

# TimeTransf Demonstration

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## What is TimeTransf

TimeTransf module is used to preprocess data containing time series to be used with LISp-Miner. This is done by computing characteristics for each time series. You define your own characteristics depending on which information you need to gain from time series.

For using module TimeTransf your database must contain at least one event matrix (table with time series).

## Easy guide for TimeTransf

### Choosing database

The first step to use TimeTransf is to choose working database. The best way how to create database as ODBC source is using LMAdmin module. In this example we will use Stulong database and Stulong Metabase created by LMDataSource module with already defined attributes.

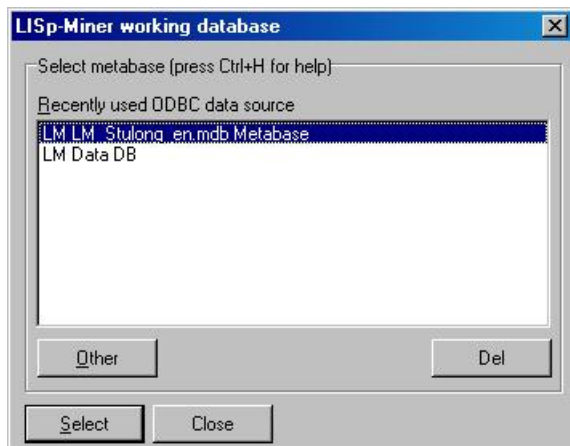


Figure 1: Choosing the database

## Main interface

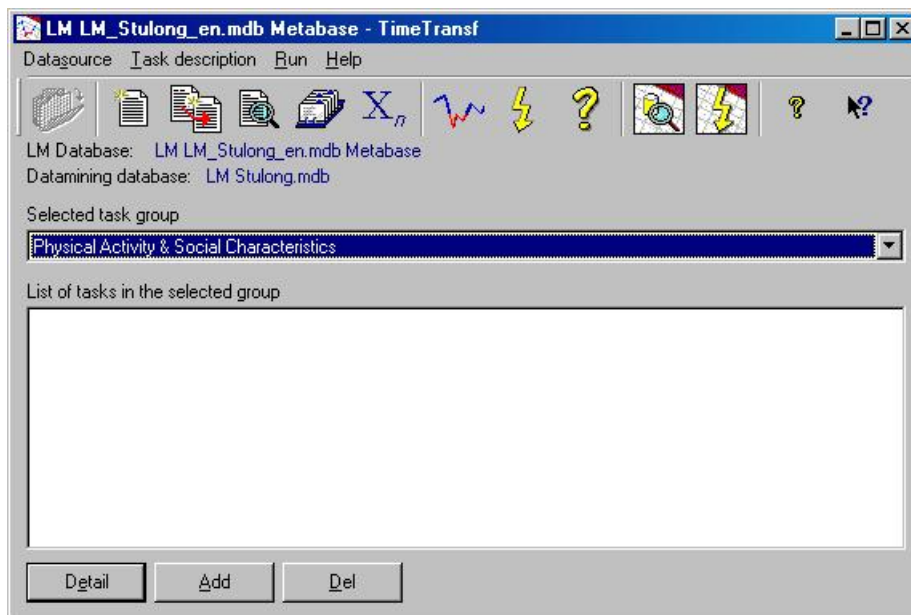


Figure 2: Main interface

Main interface is divided into five parts.

- First part contain button bar that is used for easy navigation and simple starting of most frequently used functions.

**Button bar** offers access to most frequently used functions.



opens Basic task parameters window and creates a new task



copies the selected task including its characteristics to a task with the same name but ending in “– cloned”



opens Task detail window



opens Group of tasks window



opens Variable list window



opens Graphs & Analysis window



runs the task



opens Results window



runs LM DataSource module



runs 4FT-Task module



opens About window

- Second part contains
  - LM Database name of metabase that is used
  - Datamining database name of database
- Third part contain groups of tasks that were created before
- Fourth part contain list of tasks if empty no tasks were created for selected groups of tasks
- Fifth part contain of three buttons
  - Button **Detail** show detailed information about selected task
  - Button **Add** allow you to add new task for selected group of tasks
  - Button **Delete** just delete selected task

To create new task press “Add” button.

## Creating new task

### Adding new task

The 'Basic task parameters' dialog box is shown with the following details:

- Name:** Ukol 1
- Group of tasks:** Physical Activity & Social Characteristics
- Comment:** - Komentář k úkolu 1
- Buttons:** OK, Cancel

Now you can set name of task (here Ukol1), group of tasks and comment to created task.

