PCensus

ArcView®

ESRI ArcGIS™

User's Guide

Version 9.0
Canadian Edition

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1 Getting Started with PCensus

Welcome to PCensus

PCensus is a tool that gives you access to detailed demographic information for any location in Canada and the United States, including Census data, current and future year estimates, consumer spending, market segmentation, workplace population, retail sales data and businesses. It provides powerful analytical features for:

- Demographic profiling: define a geographical area such as a county, a neighborhood, a circular area or a drive time zone and create a detailed report of its demographic characteristics.
- Lifestyle targeting: define a population segment using selected demographic criteria (for example, income and family size), and then search for the geographic areas whose populations most closely match your definition.
- Thematic Mapping: create maps that show the geographic variation of demographic characteristics using colored shading or symbols.
- Graphing: display demographic information in bar charts or pie charts.
- Automatically creating a Microsoft Word document containing all reports, maps and graphs from the current project; you can add your own text and formatting to create a finished record of your work suitable for printing, emailing, or for inclusion in other documents.
- Exporting data in Microsoft Excel®, ASCII, HTML or dBase formats for use in other applications. These common formats allow use with many specialized applications, including ArcView (for advanced mapping), or with custom software for advanced analysis such as Huff gravity modeling.
- Integrating your own data, (surveys, customer purchases, sales volumes, etc.) with demographic data to assess performance of marketing schemes or to plan strategies.
- Implementing customer relationship management (CRM) solutions to identify factors that define successful markets (e.g. income, education, or market segments) and use these to identify potential new markets.

This manual uses simple examples to highlight the various capabilities of PCensus®. You are urged to work through these examples to see the ways that the techniques illustrated might be applied to solve your own business issues.

Many of the tasks illustrated in the tutorials refer to a sample database for part of the city of Surrey, British Columbia. This database illustrates the data content available for a typical PCensus installation, but it has been somewhat modified and cannot be used for real projects. In addition, some tasks refer to sample data provided for Bellingham, Washington; the principles illustrated apply equally to Canadian and U.S. data

Installing PCensus

To use PCensus, you need the following:

- A computer running Windows Vista® or Windows® XP Professional.
- A sufficient amount of disk space, depending upon which database and mapping components you install. Databases may vary in size from less than one megabyte to several gigabytes.
- ESRI® ArcView™ version 9.1 or higher must be installed on your computer. It is recommended that you install StreetMap North America, which provides detailed street maps as well as census and ZIP code boundaries (see Chapter 13, Using ArcGIS Maps, page 51).

Before you can use PCensus, you must install the program and any databases you have purchased.

To install the PCensus program, insert the PCensus program CD in your CD drive. The installation process should start automatically; if it does not, run Setup on the CD to start the installation

*The **PCensus** program CD is supplied in a sealed envelope. Be sure to read the terms of your license agreement before opening it.*

The installation program prompts you for the name of the folder where PCensus will be installed. If the location you specify does not exist, it will be created automatically.

PCensus Databases

PCensus databases are the computer files that contain demographic information. Each database covers a specific area (for example a county, a state, or an entire country).

We have provided some sample databases so that you can try out the features of PCensus right away. To use PCensus for a real project, you must install a database that covers your area of interest.

Databases are normally shipped on CDs, and they must be properly installed on your computer before they can be used. Follow the installation instructions provided with the Database CDs.

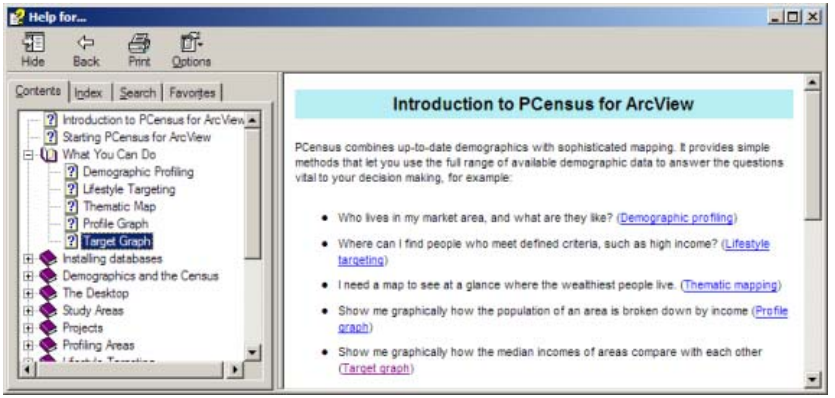
Note: PCensus must not be running while you are installing databases.

