



i2b2 Help Documentation
Table View Plug-in

Document Version: 1.1
I2b2 Software Version: 1.4

i2b2 Table View

The Table View is designed to compile the requested data and display the information in a graphical representation.

Table of Contents

[I2B2 TABLE VIEW](#)

[SELECT PATIENTS TAB](#)

[LAYOUT OF THE SELECT PATIENTS TAB](#)

[Patient Set Information](#)

[Patient Information Section](#)

[ADD PATIENTS](#)

[From Previous Query View](#)

[From Workplace View](#)

[DELETE/REMOVE](#)

[Delete All Patients](#)

[Delete Single Patient](#)

[Delete Multiple Patients](#)

[MOVE PATIENT](#)

[Move Patient Up](#)

[Move Patient Down](#)

[SELECT CONCEPTS TAB](#)

[LAYOUT OF THE SELECT CONCEPTS TAB](#)

[Concept List](#)

[ADD CONCEPTS](#)

[From Navigate Terms View](#)

[From Find Terms View](#)

[From Workplace View](#)

[DELETE/REMOVE](#)

[Delete All Concepts](#)

[Delete Single Concept](#)

[Delete Multiple Concepts](#)

[MOVE CONCEPTS](#)

[Move Concept Up](#)

[Move Concept Down](#)

[SETTING CONSTRAINTS](#)

[Date Constraint](#)

[SPECIFIED DATE RANGE: FROM AND TO DATES DEFINED](#)

[SPECIFIC START DATE: ONLY THE FROM DATE IS DEFINED](#)

[SPECIFIC END DATE: ONLY THE TO DATE IS DEFINED](#)

[SETTING THE DATE CONSTRAINT \(FROM/TO DATE RANGE\)](#)

[SETTING THE DATE CONSTRAINT \(FROM DATE ONLY\)](#)

[SETTING THE DATE CONSTRAINT \(TO DATE ONLY\)](#)

[Value Constraint](#)

[SETTING THE VALUE CONSTRAINT \(FLAG\)](#)

[SETTING THE VALUE CONSTRAINT \(TEXT\)](#)

[SETTING THE VALUE CONSTRAINT \(NUMERIC\)](#)

[RENDER TABLES TAB](#)

[CREATING TABLES \(VISUALIZATION\)](#)

[Cancel Rendering Tables](#)

[Default Views](#)

[COMMON CHARTS](#)

[Histogram](#)

[Pie Chart](#)

[Line Chart](#)

[CONTROL PANEL](#)

[Menu bar](#)

[File Menu](#)

[Load Table](#)

[Save Table](#)

[Save Selection](#)

[Output Selection](#)

[Edit Menu](#)

[Edit Table Columns](#)

[Set Default Mapping Oder](#)

[Create Table from Selected Rows](#)

[Delete Item](#)

[Java Script Window](#)

[Beanshell window](#)

[View Menu](#)

[NAVIGATION IN VIEWS](#)

[Zoom In/Out \(Axis Displays on Views\)](#)

[Zoom In](#)

[Zoom Out](#)

[Pan across](#)

[Pan Up & Down](#)

[Save Images](#)

[Save PDF](#)

[VIEWS](#)

[Table View \(!\[\]\(fed825e7856867ee486f6761f9a89d91_img.jpg\) \)](#)

[Table View Features](#)

[Column Descriptions](#)

[Column Adjustments](#)

[Copy](#)

[Adding a Table](#)

[Editing a Table](#)

[Saving a Table](#)

[Removing a Table](#)

[Cluster Rows \(!\[\]\(dd33652849c8e9399cc4230af88d276a_img.jpg\) \)](#)

[Cluto Cluster \(!\[\]\(a3a7cedfdf1046b3481312a851ed6b42_img.jpg\) \)](#)

[Algorithms](#)

[Criterion Functions](#)

[Graph-Partitioning-based clustering algorithms](#)

[Additional Features](#)

[Compare Columns \(!\[\]\(b2dcf1509ce1a0f1f2ad74ebf4e549d7_img.jpg\) \)](#)

[Compare Rows \(Parallel Coordinate\) \(!\[\]\(d00fc04377caa3ed65ff95a660ca17f8_img.jpg\) \)](#)

[Graph Columns \(!\[\]\(0fca0cddfebbc0e1a8037f272fc9f119_img.jpg\) \)](#)

[Histogram \(!\[\]\(278eac8896d7ca2faff4c0ffb1509c39_img.jpg\) \)](#)

[Histogram Editor](#)

[Histograms \(!\[\]\(736f65cbe2d4fa50379ff28ce893d31e_img.jpg\) \)](#)

[Histogram 3D \(!\[\]\(c5160aa4b7c7ddb8ed9626f69a84e19d_img.jpg\) \)](#)

[Java 3D \(!\[\]\(5636e503bb95f8b6aa095d1cf3beb772_img.jpg\) \)](#)

[Pie Chart \(!\[\]\(602350a869486f3ad241b041426ed2f5_img.jpg\) \)](#)

[Plot 3D \(!\[\]\(005e4773ca4fd6560cbfbbf37ab77167_img.jpg\) \)](#)

[Row Graphs \(!\[\]\(8133f8019ab06465554d330c1c6f4baa_img.jpg\) \)](#)

[Scatter Plot \(!\[\]\(125d701e9425b54c764340b5671b38cd_img.jpg\) \)](#)

[Scatter Plot Icons \(!\[\]\(21199eb166cc97331a0c54c649195dcc_img.jpg\) \)](#)

[Span Plot \(!\[\]\(2bdfe261b986065ee0ac76460d6528c9_img.jpg\) \)](#)

[Select by Regular Expression Mapping \(!\[\]\(dfbd6b3763a6d1d9afaa974f64e2e4b5_img.jpg\) \)](#)

Select Patients tab

The patients to be used when rendering tables in the Table View are defined in the Select Patients tab. Patients can be added on an individual basis or by adding a group of pre-defined patients known as a Patient Set or Patient List. In addition to adding patients, users can remove patients as well as change the order of the patients.

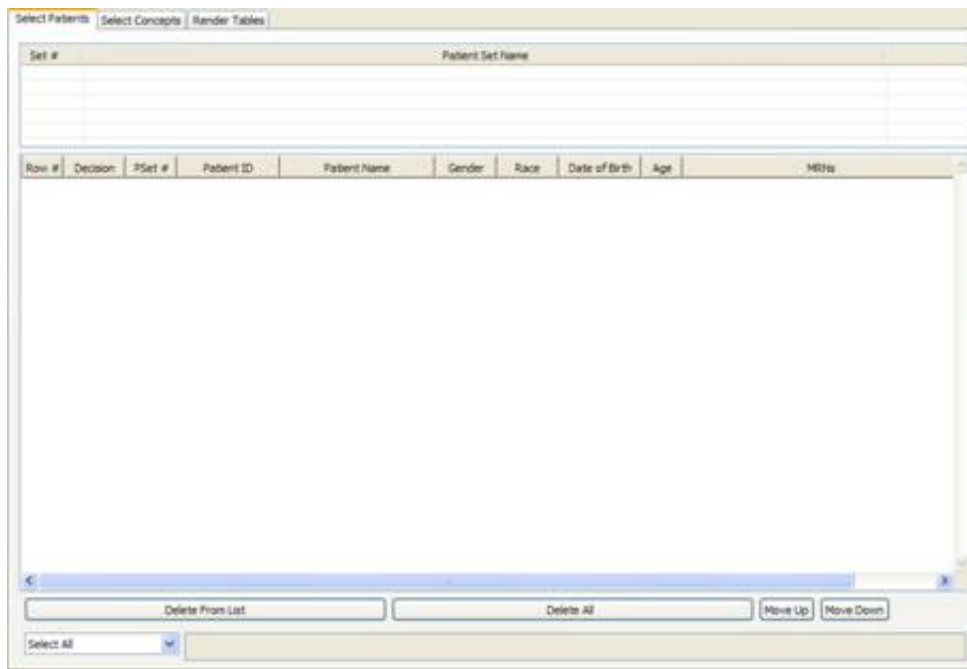


Figure 2.0 Select Patients tab

Layout of the Select Patients tab

Patient Set Information

Contains information about the patient set(s) used when creating the list of patients to be used when rendering the tables.

Patient ID	Unique number for the patient. Used to identify the patient and their associated records.
Patient Name	Name of the patient.
Gender	Patient's gender.
Race	Patient's race.
Date of Birth	Patient's date of birth. Date will appear as follows: YYYYMMDDHHMMSS
Age	Patient's age
MRNs	Medical Record Number(s) associated with the patient.

Add Patients

Patients can be added to the Table View by simply dragging the patient set from either the Previous Query View or the Workplace View.

From Previous Query View

1. Expand the previous query that contains the set of patients that you want to add.
2. Click on the **Patient List** and drag the item over to the **Table View**.
3. Drop the patient list into the patient information section (figure 2.3).

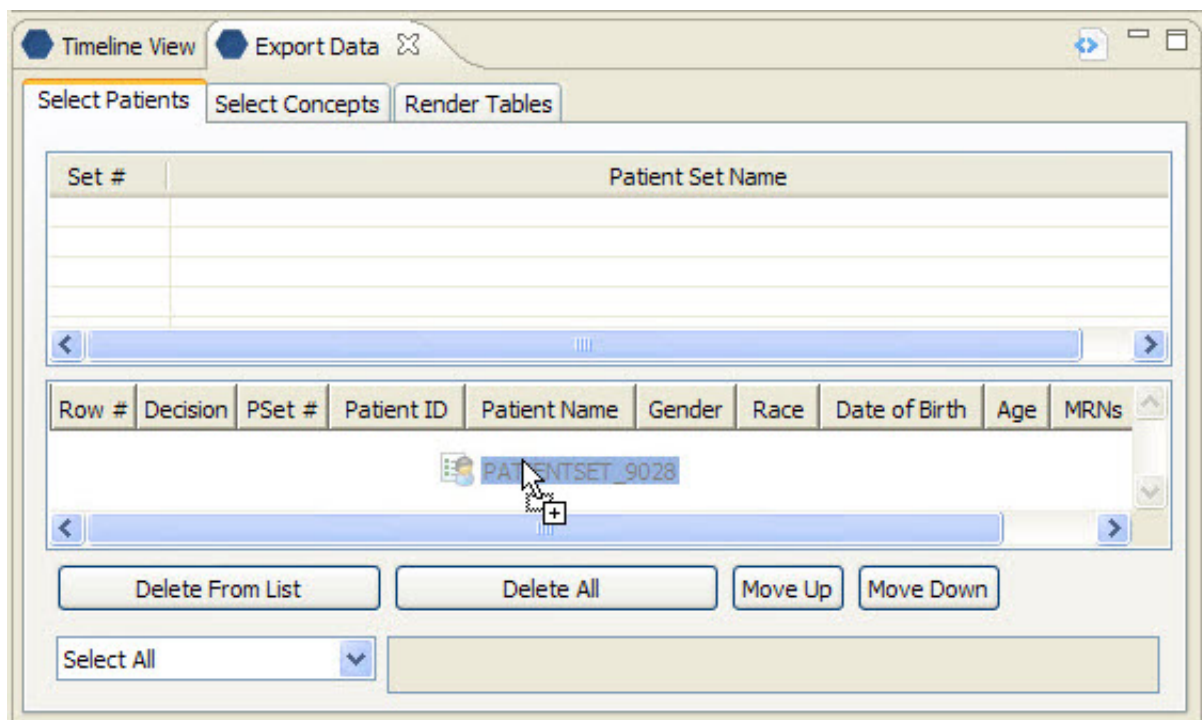
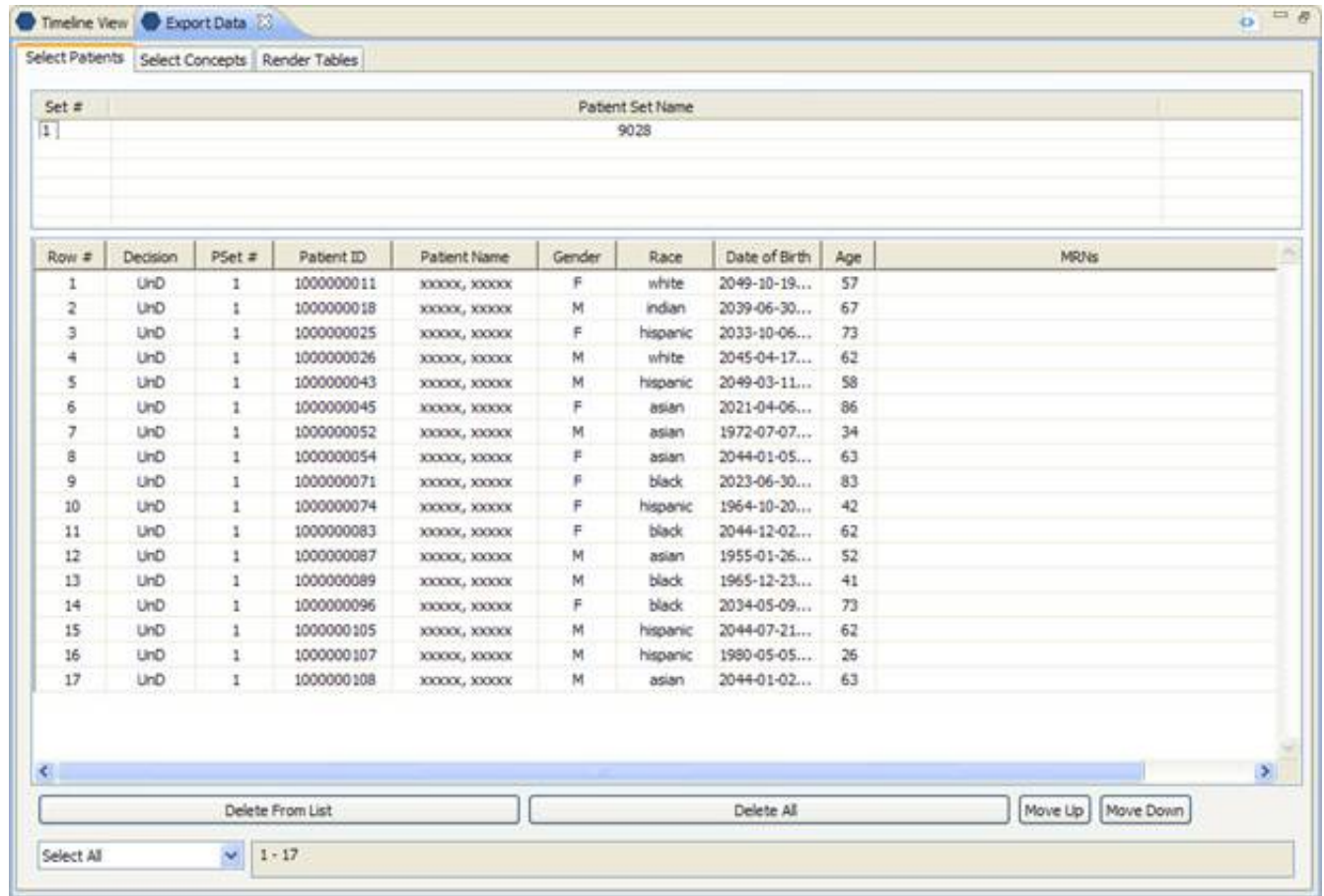


Figure 2.3 Adding a Patient

4. The patients included in the set will be listed along with the demographic information included in the PDO (figure 2.4).



Set #	Patient Set Name
1	9028

Row #	Decision	PSet #	Patient ID	Patient Name	Gender	Race	Date of Birth	Age	MRNs
1	UnD	1	100000011	xxxxx, xxxxx	F	white	2049-10-19...	57	
2	UnD	1	100000018	xxxxx, xxxxx	M	indian	2039-06-30...	67	
3	UnD	1	100000025	xxxxx, xxxxx	F	hispanic	2033-10-06...	73	
4	UnD	1	100000026	xxxxx, xxxxx	M	white	2045-04-17...	62	
5	UnD	1	100000043	xxxxx, xxxxx	M	hispanic	2049-03-11...	58	
6	UnD	1	100000045	xxxxx, xxxxx	F	asian	2021-04-06...	86	
7	UnD	1	100000052	xxxxx, xxxxx	M	asian	1972-07-07...	34	
8	UnD	1	100000054	xxxxx, xxxxx	F	asian	2044-01-05...	63	
9	UnD	1	100000071	xxxxx, xxxxx	F	black	2023-06-30...	83	
10	UnD	1	100000074	xxxxx, xxxxx	F	hispanic	1964-10-20...	42	
11	UnD	1	100000083	xxxxx, xxxxx	F	black	2044-12-02...	62	
12	UnD	1	100000087	xxxxx, xxxxx	M	asian	1955-01-26...	52	
13	UnD	1	100000089	xxxxx, xxxxx	M	black	1965-12-23...	41	
14	UnD	1	100000096	xxxxx, xxxxx	F	black	2034-05-09...	73	
15	UnD	1	100000105	xxxxx, xxxxx	M	hispanic	2044-07-21...	62	
16	UnD	1	100000107	xxxxx, xxxxx	M	hispanic	1980-05-05...	26	
17	UnD	1	100000108	xxxxx, xxxxx	M	asian	2044-01-02...	63	

Figure 2.4 Patient List

From Workplace View

1. Find the set of patients you want to use (either in your folder or a shared folder).
2. Click on the **Patient Set** and drag the item over to the **Table View**.
3. Drop the patient set into the patient information section (see figure 2.3).
4. The patients included in the set will be listed along with the demographic information included in the PDO (see figure 2.4).

Delete/Remove

There are three options for removing a patient from the list of patients to be used. Users can (1) delete the entire listing of patients, (2) delete a single patient from the list, or (3) delete multiple patients from the list.

Delete All Patients

1. Click on the **Delete All** button located in the bottom of the view.
2. The list of patients will be cleared.

Warning: Once you click on the Delete All button, all the patients on the list will be removed, therefore you need to make sure you want to delete everyone.

Delete Single Patient

1. Click on the patient in the list that you want to remove.
2. Once the patient is highlighted, click on the **Delete From List** button.
3. The patient will be removed from the list.

Delete Multiple Patients

1. Click on the first patient you want to remove.
2. Holding the Ctrl key down, click on the other patients in the list to be removed.
3. Click on the **Delete From List** button.
4. Only those patients highlighted are removed from the list.

Move Patient

Each patient listed is assigned a Row # that is used when rendering the tables. This row # determines which row the record (patient) will appear when the temporary table is created. Users have the option of moving patients which will automatically update the row #.

Move Patient Up

1. Highlight the patient to be moved.
2. Click on the **Move Up** button.
3. Continue to click on the move up button until the record is in the desired location.

Move Patient Down

1. Highlight the patient to be moved.
2. Click on the **Move Down** button.

3. Continue to click on the move down button until the record is in the desired location.

Select Concepts tab

The concepts to be used when rendering tables in the Table View are defined in the Select Concepts tab. Users can add individual or groups of concepts. In addition to adding concepts, users can define date and value constraints for each concept

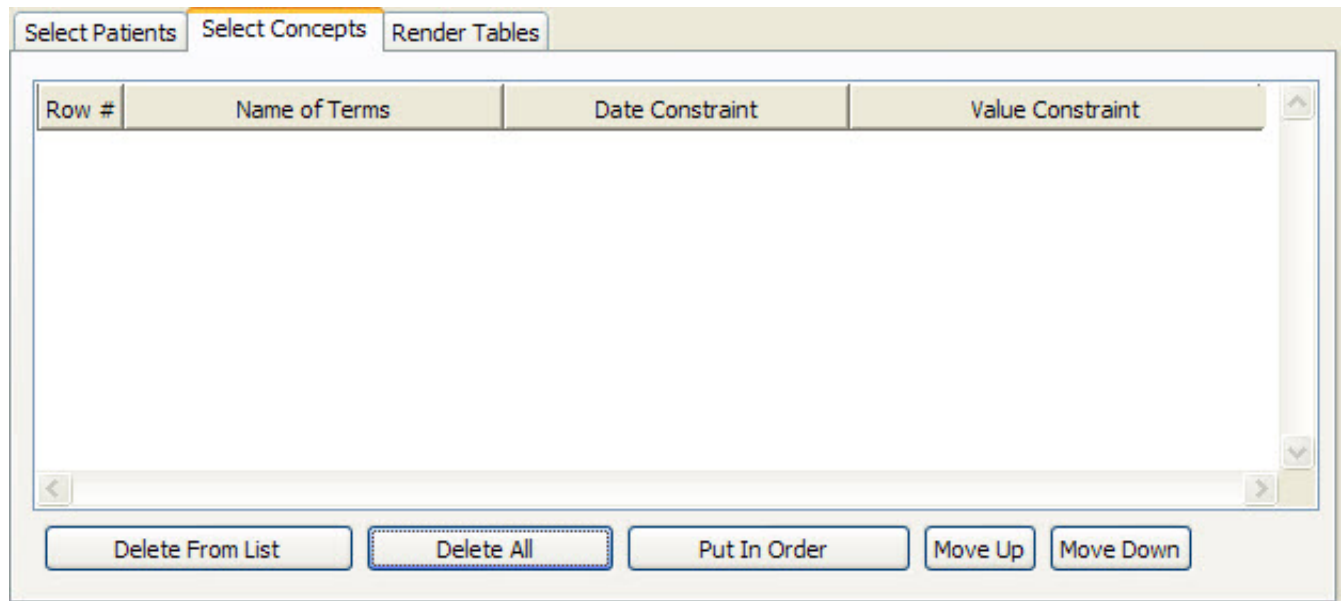


Figure 2.5 Select Concepts tab

Layout of the Select Concepts tab

Concept List

User defined list of concepts that will be used when the tables are created.

Row #	Name of Terms	Date Constraint	Value Constraint

Figure 2.6 Concept list

Field Name	Description / Use
Row #	Identifies which row the concept will appear in when the tables are rendered.
Name of Terms	The name of the concept
Date Constraint	Limit the data to a user defined date range. <i>Note: If the field is empty then no constraints have been set.</i>
Value Constraint	Limit the data to a user defined range of values for a particular concept. Not Applicable will appear if a concept can not have a value constraint set. All Values will appear as the default if a concept can have a value constraint set.

Add Concepts

Concepts can be added to the Table View by simply dragging the concept from one of the following three views.

