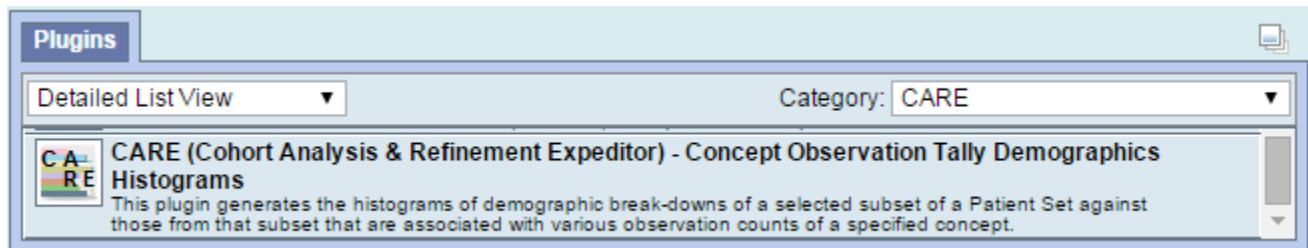


CARE - Concept Observation Tally Demographics Histograms

About the "CARE - Concept Observation Tally Demographics Histograms" Web Client Plugin



Introduction

This plugin is part of the CARE (Cohort Analysis & Refinement Expeditors) Tool Set developed as a result of feedback and suggestions from the i2b2 users community in the University of Massachusetts Medical School. As its name implies, the purpose of this tool set is to facilitate and expedite the analysis of the cohorts (i.e. a subset of a patient set) and therefore hopefully the refined usage of those particular cohorts in a study.

This i2b2 web client plugins enables a user to visualize the demographics of a subset of a patient set, associated (observed) with any various counts of observations of a selected concept (ontology term).

This plugin provides the following main functions:

- Generates demographic histograms on the subsets of patients associated (observed) with any various counts of observations of a selected concept (ontology term).
- Allows the usage of smaller queries of patient subgroups (from a large patient set) iteratively, in place of one single large query of that huge patient set, to reduce risk of overwhelming the server (i2b2 hive).
- Allows selection of subset of patients from a large patient set, to further reduce risk of overwhelming the server.
- Allows selection of the appropriate grouping of observation tallies against which to generate the resulting histograms.
- Provides feedbacks on current progress, elapsed time, and estimated remaining run time.
- Provides notification & suggestion in cases of paging (query-subgrouping) by the server.
- Provides termination indication & suggestion (for recovery) when the server failed.
- Provides detailed **'HELP'** and **'HINT'** dialogs in response to corresponding hotlinks strategically placed next to input fields that may need explanations or suggestion.
- Provides options to export histogram data into a CSV or XLS file that can easily be used by MS Excel, SPSS and other statistics software.

Instructions

1. Navigate to the **"Specify Data"** tab. Drag and drop a Patient Set and a concept (ontology term) onto the appropriate input boxes:## Enter appropriate values in the **'Starting Patient'** and **'Number of Patients'** fields that are then presented, to specify the subset of the patient set to use. Also specify at the **'Query Subgroup Size'** field the size of smaller queries of subgroups of patients to be used iteratively, to facilitate reducing the risks of overwhelming the server (i2b2 hive).## Click on the corresponding **'HELP'** hotlinks next to the **'Starting Patient'** and **'Number of Patients'** fields, and the **'HELP'** hotlink next to the **'Query Subgroup Size'** field, for detailed information; and enter corresponding appropriate values.## Click on the corresponding **'HINT'** hotlink below the **'Concepts'** field for hint or suggestion for selecting concepts.