Starting PCensus

After you have installed PCensus, and any databases that you have purchased, you can start the program by clicking its desktop icon .

Getting Help

The PCensus Help system can answer many of the questions you may have about the operation of PCensus, and provides useful information about census geography. To access the Help system, click the **Help** icon in the PCensus toolbar.



The Table of Contents in the left pane of the window shows the major Help topics. Clicking on a topic displays a page of information in the right-hand pane.

Topics are arranged in "books" representing the major subject areas. Click the "**+**" sign next to a book to see the topics that it contains.

Most topics contain "links"; words or phrases underlined and highlighted in blue. Clicking on a link displays additional pages of relevant information.

If you are unsure of the meaning of a term, the **Index** and **Search** tabs let you find topics by keywords or by a full text search of the Help system.

*The section **Demographics and the Census** provides a useful description of the structure and relationships of geographic components used by the census.*

Context-Sensitive Help

Every dialog box in PCensus has an associated Help screen that you can view by clicking its Help button. In situations where no dialog box is displayed, you can get help by pressing the **F1** key.

Context-sensitive help provides detailed descriptions of all the controls used by PCensus, with links to other relevant information.

Other Sources of Help

Additional help can be obtained over the internet by clicking "PCensus Website" in the "Help" menu. This link allows you to access the PCensus on-line knowledge base, or to submit technical questions via email.

Alternatively, you can send questions to **support@tetrad.com**.

2 PCensus Projects

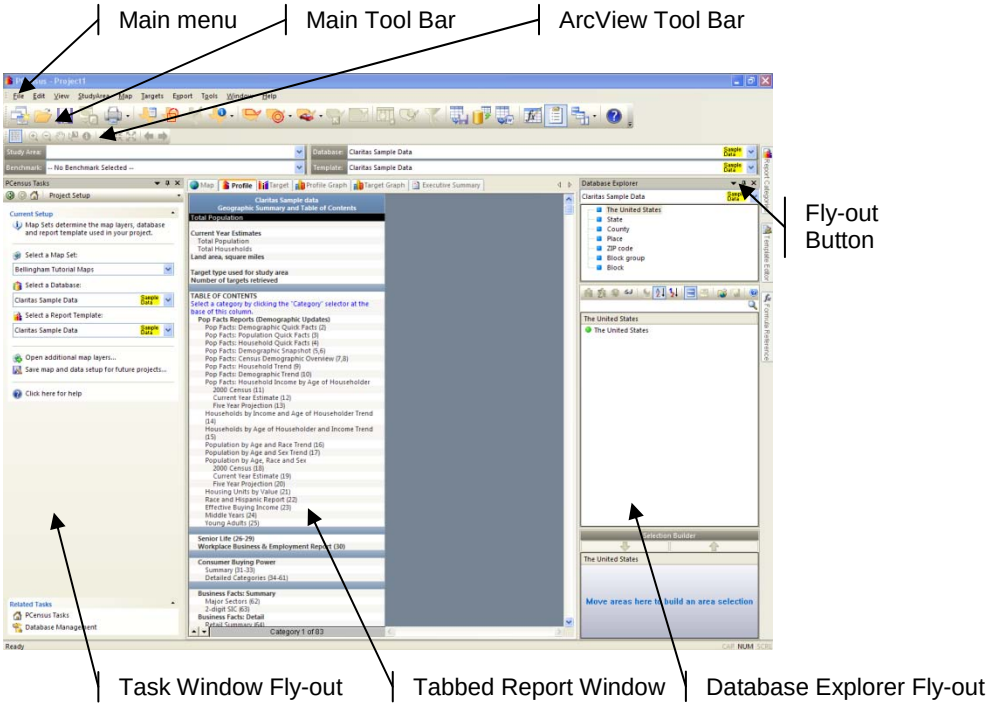
Background

A PCensus project contains all the profiles, reports, graphs, or maps that you create in the course of your work. A new project will be created when you start a PCensus session. When you have finished, you can save the project so that it can be restored in a future session.

You can work with several projects simultaneously in a PCensus session; each project will have its own window.

The Project Window

The illustration below shows a typical configuration of the PCensus project Window.



Many aspects of the project window can be customized; for example tool bars can be dragged to new locations, or made to "float" outside the main window.

*To revert to the standard configuration, select **Reset Window Layout** from the **Window** menu.*

The PCensus Tool Bars

The project window contains one or more tool bars (depending on the type of integrated mapping installed).

You can see a description of the function of each tool bar icon by allowing the mouse cursor to "hover" over the icon.