1. Navigate Terms

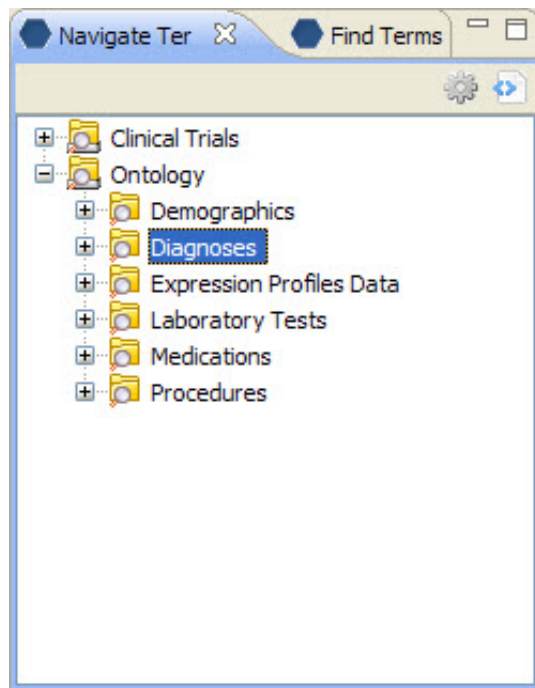


Figure 2.7 Navigate Terms View

2. Find Terms

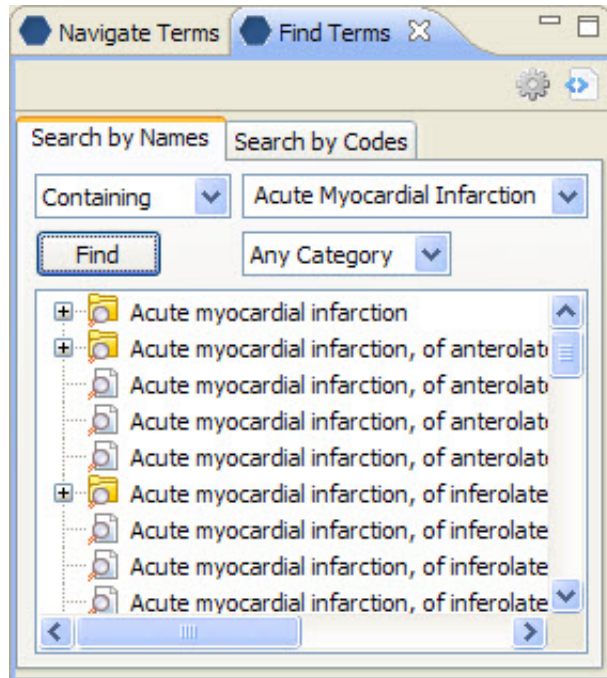


Figure 2.8 Find Terms View

3. Workplace

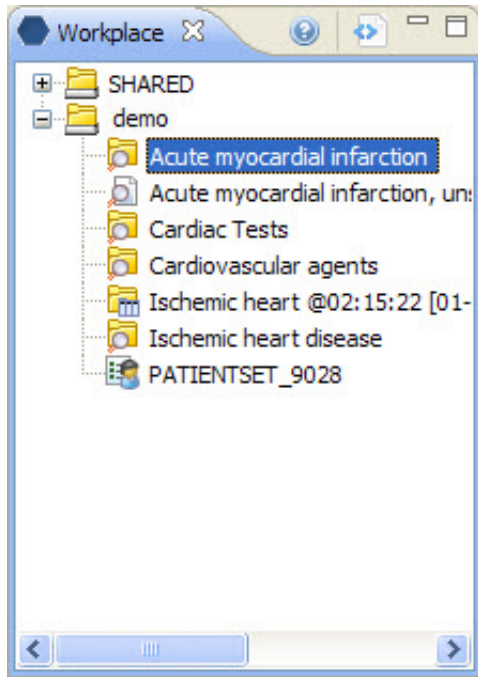
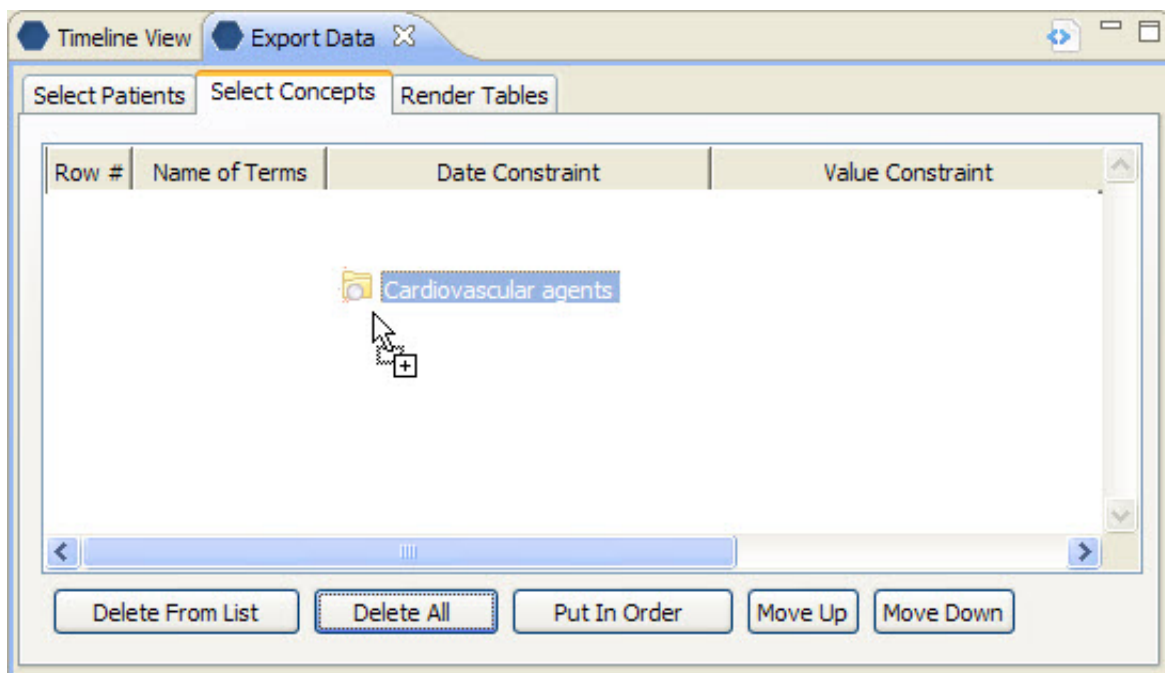


Figure 2.9 Workplace View

From Navigate Terms View

1. Expand the folders that contain the concept or grouping of concepts that you want to add.
2. Click on the concept/term and drag the item over to the **Table View**.
3. Drop the concept into the section that displays the list of concepts (figure 2.10).



4. The concept will display (figure 2.11).

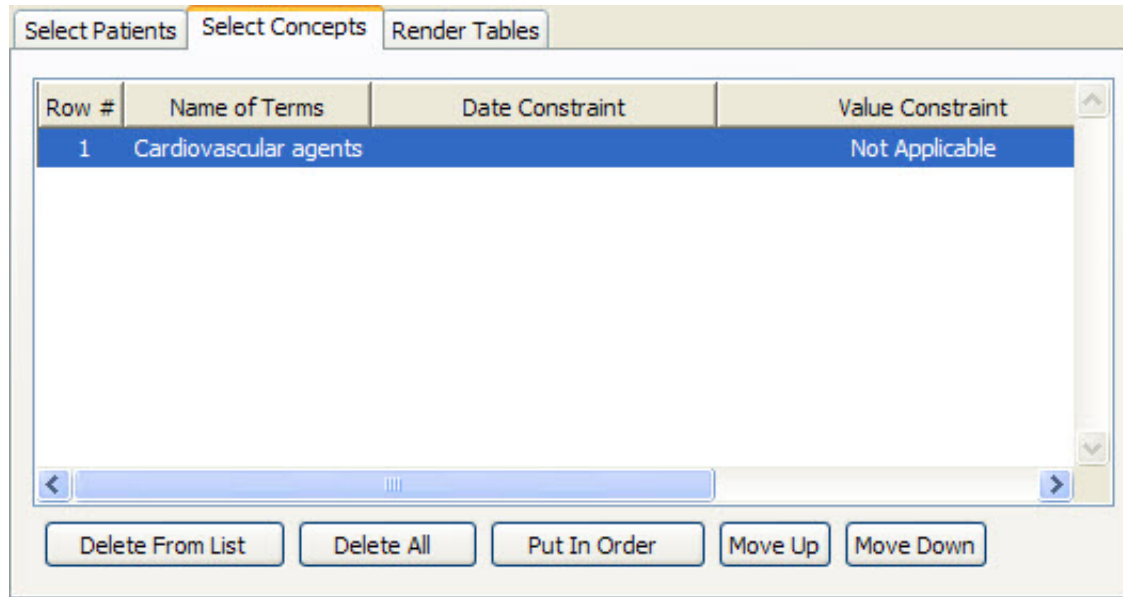


Figure 2.11 Concept List

From Find Terms View

1. After searching for the term(s) you want to add, click on the concept/term and drag the item over to the **Table View**.
2. Drop the concept into the section that displays the list of concepts (see figure 2.10).
3. The concept will display (see figure 2.11).

From Workplace View

1. Find the set of concepts you want to add (either in your folder or a shared folder).
2. Click on the concept and drag it over to the **Table View**.
3. Drop the concept into the section that displays the list of concepts (see figure 2.10)
4. The concept will display (see figure 2.11).

Delete/Remove

There are three options for removing a concept from the list of concepts to be used. Users can (1) delete the entire listing of concepts, (2) delete a single concept from the list, or (3) delete multiple concepts from the list.

Delete All Concepts

1. Click on the **Delete All** button located in the bottom of the view.
2. The list of concepts will be cleared.

Warning: Once you click on the Delete All button, all the concepts on the list and their constraints will be removed, therefore you need to make sure you want to delete everyone.

Delete Single Concept

1. Click on the concept in the list that you want to remove.
2. Once the concept is highlighted, click on the **Delete From List** button.
3. The concept will be removed from the list.

Delete Multiple Concepts

1. Click on the first concept you want to remove.
2. Holding the Ctrl key down, click on the other concepts in the list to be removed.
3. Click on the **Delete From List** button.
4. Only those concepts highlighted are removed from the list.

Move Concepts

Each item listed is assigned a Row # that is used when rendering the tables. This row # determines which row the concept will appear when the temporary table is created. Users have the option of moving concepts to a new row before the tables are created. The system will automatically update the row #.

Move Concept Up

1. Highlight the concept to be moved.
2. Click on the **Move Up** button.
3. Continue to click on the move up button until the record is in the desired location.

Move Concept Down

1. Highlight the concept to be moved.
2. Click on the **Move Down** button.

3. Continue to click on the move down button until the record is in the desired location.

Setting Constraints

There are two categories of constraints that can be defined in the Table View. One constraint is by the date and the other is by the value associated to the constraint. Not all concepts have values. For instance, diagnosis of Acute Myocardial Infarction does not have a value but the tests used to make the diagnosis do have values (high, low, numeric, etc.).

Date Constraint

Users can define a date range to be used when compiling the data to be used when the tables are rendered. This date range can be in any one of the following combinations:

SPECIFIED DATE RANGE: FROM AND TO DATES DEFINED

Only data with activity within the defined date range will be used.

Example:

Concept: Acute Myocardial Infarction
From date: 01/01/2001
To date: 12/31/2005

In this example, if a patient has a diagnosis of Acute Myocardial Infarction (MI) entered on the record from 01/01/2001 to 12/31/2005 then their data will be included. If the patient does have an MI diagnosis but it was entered prior to 01/01/2001 or after 12/31/2005 then their information will not be included.

SPECIFIC START DATE: ONLY THE FROM DATE IS DEFINED

Data from the defined start date to the latest date available. No end date defined.

Example:

Concept: Acute Myocardial Infarction
From date: 01/01/2001
To date:

In this example, if a patient has a diagnosis of Acute Myocardial Infarction (MI) entered on the record any time on or after 01/01/2001 will be included. If the diagnosis was entered prior to 01/01/2001 then the data will not be included.

SPECIFIC END DATE: ONLY THE TO DATE IS DEFINED

All data up until the defined end date. No start date defined.

Example:

Concept: Acute Myocardial Infarction
From date:
To date: 12/31/2005

In this example, if a patient has a diagnosis of Acute Myocardial Infarction (MI) entered on the record prior to and including 12/31/2005 then their data will be included. If the diagnosis was entered after 12/31/2005 then it will not be included.

SETTING THE DATE CONSTRAINT (FROM/TO DATE RANGE)

1. Double click on the field in the date constraint column.
2. A new window will open (Figure 2.12).

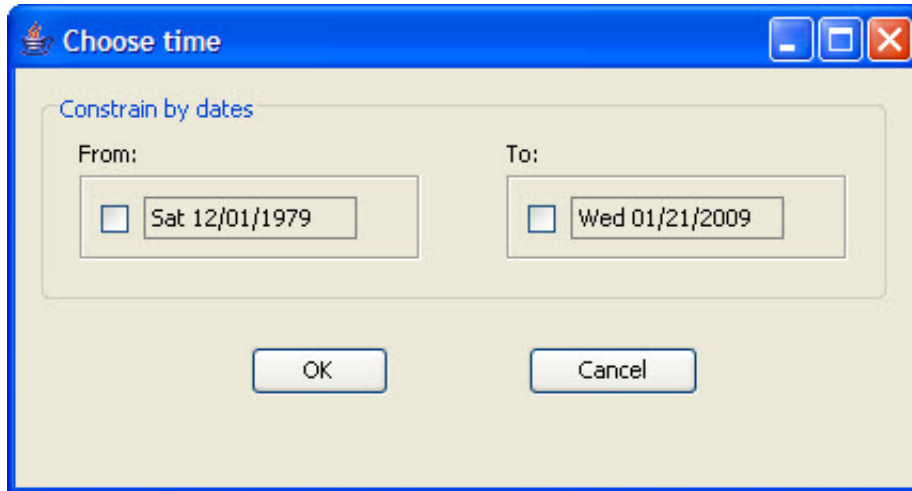


Figure 2.12 Date Constraint Window

3. Click the check box next to the date in the **From** box.
4. Highlight the default date and enter the date you want to use as your *starting* date (see figure 2.13).

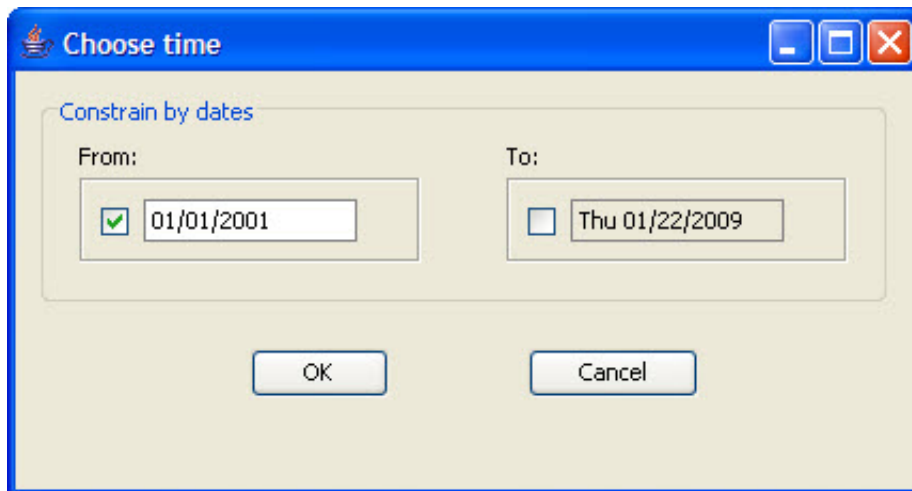


Figure 2.13 Date Constraint (From Field)

5. Click the check box next to the date in the **To** box.
6. Highlight the default date and enter the date you want to use as your *ending* date (Figure 2.14).

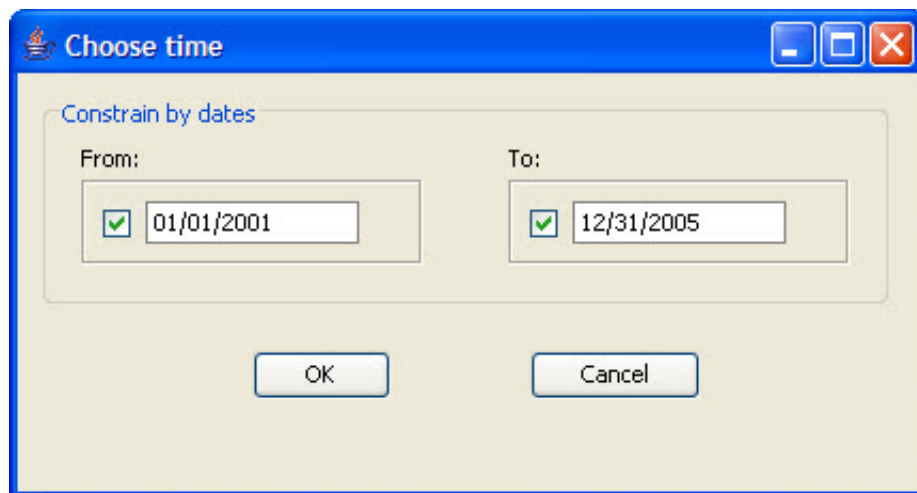
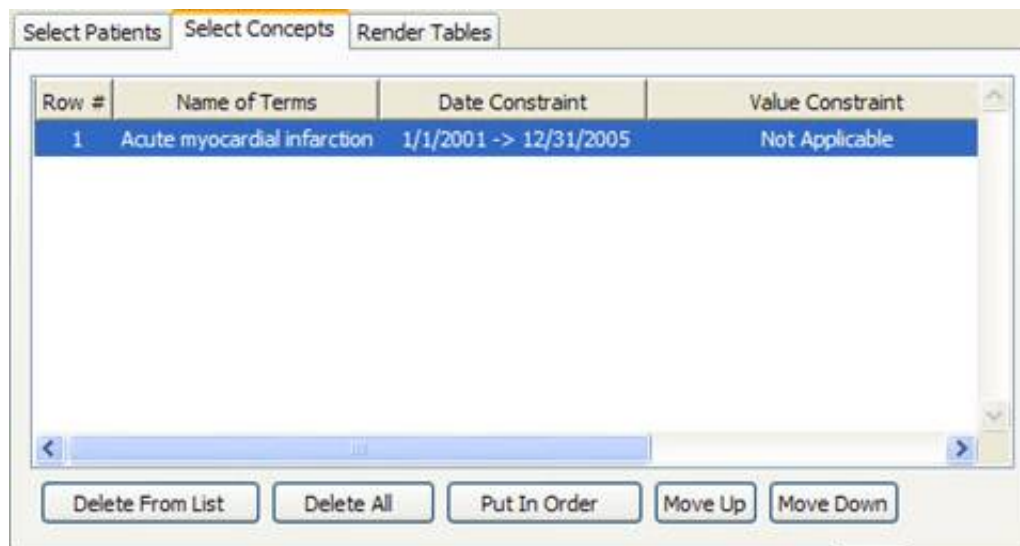


Figure 2.14 Date Constraint (From and To Fields)

7. Click on the OK button.
8. The date range entered will now appear in the date constraint column (Figure 2.15)



Row #	Name of Terms	Date Constraint	Value Constraint
1	Acute myocardial infarction	1/1/2001 -> 12/31/2005	Not Applicable

Figure 2.15 Date Constraint (From/To Range)

1. Double click on the field in the date constraint column.
2. A new window will open (see figure 2.12).
3. Click the check box next to the date in the **From** box.
4. Highlight the default date and enter the date you want to use as your *starting* date (see figure 2.13).
5. Click on the OK button.
6. The date range entered will now appear in the date constraint column (Figure 2.16)

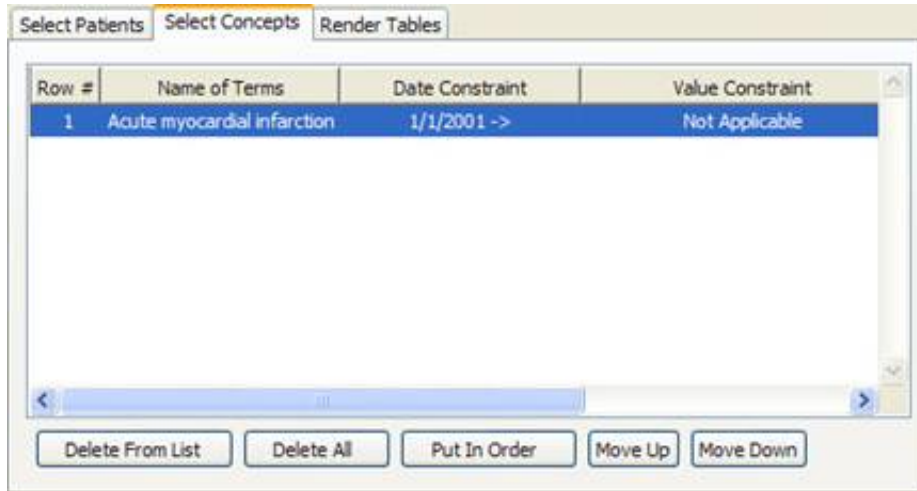


Figure 2.16 Date Constraint (From Date)

SETTING THE DATE CONSTRAINT (TO DATE ONLY)

1. Double click on the field in the date constraint column.
2. A new window will open (see figure 2.12).
3. Click the check box next to the date in the **To** box.
4. Highlight the default date and enter the date you want to use as your *ending* date (figure 2.17).

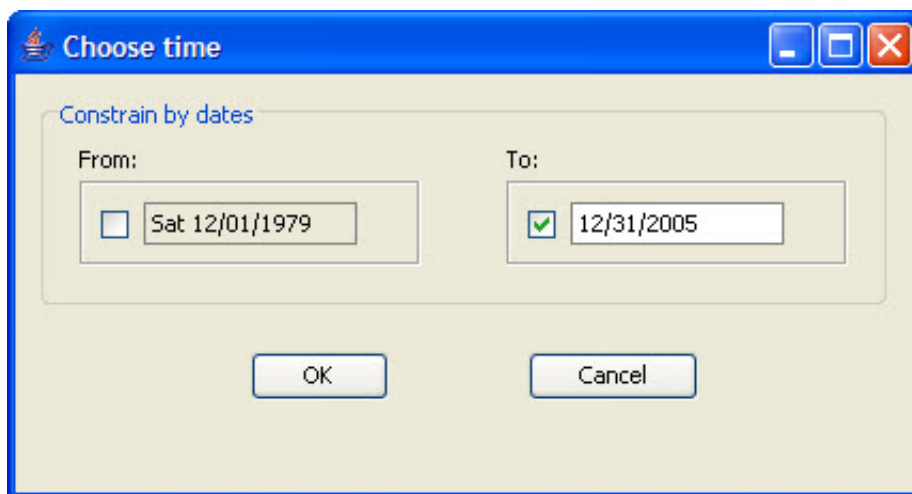


Figure 2.17 Date Constraint (To Field)

5. Click on the OK button.
6. The date range entered will now appear in the date constraint column (figure 2.18)

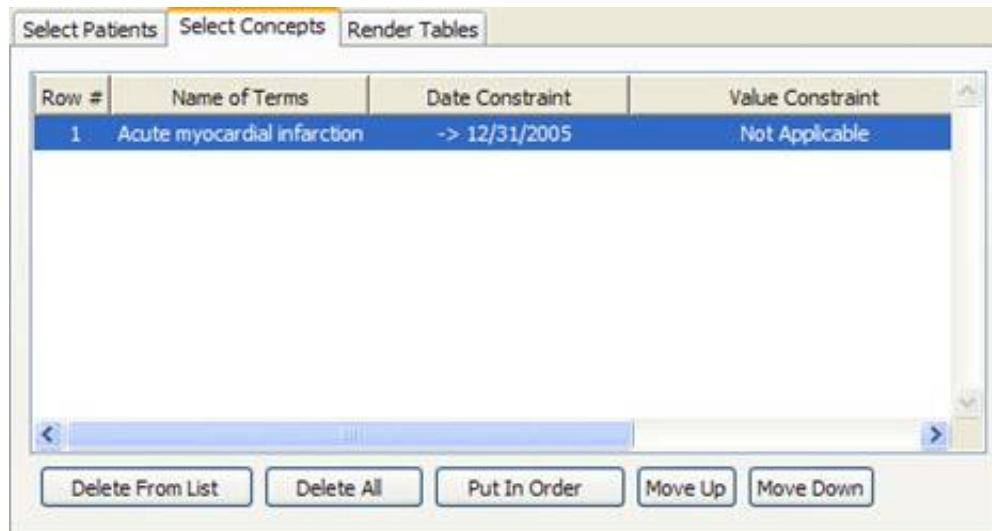


Figure 2.18 Date Constraint (To Date)

Value Constraint

As stated earlier, not all concepts have values. For those concepts that do can have values there are different types of values that may be associated with it.

1. Flag

Flags are defined in the source system when the value is entered. The following are some examples that can be found in the i2b2 Demo database.

- § High
- § Low
- § Abnormal

2. Text

The text is defined in the source system when the value is entered. The following are some examples that can be found in the i2b2 Demo database.

- § Test Not Performed
- § Borderline

§ Positive

3. Numeric

The numeric value is defined in the source system when the result is entered. The following are some example formats that can be found in the i2b2 Demo database.

§ 200

§ 1.3

Unlike flag and text values, numeric values use operators, such as greater than or less than when setting constraints for numerical values. The following is a listing of operators currently in use.

Operator	Description/Use
Less Than (<)	Any value less than the number entered.
Less Than or Equal To (<=)	Any value less than or equal to the number entered (inclusive).
Equal To (=)	An exact match to the number entered.
Between	Any value in the range of numbers entered.
Greater Than (>)	Any value greater than the number entered.
Greater Than or Equal To (>=)	Any value greater than or equal to the number entered (inclusive).

SETTING THE VALUE CONSTRAINT (FLAG)

1. Double click on the field in the value constraint column.
2. A new window will open (figure 2.19).

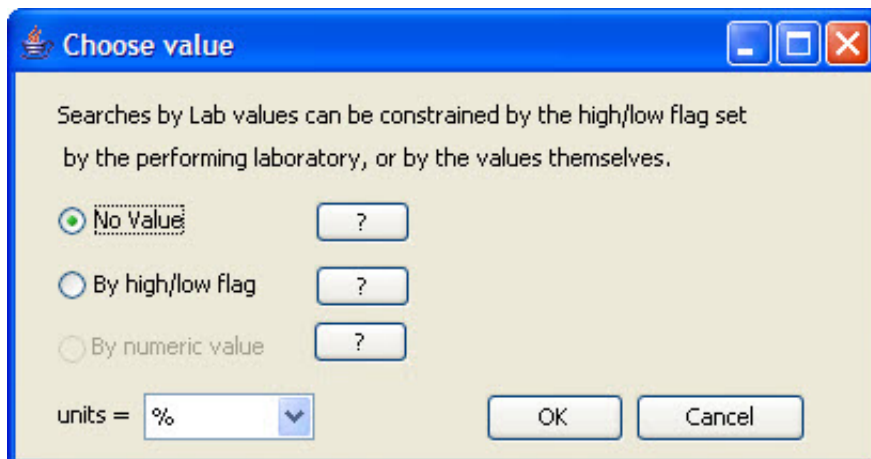


Figure 2.19 Value Constraint Window (Flag)

3. Click the radial dial next to **By high/low flag**.
4. A new field with a drop down selection box will appear (figure 2.20).

Choose value

Searches by Lab values can be constrained by the high/low flag set by the performing laboratory, or by the values themselves.

No Value ?

