPS-2.

The whole DPS package consists of two parts:

1. *Developer's part* - a set of program modules for initial installation and for setting up a specific application of DPS, i.e. to define the number of regions in a country, to load the system with indicator titles and data, to produce specific country map files, etc. The purpose of this part is to produce a particular application of DPS-2 for further distribution to users of the data. The developers are usually national or international institutions engaged in the collection, processing and dissemination of health-related data.

2. *User's part* - specifically designed DPS-2 application and appropriate data files produced using the developer's program modules mentioned above. This part should be made available to all potential data users. It has no data editing options, as users are not expected to modify data that have been loaded by the developer into the DPS.

The current manual describes only the former, developer's part of the package. The generic user manual for DPS-2 itself is available on-line under the DPS-2 menu item HELP and can be modified, e.g. translated into the national language, by the developer. The DPS software has been produced by the WHO Collaborating Centre for Health Statistics and Information (Lithuanian Health Information Centre, Vilnius, Lithuania) in collaboration with the WHO Regional Office for Europe. The WHO Office for the Western Pacific has also contributed to the production of the latest version of DPS-2.

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Data requirements

DPS-2 is designed to display and compare statistical or other numerical data (indicators) linked to defined geographical or administrative areas or any other objects and certain time periods. Examples of areas: countries in Europe, regions or municipalities in a particular country. Examples of indicators: mortality rate from certain cause of death per 100 000 population; number of doctors per 10 000 population; average concentration of pollutants in air, etc. Time periods: years, quarters, etc.

Levels of geographical division

DPS-2 can handle up to two levels of geographical/administrative division. Let us designate the sum of all areas as "*main country*", the first-level areas as "*zones*" and the second-level areas as "*regions*". Examples:

(a)

Main country - Europe

Zones - Countries of Europe

Regions - Regions within individual countries

(b)

Main country - Country X

Zones - Administrative divisions of country X, e.g. regions

Regions - Further divisions of regions, e.g. municipalities

DPS-2 can be designed as a one-level application facilitating comparisons between *zones* only, e.g. between the countries of Europe in example (a) above. In most cases, the one-level design is sufficient. Whenever possible, it is recommended to use one-level design, as it is less complex to develop and use. Two-level design can only be recommended for applications where large amounts of detailed data, and preferably complete data sets, are available.

Depending on the design of the DPS-2 (one or two levels), the user has three options:

1. To use only the first level, i.e. to display and compare data for *zones* only, e.g. (a) countries in Europe or (b) regions of country X.

2. To select a particular *zone* and compare small *regions* within this *zone* only, e.g. (a) regions in selected particular European country or (b) municipalities of selected region of country X.

3. To use the second level directly, i.e. to compare small *regions* across *main country*, e.g. (a) to compare sub-national regions across European countries or (b) municipalities across country X.

In the case of the one-level system, only option 1. above is available.

The list of *zones* is linked to corresponding areas on the map (e.g. countries on the map of Europe). It is possible to define additional *zones/regions* that are not displayed on the map (e.g. for country groupings).

Indicators

DPS-2 can accommodate up to 10 000 main indicators and 100 temporary indicators. Main indicators are grouped into 10 groups, each of which has space for 100 first-level indicators. Behind each first-level main indicator, there is room for 9 second-level indicators. The second level is introduced to record the modifications or disaggregations of the main indicator, e.g. age group and sex, and to make the whole list of main indicators more structured and easy to use. Each main indicator has a four-digit DPS code (0000-9999). The first digit indicates the group number (0-9), the next two digits show where the main indicator is placed within the group (00-99) and the fourth indicates whether it is a first- or second-level main indicator. (0 corresponds indicates first level, while 1-9 are reserved for the second level.) The title of the indicator is limited to 128 characters and may not start with an asterisk *.

Example of an indicator:

4040 Early neonatal mortality rate, per 1000 live births.

4 - group number

04 - place within group

0 - first level

Early neonatal mortality rate, per 1000 live births - title.

DPS codes are assigned to a particular indicator by the application developer, depending on where and in what sequence he or she wants to place indicators in a series of 10 000 possible places.

Main country and each *zone* may have different subsets of active indicators from the main indicator list.

The DPS-2 user also has the facility to define and calculate temporary indicators as transformations of main indicators. Each temporary indicator can be calculated from one or two main indicators by following seven rules of calculation:

1. *TI= C*I1/I2;*
2. *TI= C*I1*I2;*
3. *TI= I1+I2;*
4. *TI=I1-I2;*
5. *TI=Icurrent - Iprevious;*
6. *TI= C*(Icurrent-Iprevious)/Iprevious*
7. *Moving average*

The first four types of temporary indicators are defined using two main indicators. Each such temporary indicator is calculated for each available year, where C is a user-defined constant and I1, I2 are codes for two main indicators. For example, TI (**natural increase per 1000 population**) = *I1* (**births per 1000 population**) - *I2* (**deaths per 1000 population**) applying above calculation rule 4 above.

The next two types of temporary indicators are defined using one main indicator, for two consecutive time points, e.g. to calculate % annual change.

The numbering of temporary indicators starts from 10000. Temporary indicators have only one level. Grouping also is not used for temporary indicators. Temporary indicators are general for *main country* and all *zones*. Temporary indicators are calculated each time they are selected. User can delete temporary indicators or define new ones at any time.

Conversion of old DPS files into the new DPS-2 format

For previously developed applications (e.g. national health indicator database) based on the previous version of DPS, there is no need to reload all indicators and data into DPS-2. A special converter has been developed to convert previous DPS application files into the DPS-2 format. The converter (program **d2.exe**) is available in the set of installation files.

Start **d2.exe** to convert old DPS application.

Select path to the old DPS system directory (to CLIST.bin), select/open Clist and click "Convert".

Converted data and other files will be saved in the old directory as \DPS-2\C#_DATA\, if old files were saved as C:\DATA\. The symbols #_ are substituted for :\ . Please note that the old **wtitles.bin** file (text strings for menu elements/prompts) should not be used with **DPS2.exe**. A new file should be created. If the file is missing, the English DPS menu texts are used as a default.

Rename old file **winhsi.hlp** ("Help" text) as **dps2.hlp**.

It is recommended that all newly created (converted) data files, **DPS2.exe**, **windps.cfg** and, if necessary, new **wtitles.bin** be moved to a separate directory.

Contents of **windps.cfg**:

Data Provider=DPS-2 - means that data are in dps2 format. Later, it will be possible to use MS Access type data provider, Provider=Microsoft.Jet.OLEDB.4.0, or SQL server.

Data Source=C:\DATA - shows the path to the data files, i.e. the directory where DPS data files are saved. If there is nothing after the = sign, DPS2 will look for data files in the same directory where DPS2 is located (recommended option). When Provider=Microsoft.Jet.OLEDB.4.0, it means dps.mdb file with full path to it.

Charset=186 - the code of the character set to be used. If there is no code after the = sign, the default character set will be used.

Main new features in DPS-2

The following main modifications have been introduced in DPS-2:

- Up to **30** indicators, **30** countries and **30** years can now be selected for simultaneous display. (Formerly, only 5 indicators, 5 countries and 5 years could be selected.) Users can now save their own most frequently used selections of indicators and countries, to be reloaded next time.
- It is now possible to select the **First available** and **Last available** year of data from the list of years in the Parameters menu.
- A special data display option, **Line Chart C**, was added to present indicators by age group or other population grouping. It requires that indicators for specific age groups be included in the total list of indicators, in ascending or descending order.
- **Tables A, B, C, D** now offer the option of exporting data to a file, either a simple tab-delimited text file (*.txt) or an HTML file (*.html). These text files can be imported to other programs, e.g. to Excel for further calculation, enhanced graphical output, etc.
- Time points now can be flexibly defined by the developer according to needs, e.g. to indicate intervals of years, quarters, weeks, etc. (Formerly, the only interval available was the year.)
- Display and printing of graphical and tabular outputs have been improved.