2. Next, select the appropriate grouping of observation tallies against which to generate the resulting histograms at the "Output Options" tab

The screenshot shows the 'i2b2 Query & Analysis Tool' interface. The top navigation bar includes 'Project: i2b2 Demo', 'User: demo', and links for 'Find Patients', 'Analysis Tools', 'Message Log', 'Help', and 'Logout'. The main window title is 'CARE - Concept Observation Tally Demographics Histograms'. Below the title bar are five tabs: 'Specify Data', 'Output Options' (which is selected), 'View Results', 'Export Data', and 'Plugin Help'. The 'Output Options' tab contains the following text: 'Select the appropriate grouping of observation tallies against which to generate the resulting histograms below. For more information, refer to the "Plugin Help" tab.' Below this text are five radio button options: 'Group observation tallies in sequence of '1, 2, 3, 4, 5, 6, 7, 8, 9, over 9'', 'Group observation tallies in sequence of '1, 2, 3, 4, 5, over 5'', 'Group observation tallies in sequence of '1-2, 3-4, 5-6, 7-8, over 8'' (which is selected), 'Group observation tallies in sequence of '1-3, 4-6, 7-9, over 9'', and 'Group observation tallies in sequence of '1-5, 6-10, over 10''. At the bottom of the tab, it says: 'Next, click on the "View Results" tab to retrieve the demographic comparison of the cohort subsets that are associated with the selected observation counts of the specified concept.'

3. Then, select the "View Results" tab to wait for and view the generated demographic histograms.
4. Finally, select the "Export Data" tab to click the appropriate button to download the histogram data, in the desired form, to the local computer.

The screenshot shows the 'i2b2 Query & Analysis Tool' interface with the 'Export Data' tab selected. The top navigation bar is the same as in the previous screenshot. The main window title is 'CARE - Concept Observation Tally Demographics Histograms'. Below the title bar are five tabs: 'Specify Data', 'Output Options', 'View Results', 'Export Data' (which is selected), and 'Plugin Help'. The 'Export Data' tab contains the following text: 'Click on one of the buttons to download the data of the histograms, of the "View Results" tab, in the desired format, onto your computer.' Below this text are two buttons: 'CSV Export' and 'HTML/XLS Export'. The 'CSV Export' button has a tooltip that says: 'This initiates the download of an 'i2b2-export_CARE-obsTally_[timestamp].csv' file. Its data will be semi-colon (;) instead of comma (,) delimited.' The 'HTML/XLS Export' button has a tooltip that says: 'This initiates the download of an 'i2b2-export_CARE-obsTally_[timestamp].html.xls' file, which can be readily opened with MS Excel.' Below the 'HTML/XLS Export' button, there are two bullet points: '• MS Excel may launch a warning message when the file is loaded; simply click 'Yes' to proceed.' and '• To open it in a web browser instead, simply remove the '.xls' file extension, to allow the '.html' extension take effect.'

Result Example 1

Grouping observation tallies in sequence of '1, 2, 3, 4, 5, 6, 7, 8, 9, over 9':

CARE - Concept Observation Tally Demographics Histograms

Specify Data

Output Options

View Results

Export Data

Plugin Help

Below are the demographic details for the selected patient set subset, as well as the subsets associated with selected observation counts of the selected concept.

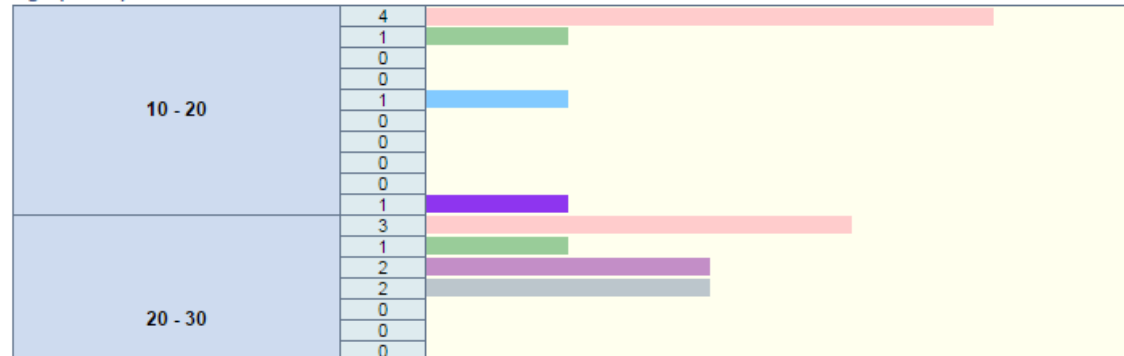
For each demographic category, the values, number of patients, and a histogram are provided.