By high/low flag ? Please select range: HIGH

By numeric value ?

units = ng/ml

OK Cancel

Figure 2.20 Value Constraint Flag

5. Click on the arrow to change the selection or accept the default.
6. Click on the OK button.
7. The constraint value entered will now appear in the value constraint column (figure 2.21)

Row #	Name of Terms	Date Constraint	Value Constraint
1	Troponin-I (Group:TROP-I)		= HIGH

Delete From List Delete All Put In Order Move Up Move Down

Figure 2.21 Value Constraint Set (Flag)

SETTING THE VALUE CONSTRAINT (TEXT)

1. Double click on the field in the value constraint column.
2. A new window will open (figure 2.22).

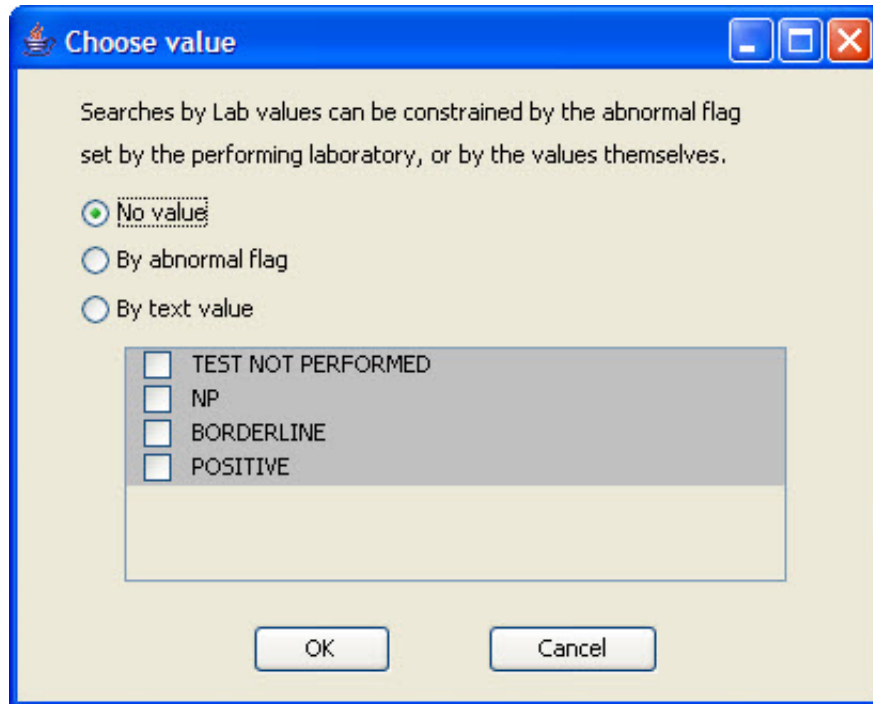


Figure 2.22 Value Constraint Window (Text)

3. Click the radial dial next to **By text value**.
4. The text value options will now become available to select. Click on the box next to the values you want to include. (figure 2.23).

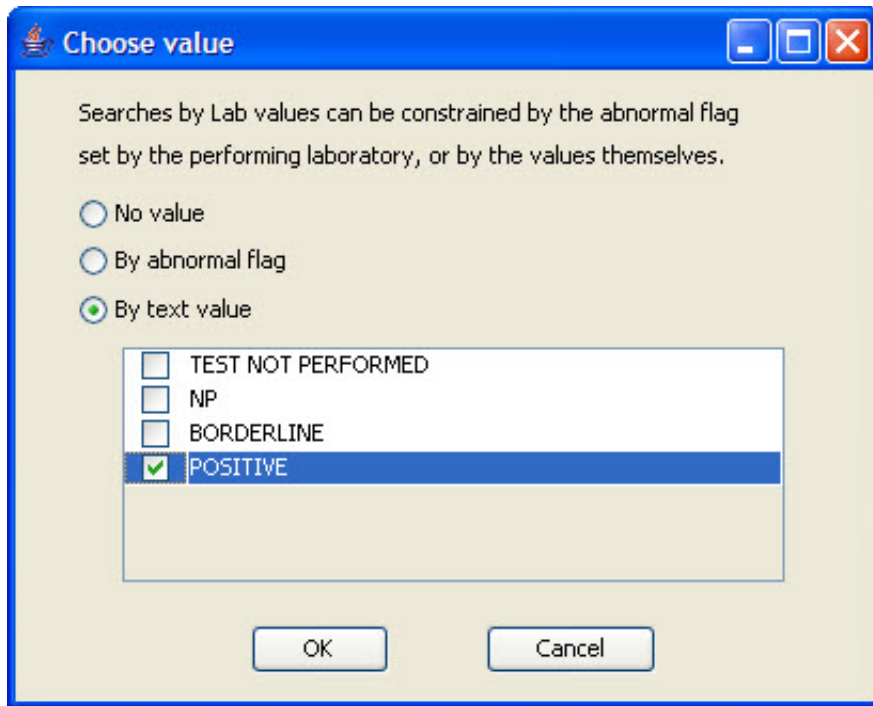


Figure 2.23 Value Constraint Text

5. Click on the arrow to change the selection or accept the default.
6. Click on the OK button.
7. The constraint value entered will now appear in the value constraint column (figure 2.24)

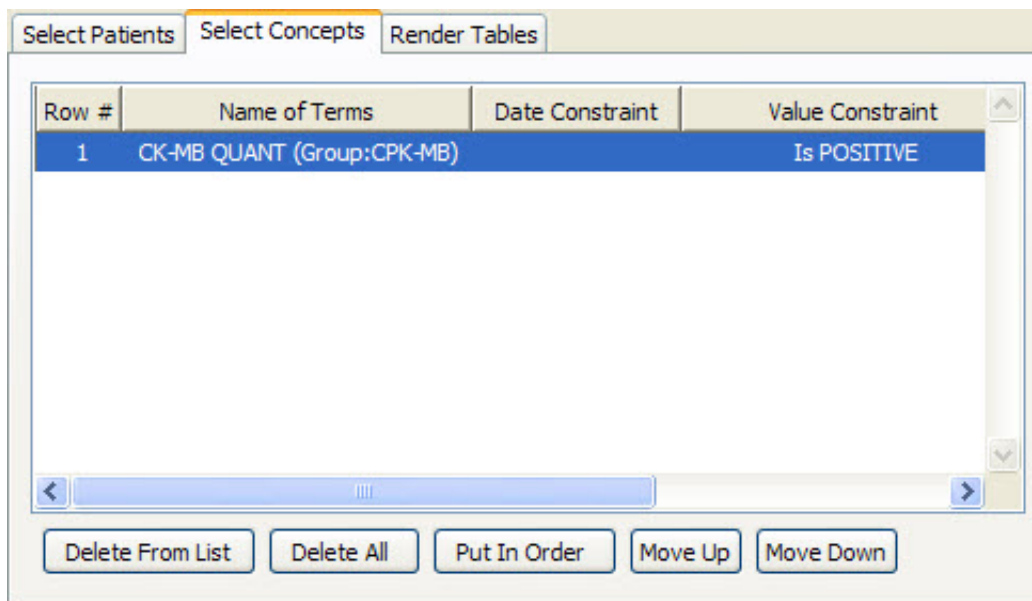


Figure 2.24 Value Constraint Set (Text)

SETTING THE VALUE CONSTRAINT (NUMERIC)

1. Double click on the field in the value constraint column.
2. A new window will open (figure 2.25).

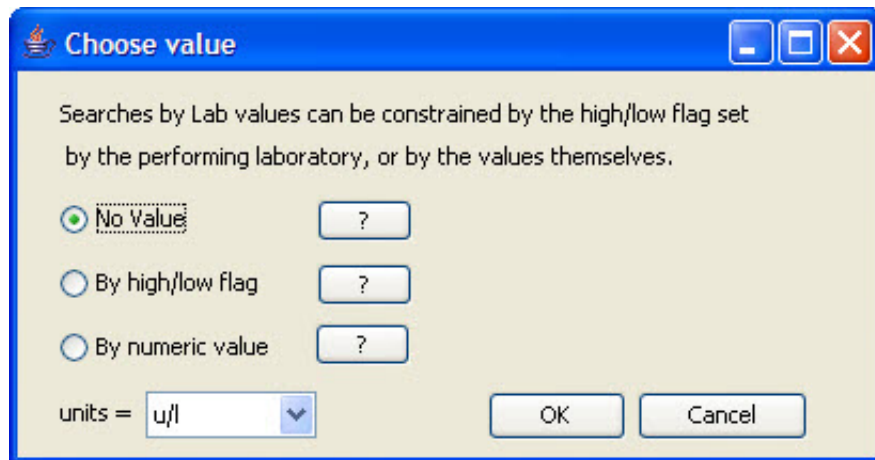


Figure 2.25 Value Constraint Window (Numeric)

3. Click the radial dial next to **By numeric value**.
4. Two new fields, one with a drop down selection box will appear (figure 2.26).

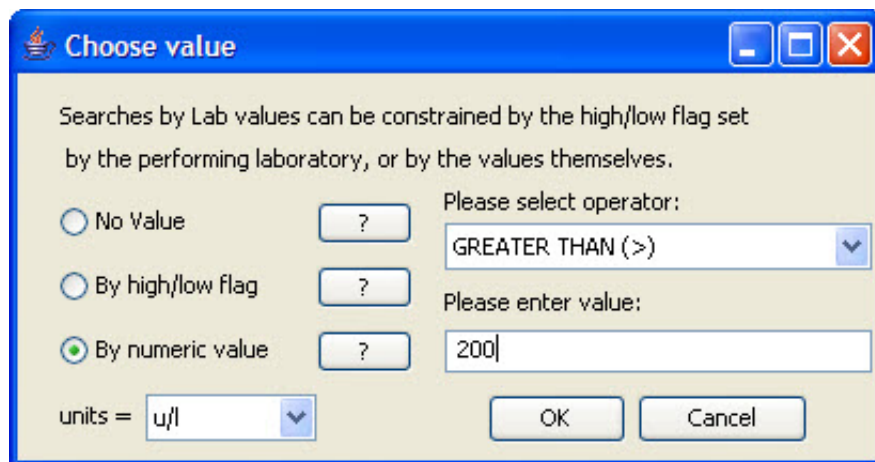


Figure 2.26 Value Constraint (Numeric)

5. Click on the arrow to change the operator or accept the default.
6. Enter a numerical value at the **Please enter value** field.
7. Click on the OK button.
8. The constraint value entered will now appear in the value constraint column (figure 2.27)

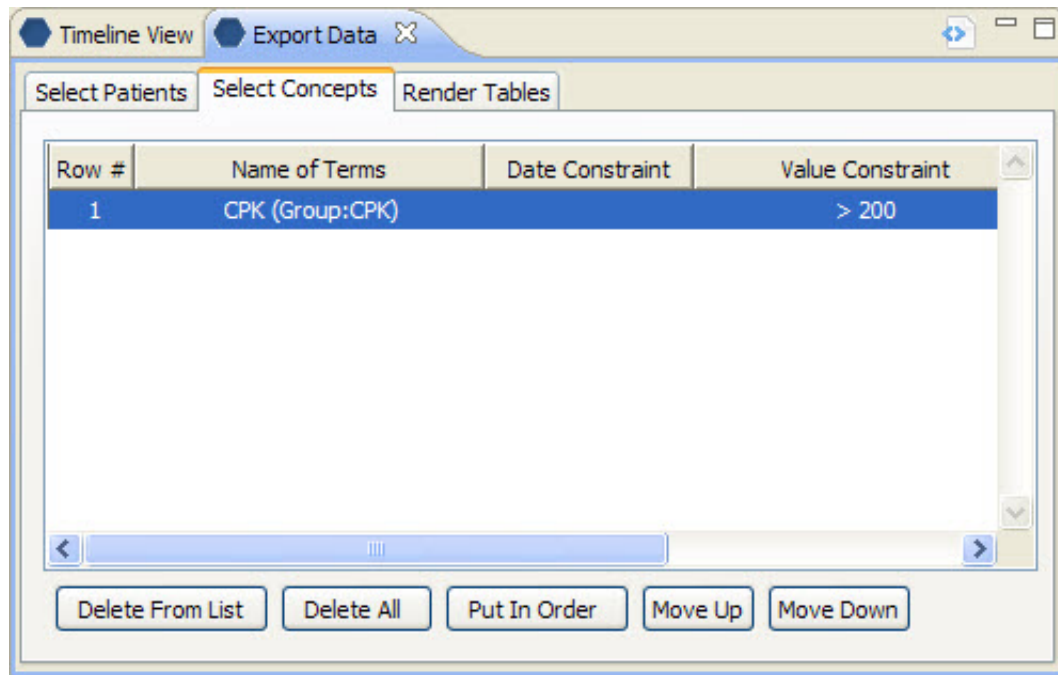


Figure 2.27 Value Constraint Set Numeric

Render Tables Tab

The render tables tab (Figure 2.28) will use the information entered on the Select Patients and Select Concepts tabs. In order to create the tables, information must be entered on these tabs. If data has not been entered, a warning will appear (Figures 2.29 and 2.3.) and the user needs to go back to the appropriate tab and add the required information.

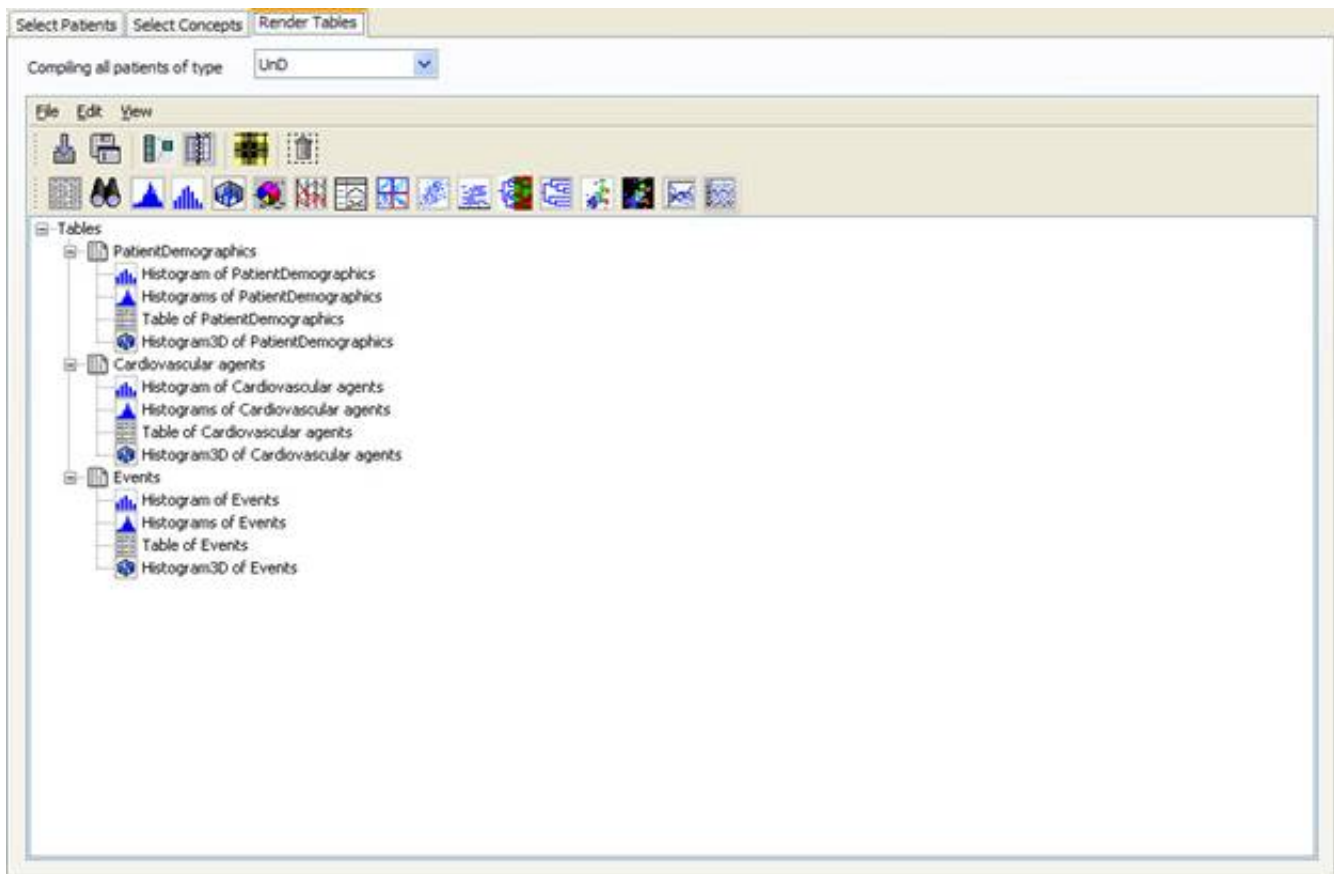


Figure 2.28 Table View: Render Tables

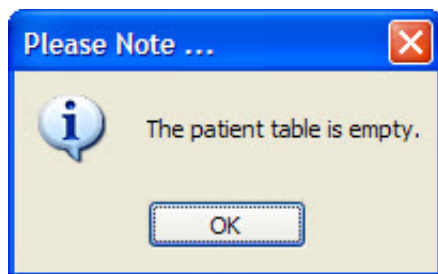


Figure 2.29 Missing Patient(s) Warning

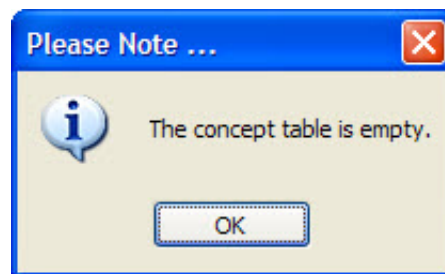


Figure 2.30 Missing Concept(s) Warning

Creating Tables (Visualization)

As soon as the user clicks on the Render Tables tab, the system will begin compiling the data entered on the Select Patients and Select Concepts tabs into tables. During the compilation process a message will appear in the Render Tables tab view (Figure 2.31).

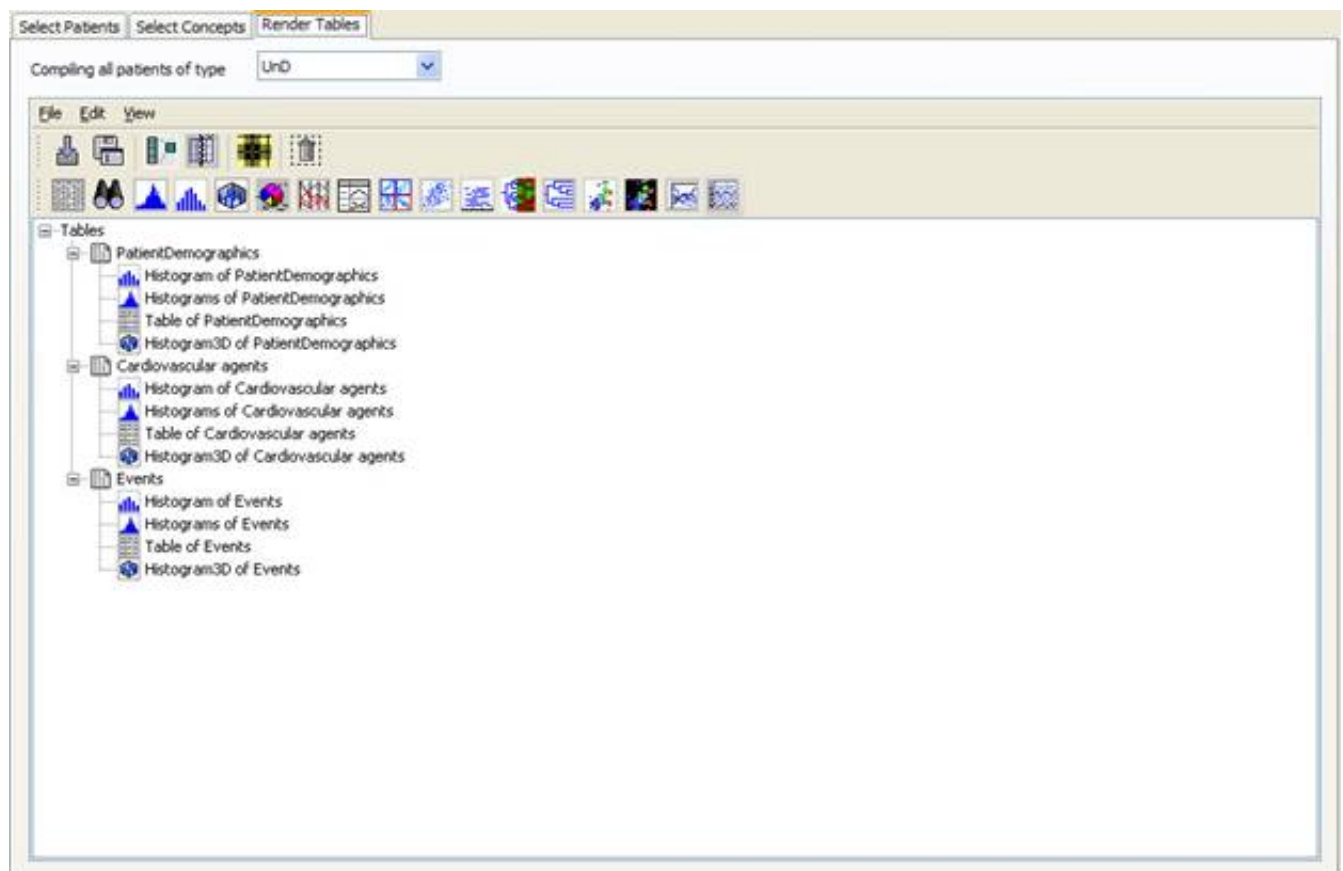
Working on visualization
Click on "select patients" tab to abort



Elapsed Time = 00 : 00
Estimated Time = 00 : 10

Figure 2.31 Working on Visualization Message

Once the tables have been compiled the Control Panel with each of the tables and default views will display (Figure 2.32.).



Cancel Rendering Tables

At any point during the rendering of the tables, the process can be cancelled by clicking on either the Select Patients or Select Concept tabs. Upon clicking on either tab, a dialog box will open asking if you want to continue with the cancellation process (Figure 2.33).

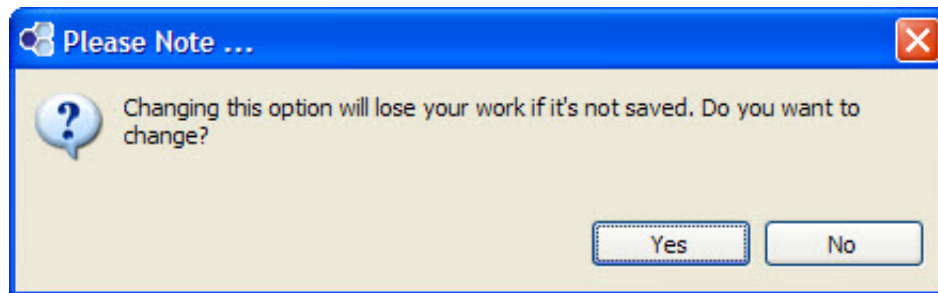


Figure 2.33 Cancellation Dialog Box

Default Views

A set of four views will be created when the rendering process has completed.

1. Table
2. Histogram
3. Histograms
4. 3D Graph

Common Charts

Histogram

A histogram typically shows the quantity of points that fall within various bins (or numeric ranges).

Pie Chart

A pie chart shows percentage values as a slice of a pie.

Line Chart

A line chart is a two-dimensional scatterplot of ordered observations where the observations are connected following their order.

Control Panel

The **control panel** allows the user to import data tables to **TableView**, open various views on the data, and save the selected rows of the data table.

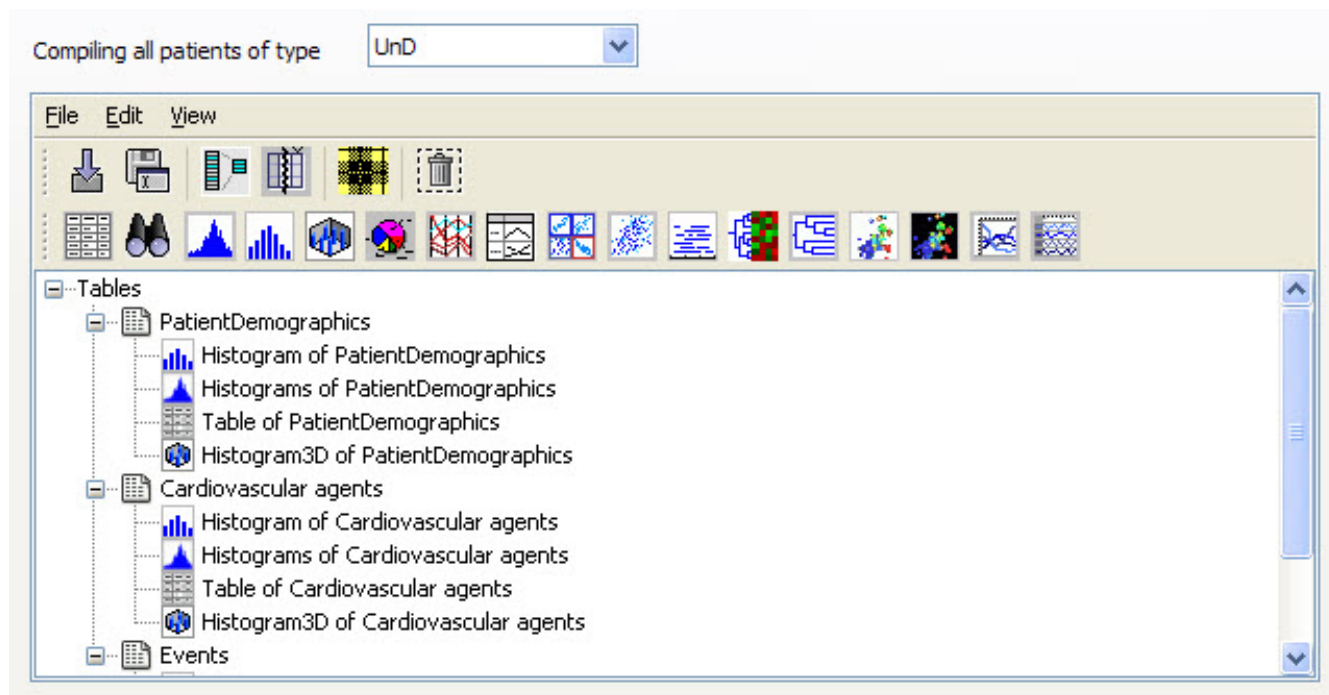


Figure 2.34 Top level control panel

The panel consists of:

- § Menu bar
- § File/edit toolbar
- § View toolbar
- § A tree diagram of the open tables and views on those tables

Menu bar

The menu bar has three menu options.