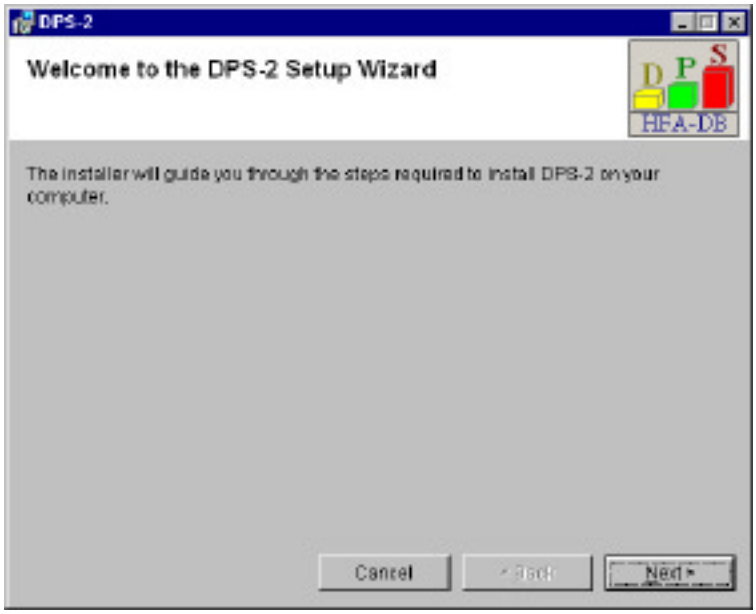
Setting up DPS-2 for a particular application

Before setting up DPS-2 for a particular application, the developer must decide on the most appropriate design for the application, i.e. whether to use one or two levels of area division. One of the main purposes of the system is to assist in comparing areas with a view to identifying those having extreme values of an indicator and thus attracting special attention. The number of *zones* and the number of *regions* in each *zone* must be large enough to make comparisons meaningful. For example, if a country is subdivided into 5 counties and each county consists of 5 districts, it may be advantageous to use districts as *zones* and to create a one-level system with 25 *zones*. In this case, the five counties could be defined as *additional zones*. Only one map of the country, divided into 25 areas, would be needed.

A two-level system would involve 5 *zones*, with 5 *regions* in each *zone* in the second level. In this case, the developer would need to include 7 different maps in DPS-2. Experience has shown that one-level design is sufficient for most applications. This is also much simpler and easier to use. The number of *zones* that may be sub-divided into *regions* and displayed on maps is limited to a maximum of 98.

Installing DPS-2 and setting up new application

The DPS-2 for a new application is distributed as a Windows Installer package. The installation of system files onto the developer's computer and initiation of a new application are performed at the same time. DPS-2 installation files can be downloaded from the web site of the WHO Regional Office for Europe at www.euro.who.int/hfadb.



Copy installation files into a separate directory on your hard disk. Start **setup.exe**.

By default, the installer allows the installation of only one version of the DPS-2 application on a single PC. The default location is **C:\Program Files\WHO\DPS-2** . To overcome this limitation, several different versions may be installed as follows:

1. Install the first version (run **setup.exe** file from the installation package).

2. Copy the installed directories and files into another directory on your hard drive.

3. Start **setup.exe** again or use the **Add/Remove Programs** option from the **Control Panel** to remove the first version from its original place.

4. Start **setup.exe** to install another version, etc.

At the end of the installation process, the developer will be prompted to define the number of first-level regions (zones) for the new application (including *main country* total) and to provide region names. Click on the asterisk to add next *zone*.

After clicking the "OK" button, all system files for DPS-2 are copied to the defined directory and appropriate files for the new application, as listed below, are created. Files marked with bold font are for further distribution to data users after the application is loaded with data. Remaining files should only be used by the application developer, i.e. they should be deleted before the finalized application is distributed to users.

DPS2.EXE - main program.

MAINLIST.IND - main indicator list.

MAINLIST.GRP - titles of indicator groups.

CLIST.BIN - list of zones that are divided into regions.

10000.**** - data file for *main country* for current year ****.

10000.IND - list of active indicators for *main country*.

10000.PAR - one of the zones' (countries') parameters files.

10000.MAP - one of the zones' (countries') map files.

WINDPS.CFG - DPS-2 configuration parameters.

NAT.EXE and **WTITLES.TXT** - to create screen prompts in the national language.

INDDEF.EXE and **INDDEF.PRJ** - to create indicator definition file.

TMPLIST.IND - list of temporary indicators.

MAPMAKER.EXE - to create boundary files for maps of new application

DPSMAN.EXE - DPS-2 data manager (former Weditor.exe).

TMSCL.BIN - time point titles file.

CID.BIN - zone (country) three-character identification code, used only in two-level applications.

DPS2.HLP - DPS-2 help file.

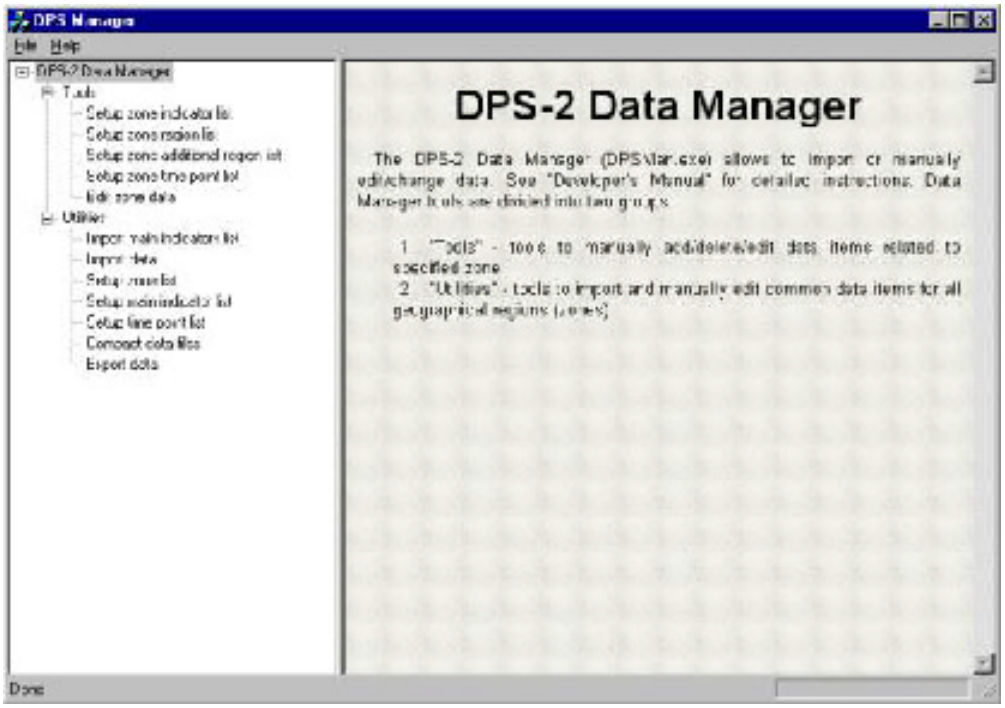
After the installation is finished, move all files from newly created \Data directory to the directory where the main programme DPS2.exe was installed. Alternatively, indicate the path to the data files in the WINDPS.cfg file (see section on the conversion of old DPS files into the new DPS-2 format).