### Setting parametr of new task

The 'Task detail' dialog box is shown with the following details:

- Basic parameters:**
  - Name: Ukol 1
  - Comment: "- Komentář k úkolu 1"
  - Group of tasks: Physical Activity\_Social Characteristics
  - Owner: PowerUser
- Field for key items:** KONTR.ICO
- Results data matrix:** Results\_Ukol\_1
- Buttons:** Edit, Variables definition, Edit SQL query
- Characteristics Table:**

Name	Type	Function	Variable	Condition
- Bottom Buttons:** Close, Detail, Add, Clone, Del, Run, Results

After adding new task you can set its parameters. On screen you can see four parts:

- First is called **Basic parametrs** that are parametrs, that you created in previous step. It means name of task, group of task, comment made to task and owner of task.

You can use EDIT button to edit this setting.

- Second part contains important functions.
  - **Field for key items** – this is selection of key item in data matrix (in our example the key for matrix KONTR is ICO).
  - **Results data matrix** name of data matrix where results shall be saved.

There are two buttons as well “VARIABLE DEFINITION” and “EDIT SQL QUERY”.

### Variable definition

Variables list enables to manage variables by

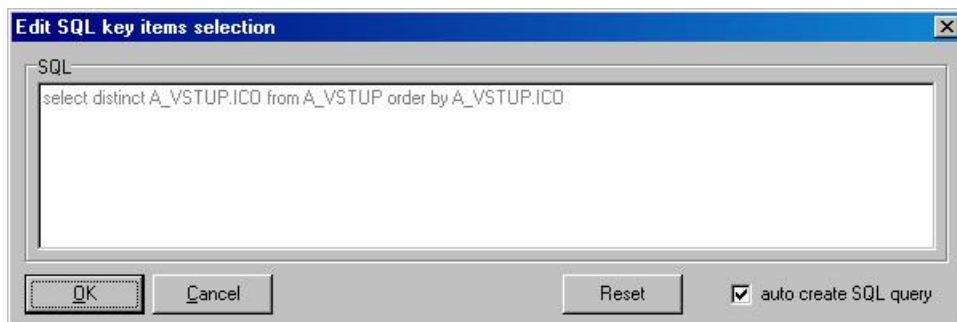
- **Detail** opens Variable detail window where it is possible to set all data fields of the given variable
- **Add** add new variable
- **Del** delete selected variables
- **Clone** make a copy of created task

Variables serve for the calculation of characteristics. Each variable relates to one particular table containing time series. Each variable consists of four data fields describing time series. Note: Variables are defined globally within the current metabase which means you can use it in all tasks.

The name of the variable identifies it the whole TimeTransf module. Each variable consists of the following data fields (all four data fields relate to the entered variable matrix):

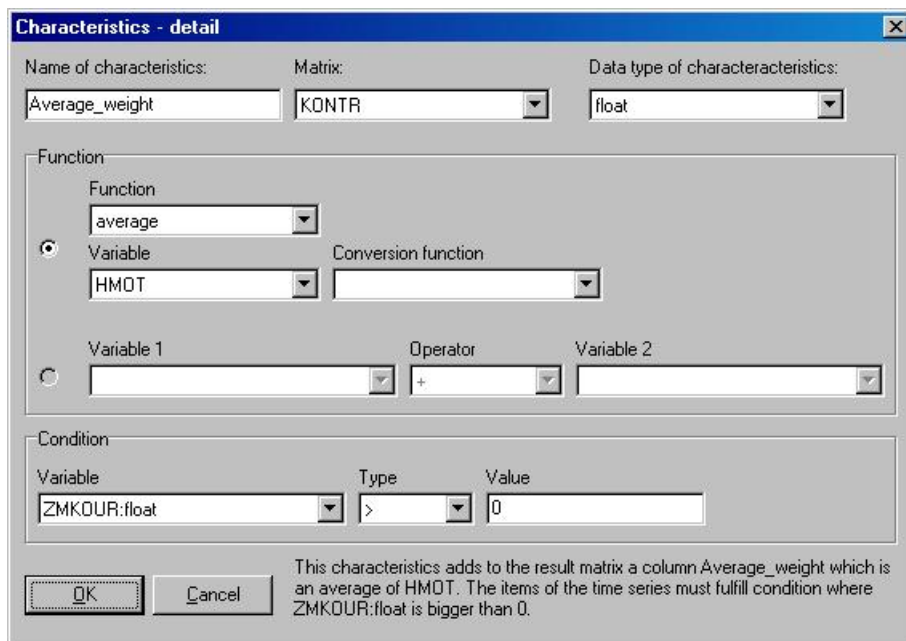
- **Variable name** name for this variable
- **Variable matrix** the name of one particular table containing time series (here KONTR)
- **Key item relation** this data field relates directly to key items field in key table
- **Field for date/time** the time information about individual events in time series
- **Value variable** the actual numeral values of events
- **Symbol variable** enables to separate or eliminate certain events by setting desirable conditions (if you do not want to use conditions leave Symbol variable as is). To describe how symbol variable works we will fill attribute KOURENI.