- | | |
|-------------|---------------------------------|
| File | Importing and exporting data |
| Edit | Options to edit a table or view |




Figure 2.35 Menu bar

FILE MENU

The File menu on the main control panel provides choices for importing and exporting data.

Load table	Load a table from a file, URL, or database
Save table	Save the table to a file
Save selection	Save the selected rows to a file
Output selection	Feature is not currently available.

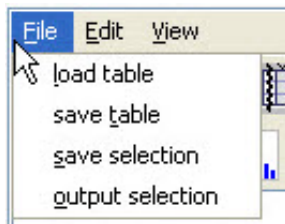



Figure 2.36 File menu

Load Table

Import data from a file, URL or database to a new table.

Note: The load table feature can be accessed view the File Menu or by clicking on the load table icon () located on the file and edit toolbar.

Load from File or URL

1. Select **Load table** from the **File Menu** or click on the icon on the toolbar.

2. The Load Table window will open (Figure 2.37).

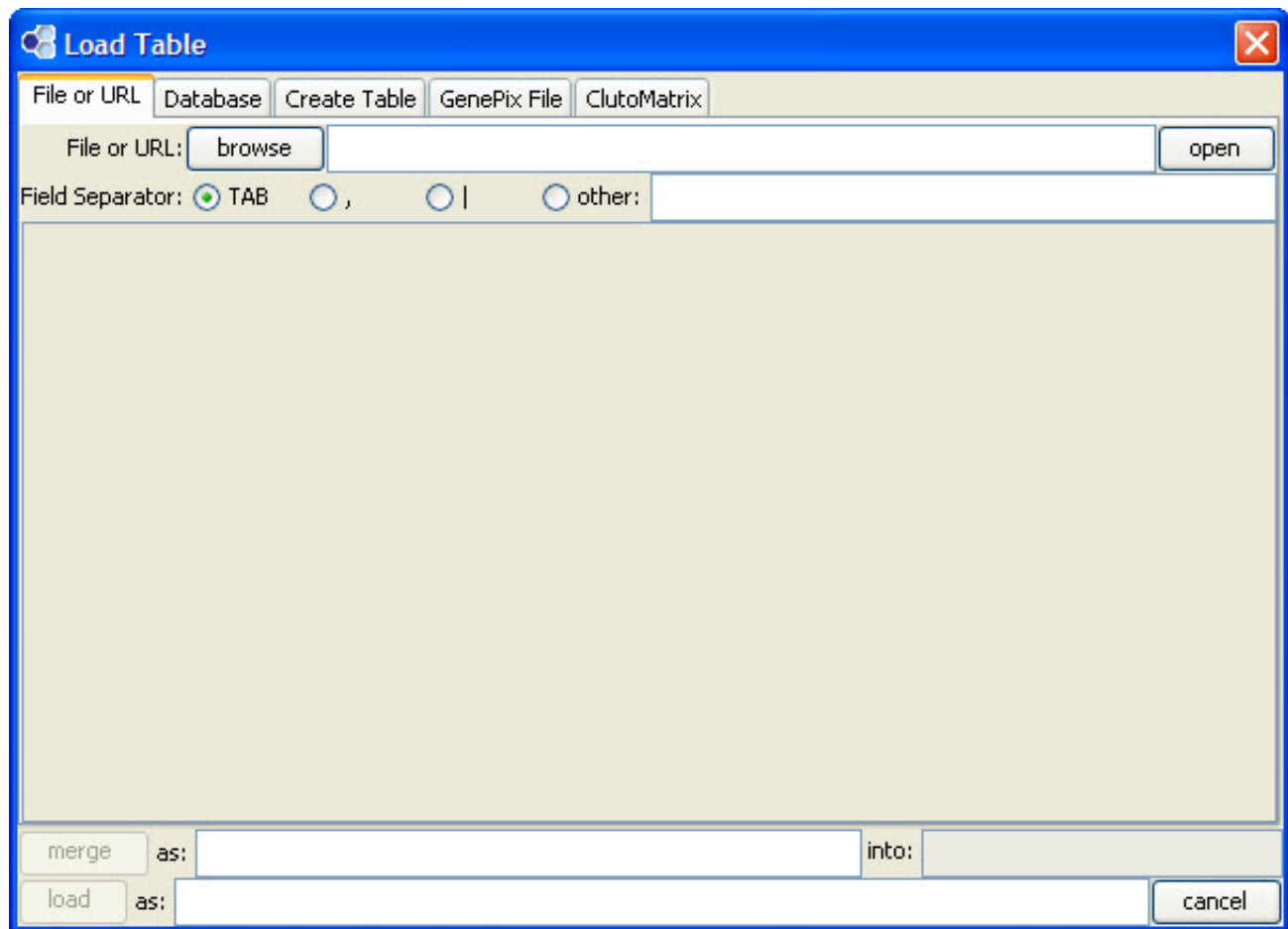


Figure 2.37 Load Table

3. Across the top there are five tabs each representing the different methods to import the data.
4. Select **File or URL** tab.
5. Click on the **Browse** button (or manually enter the location of the file/URL)
6. A new window listing file locations will open. Locate and open your file.
7. The contents of the file will appear in the Load Table window.
8. Next to the **Load** button there is a field labeled **as:** enter the table name as you want it to appear in Table View.

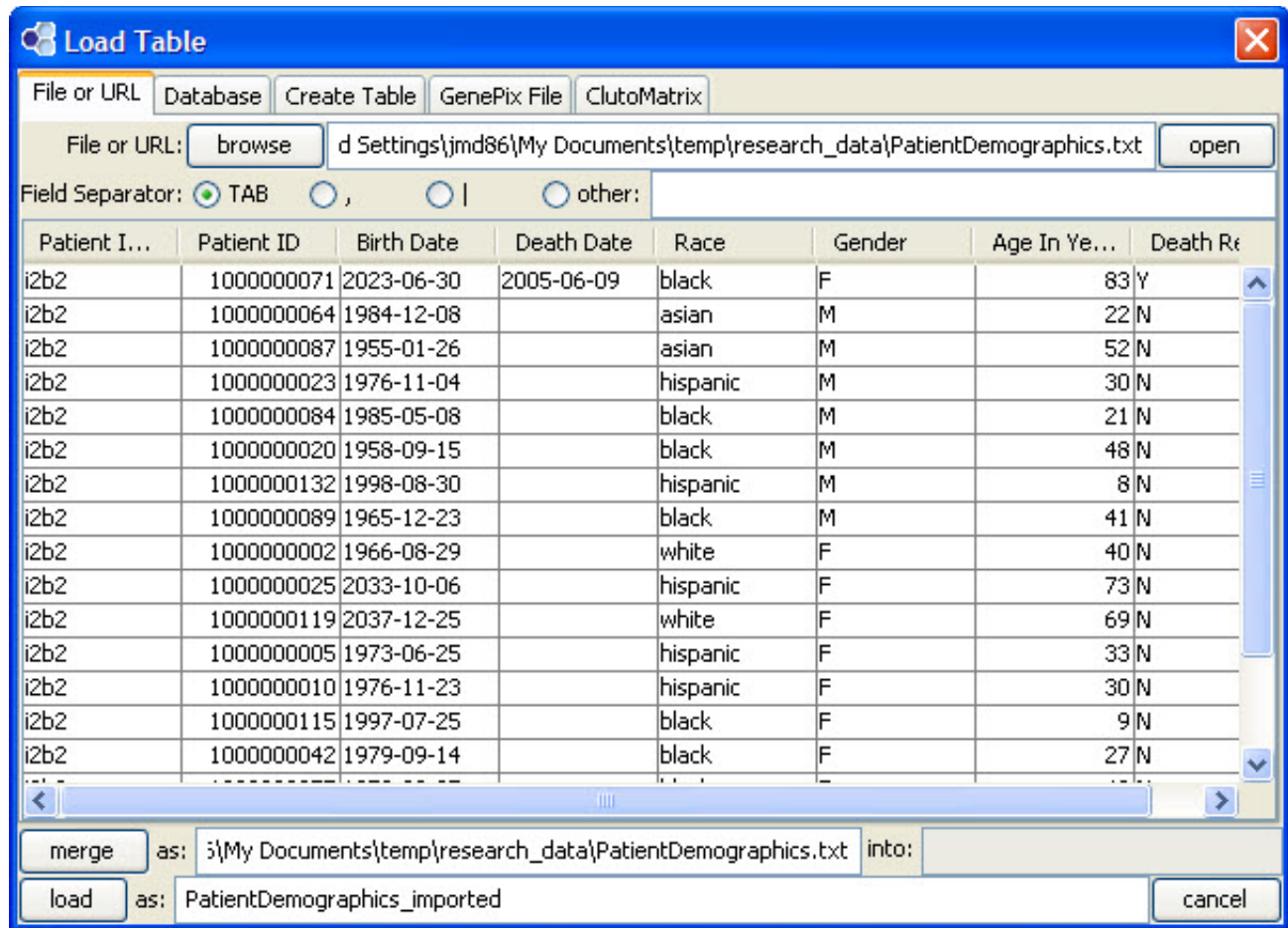


Figure 2.38 Load Table: File or URL

9. Click on **Load** to import the data into a new table.
10. The new table leaf (📄) will be created and appear on the main tree view.
11. To create a table view for this data, simply click on the Table icon (📊) on the view toolbar or select Table View from the View menu.

Load from Database

1. Select Load table from the File **Menu** or click on the icon on the toolbar.
2. The Load Table window will open (Figure 2.37)
3. Across the top there are five tabs each representing the different methods to import the data.
4. Select **Database** tab.
5. Click on the **Edit Connections** button
6. A new window **Edit Database Account Preferences** will open. Enter the appropriate information for your database.

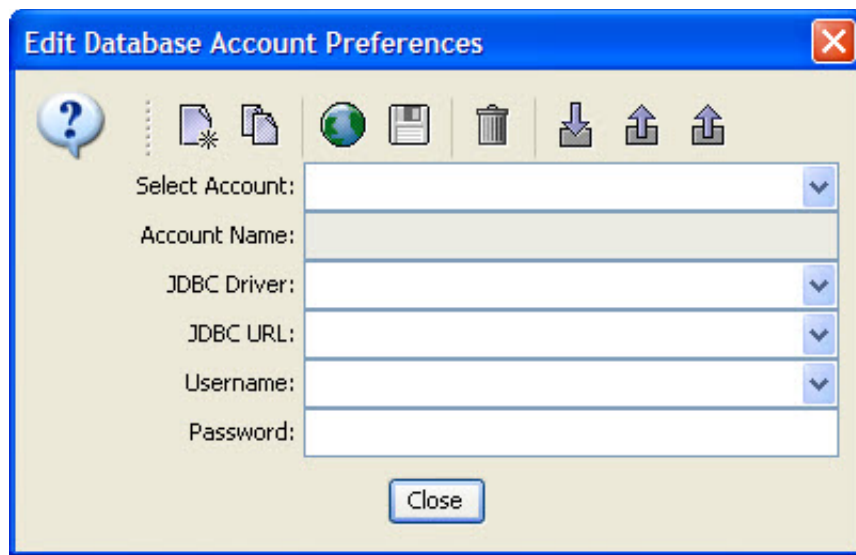


Figure 2.39 Edit Database Account Preferences

7. Click on the **Connect** button to connect to the database.
8. The database information will appear in the Load Table window.
9. Next to the Load button there is a field labeled **as:** enter the table name as you want it to appear in Table View.

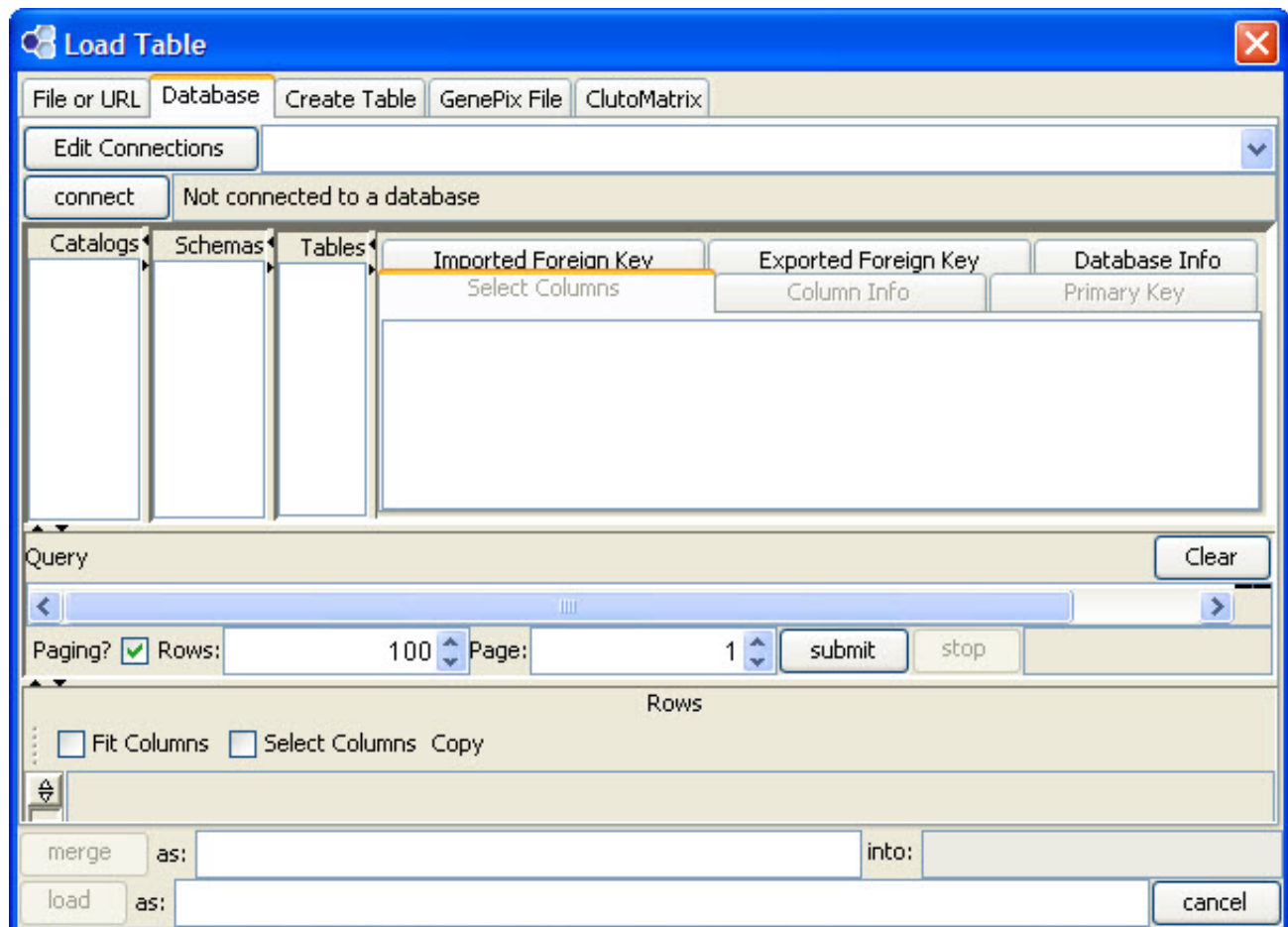


Figure 2.40 Load Table: Database

10. Click on Load to import the data into a new table.
11. The new table leaf (📄) will be created and appear on the main tree view.
12. To create a table view for this data, simply click on the Table icon (📊) on the view toolbar or select Table View from the View menu.

Load from Create a Table

1. Select Load table from the File **Menu** or click on the icon on the toolbar.
2. The Load Table window will open (Figure 2.37)
3. Across the top there are five tabs each representing the different methods to import the data.
4. Select Create a Table tab.
5. Click on the New Table icon (📊*)
6. Using the toolbar, add the necessary columns and rows.
7. Manually enter the data into the table.
8. Next to the Load button there is a field labeled **as:** enter the table name as you want it to appear in Table View.

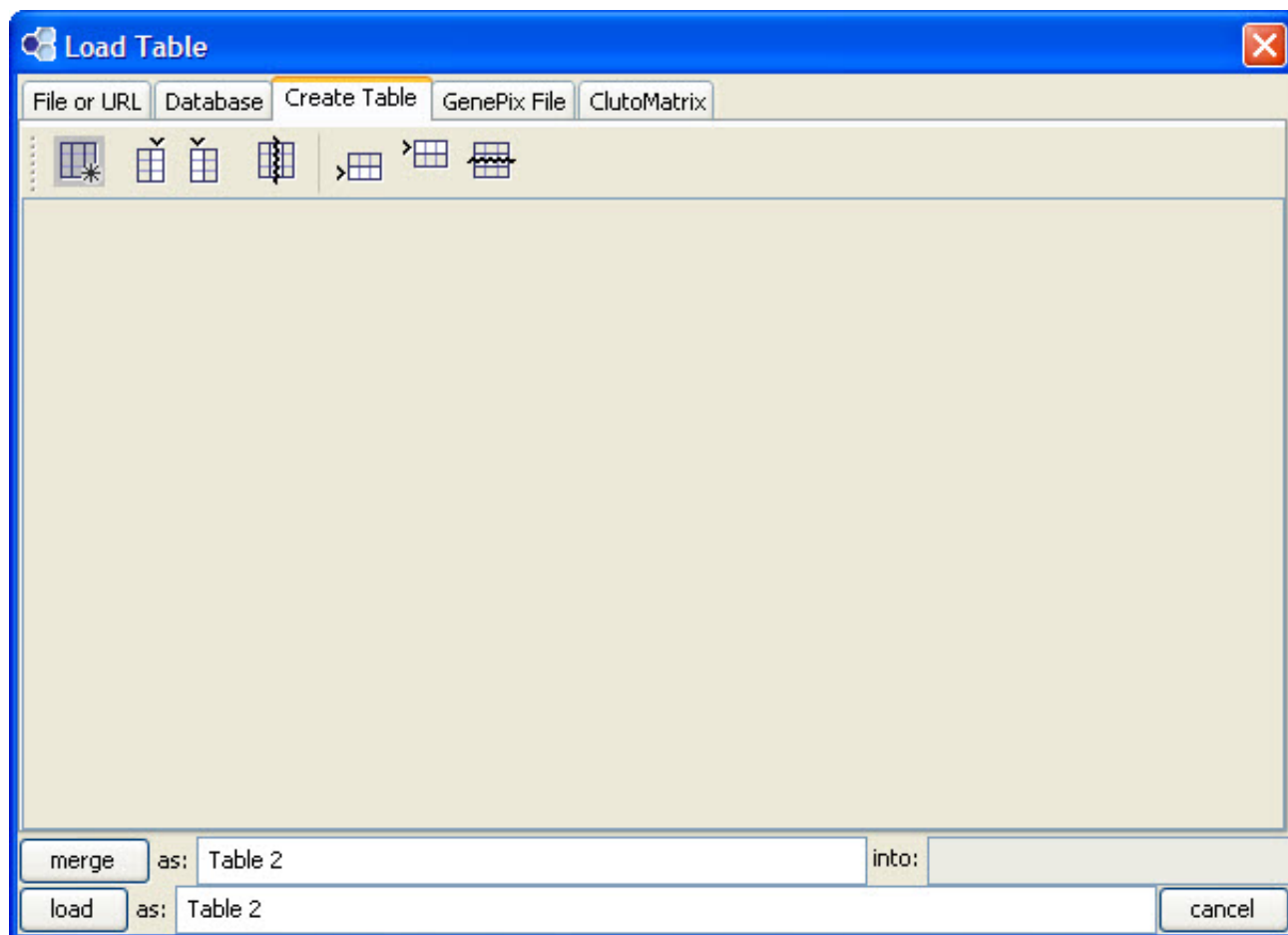
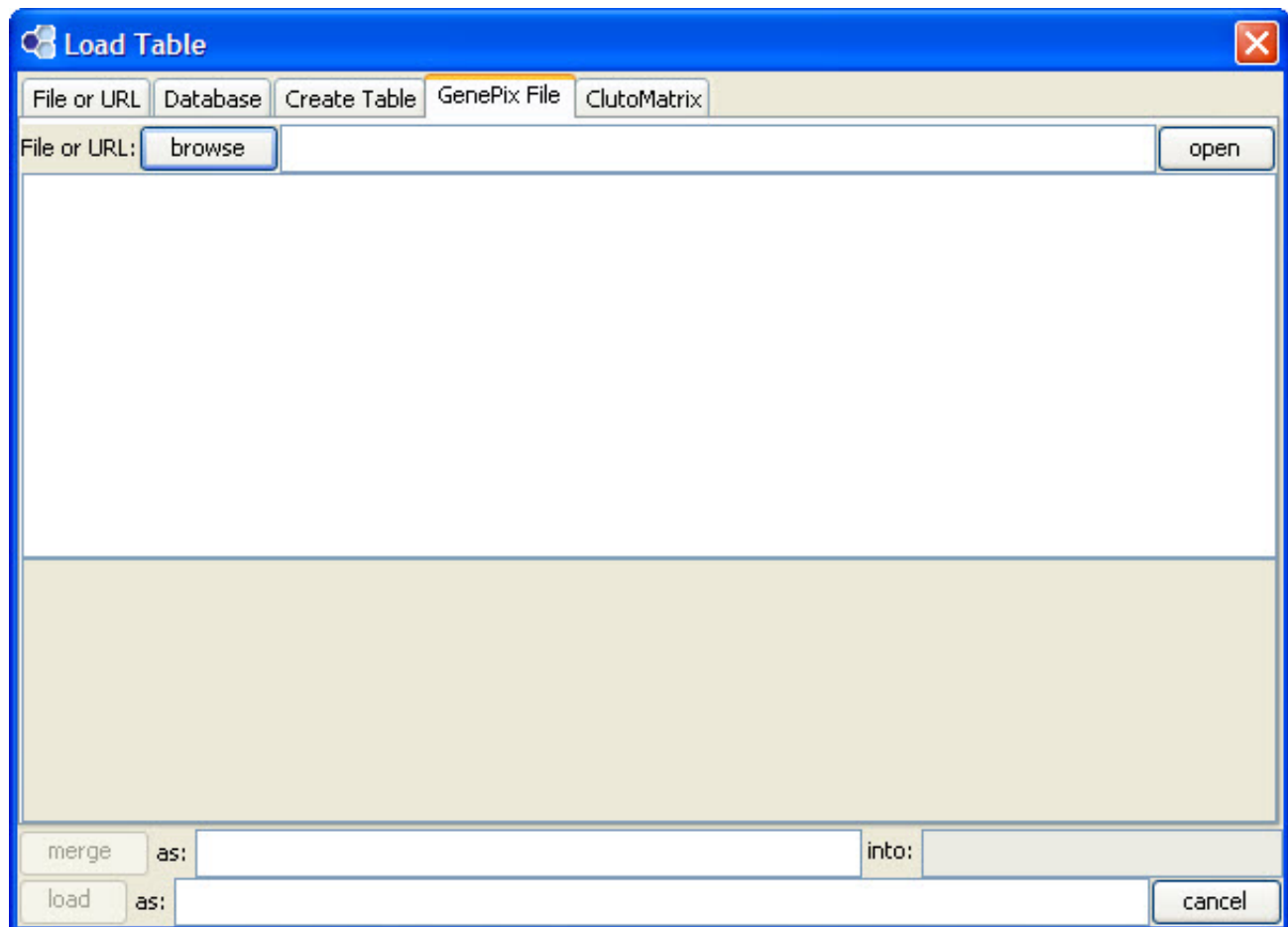




Figure 2.41 Load Table: Create a Table

9. Click on **Load** to import the data into a new table.
10. The new table leaf (📄) will be created and appear on the main tree view.
11. To create a table view for this data, simply click on the Table icon (📊) on the view toolbar or select Table View from the View menu.