The newly created application will be one-level, i.e. it will contain only the *main country* (code 10000). The main indicators list will have two indicators created, with codes 0000 and 0010, respectively. These two indicators are also activated in the main country indicators list. The data files are created for the current year, which number is read from the computer clock.

DPS DATA MANAGER (dpsman.exe file) should be used for further editing of *zone* names and installation of *regions* into the second level (if needed), loading indicators and data, etc.

Text and image displayed on the DPS-2 opening screen can be defined by creating/editing the appropriate file **front.bmp**. DPS-2 uses special boundary files to display maps, which, naturally, are different for each application. Use MAPMAKER to covert .tif, .bmp, .jpg, .gif, .png files (can be compressed) and MID/MIF map files into the special boundary files used by DPS-2. Use any text editor to edit file **wtitles.txt** and **nat.exe** to modify screen prompts or translate them into the national language. In some cases, e.g. for the Russian language, the Windows system must be set to the appropriate language as well. The default language is English.

Further development of the application and data loading (DPS-2 data manager)



The DPS-2 Data Manager (**dpsman.exe**) allows data to be imported or manually edited/ modified. Data Manager options are divided into two groups:

A. "Utilities" - import/edit items of data common to all zones:

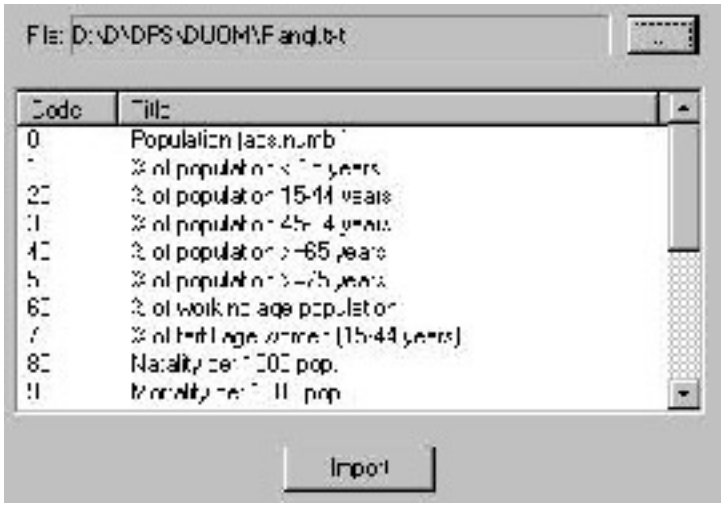
- "Import main indicator list" - import DPS codes and main list indicator titles from the text file
- "Import data" - import indicator values for all or selected *zones* and time points
- "Set up zone list" - add or remove *zones* when two-level geographical/administrative division is used
- "Set up main indicator list" - manually add/remove/edit indicator titles in the main list of indicators
- "Set up time point list" - add/remove/edit time points in the joint list of time points (e.g. available years)
- "Compact data files" - free unused disk space after multiple changes of indicator and time point lists
- "Export data" - export full DPS data to matrix or common database record format if needed for special purposes

B. "Tools" - allows *zone* parameters established during initial installation or defined using functions under "Utilities" menu to be edited:

- "Set up zone indicator list" - select/deselect active indicators for the *main country* or selected *zone* (in the case of a two-level system) from the joint main list of indicators
- "Set up zone region list" - edit names of regions
- "Set up zone additional region list" - add/delete/edit names of additional regions
- "Set up zone time point list" - add/remove time points from the joint list
- "Edit zone data" - manually edit indicator values

A. Utilities

A.1. Import main indicator list



Purpose: to import DPS codes and the list of indicator titles from a text file.

The import file with new indicators must be prepared in advance and saved on the disk. The format is as follows:

N1 Title1 of indicator

N2 Title2 of indicator

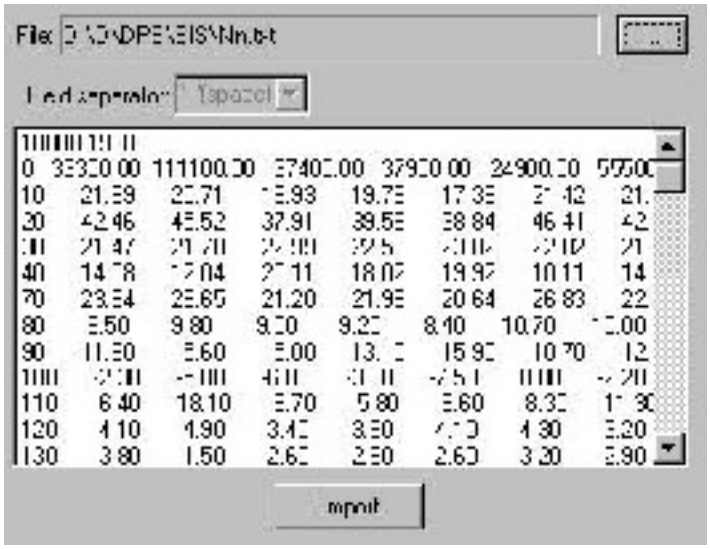
.....

NN TitleN of indicator,

where N1 is the DPS code of an indicator indicating where the user wants to place it in the full list (see section "Indicators") and Title1 is the title of the first indicator.

The DPS code and the indicator title must be separated by at least one space. Maximum length of the indicator title is 128 characters. The title must not begin with an asterisk (*), lest the indicator be considered to be unused.

A.2. Import data



Purpose: to import indicator values.

The import file with data must be prepared in advance and saved on the disk. There are several possible formats for the import file.

Format 1 is used to import data for all regions, including additional regions, if any:

CCCCCC YYYY

N1 Value1 Value2 .... ValueM

N2 Value1 Value2 .... ValueM

……

NN Value1 Value2.... ValueM,

where CCCCCC represents the code for the *main country* or *zone* (*main country* = 10000 in the case of a one-level system), YYYY is the code for the time point (e.g. year), N# is the DPS code of an indicator (integer), Value# is the value of an indicator (floating point). These values should be listed in the sequence in which the relevant *zones* or *regions* (including any additional regions) appear in the appropriate lists. Field separator is detected automatically and could be space, comma, semicolon or tab. In the case of a two-level system, the *zone* code CCCCCC should be from 10100 up to 19800, and N# should be from 0000 up to 9999. Each line must contain values for all regions, including missing values and the total for *country* or *zone* and additional regions. The code for a missing value is (-100000000) or (-1.0E8).