## Edit SQL query



Window for editing SQL query enables specification of selection of key items. Such specification enables elimination of needless time series in order to speed up the calculation. It is necessary to keep SQL conventions especially the 'distinct' must be included

## Adding new characteristics



Now we have set variables for our first task. We will try to get average weight of patient during time period.

- **Name of characteristics** appears also as the name of a column in the results matrix name of task
- **Matrix** sets the matrix on which the characteristics is calculated
- **Data type of characteristics** sets the data type of a particular column in the results matrix

## Function

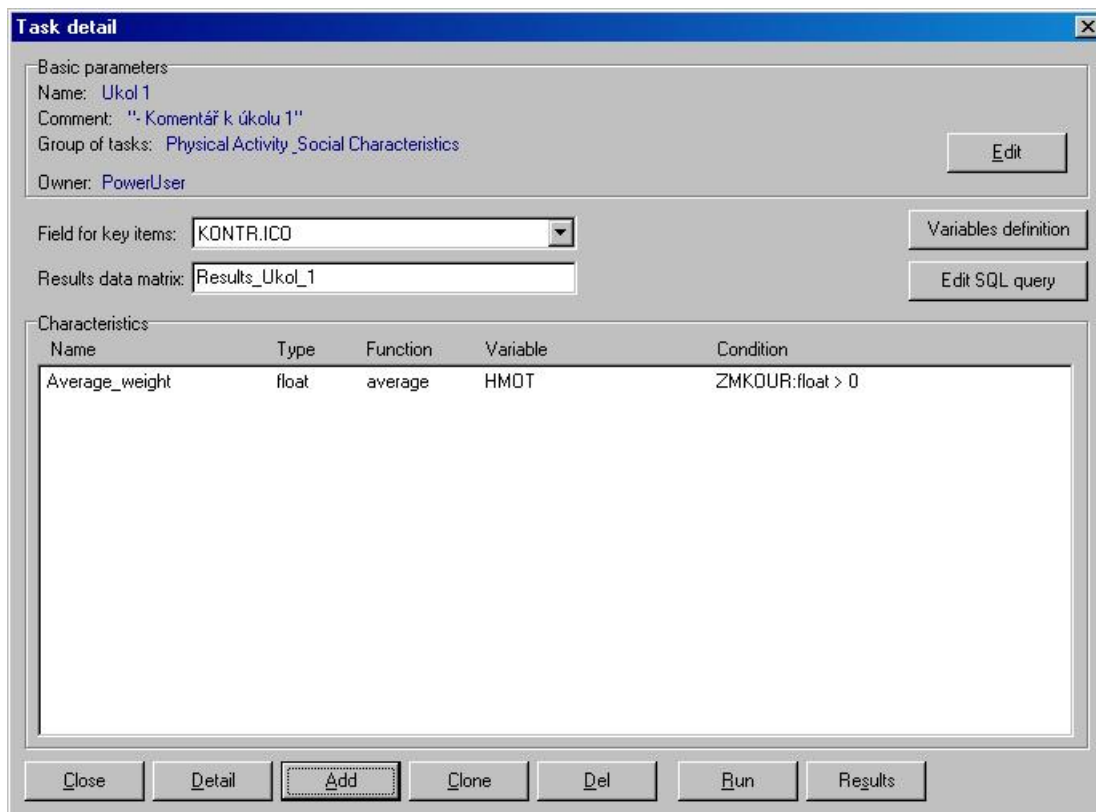
We want to see average weight of people who do not smoke so we must select AVERAGE in Function Field for variable VAHA.

Here is list of all available functions in TimeTransf.