- **Main Tool Bar:** provides short-cuts to many frequently used PCensus functions.
- **ArcView Tool Bar:** Controls operations in the Map Window. This tool bar corresponds to the tools used in ArcView.

Fly-out Windows

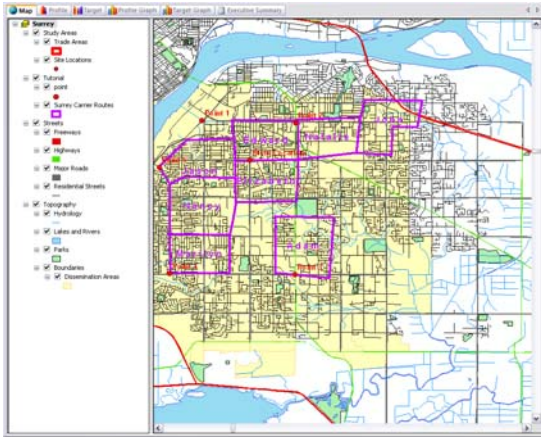
Fly-out controls are used extensively in PCensus, for example in the **Task Window**, **Database Explorer** and **Template Editor** windows. These windows are controlled by buttons in the left and right margins of the project window.

Fly-out windows can be used in two ways:

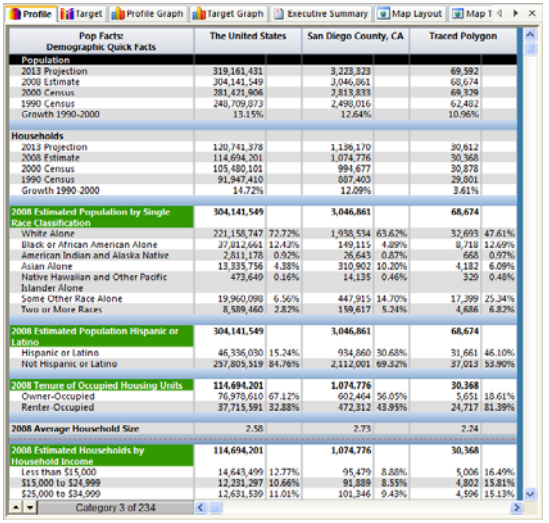
- They can be briefly displayed and used by hovering the mouse over the appropriate button (clicking is not necessary). When the desired operation is complete, they will be hidden automatically.
- They can be locked in place when repeated use is required (for example for editing a template). Each fly-out window contains a push-pin button to toggle the auto-hide and locked settings.

Tabbed Report Window

This section of the project window contains the various reports and maps generated by PCensus. Click in the labeled tabs at the top of the window to switch between the various pages.



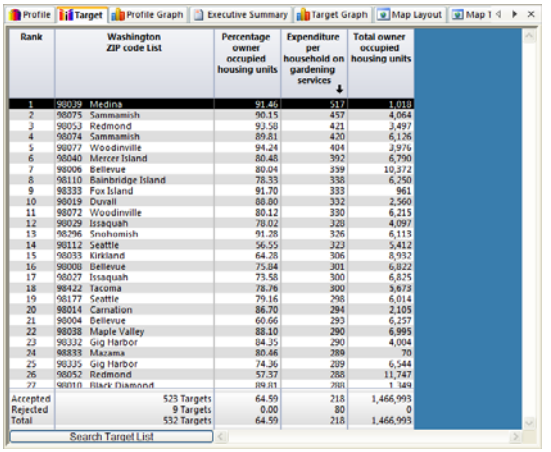
The **Map** page displays the outlines of study areas (circles, polygons, drive time zones) that you define, as well as colored thematic maps that you create.