Load from GenePix File

1. Select Load table from the File **Menu** or click on the icon on the toolbar.
2. The Load Table window will open (Figure 2.37)
3. Across the top there are five tabs each representing the different methods to import the data.
4. Select **GenePix** tab.
5. Click on the Browse button (or manually enter the location of the file/URL)
6. A new window listing file locations will open. Locate and open your file.
7. The contents of the file will appear in the Load Table window.
8. Next to the Load button there is a field labeled **as:** enter the table name as you want it to appear in Table View.



9. Click on **Load** to import the data into a new table.
10. The new table leaf () will be created and appear on the main tree view.
11. To create a table view for this data, simply click on the Table icon () on the view toolbar or select Table View from the View menu.

Load from ClutoMatrix

1. Select Load table from the File **Menu** or click on the icon on the toolbar.
2. The Load Table window will open (Figure 2.37)
3. Across the top there are five tabs each representing the different methods to import the data.
4. Select **ClutoMatrix** tab.
5. Click on the Browse button (or manually enter the location of the file/URL) located next to the **Matrix File or URL:** field.
6. A new window listing file locations will open. Locate and open your file.
7. The contents of the file will appear in the Load Table window.
8. Repeat these steps for the Row Label File or URL and the Column Label File or URL.
9. Next to the Load button there is a field labeled as: enter the table name as you want it to appear in Table View.

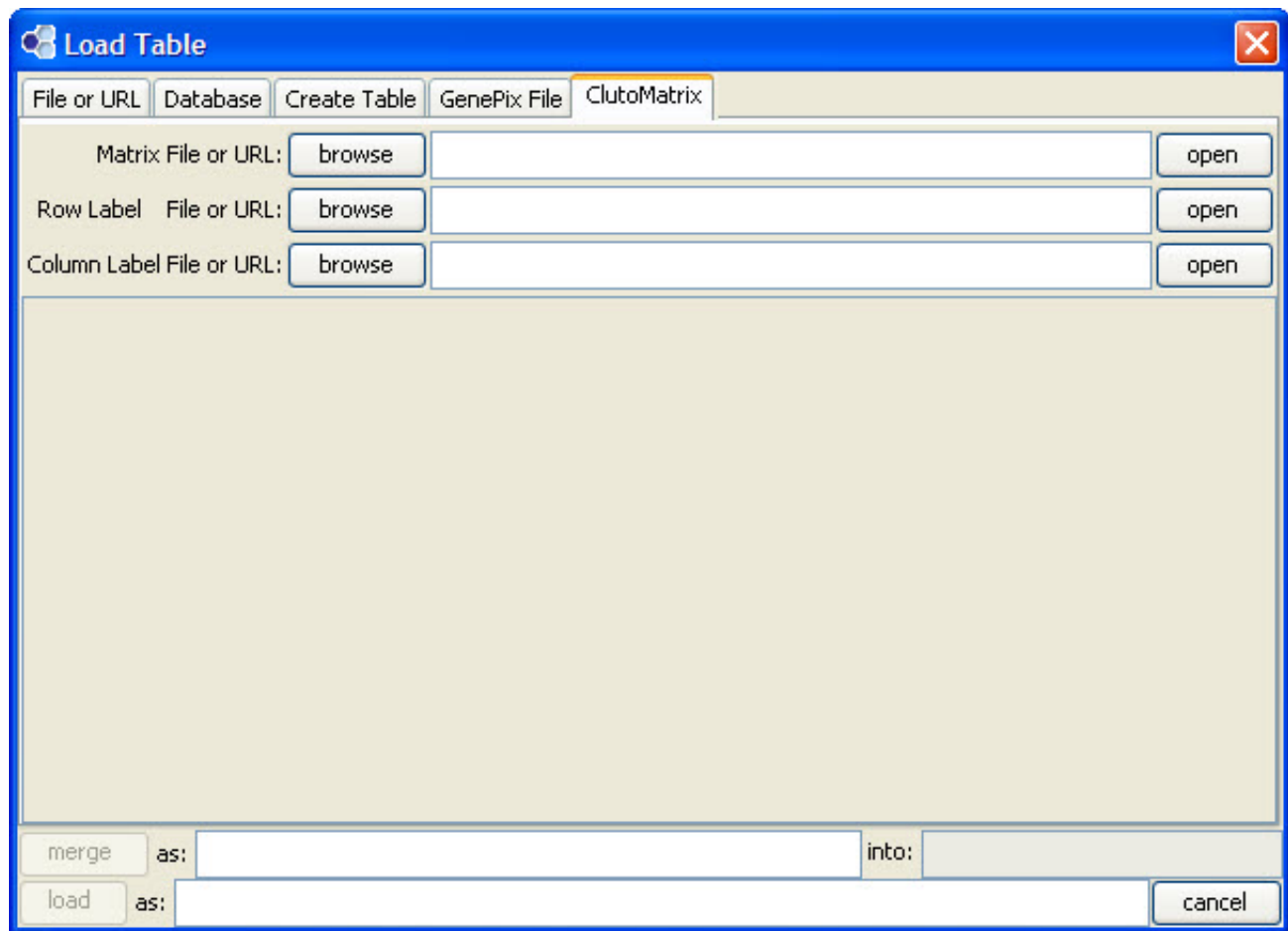




Figure 2.43 Load Table: ClutoMatrix

10. Click on **Load** to import the data into a new table.
11. The new table leaf () will be created and appear on the main tree view.
12. To create a table view for this data, simply click on the Table icon () on the view toolbar or select Table View from the View menu.

Save Table

Save the data in a table to a tab delimited text file.

Note: The **save table** feature can be accessed via the **File Menu** or by clicking on the save table icon () located on the **file and edit toolbar**.

1. Click on the table to be saved.
2. Go to the **File Menu** on the main **Control Panel** and select **Save Table**.
3. The save dialog box will open (Figure 2.44).

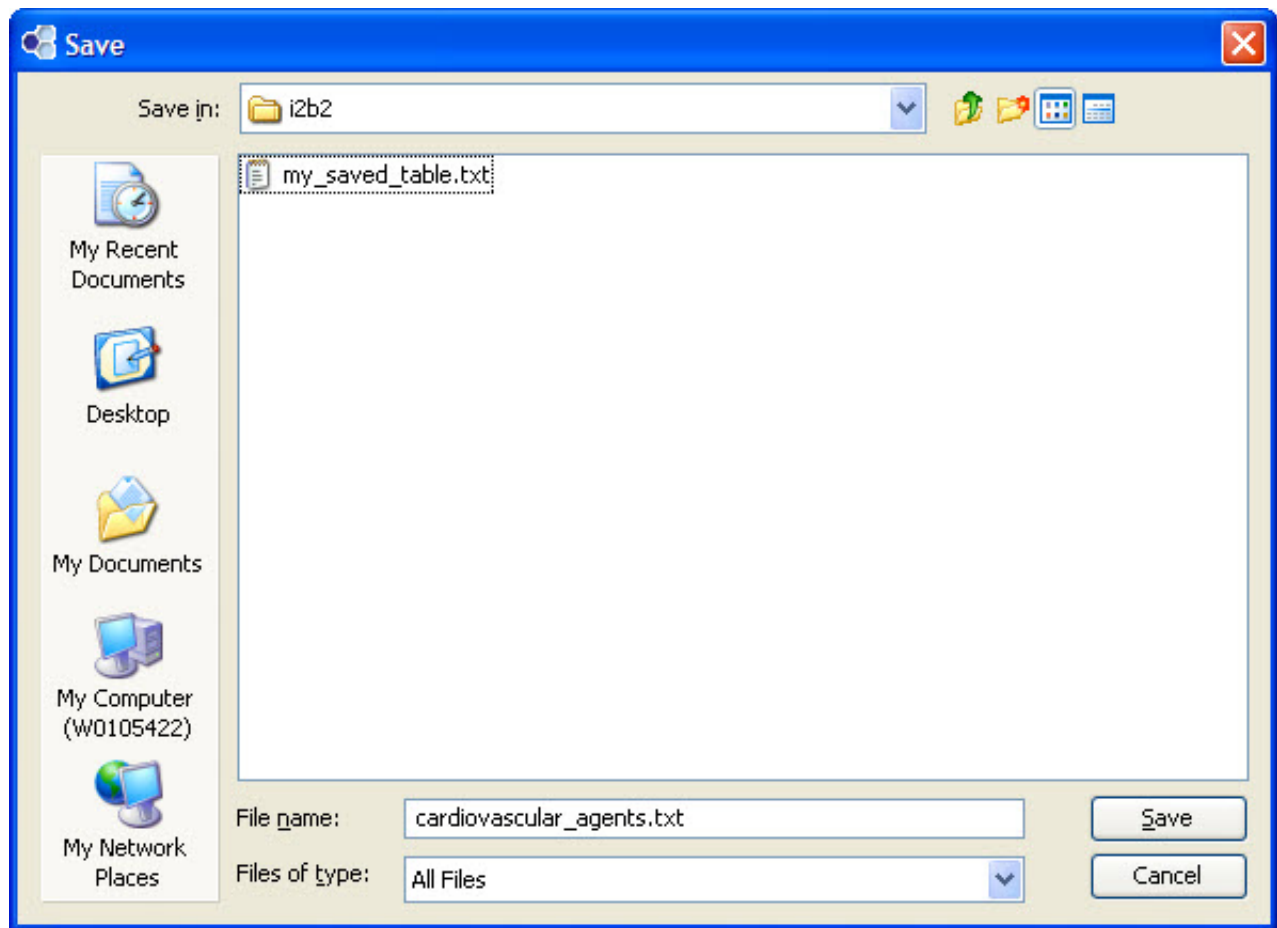


Figure 2.44 Save Table

4. Select the location where the file will be saved.
5. At the **File Name** prompt enter a name for the file.


Note: Include the file extension in the file name.

Example: my_file_name.txt

6. Click on the **Save** button.

Save Selection

Save the selected data in a table to a file.

Note: The **save selection** feature can be accessed via the **File Menu** or by clicking on the save selection icon () located on the **file and edit toolbar**.

1. Click on the table to be saved.
2. Using **<Ctrl>Left Mouse Button** select the rows that contain the data to be saved. (Figure 2.45)

Figure 2.45 Save Select Rows

3. Go to the **File Menu** on the main **Control Panel** and select **Save Table**.
4. The save dialog box will open (Figure 2.45).
5. Select the location where the file will be saved.
6. At the **File Name** prompt enter a name for the file.

Note: Include the file extension in the file name.

Example: my_file_name.txt

7. Click on the **Save** button.

Output Selection

Currently this option is not available.

EDIT MENU

The Edit menu options apply the table or view which has focus in the tree display of the main control panel.

Table Columns	Delete, reorder, or add columns to the table.
Set Default Mapping Order	Determines the mapping order for character string columns.
Create Table from Selected Rows	Create a new table of the selected rows from current table. The new sub-table is added as a child view of the original table in the tree diagram. The selections between this new sub-table and the original will be linked.
Delete Item	Delete this table or view and all other tables or views that depend upon it.
JavaScript Window	Formula interpreter: Rhino for JavaScript Additional information can be found at http://www.mozilla.org/rhino/
BeanShell Window	Formula interpreter: BeanShell for Java Additional information can be found at http://www.beanshell.org/docs.html

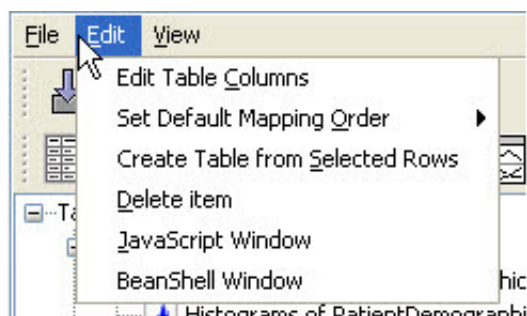


Figure 2.46 Edit Menu

Edit Table Columns

Allows the user to change the name of the table, or add or remove columns from the table.

Note: The **edit table column** feature can be accessed via the **Edit Menu** or by clicking on the edit table columns icon (📄) located on the **file and edit toolbar**.

The screenshot shows a window titled "Edit PatientDemographics" with a menu bar containing "Close", "Save Image", and "Save PDF". Below the menu bar, the "Table Name" is set to "PatientDemographics". There are three icons for table operations: a grid, a grid with a plus sign, and a grid with a minus sign. The main area displays a table with the following data:

	Name	Class	Type	Description
...	Patient ...	Patient ID	Birth Date	Death ...
1	i2b2	100000...	2023-06...	2005-06... black F 83 Y
2	i2b2	100000...	1984-12...	asian M 22 N
3	i2b2	100000...	1955-01...	asian M 52 N
4	i2b2	100000...	1976-11...	hispanic M 30 N
5	i2b2	100000...	1985-05...	black M 21 N
6	i2b2	100000...	1958-09...	black M 48 N
7	i2b2	100000...	1998-08...	hispanic M 8 N
8	i2b2	100000...	1965-12...	black M 41 N
9	i2b2	100000...	1966-08...	white F 40 N
10	i2b2	100000...	2033-10...	hispanic F 73 N
11	i2b2	100000...	2037-12...	white F 69 N
12	i2b2	100000...	1973-06...	hispanic F 33 N
13	i2b2	100000...	1976-11...	hispanic F 30 N
14	i2b2	100000...	1997-07...	black F 9 N
15	i2b2	100000...	1979-09...	black F 27 N
16	i2b2	100000...	1958-09...	black F 48 N
17	i2b2	100000...	1983-11...	indian F 23 N
18	i2b2	100000...	2021-04...	asian F 86 N
19	i2b2	100000...	1968-10...	hispanic F 38 N

Figure 2.47 Edit Table Columns

Add Column

A New Column dialog opens when choosing to insert or add a column. New columns can be columns from the imported table, columns with user entered values, or formula columns that use a script to generate values.

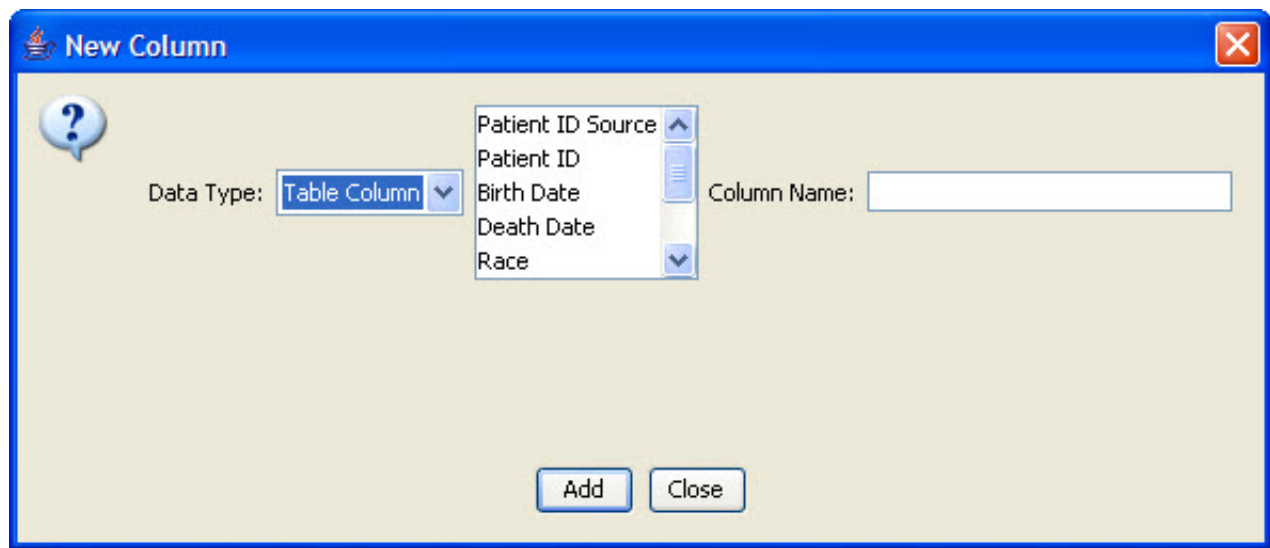




Figure 2.48 Add Column Dialog Box


Add Column After

1. Highlight the column that will be in front of the new column.
2. Click on the Add Column After icon ()
3. A new dialog box will open (see Figure 2.48)
4. Select the Data Type (see section on Data Types for more information).
5. Enter the additional information for the data type selected.
6. Enter the name for the new column.
7. Click on the Add button.

Add Column Before

1. Highlight the column that will be after the new column.
2. Click on the Add Column Before icon ()
3. A new dialog box will open (see Figure 2.48)
4. Select the Data Type (see section on Data Types for more information).
5. Enter the additional information for the data type selected.
6. Enter the name for the new column.
7. Click on the Add button.

Delete Column

1. Highlight the column to be deleted by clicking on the column header.
2. Click on the Delete Column icon ()
3. The column will be deleted.

Data Type Options

There are several different data types available when adding a column to the table. When adding a column it is necessary to define what type of data will be in the rows for that column.

Data Type	Description
Table Column	Selection of existing columns in the database.
Text	String of characters in variable lengths.
Integer	Whole numbers that can be positive, negative or zero. Contains no decimals, commas or other symbols.
Number	Numbers that contain decimals. They have a fixed precision and scale.
Date	Date combined with a time of day. Time of day includes fractional seconds and is based on a 24 hour clock.
Boolean	Represents only two values: 0 and 1. Also known as a flag type in which the 0 and 1 are usually identified with false and true respectively.
BeanShell	Formula interpreter: BeanShell for Java Additional information can be found at http://www.beanshell.org/docs.html
JavaScript	Formula interpreter: Rhino for JavaScript Additional information can be found at http://www.mozilla.org/rhino/

FORMULA INTERPRETER: BEANSHELL FOR JAVA

Four variables are provided to the formula:

Variable	Description
table	the javax.swing.table.TableModel on which this formula operates
row	the row of the cell in the table (row starts from 0)
col	the column of the cell in the table (col starts from 0)
Cells	the Cells class that has a number of useful static methods.

The formula should return a value.

To retrieve a value from a cell in the table, use the method from the TableModel interface:
`table.getValueAt(row, col-1);`

The Cells class provides a means to get a collection of table cells. (Cells uses java.util.Collection interface for Java2, for JDK1.1 it uses java.util.Vector only.)

Cells class provides the following static methods:

Vector getValuesFrom(TableModel tableModel, int from_row, int from_col, int to_row, int to_col)

Return a list of cells from a rectangular portion of the table.

Object min(Collection cells)

Return the cell with minimum value of the cells in the list.

Object max(Collection cells)

Return the cell with maximum value of the cells in the list.

Object median(Collection cells)

Return the median value of all Number-typed cells in the list.

double sum(Collection cells)

Return the sum of all Number-typed cells in the list of cells.

double average(Collection cells)

Return the average mean value of all Number-typed cells in the list.

double variance(Collection cells)

Return the variance of all Number-typed cells in the list.

double stddev(Collection cells)

Return the standard deviation of all Number-typed cells in the list.

int count(Collection cells)

Return the count of cells in the list.

int count(Collection cells, Object obj)

Return the number of times the given obj appears among the cells in the list.

int count(Collection cells, Class javaClass)

Return the number of cells in the list are of the given java class.

Set distinct(Collection cells)

Return the set of distinct cells in the list with duplicates removed.

List sort(Collection cells)

Sort the cells in place.

List reverse(Collection cells)

Reverse the order of the cells in place.

List fill(Collection cells, Object obj)

Fill the list with the given obj.

List getCommonClasses(Collection collection)

Return a list of java Classes that all cells in the list belong to.

Class getCommonClass(Collection collection)

Return the most specific java Class that all cells in the list belong to.

Set getCommonInterfaces(Collection collection)

Return a list of java interfaces that all cells in the list implement.

BeanShell Example formulas:

Example 1

```
// return column 1 - column 0  
table.getValueAt(row, 1) - table.getValueAt(row, 0);
```

Example 2

```
// return the previous column value with a maximum number of decimal places  
double dp = 100; // set number of decimal places  
Object v = table.getValueAt(row,col-1);  
return v instanceof Number ? Math.round(((Number)v).doubleValue() * dp) / dp : null;
```

Example 3

```
// return the sin of column 0  
Math.sin(((Number)(table.getValueAt(row,0) + 1.)).doubleValue());
```

Example 4

```
// average the values in a range of rows  
Cells.average(Cells.getValuesFrom(table,row-1,col-1,row+1,col-1));
```

Example 5

```
// return the sum of the preceeding columns  
double sum = 0.;  
for (int c = 0; c < col; c++) {  
    Object v = table.getValueAt(row,c);  
    if (v instanceof Number) {  
        sum += ((Number)v).doubleValue();  
    }  
}  
return sum;
```

Set Default Mapping Oder

Determines the mapping order for character string columns.

- § Natural Order
- § AlphaNumeric Order
- § Table Row Order

Create Table from Selected Rows

This creates a sub-table that contains only the selected rows from the selected parent table. The sub-table references rows in the parent table, and thus will reflect any changes made to that table. Row selection is also

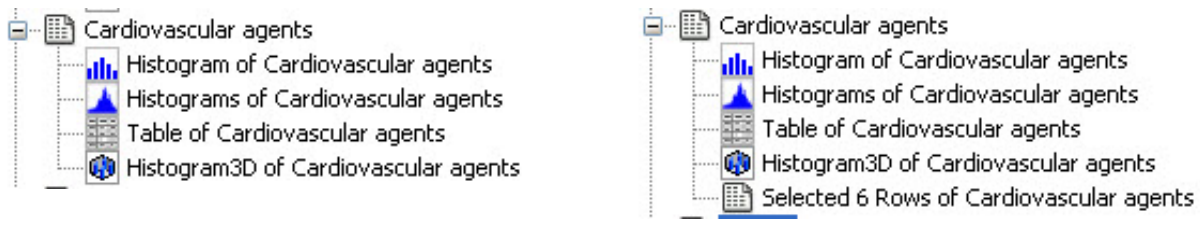




Figure 2.50 Branch pre- and post-creation of new table from selected rows

- To create a table view for this data, simply click on the Table icon () on the view toolbar or select Table View from the View menu.

Delete Item

Delete this table or view and all other tables or views that depend upon it.

Note: The delete item feature can be accessed via the **Edit Menu** or by clicking on the **delete item** icon () located on the **file and edit toolbar**.

- Click on the view to be deleted.
- Go to the **Edit Menu** on the main **Control Panel** and select **Delete Item**.
- The item will be deleted.

Warning: Once you click on the Delete Item it will be removed, therefore you need to make sure you have selected the correct view.

Java Script Window

A new window opens allowing the user to write code using a formula interpreter (Rhino for JavaScript). Additional information can be found at <http://www.mozilla.org/rhino/>

Beanshell window

A new window opens allowing the user to write code using a formula interpreter (BeanShell for Java). Additional information can be found at <http://www.beanshell.org/docs.html>

VIEW MENU

The views in the Table View are distinguished from other i2b2 Workbench views by their ability to show the information in a graphical representation.

Views can be opened on the selected table either from the View menu or the view toolbar.

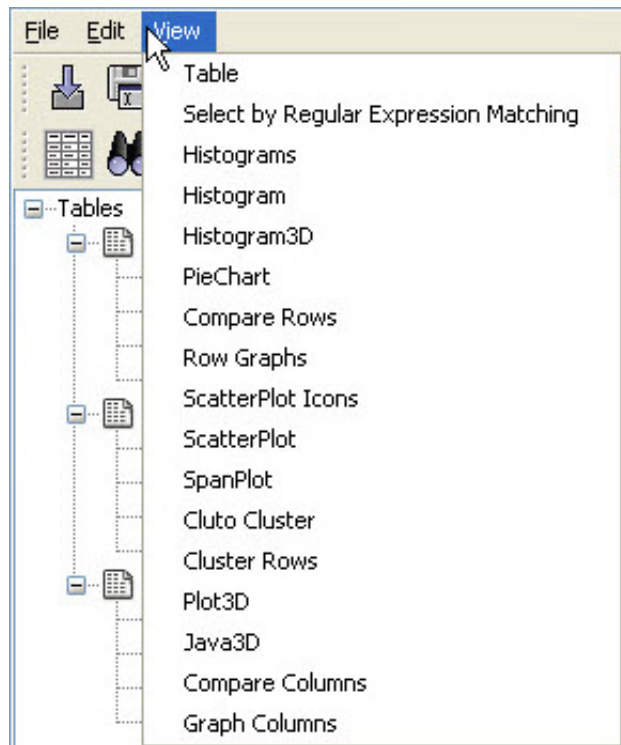


Figure 2.51 View Menu



Figure 2.52 View Toolbar

Navigation in Views

Zoom In/Out (Axis Displays on Views)

The Axes displays on several of the views allow the user to zoom in, zoom out, pan across, or pan up and down the view of the data by using the **mouse** or the **arrow** keys.

Note: Note all axes have the ability to zoom.

ZOOM IN

Keyboard: Press the **UP** arrow key.

Mouse: Use **Left Mouse Button** to zoom in on the view. The point at which the button is pressed will move to the left edge, and the point at which the button is released will move to the right edge.