## Condition

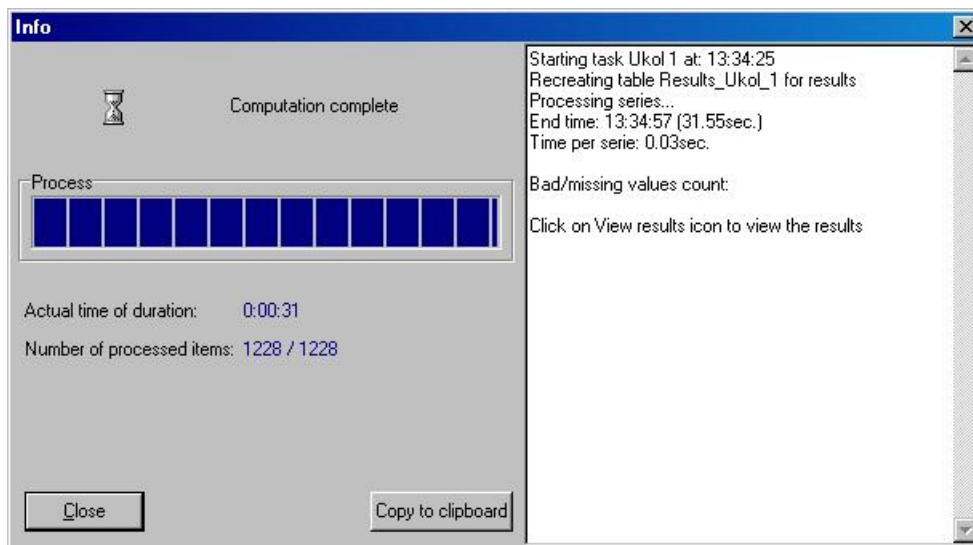
Condition variable is possible to select only within the selected matrix. Condition variable displays as the name of variable and its data type. It is possible to select from the fields value, date/time or symbol. With the field date/time it is also possible to extract only e.g. year, day in week or minute. If you don't need to set condition it is necessary to leave Condition variable set to "none". In the Condition field it is possible to select a comparison operator (=, <>, <, >) to compare with the value entered in the field Value. It is possible to enter more than one value separated by commas in the field Value, in such a case the logical operator OR will be used in the calculation. We want people who changed their behavior in smoking (that was created Symbol variable ZMKOURENI in previous step). People who did not change their smoking behavior have attribute  $ZMKOURENI > 0$ .

## Created characteristic



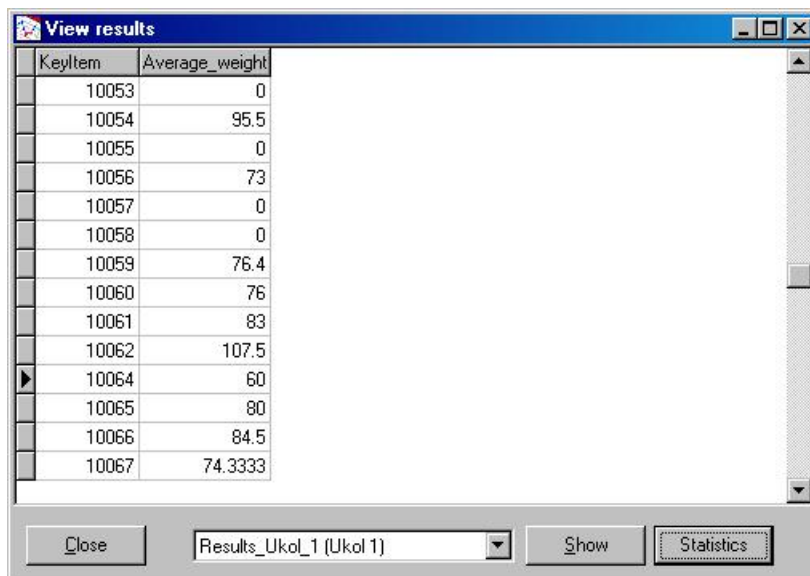
So now we have characteristic we can run TimeTransf by pressing RUN button.

## Running task




You can see progress dialog of TimeTransf be patient this can take several minutes. After finishing Close the windows and select RESULT button to see results of task.

## Result windows

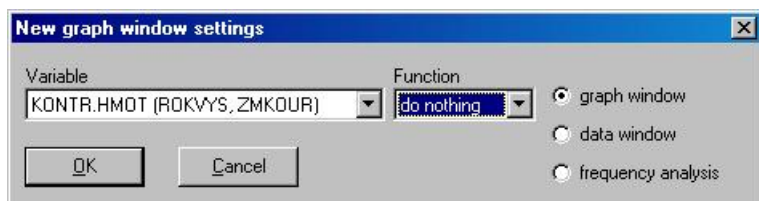


TimeTransf shows the results of the task we see average weights of patients who changed their smoking behavior. Patients who did not change smoking behavior or did not smoke has zero as a result of task.