Pop Facts: Demographic Quick Facts	The United States		San Diego County, CA		Traced Polygon	
Population						
2013 Projection	319,161,431		3,223,323		69,592	
2008 Estimate	304,141,549		3,046,861		68,674	
2000 Census	281,421,906		2,813,833		69,329	
1990 Census	248,709,873		2,498,016		62,482	
Growth 1990-2000	13.15%		12.64%		10.96%	
Households						
2013 Projection	120,741,378		1,136,170		30,612	
2008 Estimate	114,694,201		1,074,776		30,368	
2000 Census	105,480,101		994,677		30,878	
1990 Census	91,947,410		887,403		29,801	
Growth 1990-2000	14.72%		12.09%		3.61%	
2008 Estimated Population by Single Race Classification	**304,141,549**		**3,046,861**		**68,674**	
White Alone	221,158,747	72.72%	1,938,534	63.62%	32,693	47.61%
Black or African American Alone	37,812,661	12.43%	149,115	4.89%	8,718	12.69%
American Indian and Alaska Native	2,811,178	0.92%	26,643	0.87%	668	0.97%
Asian Alone	13,335,756	4.38%	310,902	10.20%	4,182	6.09%
Native Hawaiian and Other Pacific Islander Alone	473,649	0.16%	14,135	0.46%	329	0.48%
Some Other Race Alone	19,960,098	6.56%	447,915	14.70%	17,399	25.34%
Two or More Races	8,589,460	2.82%	159,617	5.24%	4,686	6.82%
2008 Estimated Population Hispanic or Latino	**304,141,549**		**3,046,861**		**68,674**	
Hispanic or Latino	46,336,030	15.24%	934,860	30.68%	31,661	46.10%
Not Hispanic or Latino	257,805,519	84.76%	2,112,001	69.32%	37,013	53.90%
2008 Tenure of Occupied Housing Units	**114,694,201**		**1,074,776**		**30,368**	
Owner-Occupied	76,978,610	67.12%	602,464	56.05%	5,651	18.61%
Renter-Occupied	37,715,591	32.88%	472,312	43.95%	24,717	81.39%
2008 Average Household Size	2.58		2.73		2.24	
2008 Estimated Households by Household Income	**114,694,201**		**1,074,776**		**30,368**	
Less than $15,000	14,643,499	12.77%	95,479	8.88%	5,006	16.49%
$15,000 to $24,999	12,231,297	10.66%	91,889	8.55%	4,802	15.81%
$25,000 to $34,999	12,631,539	11.01%	101,346	9.43%	4,596	15.13%

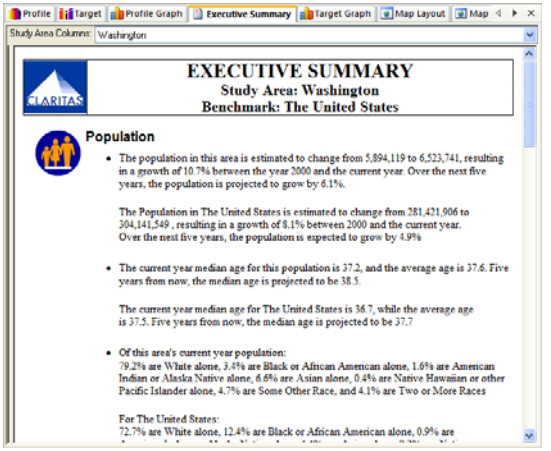
Category 3 of 234

The **Profile** page displays demographic data for each study area defined in your project. Data for study areas is shown in side-by-side columns for easy comparison.



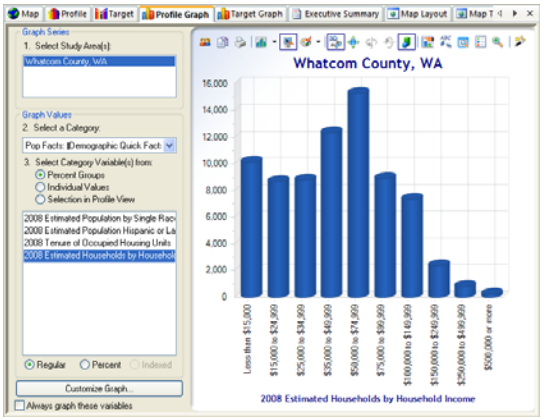
Rank	Washington ZIP code List	Percentage owner occupied housing units	Expenditure per household on gardening services	Total owner occupied housing units
1	98039 Medina	91.46	517	1,018
2	98075 Sammamish	90.15	457	4,064
3	98053 Redmond	93.58	421	3,497
4	98074 Sammamish	89.81	420	6,126
5	98077 Woodinville	94.24	404	2,976
6	98040 Mercer Island	80.48	392	6,790
7	98006 Bellevue	80.04	359	10,372
8	98110 Bainbridge Island	78.33	338	6,250
9	98333 Fox Island	91.70	333	961
10	98019 Duvall	88.80	332	2,560
11	98072 Woodinville	80.12	330	6,215
12	98029 Issaquah	78.02	328	4,097
13	98296 Snohomish	91.28	326	6,113
14	98112 Seattle	56.55	323	5,412
15	98033 Kirkland	64.28	306	8,932
16	98008 Bellevue	75.84	301	6,822
17	98027 Issaquah	73.58	300	6,825
18	98422 Tacoma	78.76	300	5,673
19	98177 Seattle	79.16	298	6,014
20	98014 Carnation	86.70	294	2,105
21	98004 Bellevue	60.66	293	6,257
22	98038 Maple Valley	88.10	290	6,995
23	98332 Gig Harbor	84.35	290	4,004
24	98383 Mazama	80.46	289	70
25	98335 Gig Harbor	74.36	289	6,544
26	98052 Redmond	57.37	288	11,747
27	98010 Black Diamond	89.81	288	1,349
Accepted	523 Targets	64.59	218	1,466,993
Rejected	9 Targets	0.00	80	0
Total	532 Targets	64.59	218	1,466,993