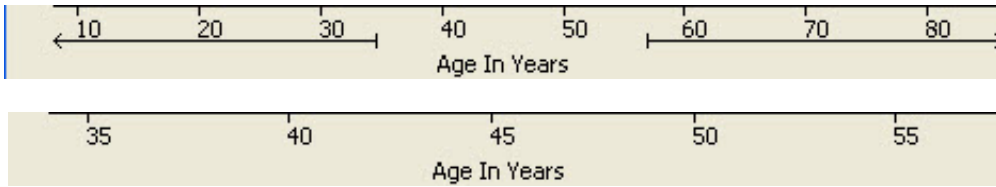


Figure 2.53 Zoom In - X Axis

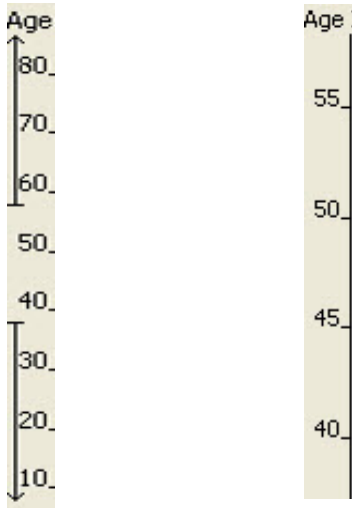


Figure 2.54 Zoom In - Y Axis

ZOOM OUT

Keyboard: Press the **DOWN** arrow key.

Mouse: Use **<Ctrl>Left Mouse Button** to zoom out on the view. The left edge will move to the point at which the button is pressed, and right edge will move to the point at which the button is released.



Figure 2.55 Zoom Out - X Axis

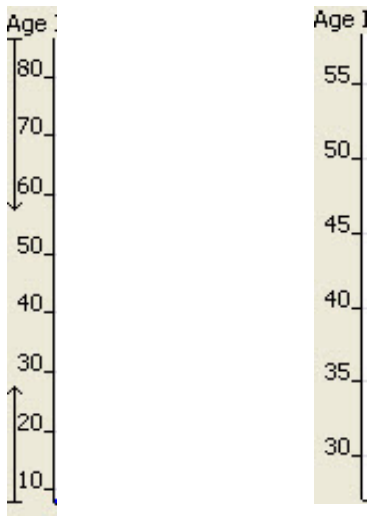


Figure 2.56 Zoom Out - Y Axis

PAN ACROSS

Keyboard: Press the **LEFT** arrow or the **RIGHT** arrow key.

Mouse: Using **<Shift>Left Mouse Button** to pan across the view: press the button and drag to pan.

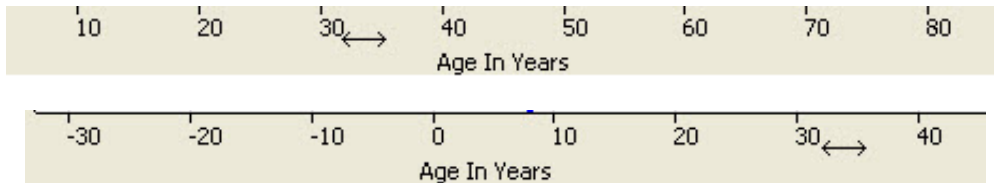


Figure 2.57 Pan Across - X Axis

PAN UP & DOWN

Keyboard: Not available.

Mouse: Using **<Shift>Left Mouse Button** to pan up and down the view: press the button and drag to pan.

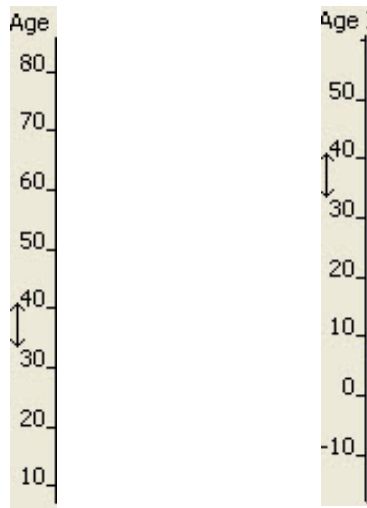


Figure 2.58 Pan Up and Down - Y Axis

Save Images

All views can be saved to an image.

1. Open the view to be saved.
2. Click on Save Image located at the top of the view.
3. The save dialog box will open (see Figure 2.59)

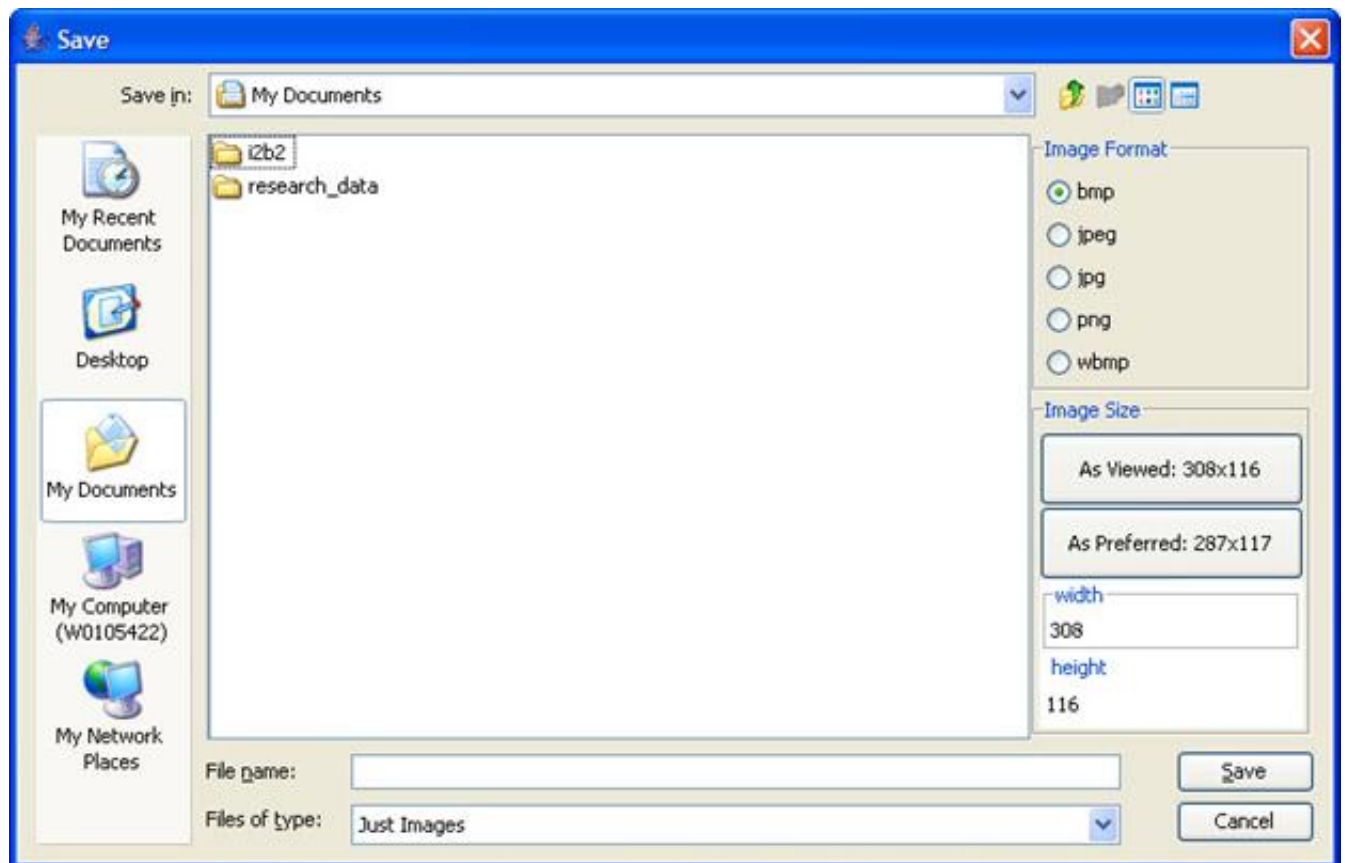


Figure 2.59 Save Images

4. Select the location of where the image will be saved.
5. Select the image format that is appropriate for your use.
6. If necessary, change the default image size.
7. Enter the file name for the image.
8. Click on the Save button.

Save PDF

All views can be saved to a PDF.

1. Open the view to be saved.
2. Click on Save PDF located at the top of the view.
3. The save dialog box will open (see Figure 2.60)

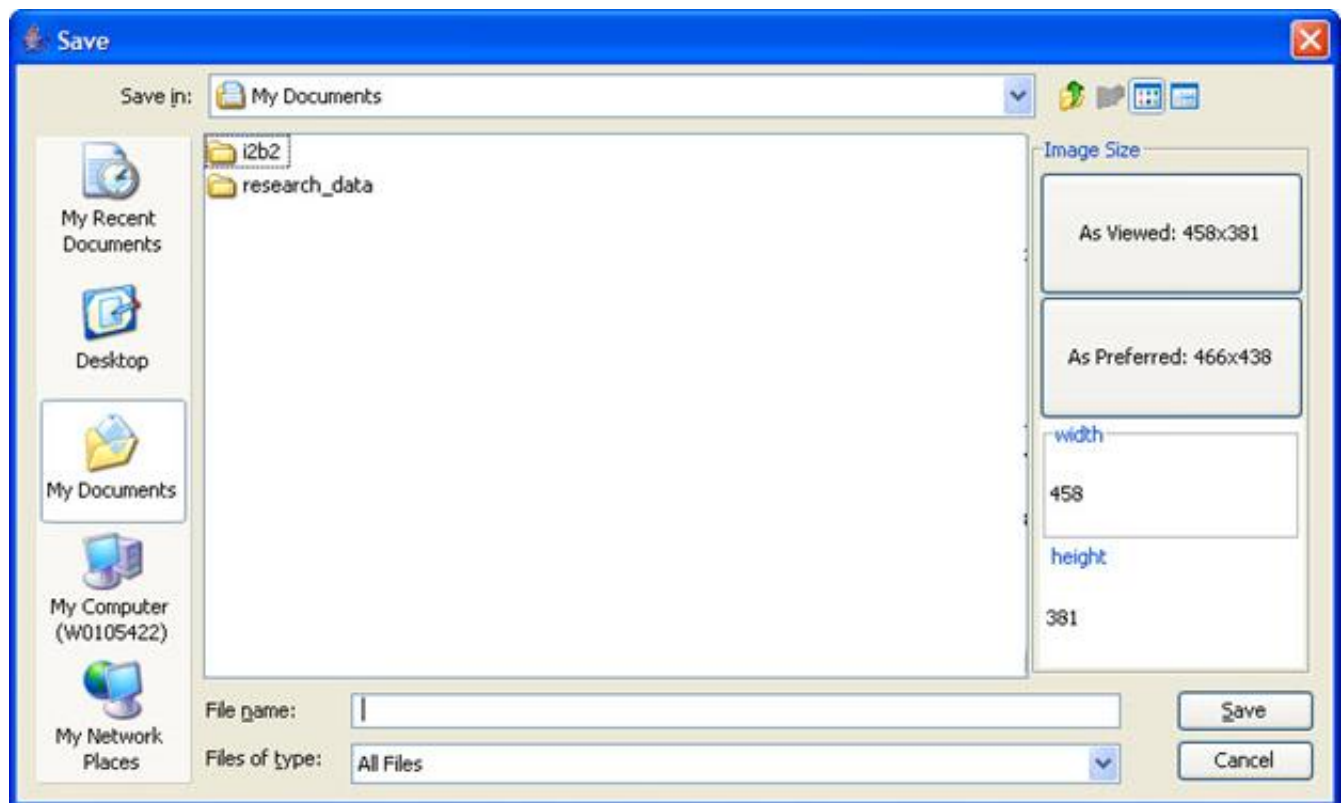



Figure 2.60 Save PDF

4. Select the location of where the image will be saved.

5. If necessary, change the default PDF size.
6. Enter the file name for the PDF.
7. Click on the Save button.

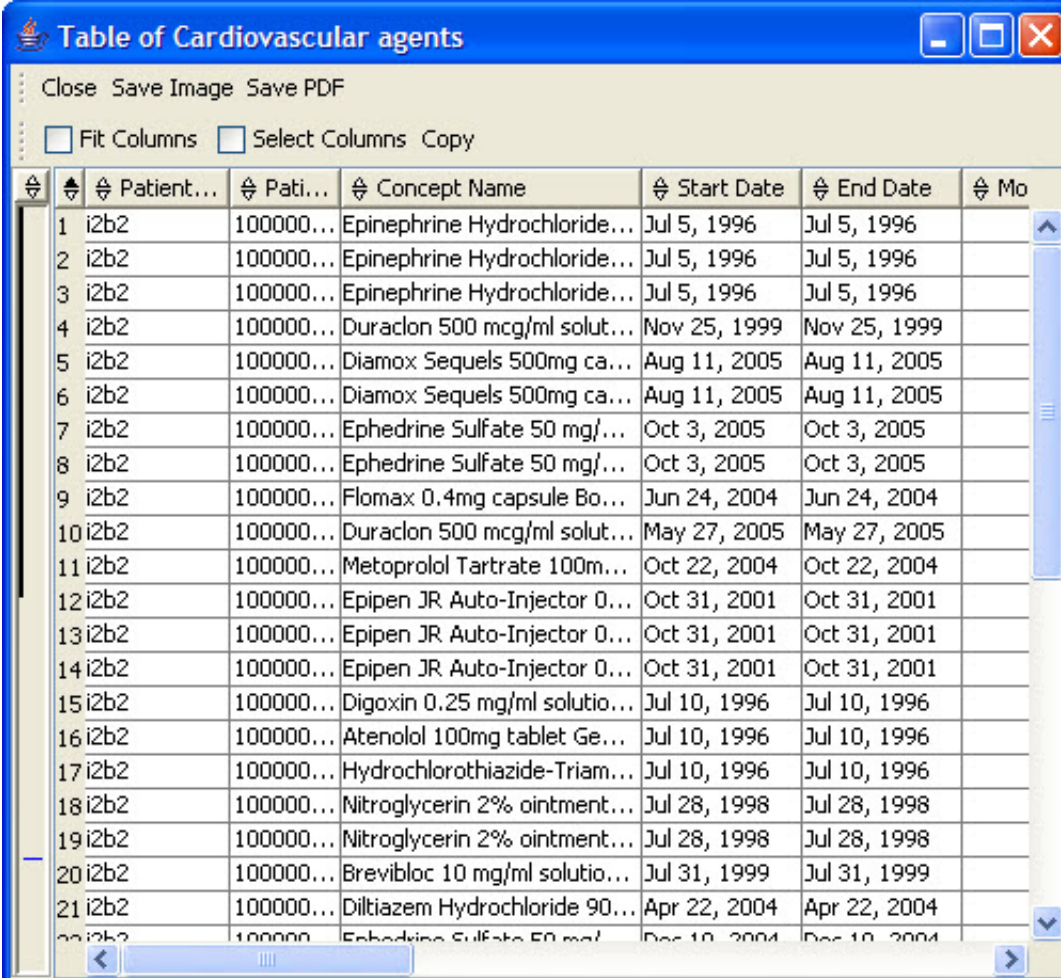
Views

Table View ()

A table () shows a column for each attribute and one or more rows of data. It provides a view of the data as a table which is similar to a traditional spreadsheet.

The small bar along the left margin shows the location of selected rows within the entire length of the table. A mouse click in this area will scroll the table to that location.

The left margin of the table shows the row number indices of the table in its original sort order.



	Patient...	Pati...	Concept Name	Start Date	End Date	Mo
1	i2b2	100000...	Epinephrine Hydrochloride...	Jul 5, 1996	Jul 5, 1996	
2	i2b2	100000...	Epinephrine Hydrochloride...	Jul 5, 1996	Jul 5, 1996	
3	i2b2	100000...	Epinephrine Hydrochloride...	Jul 5, 1996	Jul 5, 1996	
4	i2b2	100000...	Duraclon 500 mcg/ml solut...	Nov 25, 1999	Nov 25, 1999	
5	i2b2	100000...	Diamox Sequels 500mg ca...	Aug 11, 2005	Aug 11, 2005	
6	i2b2	100000...	Diamox Sequels 500mg ca...	Aug 11, 2005	Aug 11, 2005	
7	i2b2	100000...	Ephedrine Sulfate 50 mg/...	Oct 3, 2005	Oct 3, 2005	
8	i2b2	100000...	Ephedrine Sulfate 50 mg/...	Oct 3, 2005	Oct 3, 2005	
9	i2b2	100000...	Flomax 0.4mg capsule Bo...	Jun 24, 2004	Jun 24, 2004	
10	i2b2	100000...	Duraclon 500 mcg/ml solut...	May 27, 2005	May 27, 2005	
11	i2b2	100000...	Metoprolol Tartrate 100m...	Oct 22, 2004	Oct 22, 2004	
12	i2b2	100000...	Epipen JR Auto-Injector 0...	Oct 31, 2001	Oct 31, 2001	
13	i2b2	100000...	Epipen JR Auto-Injector 0...	Oct 31, 2001	Oct 31, 2001	
14	i2b2	100000...	Epipen JR Auto-Injector 0...	Oct 31, 2001	Oct 31, 2001	
15	i2b2	100000...	Digoxin 0.25 mg/ml solutio...	Jul 10, 1996	Jul 10, 1996	
16	i2b2	100000...	Atenolol 100mg tablet Ge...	Jul 10, 1996	Jul 10, 1996	
17	i2b2	100000...	Hydrochlorothiazide-Triam...	Jul 10, 1996	Jul 10, 1996	
18	i2b2	100000...	Nitroglycerin 2% ointment...	Jul 28, 1998	Jul 28, 1998	
19	i2b2	100000...	Nitroglycerin 2% ointment...	Jul 28, 1998	Jul 28, 1998	
20	i2b2	100000...	Brevibloc 10 mg/ml solutio...	Jul 31, 1999	Jul 31, 1999	
21	i2b2	100000...	Diltiazem Hydrochloride 90...	Apr 22, 2004	Apr 22, 2004	
22	i2b2	100000...	Ebedicine Sulfate 50 mg/...	Dec 10, 2004	Dec 10, 2004	

Figure 2.61 Table

TABLE VIEW FEATURES

The table view has features for refining the display to suit your needs.

Column Descriptions

Descriptions of the attributes for which data is reported are displayed.

Column Adjustments

You can make the following adjustments to columns:

Adjust column width by dragging a border left or right.

Change a column order by dragging a column heading and dropping to insert it between two columns.

Column sort is done by clicking on the up or down arrow in the column heading. To return to the original sort order, click on the appropriate arrow in the row # column.

Up Arrow – ascending order

Down Arrow – descending order

Additional Sorting criteria – hold the **<Shift>** key while clicking on other arrows.

Remove Additional Sorting – hold the **<Ctrl>** key while clicking on an arrow.

Fit Column will force the table to fit the width of the window by either expanding or shrinking the column widths.


Select Columns allows the user to select one or many columns.

Copy

The Copy button copies the text values of the selected cells in the table to the system clipboard. The values can then be pasted in other applications.

Adding a Table

Note: The **add table** feature can be accessed via the **View Menu** or by clicking on the table icon () located on the **file and edit toolbar**.

1. On the main **Tree View** highlight the branch, also referred to as table leaf () in which the new table is to be created (Figure 2.62)

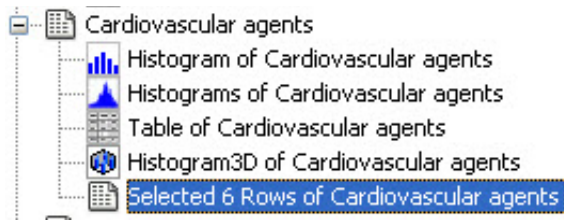



Figure 2.62 Add Table: Highlight branch/leaf

2. Click on the Table icon () on the view toolbar or select Table View from the View menu.
3. A new table will be created and appear under the selected branch (Figure 2.63).

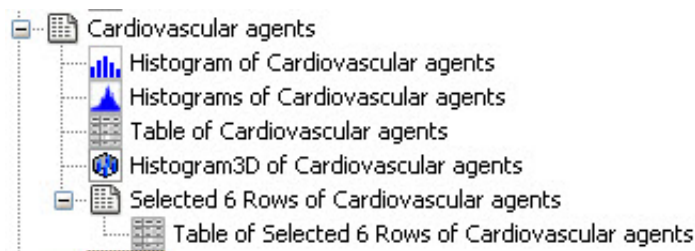


Figure 2.63 Add Table

EDITING A TABLE

For information on editing a table please see **Table Columns** section of the help.

SAVING A TABLE

For information on saving a table please see **Save Table** section of the help.

REMOVING A TABLE

For information on removing a table please see **Delete Item** section of the help.

Cluster Rows ()

Cluster Rows performs a hierarchical clustering of the rows of the table based on the values in the selected columns. The distances between rows can be calculated using a variety of distance functions available in the CERN colt package. The default is Euclidean distance. The distance calculation between clusters can be set to Average (the averages of the rows distances between the cluster), Single-link (the least row distance), or Complete-link (the greatest row distance). The cluster button starts the clustering process.

The hierarchical cluster is displayed as a dendrogram. Dragging out an area over the dendrogram selects all rows in the table represented by the branches of the tree in the selected area.

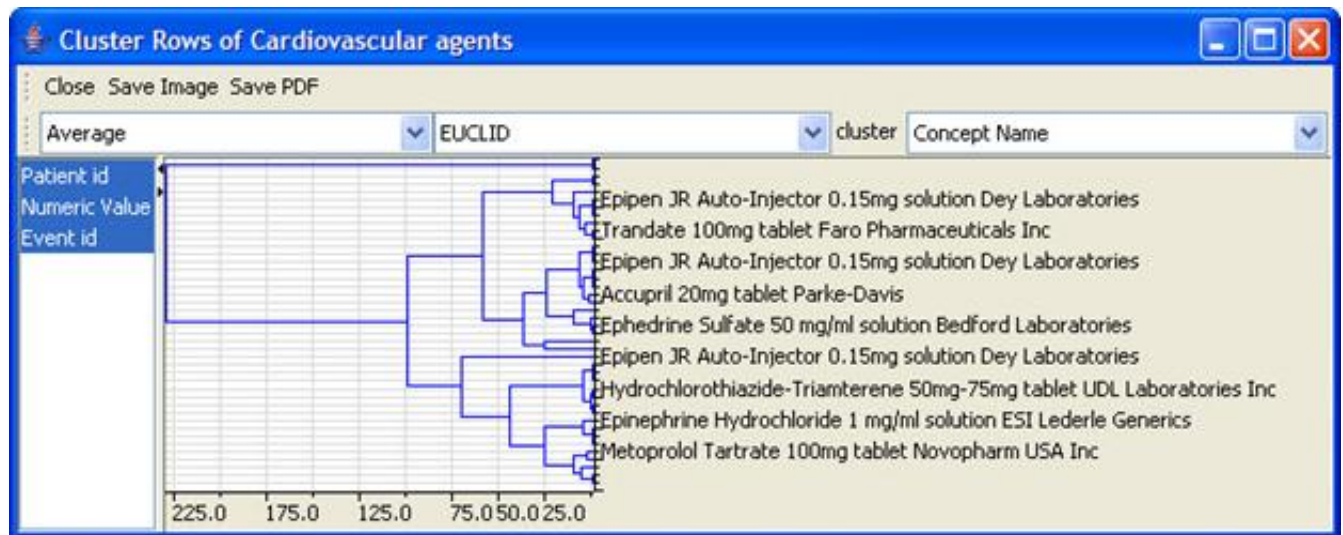


Figure 2.64 Cluster Rows

Cluto Cluster (🇺🇸)

CLUTO is a 3rd party software package for clustering low- and high-dimensional datasets and for analyzing characteristics of the various clusters.

ALGORITHMS

CLUTO provides three different classes of clustering algorithms that operate either directly in the object's feature space or in the object's similarity space. These algorithms are based on the *partitional*, *agglomerative*, and *graph-partitioning* paradigms.

A key feature in most of **CLUTO**'s clustering algorithms is that they treat the clustering problem as an optimization process which seeks to maximize or minimize a particular *clustering criterion function* defined either globally or locally over the entire clustering solution space.

Criterion Functions

CLUTO provides a total of seven different criterion functions that can be used to drive both partitional and agglomerative clustering algorithms. Most of these criterion functions have been shown to produce high quality clustering solutions in high dimensional datasets, especially those arising in document clustering.

Multiple similarity/distance functions:

- § Euclidean distance
- § Cosine
- § Correlation coefficient
- § Extended Jaccard

§ User-defined

Traditional agglomerative merging schemes:

- § Single-link
- § Complete-link
- § UPGMA

Graph-Partitioning-based clustering algorithms

Furthermore, **CLUTO** provides graph-partitioning-based clustering algorithms that are well-suited for finding clusters that form contiguous regions that span different dimensions of the underlying feature space

ADDITIONAL FEATURES

Multiple methods for effectively summarizing the clusters: most descriptive and discriminating dimensions, cliques, and frequent itemsets.

Can scale to very large datasets containing; hundreds of thousands of objects and tens of thousands of dimensions.