To change to a different grouping of observation counts, simply click on the "Output Options" tab to make the appropriate selection, and then return to this tab page again to view the new set of histograms (note that since the patient observation data are already fetched, the subsequent turn-around time would be much less than the very first run, provided that the cohort subset and concept are not changed).

COHORTS	POPULATIONS
Circulatory sys@14:31:02 [7-19-2012] [demo] [PATIENTSET_181] contains some 66 patients	
(selected patients #1 - 66, or the entire set)	66
100% of selected patients associated with "Circulatory system"	66

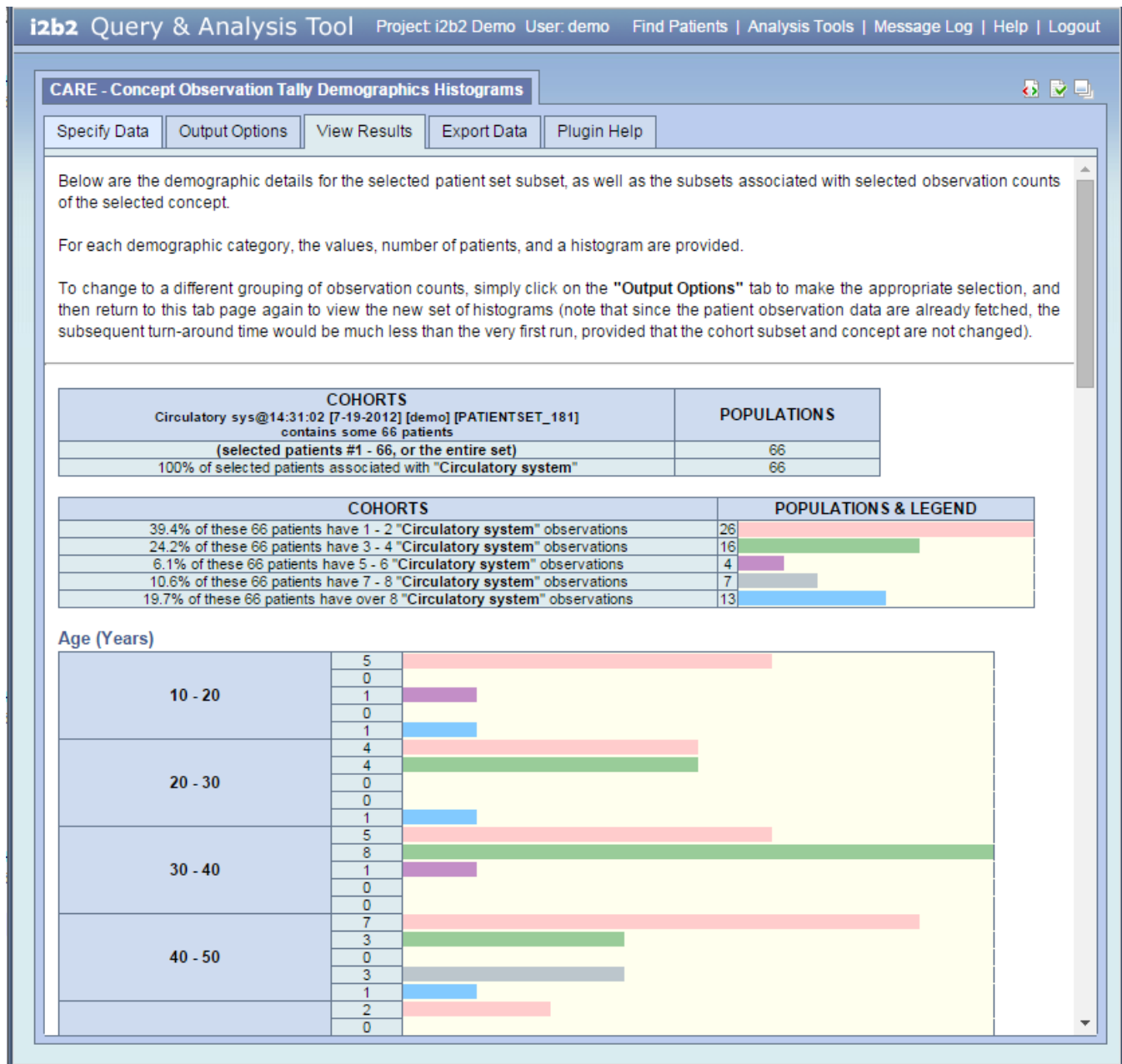
COHORTS	POPULATIONS & LEGEND
22.7% of these 66 patients have 1 "Circulatory system" observations	15
16.7% of these 66 patients have 2 "Circulatory system" observations	11
13.6% of these 66 patients have 3 "Circulatory system" observations	9
10.6% of these 66 patients have 4 "Circulatory system" observations	7
6.1% of these 66 patients have 5 "Circulatory system" observations	4
0% of these 66 patients have 6 "Circulatory system" observations	0
3% of these 66 patients have 7 "Circulatory system" observations	2
7.6% of these 66 patients have 8 "Circulatory system" observations	5
1.5% of these 66 patients have 9 "Circulatory system" observations	1
18.2% of these 66 patients have over 9 "Circulatory system" observations	12