Format 2 is used to import data elements one by one for single indicators, time points and regions. This format is also more convenient for transferring data from other databases. The record layout is as follows:

YYYY N# CCCCC XXX Value#

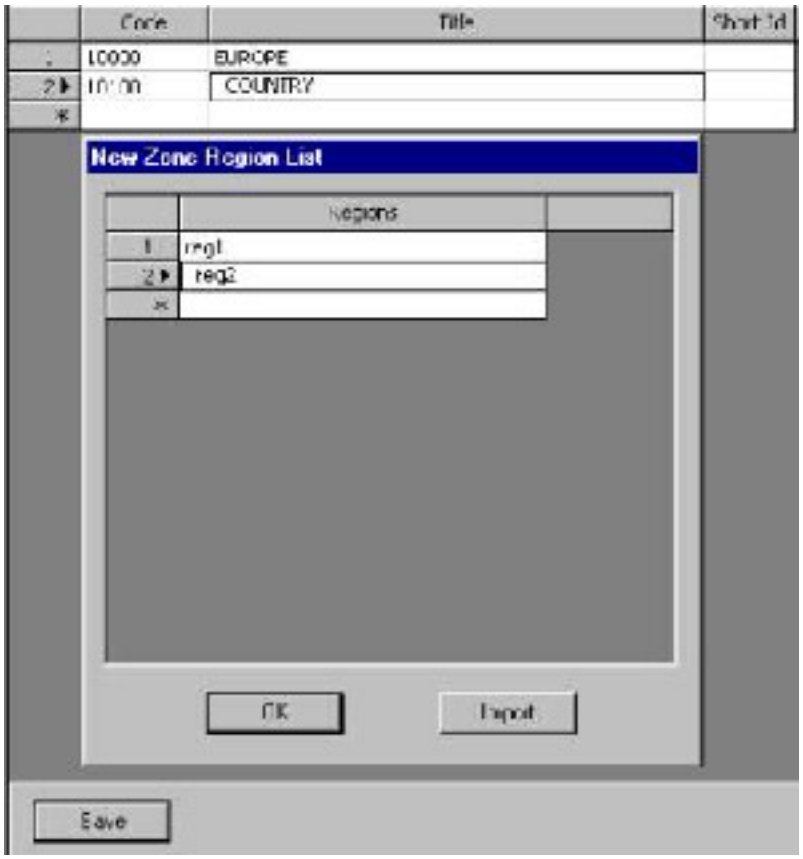
……. ,

where YYYY represents the code for the time point (e.g. year), N# is the DPS code for an indicator (integer), CCCCC is the code for the *main country* or *zone* (e.g. 10000), XXX is the code for a region (the sequential number in the list of zones or regions), Value# is a floating point value for the region. Field separator is detected automatically and could be space, comma, semicolon or tab. *Zone* code CCCCC should be from 10100 up to 19800, and N# should be from 0000 up to 9999.

If the time point is not present in the *zone* time point list, it will be added. If the indicator number is not activated in the *zone* indicators list, it will be activated if this indicator is present in the main indicators list. This means that, when using data import, there is no need also to activate indicators and time points in the appropriate *zone* lists, as this occurs automatically.

It should be pointed out that the production of data import files is probably the most difficult step. The raw national health data or other relevant data to be displayed via DPS-2 are usually accumulated in complicated, often separate databases or data sets, and in different formats. All of these data must be transformed into one harmonized set of indicators before loading into DPS-2. This includes a clear definition of how each indicator is to be calculated and where to fetch data for correct numerators, denominators and other data elements. Then the developer must prepare a special computer program or programs to convert raw data into indicators, i.e. to access and retrieve the necessary raw data elements, to calculate indicators and produce data files in the above format, suitable for import into DPS-2. It may require considerable effort to develop such a converter. However, once this has been done, DPS-2 can subsequently be updated almost automatically.

A.3. Set up zone list



Purpose: to add or remove *zones* when a two-level geographical/administrative division is used.

It is also possible to delete all *zones* (except *main country*) and the system automatically becomes one-level. When a *zone* is deleted, the related data is lost. Use this utility very carefully.

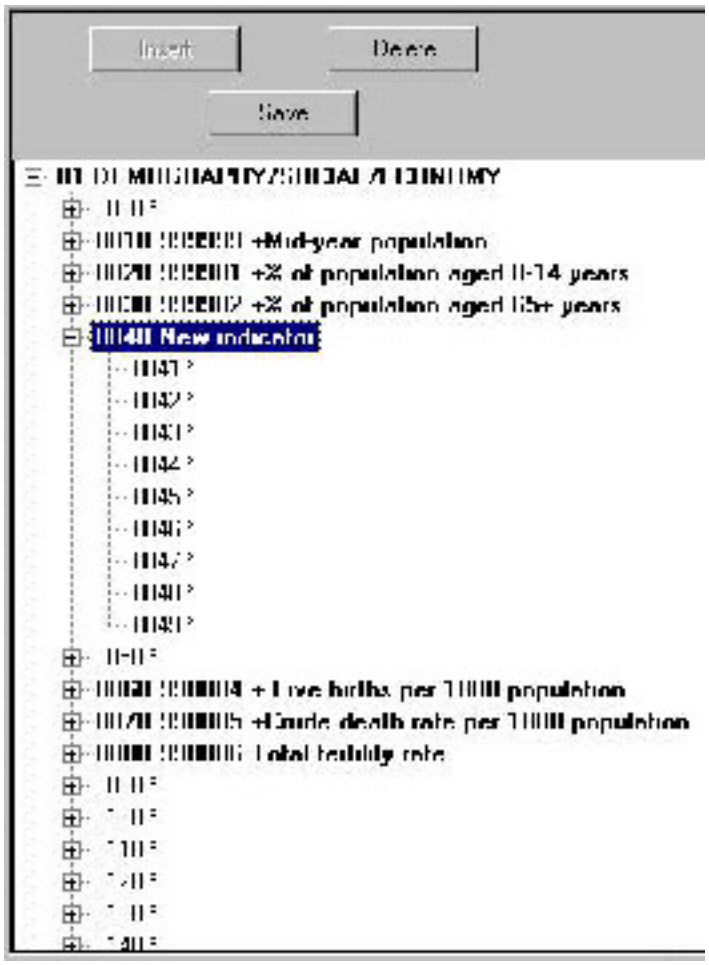
To add a new *zone*, click the "Insert" button. In the CODE field, enter zone code. This code should be 1xx00, where xx is between 01 and 98 and indicates the place of the given *zone* in the *main country* list of *zones*.

In the TITLE field, enter *zone* title (normally the same title as in the *main country* list). In the "Short ID" field, enter the three-character *zone* code. These codes will be added to *region* titles in printouts (to help users to identify to which *zone* a given *region* belongs).

To confirm your options, click "Save". In the next window, enter or import the *region* list of new *zone*. This list must match *zone's* geographical division, i.e. entered in the same sequence as in *zone's* map. You should be very careful in this window, as it will be impossible to insert or delete new *regions* later.

To insert additional regions, use SET UP ZONE ADDITIONAL REGION LIST later. After confirmation, the program creates all necessary data files for one time period and one indicator for new *zone*. Year is taken from the computer's clock.

A.4. Set up main indicator list



Purpose: to manually add/remove/edit indicator titles in the main list of indicators. This utility allows indicators or groups of indicators to be added or deleted, and their titles to be edited.

Indicator list is divided into ten groups, each containing up to 1000 indicators. To edit a group title or indicator title, click on the highlighted field. Group title string may consist of up to 30 symbols and is kept in the file **mainlist.grp**. Main indicator list and groups are general for all *zones* and the *main country.* Free or unused indicators are indicated with an asterisk *.

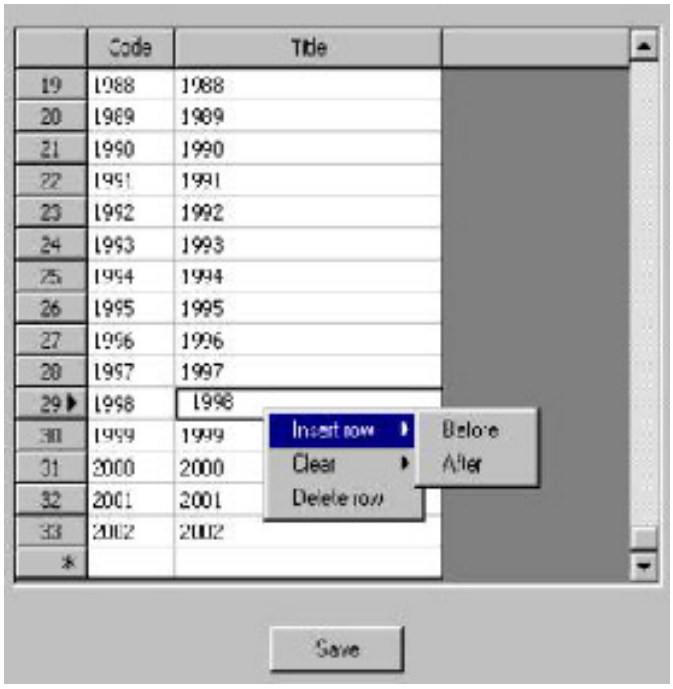
To delete an old indicator, click the "Delete" button. If a first-level indicator is deleted, all second-level indicators become unused and the second level will not be available for this indicator. Be very careful when deleting indicators, lest the indicator be deleted for all *zones*.