The **Target** page lists areas (called target areas) within your study area that match a specific demographic profile; for example, you can list all the ZIP codes where the average income is between $40,000 and $50,000.

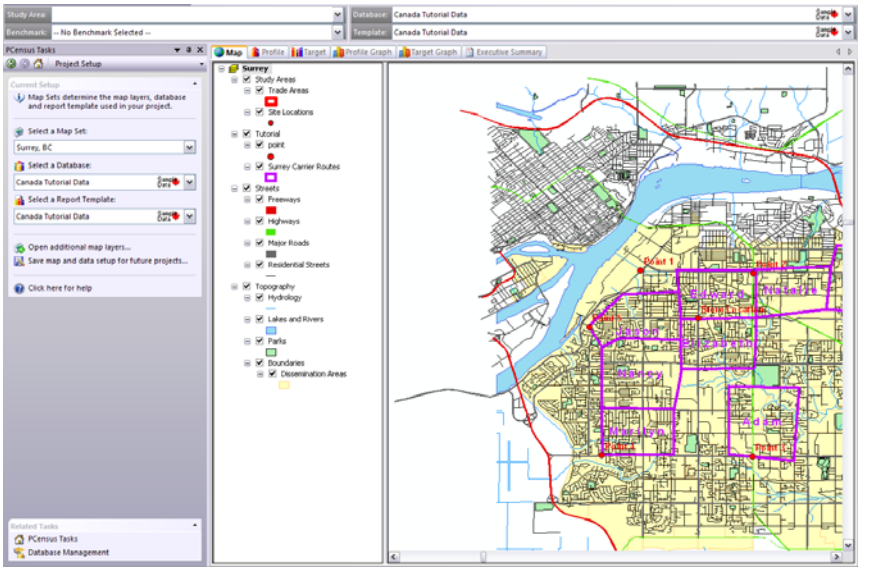


The **Executive Summary** tab displays a narrative summary of the demographics for a selected area.

Note: the Executive Summary is not available for all PCensus databases.



The **Profile Graph** and **Target Graph** pages display data for your project in graphical form.



Split Views

It is often desirable to be able to view the contents of two or more tabbed report windows simultaneously, for example to view the contents of the map tab and the profile tab when using the "hot-link" feature (page 32).

The **Merge/Split** icon  in the PCensus tool bar can create side-by-side or stacked views of the tabbed windows.

Right-clicking in the tabs provides more options for viewing multiple windows.

The Task Window

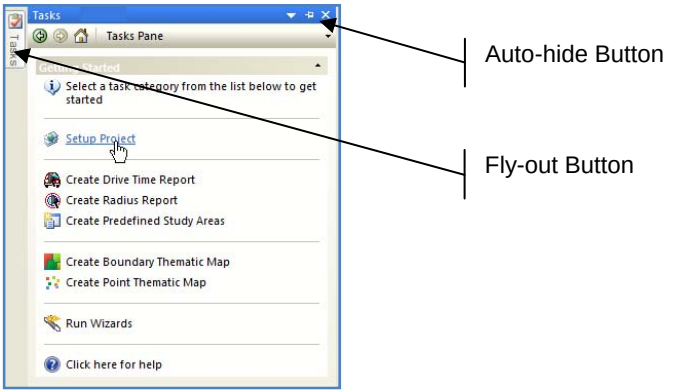
The PCensus Task Window is a feature introduced in PCensus version 9 that substantially reduces the number of steps required to create commonly-used reports and maps. Earlier implementations of PCensus used "wizards" to guide the user step-by-step through a series of choices; the task window allows many of the same results to be produced with one or two mouse clicks.

If you are accustomed to previous versions of PCensus, you will find that the "traditional" wizards are still available in the PCensus tool-bar, and may be used for advanced functions that are not accessible from the Task Window.