Age (Years)



Result Example 2

Grouping observation tallies in sequence of '1-2, 3-4, 5-6, 7-8, over 8'



Caveats

- Since it is possible for the server (i2b2 hive) to take a long time to provide all the data requested, this plugin provides occasional updates of 'Elapsed time' and 'estimated remaining run time', etc. displays while the data are being fetched. These displayed values are at best rough estimates based on occasional data coming back from the server. In the case of zero 'Query Subgroup Size' selected (i.e. no query-subgrouping), then there would be no data coming back from the server until either of the following situations:
 - The whole, single, query is done.
 - The server itself started paging (i.e. query-subgrouping), and the result of the 1st of such paged subqueries just arrived.
 - The server got overwhelmed by all the excessive data and failed, returning an 'error'.
- In any of these cases above, the updates of 'Elapsed time' and 'estimated remaining run time' will be quite infrequent, as updates from the server (i2b2 hive) will most likely take a long time, and far and few in-between, if any.
- This plugin also tries to provide updates on the current subgroup the server (i2b2 hive) is fetching. However, in the cases when the server (i2b2 hive) itself started paging (i.e. query-subgrouping), then the current subgroup # being fetched may exceed the original stated total number of subgroups.
- The exact behaviors of exporting data in the desired files will be different among the various browsers (Firefox, Chrome, Internet Explorer, Safari, and Opera). Most of these browsers will present options between saving and just opening the exported file; while certain browsers, like Internet Explorer, may also open up a new blank tab page along with the export action.

Browser Compatibilities

- This plugin has been successfully tested with the following browsers: Firefox (v31, v35), Chrome (v41), Internet Explorer 32/64 (v10, v11), Safari (v5.1.7), Opera (v28); all on Windows 7.
- Its "Export Data" feature does not work with Vivaldi (v1.0.94.2).
- The i2b2 web client itself does not work with Opera (v12.11, v12.16).

i2b2 version compatibilities

This current version is compatible with i2b2 v.1.6-1.7.

Version History

1.0	Initial release, with options of using a subset of a large patient set; selection of observation tallies grouping for resulting histograms; user-friendly feedback (estimated run-time, etc.), helps & hints. <i>By Wayne Chan, University of Massachusetts Medical School, Worcester, USA.</i>	2015 Q1
1.1	Added "Export Data" options & other minor refinements. <i>By Wayne Chan, University of Massachusetts Medical School, Worcester, USA.</i>	2015 Q2

Terms of Use

This plugin is published under the [GNU GPL v3 license](#).

This software is distributed as a plugin to the i2b2 v1.6-1.7 webclient framework, and may be used free of charge. It is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

Download

The latest version of this web client plugins can be downloaded from [its Codeplex download page](#).