To insert a new indicator, choose free indicator place, highlight it and click the "Insert" button. Enter indicator title of up to 128 characters. Do not use an asterisk * at the beginning of the string. It is recommended to mark first-level indicators which will have a second level by adding, for example, a plus sign + in front of the title.

To confirm changes, click "Save". The program rewrites **mainlist.ind** file, then checks all zone indicator lists for deleted indicators. The *zone* data files will be rewritten if indicators are found to be deleted. This operation may be time-consuming, and so we do not recommend deleting indicators from main list very often.

To add many new indicators at once, use "Import main indicator list" utility.

A.5. Set up time point list



Purpose: to add/remove/edit time points in the joint list of time points (e.g. available years).

This tool allows you to add new time points, to delete old ones in the time points list or to edit titles of time points. The code for a time point could be any number from 1 to 9999. The maximum length of the name of a time point is 16 characters. The names of time points should be as short as possible, so that they can easily be shown in graphs. To delete a time point, click the "Delete" button. To insert, click "Insert". To add next point, click on asterisk. To confirm changes, click "Save". Use this utility very carefully, lest all data for deleted time points be lost. This option can also be used to remove old data from the system.

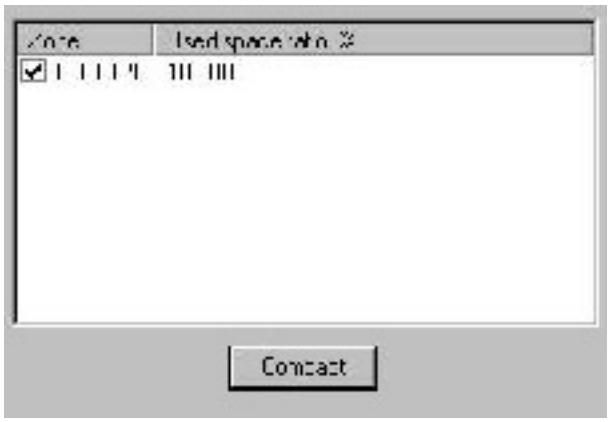
Note: When appropriate, use the right mouse button to open the "Insert/Clear/Delete" dialogue box.

If time points are other than years, e.g. quarters, months or weeks, the developer must establish an appropriate system for time point codes, so as to reserve enough space to insert a new point between two existing points. Example of such a coding system where monthly data are to be used, starting from year 2000:

Code	Title
5001	2000Jan
…	….
5006	2000June
…..	……
5012	2000Dec
5018	2001June

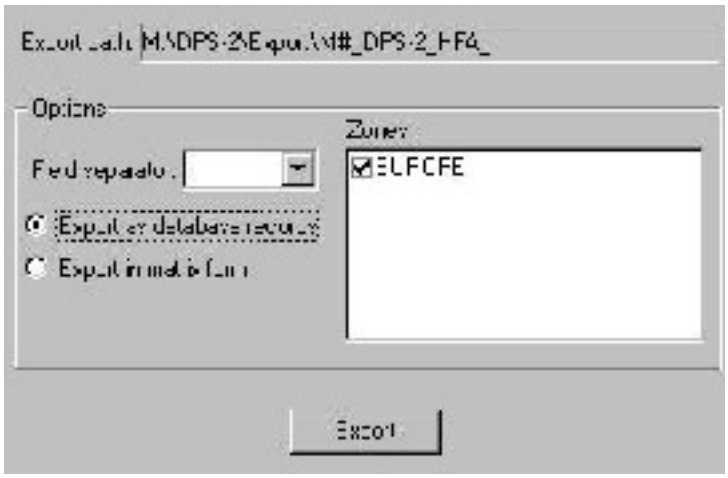
etc.

A.6. Compact data files



Purpose: to release unused disk space after multiple changes of indicator lists. This operation is recommended after a significant number of indicators has been deleted and may be performed when the used space ratio (%) is less then 100.

A.7. Data export

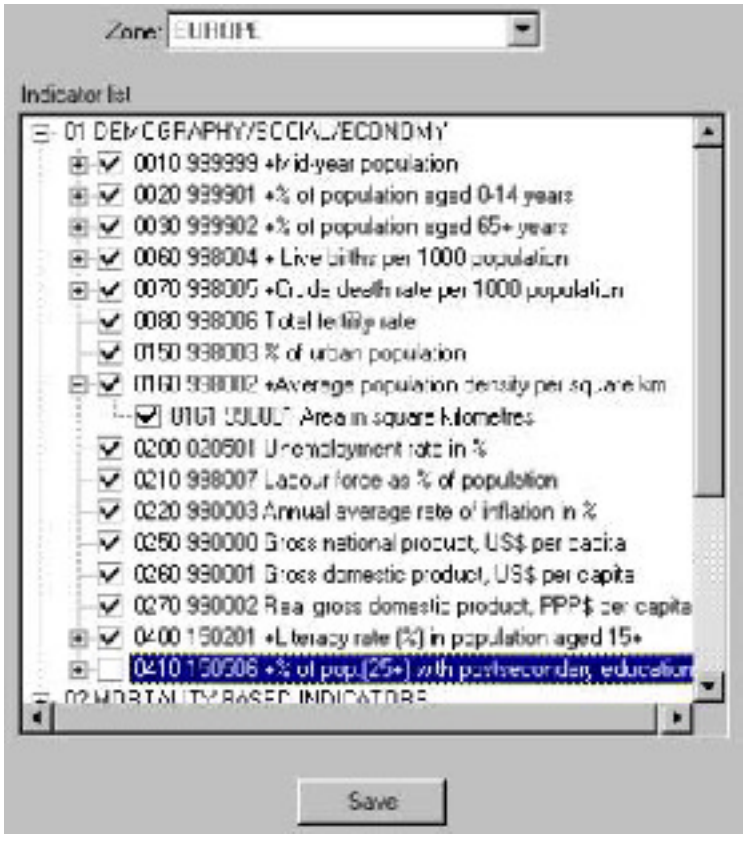


Purpose: to export full DPS data to matrix format or common database record format, if needed for special purposes.

This utility exports data for selected *zones* and for all time points. The output file structure could be as database records or in matrix format (the same formats as for data import). Field separator may be chosen from space, comma, semicolon or tab. For each time point, separate files will be created. File names are the same as the time point codes, and the file extension is csv. Files for indicators, zones, time points, regions, groups and maps will also be exported. This export facility may be used as a back-up in case of accidental data damage. It is recommended to save data by creating export/ import files after each major manual data edit or update.

B. Tools

B.1. Set up zone indicator list



Purpose: to select/deselect active indicators for *main country* or given *zone* from the joint main list of indicators.