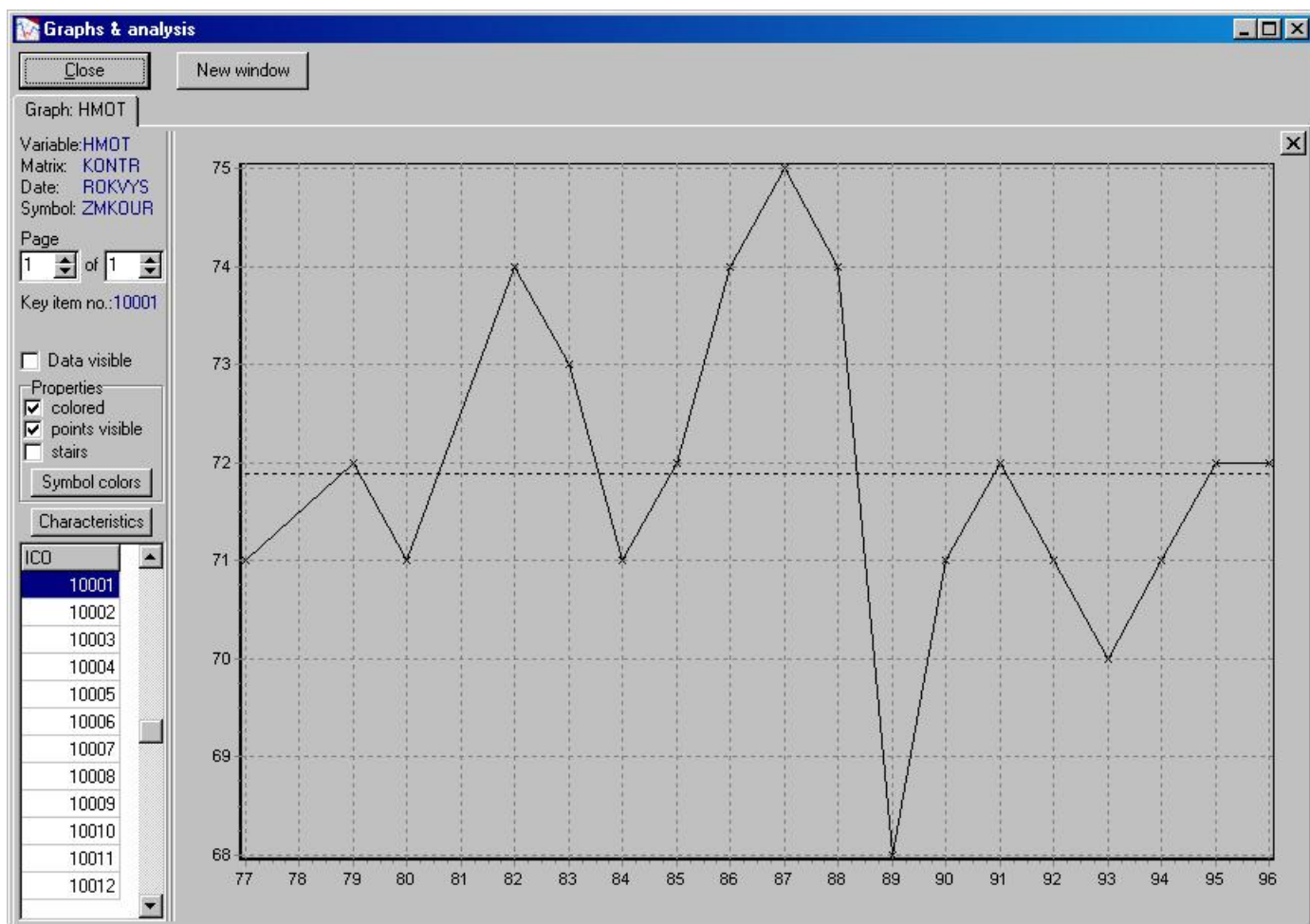
## Graph

Now with created task and results you can use Graph function in main interface. Press  Data, graphs & analysis.





- Field variable you can see all variables defined in previous steps! So you must choose which variable is related to specific task.
- Function – you can define which function will be used for generating graph
- Demanded output of graph



Finally we see graph of first patient and changes during time period.