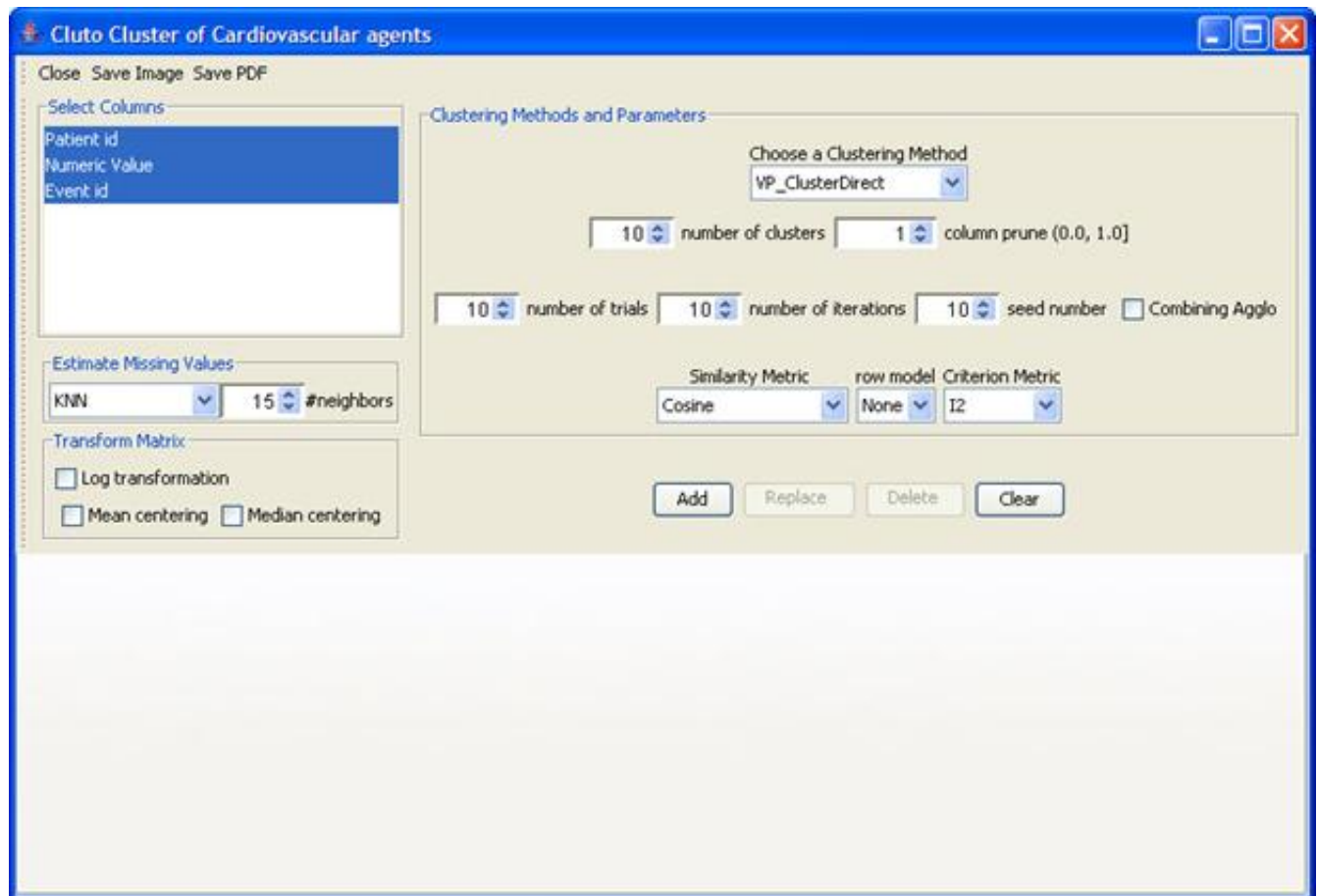


Figure 2.65 Cluto Cluster

Compare Columns ()

Shows a line graph of the values of each selected column, superimposed using a common scale.

This might be a useful view of the table if successive rows in the table represent a time series of values

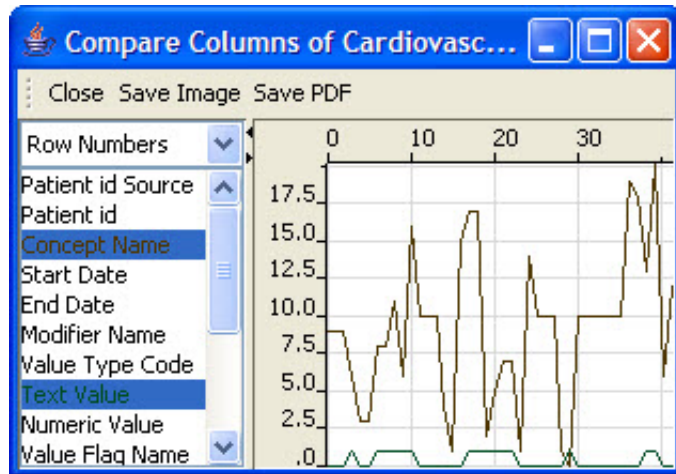


Figure 2.66 Compare Columns

Compare Rows (Parallel Coordinate) ()

This view displays the values of each row of a table as a line graph across a set of vertical axes which represent the columns of the table. Each vertical axis line represents one column from the table and each value from that column to map to the line by its relative distance between the minimum and maximum value for that column.

The user may select rows from the table by pressing the mouse button over a vertical axis and dragging vertically to select a region of values in that column.

The Selection of columns to operate on is controlled by selecting the diamond shape for the column at top the graph. The selection status of the column is indicated by whether the diamond-shape is filled. The anchor selection is drawn in black. Clicking on a diamond will select that column, a Double-Click selects only that column, and a Control-Click toggles the selected status of the column.

The Toolbar buttons operate as follows:

- § **Show All** causes all columns to be displayed.
- § **Hide** will hide the currently selected columns from view.
- § **Group** will set the display range the same on the currently selected columns.
- § **Normalize** will set the display range independently for each selected column.

The Radio buttons control which rows are displayed:

- § **All Rows Display** all rows from the table.
- § **Selected Rows Tracks** the selection and display those rows from the table.
- § **Current Rows Locks** the display on the current selection.

The color gradient of the graph lines can be set to a column by double-clicking the diamond shape for the column at top the graph.

The columns may be reordered by dragging the diamond shape above a column to the left or right.

The mapping order of a column may be inverted by clicking on the triangle below the column.

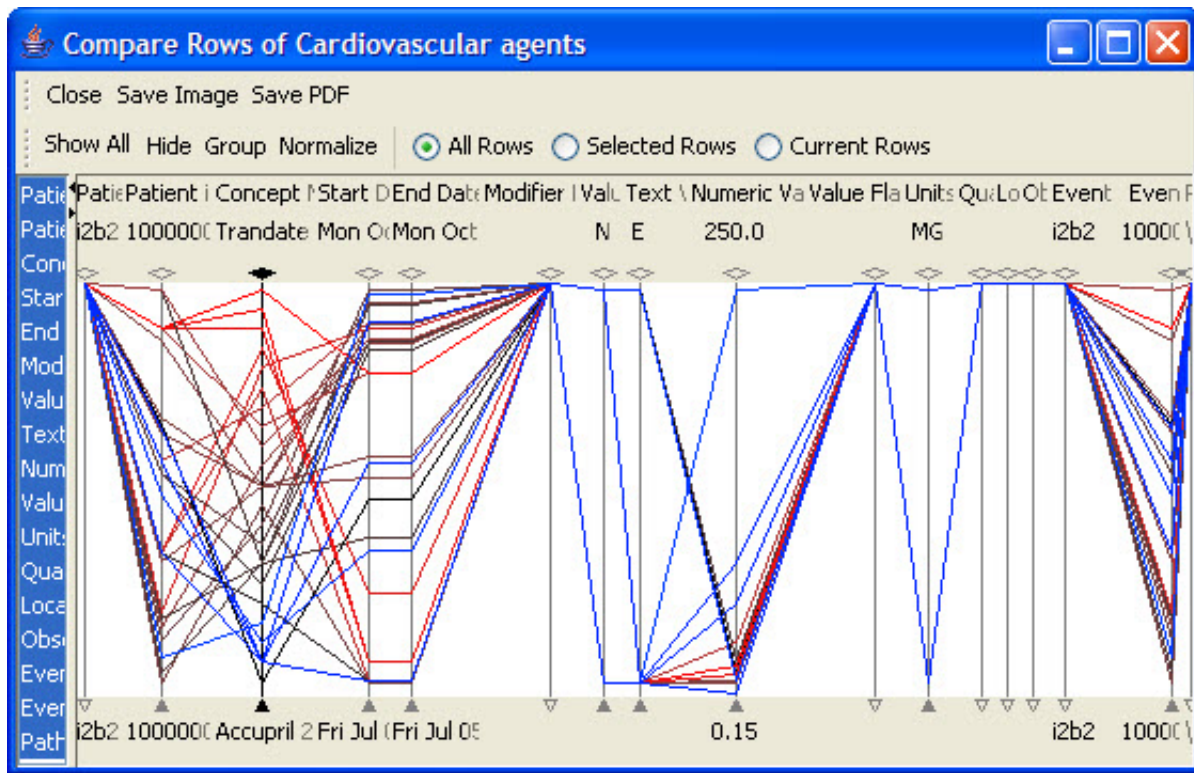


Figure 2.67 Compare Rows

Graph Columns ()

Shows a line graph of the values in a column across all the rows in the table. A graph can be slid up or down by dragging the label with the mouse. This allows separate line graphs to be superimposed. Note that each line graph is normalized to its own value range, so superimposed graphs do not share a common scale.

This might be a useful view of the table if successive rows in the table represent a time series of values.

The user may select rows in the table by pressing the mouse button over a graph and dragging left or right to select a region on the graph.

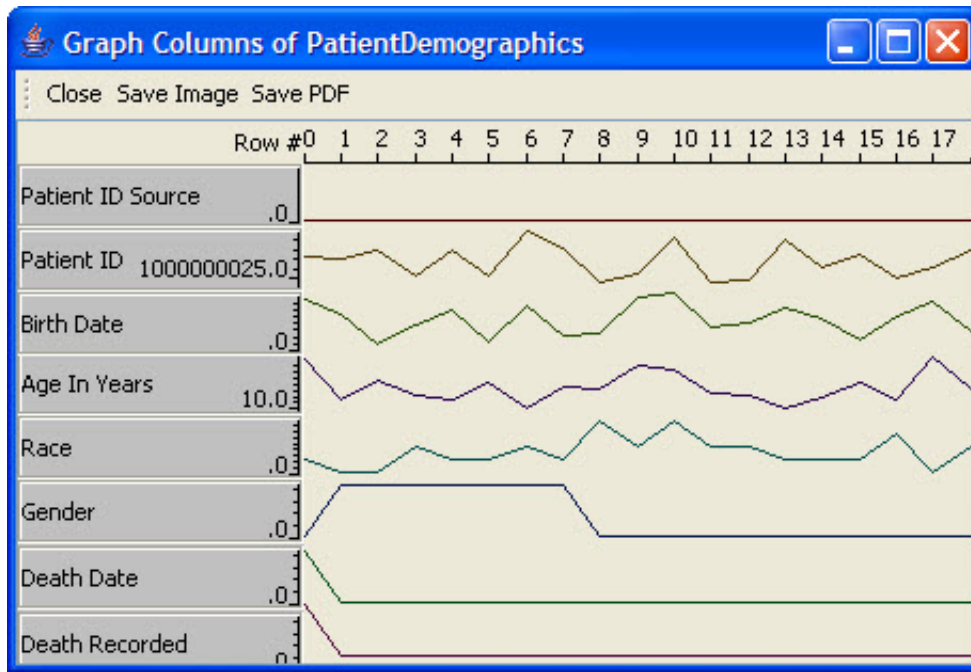


Figure 2.68 Graph Columns

Histogram ()

This view presents a bar chart to represent the histogram. If multiple columns are included in the histogram, this will be a grouped bar chart.

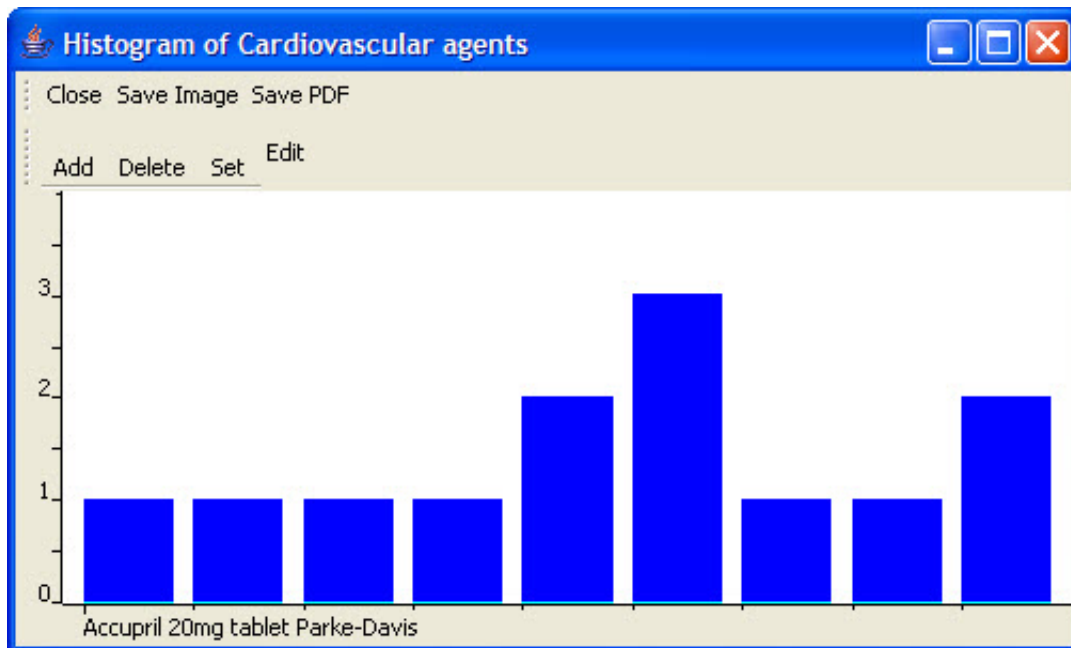


Figure 2.69 Histogram

HISTOGRAM EDITOR

A histogram divides the range of a set of values into a number of bins, and reports the number of values that fall into each bin.

The Histogram Editor defines the bins for each of the table columns included in the histogram.

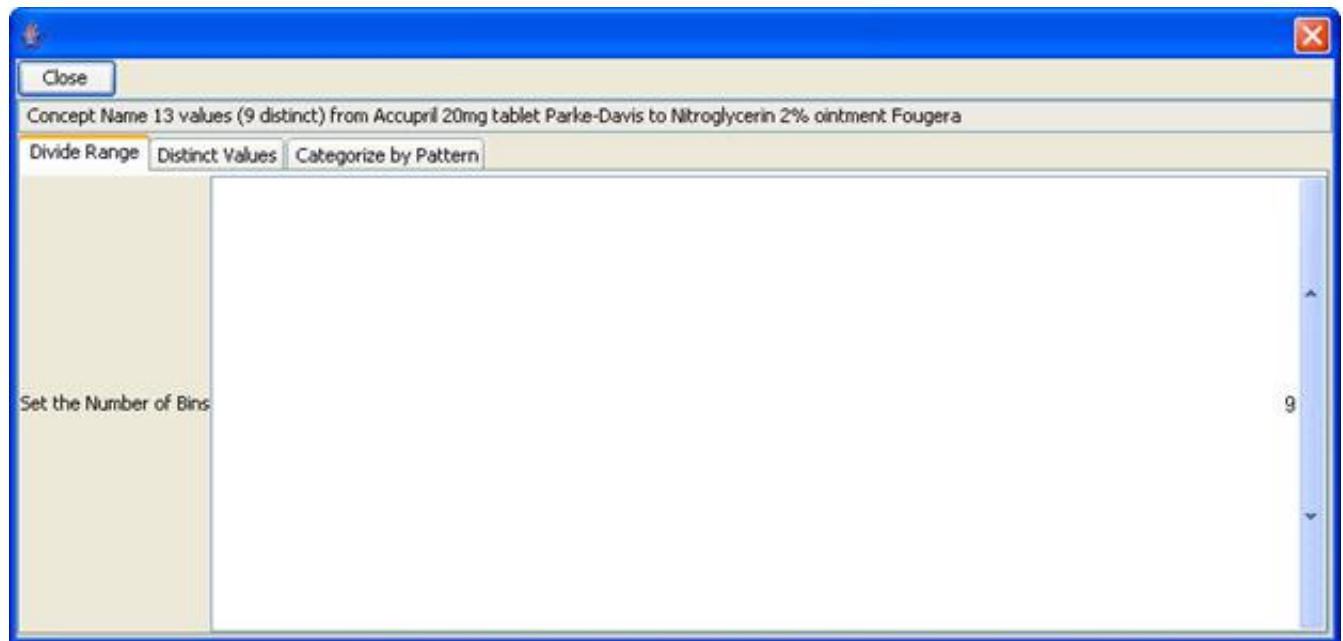


Figure 2.70 Histogram Editor Dialog Box

Histograms ()

This view presents a histogram for each column in the table. A histogram shows how many rows of the table have values that fall in each sub range between the minimum and maximum values for a column. Changing the width of the window will cause each histogram to be recomputed.

The toolbar has a button with an iconic histogram for each column in the table. Selecting a button on the toolbar displays an interactive histogram.

The user may select rows from the table by pressing the mouse button over a histogram and dragging left or right to select a range of values from the column. Rows from the table that correspond to that range of values are selected.

The highlighted portion of each bar shows how many rows with that value are selected.

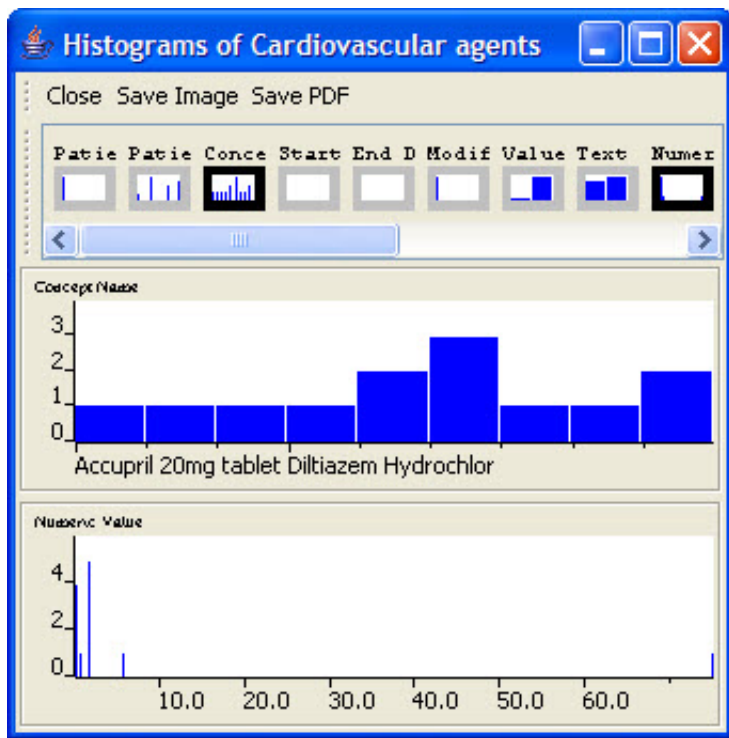


Figure 2.71 Histograms

Histogram 3D ()

This view presents 3 dimensional bars to represent a histogram calculated over 2 table columns.

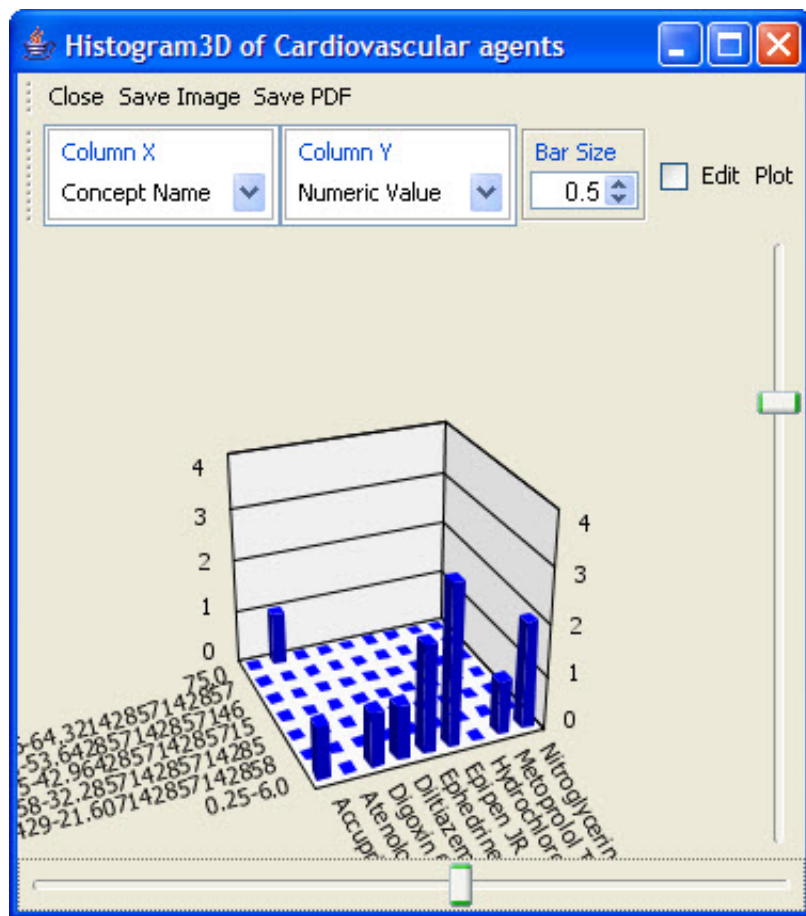


Figure 2.72 Histogram 3D

Java 3D ()

Scatter Plots in 3D

Provides a 3D scatter plot of values from three columns of a table.

The Java3D component provides high performance 3D viewing.

The Plot 3D component is an all software version that provides similar functionality for those that don't have Java3D.

A control button sets interaction to either navigation or selection. While navigating the left mouse button rotates, the center mouse (or Alt Left Mouse Button) zooms in or out, and the right mouse button translates the view up, down, left or right. While selecting, press the mouse over the view and drag out a region to select rows corresponding to the values in the selected region.

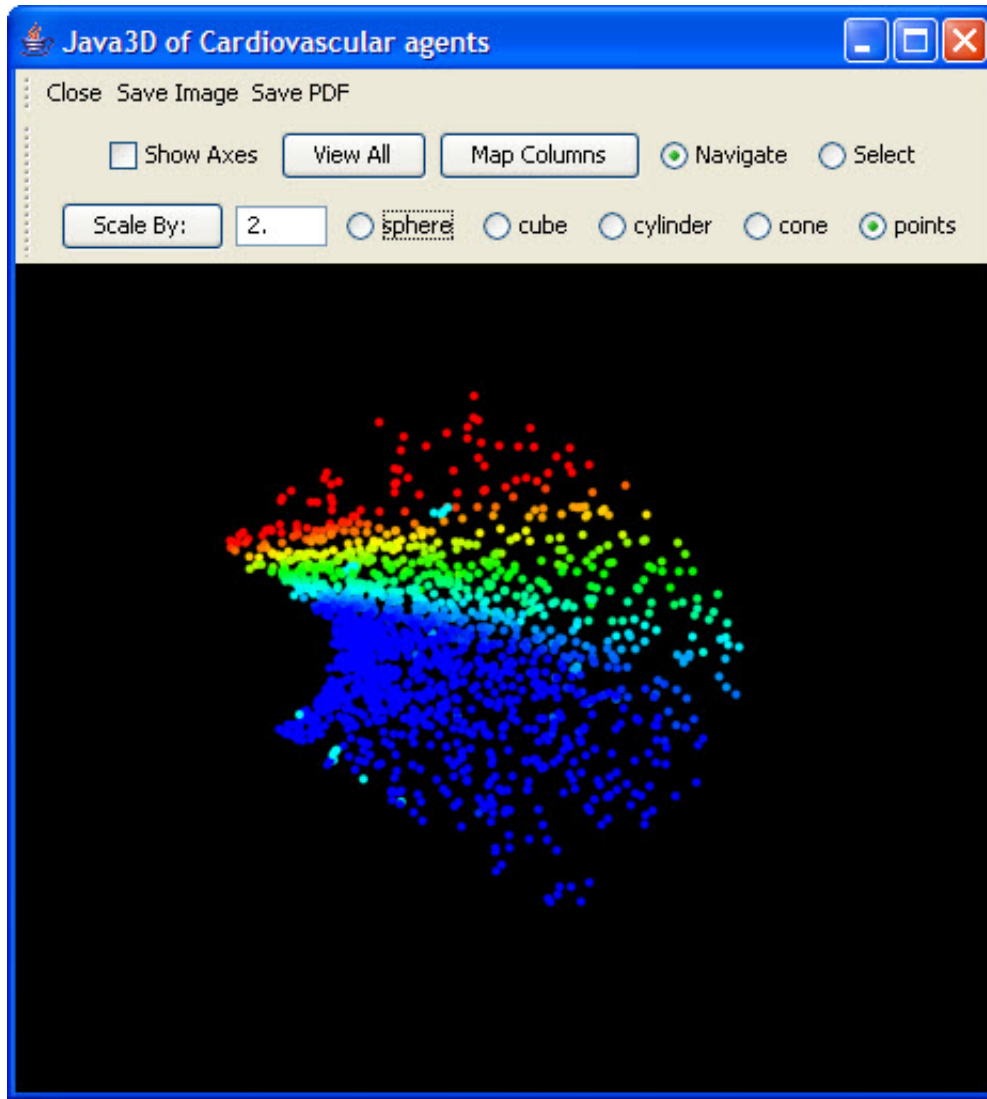


Figure 2.73 Java 3D

Pie Chart ()

This view presents a pie chart to represent the histogram. If multiple columns are included in the histogram, there will be a ring for each column.