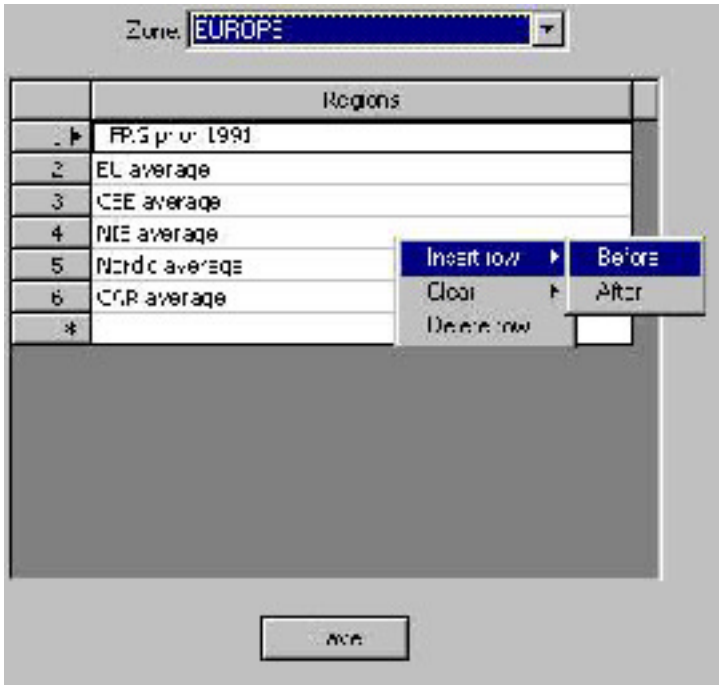
This list indicates which indicators from the main indicator list are active for the current *zone*. By activating only those indicators for which data are available, the developer can save a significant amount of disk space, as the program reserves space for data for active indicators only. Select specific *zone* first and then select appropriate group on the main list. Click on the box in front of the indicator title to activate appropriate indicator. A ✓ sign indicates that the given indicator is active. To deactivate indicator, click once more. If the first-level indicator is deactivated, all indicators from the second level will automatically be deactivated. The zone indicator list must include at least one active indicator. If data are being loaded for a particular indicator, it automatically becomes active. To confirm changes, click "Save" button. Data can only be edited and displayed for active indicators.

B.2. Set up zone region list

Purpose: to edit names of regions in selected *zone*.

The user is not allowed to delete or insert new entries, because the *zone region* list is linked to the appropriate regions on the map. For this reason, the user can only edit region titles. To confirm changes, click the "Save" button. Select *main country* or specific *zone* first, if necessary.

B.3. Set up zone additional region list

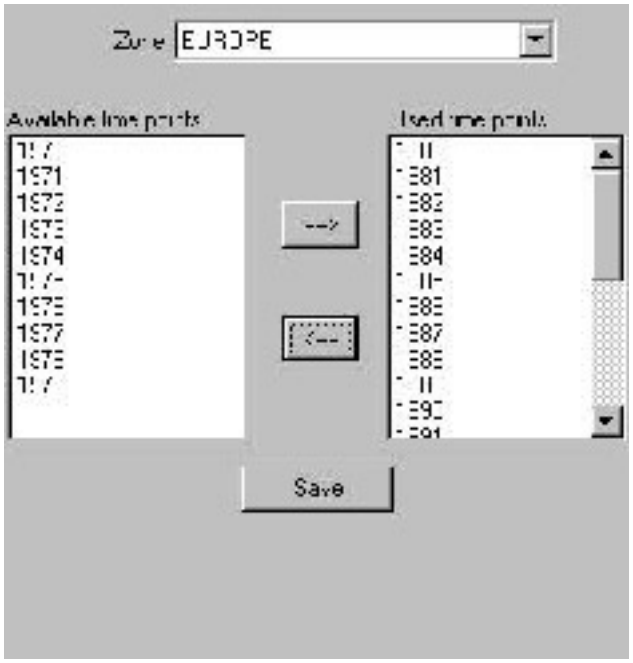


Purpose: to add/delete/edit names of additional regions that are not linked to the *main country* or zone maps. This option allows the addition of new regions that are not suitable to be displayed on a map, for example averages of certain country groups. Additional regions will be included in all of the data display options except the maps.

To confirm changes, click the "Save" button. After changing of the additional regions list, all the data files will be rewritten.

Note: When appropriate, use the right mouse button to open "Insert/Clear/Delete" dialogue box.

B.4. Set up zone time point list



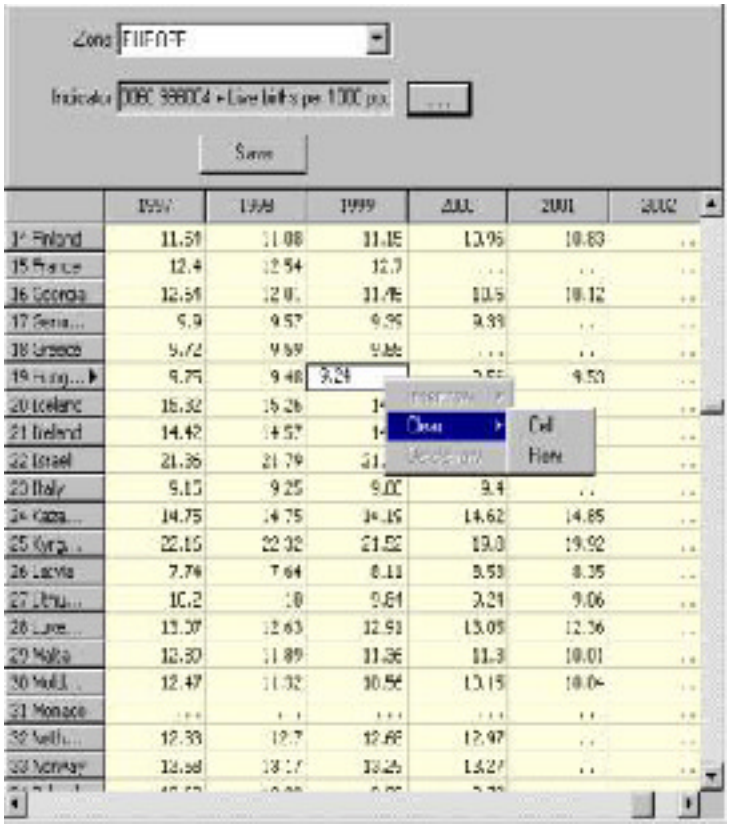
Purpose: to insert/remove time points for selected *zone* from the joint list of available time points (see A.5).

This option allows you to select from all available time points those time points which should be used for selected *zone*, e.g. those years for which data are available. Selection is made by clicking appropriate button in window. To confirm changes, click the "Save" button.

This option can also be used to delete old data from the application.

If, during data import, a new time point appears in the data file, it will automatically be added to the list (if it is a valid time point, i.e. was defined in the joint time point list).

B.5. Edit zone data



Purpose: to manually edit indicator values in selected *zone*.

At the top of the window, the current selection for *main country* or *zone* and the indicator are displayed. The purpose of this tool is to make relatively small data entries or corrections. To make big data changes, it is better to use import tools. To change data for current indicator, enter indicator value (up to eight digits). To indicate data missing, choose "Clear". Click the "Save" button to confirm changes.

Note: When appropriate, use the right mouse button to open "Insert/Clear/Delete" dialogue box.

Screen prompts in national language

DPS-2 can be modified to use any national language. All menu items and other displayed or printed text in the file **wtitles.txt** can be modified or translated by the developer. Text in **wtiles.txt** has the following structure:

'Code' 'English title'='National title'
'Code1' 'English title1'='National title1'
... .