The Task Window consists of a number of "panes". Each pane addresses a specific task, for example to create a profile report or a thematic map. Controls are provided to set up defaults (such as database and map selections) and to minimize repetitive steps in frequently-performed processes.

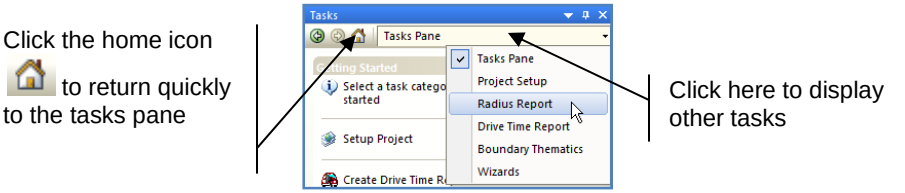
The Task Window is an example of a "fly-out" control that can be displayed briefly to adjust settings, or "locked" in place for more complex operations.

- Place the mouse cursor in the **Tasks** button in the left-hand frame of the PCensus window.



- Click the **Tasks** fly-out button in the left margin.
- Click the **Auto-hide** "push-pin" button to lock the window in place.

The first time that the Task Window is opened, it displays the **Getting Started** pane that contains links to the other task panes. You can also navigate through the various panes by clicking in the heading area of the Task Window to display the Tasks menu.



Set Up a Project

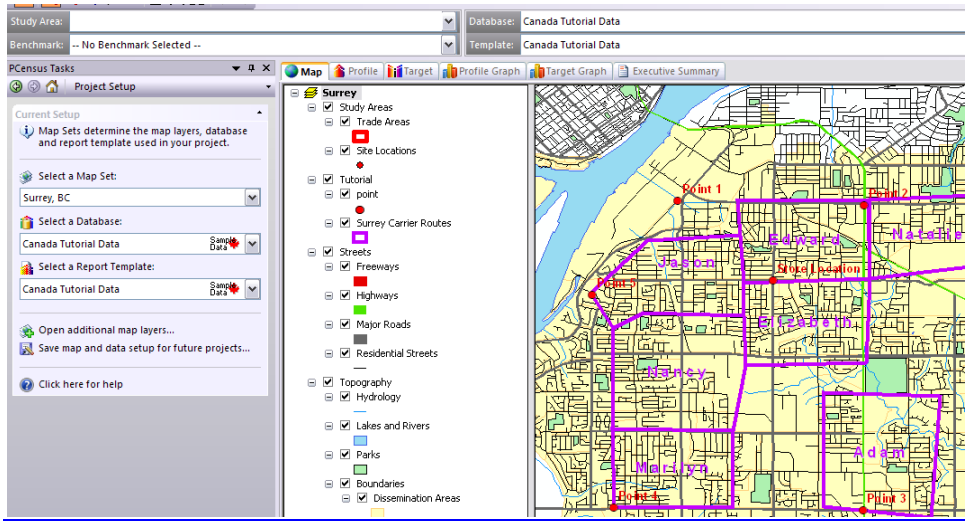
The **Project Setup** window lets you specify the maps, databases and templates to be used when starting a new PCensus project. Although you can select these three components individually, it is more convenient to select a "**Map Set**" that defines a useful starting point for your project.

A Map Set is a "snapshot" of a project's environment that can be used as a starting point to create a similar project in the future. It records the following criteria:

- The PCensus database to be used as a source of demographic data for a project (see Chapter 4, Databases and Templates).
- A customized template (if any) to define the content of profile reports.
- Map Layers and their display properties and the initial geographic scope of the map window.

To illustrate the use of Map Sets to set up a project, we have included a sample map set entitled **Canada Tutorial Data**. This will be used in many of the examples described in the chapters that follow.

- Display **the Project Setup** pane of the Task Window.
- Select the Map Set "Surrey, BC."



PCensus automatically opens the map layers required for projects in the Surrey area, including:

- Street network.
- Boundary layers to be used for thematic mapping, with all customized features, such as color "overrides".
- The map view adjusts to display downtown Surrey.
- The Canada Tutorial Database and Template are opened.

Working with Real Data

When you begin to use PCensus for real-life projects, you will use fully functional databases and maps in place of the sample data described in the preceding section.

Assuming that you have installed the PCensus databases that you have purchased, they will appear in the **Select a Database** list in the project setup pane. Just select the database with the appropriate data content and geographical coverage for your project's requirements.