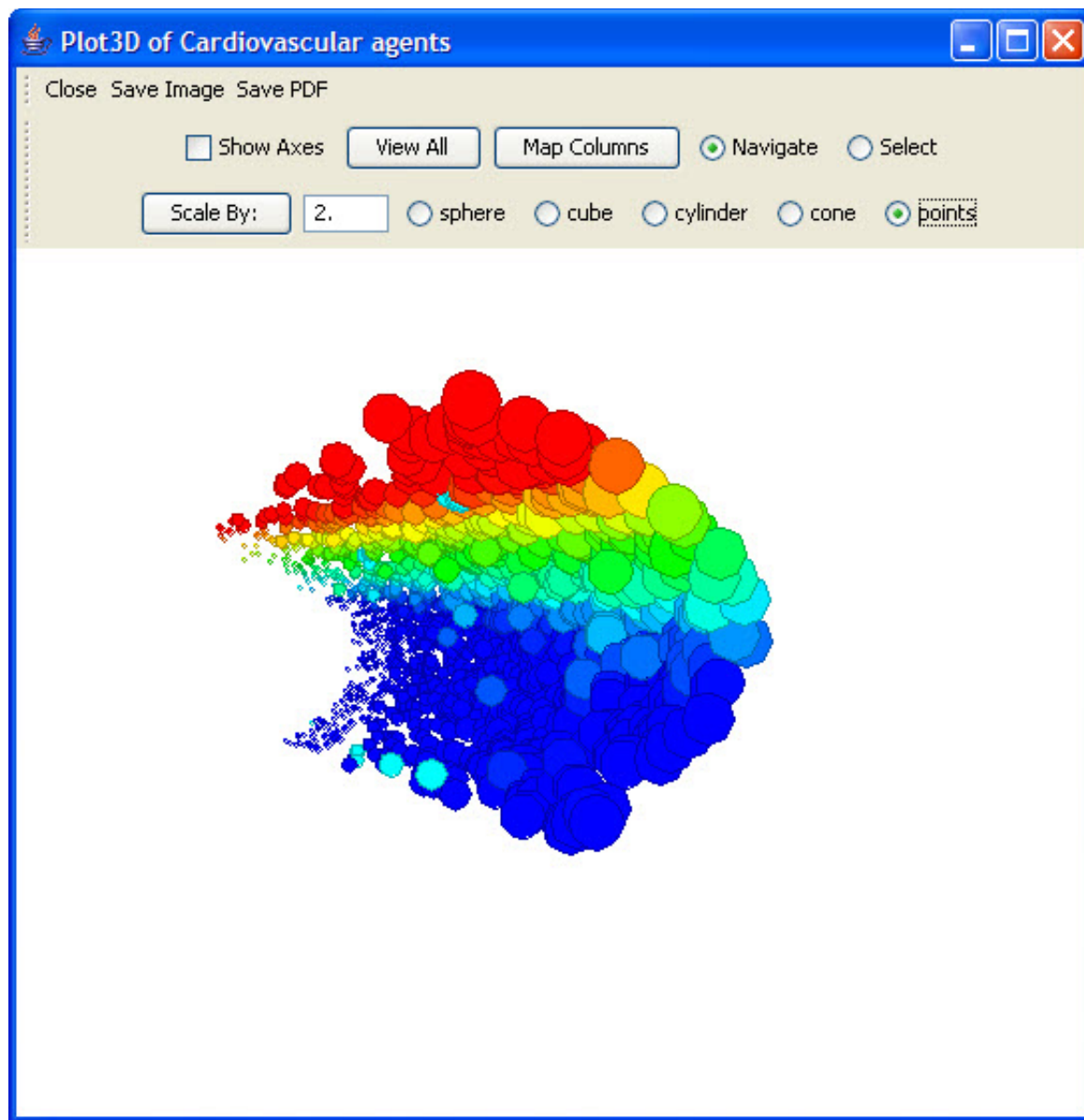


Figure 2.75 Plot 3D

Row Graphs ()

This displays a table that has a row for each distinct value of the selected column. The table displays the value in the first column and a graph of row values in the second column. Double-Clicking on the graph, will open a Compare Rows view.

The column to display is selected in the **Graph Column** box.

The height in pixels for each graph can be set in the **Graph Height** box. The width of the graph can be adjusted by dragging the edge of the column header.

The look of the graph is set using the **Graph Prototype**. This is a **Compare Rows** view that serves as a model for all of the graphs displayed.

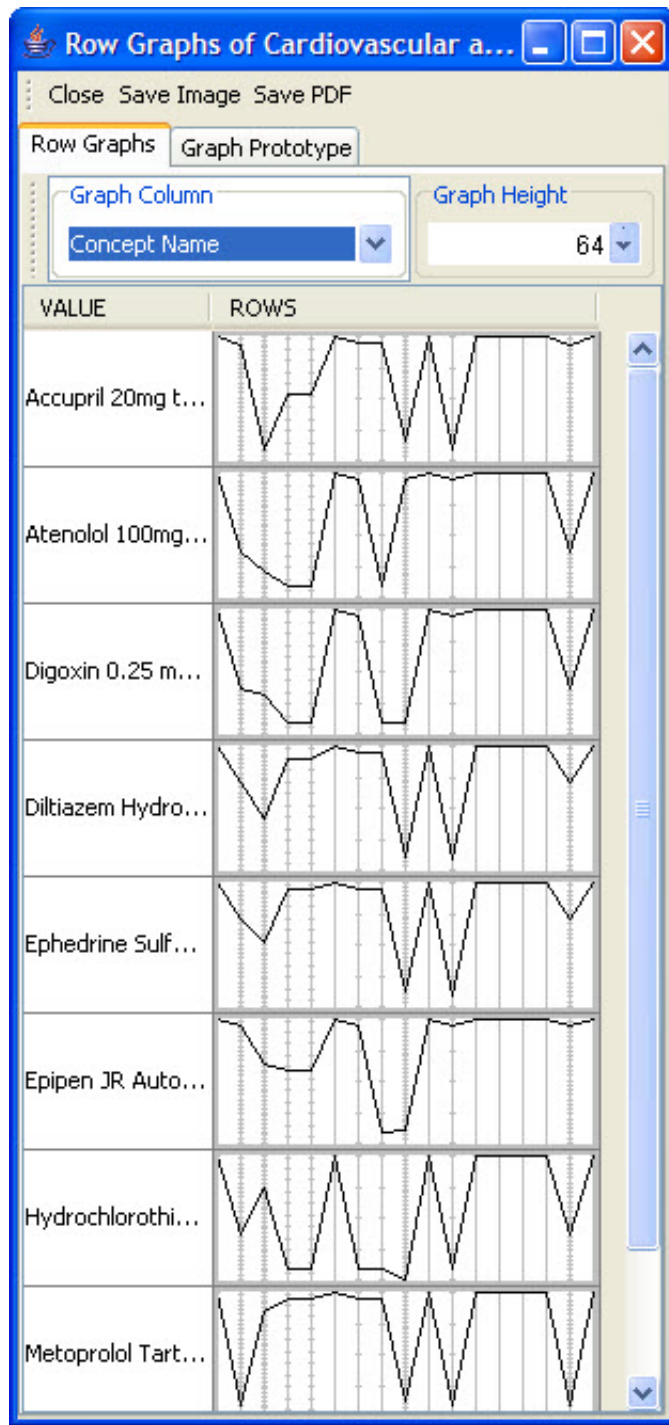


Figure 2.76 Row Graphs

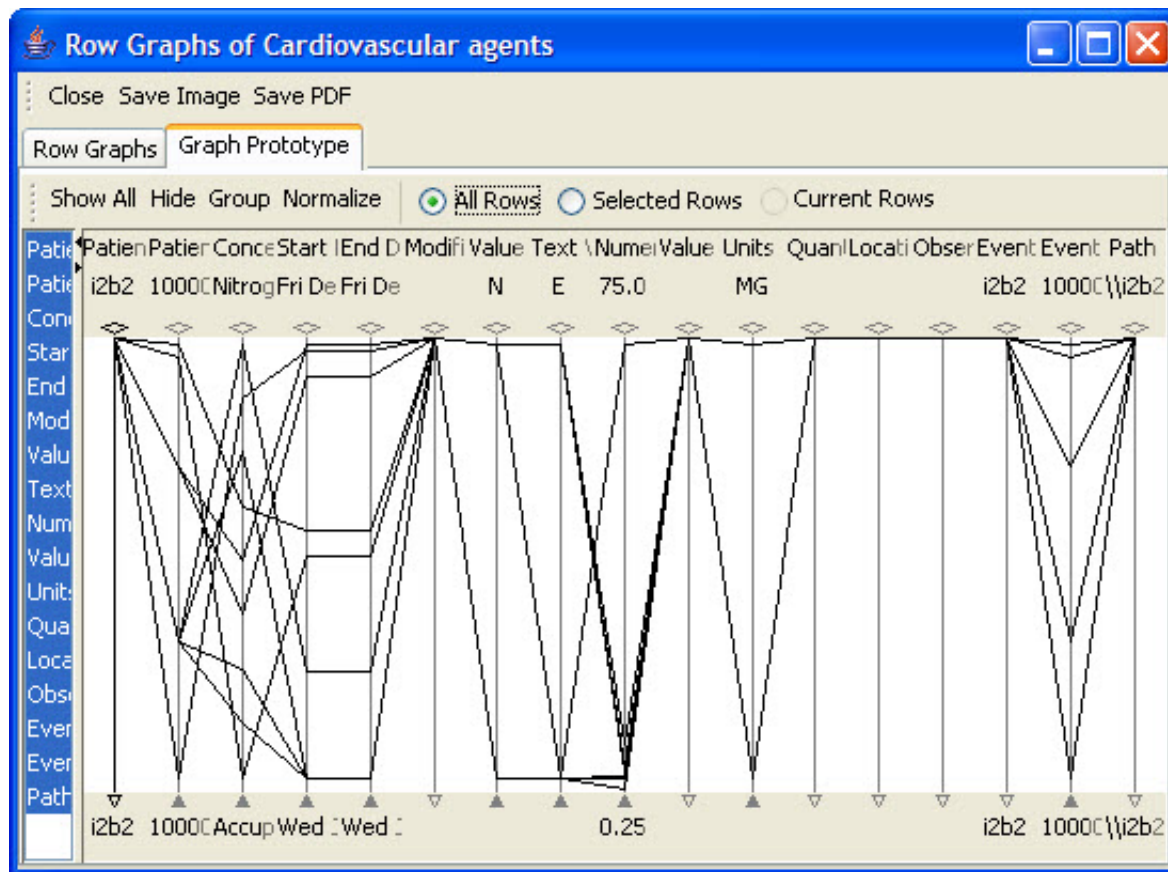


Figure 2.77 Graph Prototype

Scatter Plot ()

This provides a pairwise scatter plot of any two columns in the table. The columns are selected by choosing from the **X** and **Y** lists of column names, and the scatter plot is displayed when the **Plot** button is pressed.

The user may select rows from the table by pressing the mouse button over a scatterplot and dragging out a rectangular region.

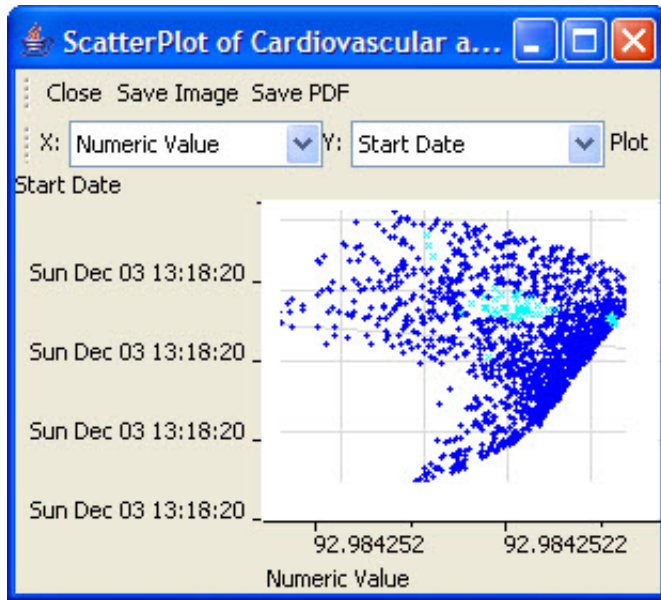


Figure 2.78 Scatter Plot

Scatter Plot Icons ()

This provides a pairwise scatter plot of any two columns in the table. A thumbnail icon is generated for each pair of columns in the table. Clicking an icon open an interactive Scatter Plot view for that pair of columns.

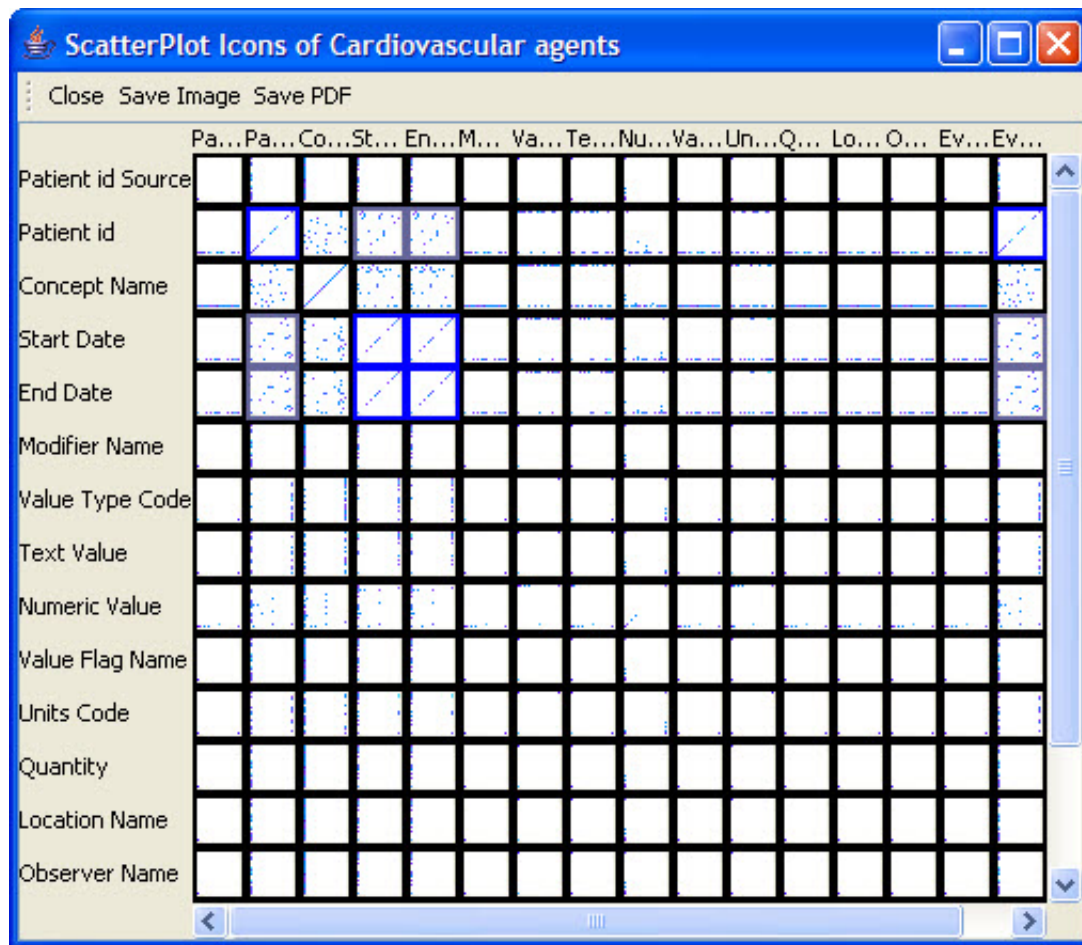


Figure 2.79 Scatter Plot Icons

Span Plot ()

This provides a pairwise scatter plot of any three columns in the table. Two columns represent the starting and ending values of a span along the X axis, while the third column provides the mapping to the Y axis. The columns are selected by choosing from the **Xs**, **Xe**, and **Y** lists of column names, and the span plot is displayed when the **Plot** button is pressed.

The user may select rows from the table by pressing the mouse button over a scatterplot and dragging out a rectangular region.

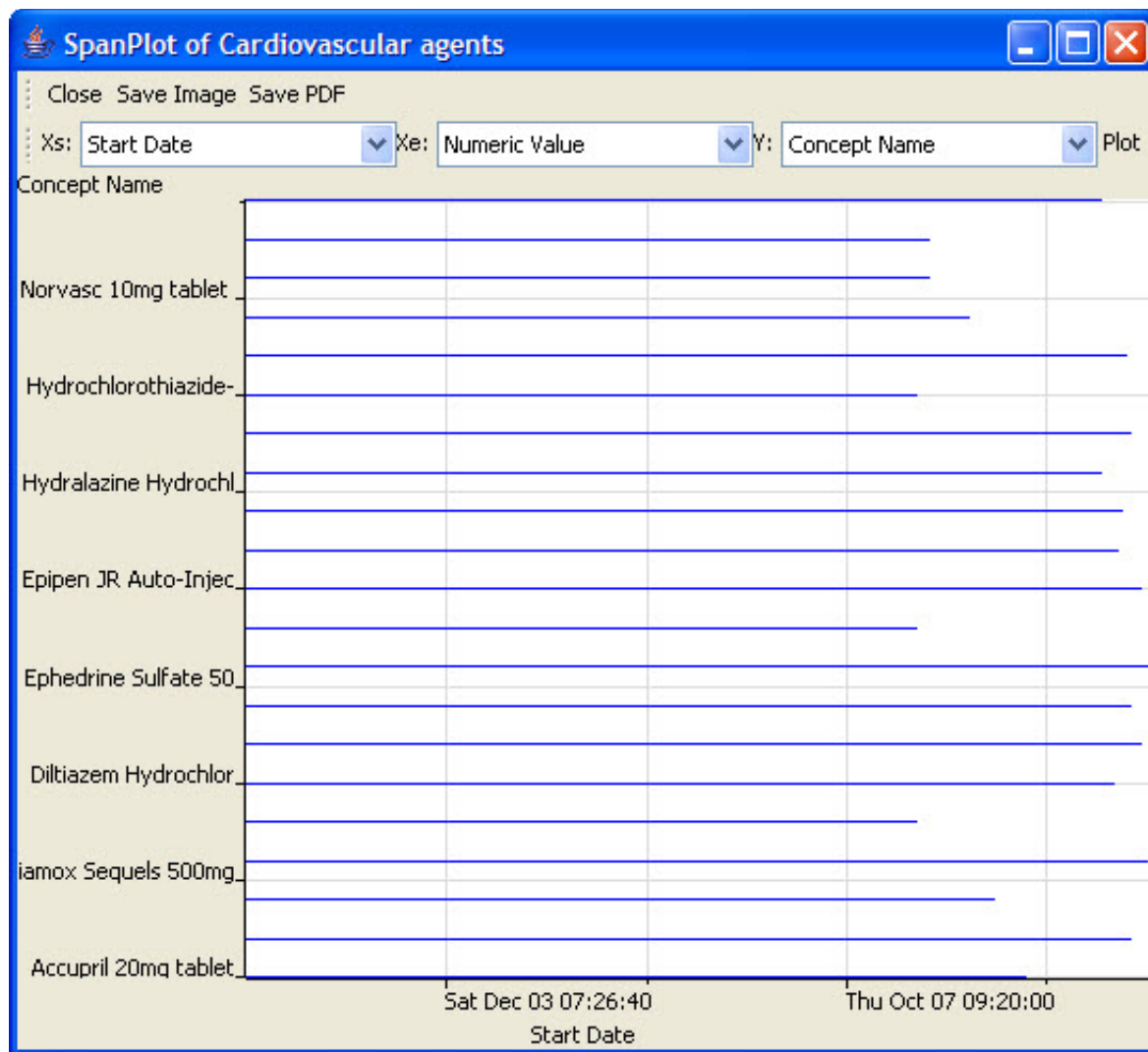







Figure 2.80 Span Plot

Select by Regular Expression Mapping ()

Search allows for the search of matching values in a column. Enter a regular expression for the desired column, and then press the Set operation to specify how to apply the matches to the selection of rows. Example:

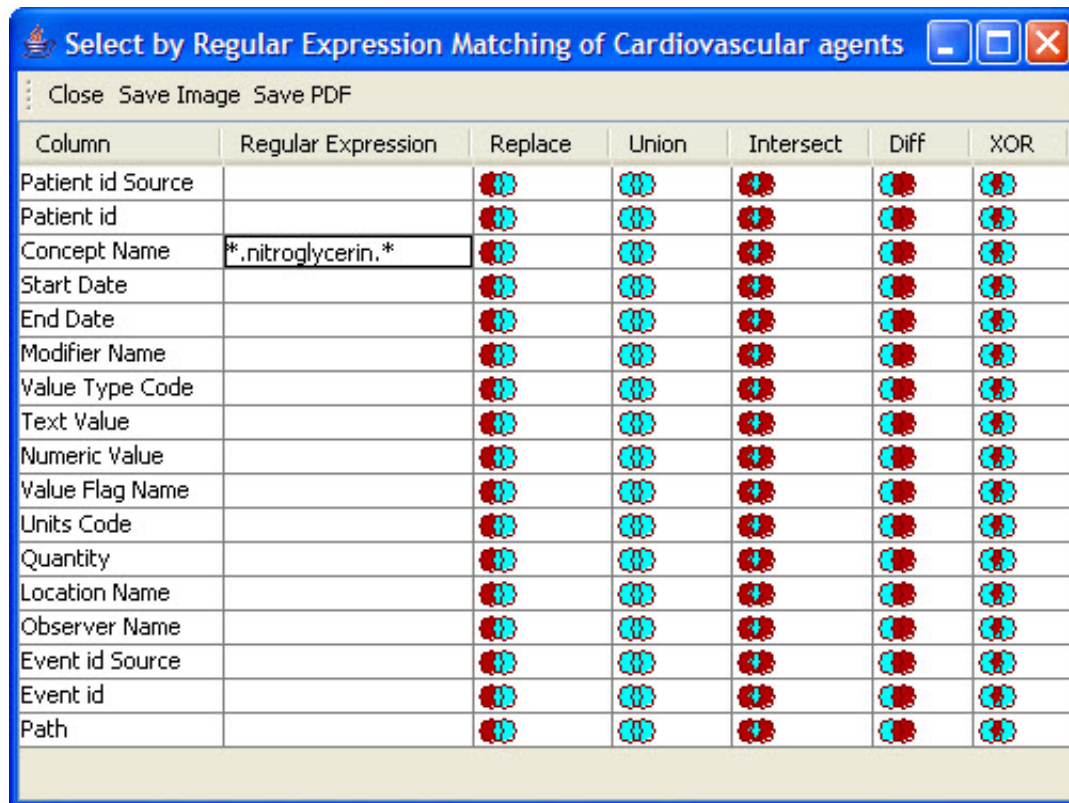
- | | |
|---|--------------------------|
| Match values that <i>contain</i> 'nitroglycerin' | *.nitroglycerin.* |
| Match values that <i>start</i> with 'nitroglycerin' | nitroglycerin.* |
| Match values that <i>end</i> with 'nitroglycerin' | *. nitroglycerin |

Selection Set Operation Choice:

- Replace** () Replace the previous selection with new selection
- Union** () Union previous selection with the new selection
- Intersect** () Intersect previous selection with the new selection
- Diff** () Delete the new selection from the previous selection
- XOR** () Exclusive OR of previous selection with new selection

For more information on regular expressions:

<http://java.sun.com/docs/books/tutorial/extra/regex/index.html>
<http://java.sun.com/j2se/1.4.2/docs/api/java/util/regex/Pattern.html>
























































































Column	Regular Expression	Replace	Union	Intersect	Diff	XOR
Patient id Source						
Patient id						
Concept Name	<code>*.nitroglycerin.*</code>					
Start Date						
End Date						
Modifier Name						
Value Type Code						
Text Value						
Numeric Value						
Value Flag Name						
Units Code						
Quantity						
Location Name						
Observer Name						
Event id Source						
Event id						
Path						

Figure 2.81 Select Regular Expression Mapping