Do not change Code# and text before "=". Use any text editor to enter titles in national language after "=".

DPS-2 uses the **wtitles.bin** file for text conversion. Run program **nat.exe wtitles.txt** to produce **wtitles.bin** file and copy it to DPS-2 directory. **Nat.exe** uses **wtitles.txt** file as an input. Make sure that **wtitles.txt** is in the same directory as **nat.exe**. DPS-2 can work without **wtitles.bin**, but in this case all text will be in English.

Definitions of indicators

Definitions of indicators and any other indicator-specific notes are kept in the binary file, **inddef.bin**, which can be created from simple text files using the **inddef.exe** program. First create file(s) with definitions and/or notes for all or selected indicators used in DPS application. In the case of a large number of indicators, it may be convenient to describe the definitions in several separate text files. You may use any conventional text editor to enter and edit the definitions, but you must save it as a simple .txt file. The first line of each definition should consist exclusively of a header composed of a dot followed by the indicator's DPS code. (Codes commencing with two zeroes may be shortened to two digits by omitting these two zeroes.) All text below this header will be considered as the definition for the corresponding indicator, until the next line commencing with a dot is found. Names of files containing the text of definitions must be listed in the file **inddef.prj**, which is used by **inddef.exe**. For example:

Contents of file **inddef.prj**:	DEF1.TXT
Contents of file DEF1.TXT:	.20
Text of definition for indicator 0020	.30
Text of definition for indicator 0030	etc.

Help text

DPS-2 help files (dps2.hlp) can be produced and edited using a separate tool: Microsoft Help Workshop. To install this software, launch **hcwseteup.exe**. Follow the steps listed below to create a help file:

1. Create new help topics file **dps2.rtf** and save as rich text format (RTF) (or edit an existing file). To learn about Windows Help, launch **cwh.hlp**. This file contains most of the topics in the Help system. File **helpex.hlp** contains topics used as examples in **cwh.hlp**. File **helpref.hlp** contains reference topics for Help macros and the Help project file. These topics are displayed against a grey background, to help distinguish them from the rest of the Help system. For more information, see Help Workshop help.
2. Launch **Help Workshop** program.
3. Open help project file **dps2.hpj**. If necessary, change help file options such as language, code page, compression rate.
4. Compile project file.

Maps

DPS uses boundary files with the **.map** suffix to display data in the form of maps. File names are the same as *main country* or *zone* code, i.e. 10000 or 1**00. In the case of one-level design, there is only one map, representing the *main country*. In the case of two-level design, each *zone* should have its own map, showing its regions. The fully completed two-level application should also have an additional map, showing the *main country* divided into *regions*. The corresponding boundary file of this map should be named **19900.map**.

Map files can be created using **mapmaker.exe** from monochrome bitmap file produced by scanner and ASCII MapInfo Interchange Format (MID/MIF) files. A bitmap file must be in .tif, .bmp, .gif, .jpg or .png format and consist of black and white dots only.

A DPS-2 boundary file is created from a file produced by scanning an appropriate map, which must only contain boundaries of *zones* or *regions*. Follow the steps listed below to create a DPS-2 boundary file:

1. Start **mapmaker**.
2. Open appropriate bitmap file using menu item **File:Open**… . If image width is more than 2048 pixels or height is more than 1536 pixels, mapmaker will reduce the image to the appropriate size, not exceeding 2048 pixels in width and 1536 pixels in height.
3. After the bitmap is read, if boundary lines are greater than one pixel in thickness, use menu item

   Tools:Thin lines or  button from **Tools** control window to reduce lines to one pixel.
4. The next possible step is the editing of the bitmap for your needs. For this purpose, **mapmaker** has a built-in bitmap editor. It is possible to select the following tools:
   - **Eraser** - use menu item **Tools:Erase** or  button.
   - **Pen** - use menu item **Tools:Pen** or  button.
   - **Line** - use menu item **Tools:Line** or  button.
   - **Ellipse** - use menu item **Tools:Ellipse** or  button.

   Mapmaker also facilitates rollback to previous image after each editing operation. Built-in cache can hold up to 64 items or image operations. To return to previous image, use menu item **Edit:Undo** or  button.

   Also, it is possible to enlarge the entire image, in order to undertake more complicated corrections. The following tools exist for this purpose:
   - **Enlarge** (Zoom in) - use menu item **Tools:Zoom:Zoom** in or  button. Image can be enlarged up to 5 times original size.
   - **Reduce** (Zoom out) - menu item **Tools:Zoom:Zoom** out or  button.
   - **Original size** - menu item **Tools:Zoom:Original** size or  button.
5. The map is built up by selecting appropriate *zones* or *regions*, one by one. The areas must be selected in the same order as they are listed in the appropriate DPS list of *zones* or *regions*, otherwise they will have to be resorted later to correspond to these lists. If one area is completely inside of a larger area (e.g. a city in the centre of a county), the larger area **must be selected before the smaller one**, otherwise the smaller area will be covered and will be not visible on the screen.

To start the selection of a particular area, cut this area from the whole image. The cutting is possible when image has its original size or **Original size** button is greyed. Place the cursor above and to the left of the area and keep the left mouse button pressed.

Draw a rectangle a bit larger than the area and release the mouse button. The area must be fully inside the rectangle. If the rectangle is too small, restore the full map with **Tools:Selection:View bitmap** or use button and repeat this step.

6. The next step is to clear away all unnecessary lines and dots around the selected area. The cursor now appears as a small rectangle. Clicking with the left mouse button clears the area inside this rectangle. It is particularly important to remove all dots and lines above the selected area and to cut off all boundaries of the neighbouring areas.

7. The next step is to digitise the boundary of the selected area, i.e. to find coordinates for certain points on the boundary. Select menu item **Tools:Selection:Extract** points or button and a new area is drawn on the screen, using cross-diagonal hatch brush and red border colour:

   If the shape of this area is the same as the original area, the coordinates are correct and this area can be accepted. If the shape of the new area is not acceptable, restore the original map using menu selection **Tools:Selection:View bitmap** or the corresponding button on the toolbar and repeat all steps from step 5 more carefully.

8. If the shape of the selected area is acceptable, it must be added to the map being built for DPS. Select menu item **Tools:Selection:Add region** or button. The request to define region properties will be displayed. In the event that the given area is part of the previously processed one (**sub-region**, e.g. an island which is for administrative purposes a part of the previously processed region on the mainland), make sure that the "New region" box is not checked. In this case, the same name as the previous area will automatically be used. Click "OK". The program now returns to original map view and all added regions will subsequently be drawn on the screen using transparent cross-diagonal hatch brush and red border colour:

9. If there is a need to modify the list of already processed (selected) regions, i.e. delete some or all regions or change the order of regions, use menu item **Edit:Regions**… . This command is available when the region list is not empty. The left side of the "Regions" window is used to allocate region list and three buttons: "Up", "Down" and "Delete". The right side is used to draw the regions map. Currently processed regions in the list are drawn in red on the right-hand side of the map. To select a region on the map, left-click inside the region. To select the next region, press and hold the Shift key and left-click inside the next region. To change selected/highlighted region position in the list, use **Up** or **Down** button. To delete a region from the list, use the **Delete** button. The selected region is redrawn with a grey rectangle around it and the **Delete** button becomes available. Click "OK" to save changes and return to the original map.

10. When all regions have been processed, click on menu item **Tools:View map** or button to create DPS map file. The "Map regions" window will be opened to set up map region list.