If you have purchased map products such as street networks or boundary maps, they must be installed on your computer according to the specific manufacturer's instructions; however, this installation will not automatically import them into PCensus. You must open the required ESRI Project (.mxd), layer (.lyr) or shape files (.shp) by clicking **Open Additional map Layers**

in the **Project Setup** pane, and then use the controls in the ArcView tool bar to create a map view suitable for your requirements.

Creating an attractive and usable map view is a multi-step process, and it would be tedious to repeat this every time you create a new PCensus project, so it is recommended that you create Map Sets to preserve any view that you may need to re-create in future sessions.

For example, if you often need to create reports and maps in a city (for example San Francisco) using current-year demographic data in the context of a street map, you can create a "San Francisco" map set that will appear in the **Project Setup** window.

For instructions on how to set up maps and create a Map Set, see Appendix 4 - Creating a Map Set.

What Can I Do Now?

Once you have set up your project, you can create maps, reports and other analyses. For example, you may:

- Profile reports based on predefined census areas, circles, drive time areas or polygons.
- Create thematic maps displaying demographics as shaded areas or colored symbols.

4 Databases and Templates

PCensus Databases

PCensus databases are the computer files that contain demographic information. Each database covers a specific area (for example a county, a state, or an entire country), and contains a set of data components customized to your specific requirements. These components may include any or all of the following:

- Data from U.S. or Canadian Population Censuses.
- Demographic data estimated for the current (non-census) year or projected to future years.
- Consumer Spending estimates.
- Lifestyle and behavioral segmentation.
- Retail supply and demand estimates.
- Spending patterns.
- Financial assets and instruments.
- Crime risk estimates.
- Shopping centers.
- Financial institutions.
- Traffic Volumes.

The Sample Databases provided as part of your PCensus installation illustrate typical combinations of data components that can be purchased.

Data Templates

Data templates allow PCensus to organize the diverse content of each database into related groups called categories, which correspond to the available standard Profile reports. Templates also define the layout and formatting of profile reports, as described in Chapter 31, Understanding the Profile Browser.

The standard template provided with each database is designed to create profile reports suitable for many purposes. If you need reports specific to the requirements of your industry, refer to Chapter 32, Customizing the Profile.

5 Profile a Predefined Area

Objective

Create a **Profile Report** comparing the demographics for Canada with selected predefined regions.

Background

Predefined study areas are geographic areas that are defined by the contents of the PCensus database in use. In most cases this conforms to the geographical hierarchy used in collecting and disseminating census data. For example, in the United States, census data are summarized at several levels from state, county or city down through places and ZIP code areas to "micro" areas such as blocks or block groups. In Canada, equivalent areas are provinces, census divisions, through postal FSA codes and dissemination areas.

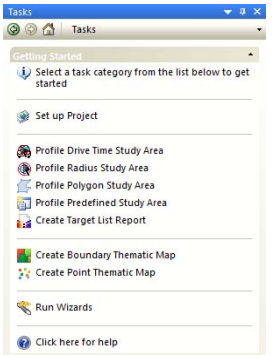
*For detailed descriptions of geographical hierarchies, refer to the section **Demographics and the Census** in the PCensus help system, or to the summary in Appendix 2 – Census Geography in this manual.*

Predefined study areas allow you to display profile reports for any area that exists in the database; you do not need to refer to a map to define an area such as "State of Alabama", "San Diego County" or "Zip code 90210".

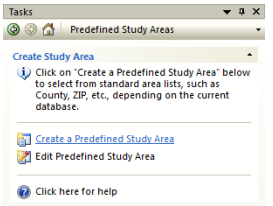
Steps to Profile Predefined Areas

In most PCensus installations, there will be more than one installed database (including the Sample data provided for tutorials). You must tell PCensus which one you want to use for your project. You must also specify which data template will be used to define the contents of the profile report.

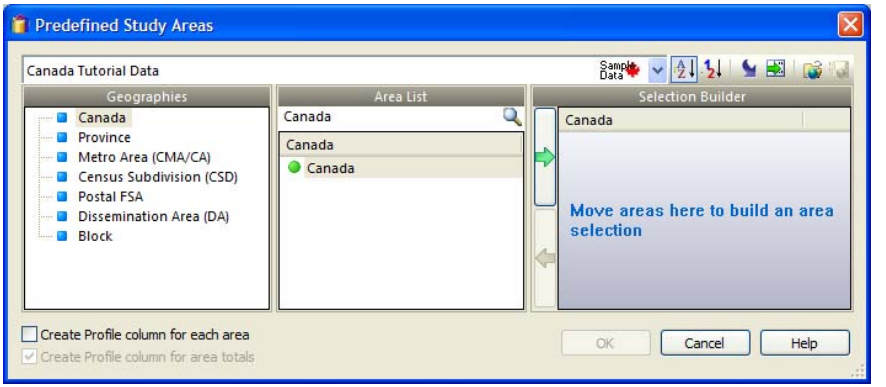
*To use the traditional "Wizard" method for defining study areas, click the **New Predefined Study Area** icon*  *in the PCensus tool bar.*