    This window is only displayed the first time round. Thereafter, the program goes directly to the "Region map" window. The "Available regions" list on the left consists of the regions currently not included in the map. By default, it is empty. The "Used regions" list on the right consists of the regions included in the map. By default, it consists of all extracted regions. The next two buttons, ➔ and ←, are used to add regions to the map or delete regions from the map, respectively. The ➔ button is available when one or more items are selected/highlighted in the "Available regions" list. The ← button is available when one or more items are selected/highlighted in the "Used regions" list. "Up" and "Down" buttons are used to change the order of the map regions. The **TAB** key is used to set input focus to "Used regions" list, and the "Up" and "Down" buttons then become active.

The item that currently has input focus is highlighted with a grey border. Use "Up" and "Down" buttons to navigate position of the item in the list that is in focus. Use arrow keys to change focus item.

When the map regions list is correct, click "OK". The program opens "Region map" window. Use the mouse in the usual way to select and change the size of the map and to move it to the most appropriate position on screen. Move windows for legend, region average and time point to the most appropriate positions on the screen.

Select menu item **Options** to set up map regions list.

Select menu item **Save** to save map data to disk.

To return to original map view, select menu item **Close** or  button on the top right of the window.

11. After the above steps, the file **10000.map** will be created in directory \DATA\C#_MAPS_map19 where **mapmaker.exe** is located, if, for example, file C:\MAPS\map.19.tif was opened in step **2**.
12. In the case of a complicated map with a large number of zones/regions, it may be necessary to stop this process before the map is finished. To save the current state of the bitmap, all extracted regions and map data, select menu item **File:Save bitmap data** … . Set location and name of the new file. This will create a file with a .bsd suffix. To continue map creation next time in step **2**, select file type .bsd.

Follow the steps listed below to create DPS-2 boundary files from ASCII MapInfo Interchange Format (MID/MIF) files:

1. Start **mapmaker**.
2. Open appropriate **mif/mid** file using menu item **File:Open** … . In the **Options** window, set up some **mif/mid** map parameters: identification code (must be unique) and name columns, map levels information and final size of the map in pixels (from 640x480 up to 1600x1200 resolution). For more complicated maps, select better resolution. If mif/mid file consists of a single map, code divider is usually set to 1.

   A map or map tree is shown on the left-hand side of the screen and the currently selected portion of the map tree is drawn on the right. Because any map region can consist of several parts (biggest being **main region** and others being **sub-regions**), **main region** is filled in light grey and **sub-regions** in white. Currently selected or active tree region is filled in corresponding red colour on the right-hand side.
3. The next step is to adapt mif/mid map(s) to user needs, i.e. to remove unused and very small (invisible) sub-regions. This can be done using the following tools:
   - **Filter** - Use menu item **Edit:Filter** or  button to reject sub-regions smaller than desired size in %.

     If size parameter is 0.0, filtering is turned off.
   - **Delete** - Use menu item **Edit:Delete** or  button to remove selected sub-regions on the map.

     All selected regions on the map are highlighted with a grey rectangle around. To select a region, left-click with cursor inside the region. To select next region, use the Ctrl key. For multiple selection in a particular area, place the cursor above and to the left of the area. Press the left mouse button and keep it depressed. Draw a rectangle a bit larger than the area and release the mouse button. The regions which are fully inside the rectangle will be marked as selected with a grey rectangle around.

   To restore the previous state of the map, use menu item **Edit:Undo** or  button.

4. When the map region list is to be approved, click menu item **Tools:View map** or  button to create a DPS map file.

   The "Map regions" window will be opened to set up a map region list. This window is displayed only the first time round. The next time, the program goes directly to the "Region map" window. The "Available regions" list on the left consists of the regions not currently included in the map. By default, it is empty. The "Used regions" list on the right consists of the regions included in the map. By default, it consists of all extracted regions. The next two buttons, ➔ and ➔, are used to add regions to the map and delete regions from the map, respectively. The ➔ button is available when one or more items are selected/highlighted in the "Available regions" list. The ➔ button is available when one or more items are selected/highlighted in the "Used regions" list. "Up" and "Down" buttons are used to change the order of the map regions. When the **TAB** key is used to set input focus to "Used regions" list, "Up" and "Down" buttons become active. The item that currently has input focus is highlighted with a grey border. Use "Up" and "Down" buttons to navigate position of the item in the list that has focus. Use arrow keys to change focus item.

   Click "OK". The program opens the "Region map" window. Use the mouse in the usual way to select and change the size of the map and to move it into the most appropriate position on screen. Move windows for legend, country average and time point to the most appropriate positions on the screen.

   Click menu item **Options** to set up map regions list.

   Click menu item **Save** to save map data to disk.

   In the case of two geographical levels, click menu item **Tools:Append to small region map** to add map regions to small regions map and click menu item **Tools:Delete from small region map** to remove map regions from small region map.

   To return to original map view, click menu item **Close** or  button on the top right of the window.

5. All map files will be created in the directory \DATA\C#_MAPS_map19 from **mapmaker.exe** location, if, for example, file C:\MAPS\map.19.mif was opened in step **2**.

6. In the case of a complicated map with a large number of zones/regions, it may be necessary to stop this process before the map is finished. To save map(s) in current state, click menu item **File:Save mif data** … . Set location and name of the new file. This will create a file with the suffix .msd. To continue map creation next time in step **2**, select file type .msd.

Opening screen

An application-specific opening screen can be used as application title, to help identify various DPS applications. When DPS-2 is started, the program first looks for the file **front.bmp** and displays the contents on the screen for 5 seconds. This file may contain the title of the application, e.g. "National database of health indicators", the producer, date of update and any other relevant text and/or image. Use standard Windows accessories (e.g. Paint) to produce your **front.bmp** file and save it as 256-colour bitmap. (RLE compression may be used.) See **front.bmp** file in the European HFA-DB application as an example. If **front.bmp** is missing in the DPS-2 directory, the program skips this step and starts from the main menu window.

User version for distribution

The new DPS-2 application can be considered to be complete and ready for distribution to users if the following steps have been completed and the corresponding files created:

- The list of indicators has been defined and titles imported.
- Complete lists of regions and time points have been defined.
- All available data for defined indicators, regions and time points have been imported.
- Indicator definition file has been created.
- Help text file has been created.
- Map files have been created.
- File with prompts in national language (if needed) have been created.
- Opening screen file has been created.

As mentioned earlier, the developer's program modules should be removed from the package for distribution to data users. The package can be distributed on CD, made available via LAN or downloaded from the Internet. In the event of distribution over the Internet, files should be compressed to make downloading easier. The user version of the DPS-2 package includes the following set of files. (You can also examine the HFA-DB file set content from www.euro.who.int/hfadb.)

DPS2.EXE - the main program, starts the application. Can be renamed for different applications.

10000..**** - data for *main country*

100.****** - data files for existing zones with regions (in the event of two-level system only) and time points (e.g. 10100.2003, 10500.2003).

100.IND** - list of active indicators for zone **.

100.PAR** - zone parameters files.

100.MAP** - map files.

MAINLIST.IND - main indicator list.

MAINLIST.GRP - titles of indicator groups.

CLIST.BIN - list of zones having regions.

WINDPS.CFG - DPS-2 configuration parameters.

TMPLIST.IND - list of temporary indicators.

DPS2.HLP - Help text.

FRONT.BMP - opening screen picture.

INDDEF.BIN - definitions and notes.

WTITLES.BIN - text of menu items and other screen prompts.

CID.BIN and **TMSCL.BIN** - special files.

IND.SAV and **REG.SAV** - saved user selections of indicators and regions (optional).

Notes