- Start PCensus and select the **Surrey, BC** Map set in the **Setup Project** task pane (This will automatically select the **Canada Tutorial** Database).
- Return to the **PCensus Tasks Pane** (click the "Home" icon).
- Click **Profile Predefined Study Area** to display the **Predefined Study Areas** dialog box.



- Click **Profile Predefined Study Area**.



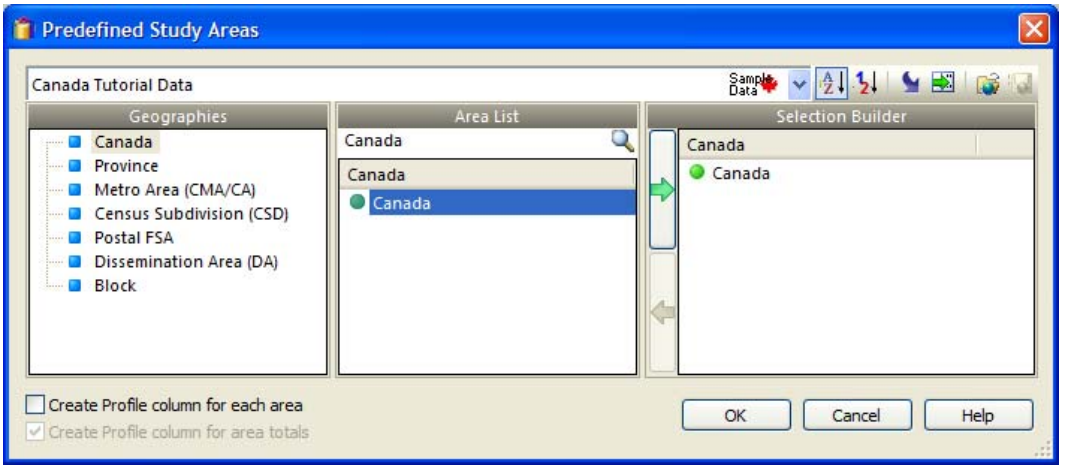
*The **Predefined Study Area** dialog box has many similarities to the **Database Explorer** (page 29).*

This dialog box contains three panels:

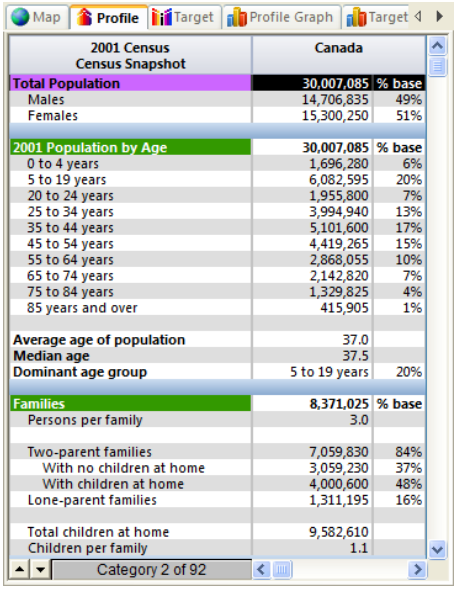
- The **Geographies** panel lists the types of predefined areas available in the current database.
- The **Area List** panel lists areas of the selected geographic type.
- The **Selection Builder** panel is used to build a list of selected areas.

Create a Profile Column for Canada

- Move **Canada** from the Area List panel into the **Selection Builder**, either by dragging with the mouse or by clicking the button.



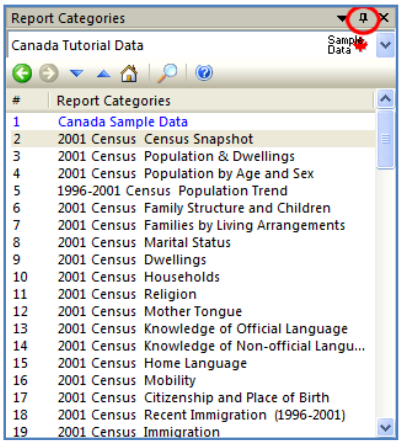
- Click **OK** to add a data column for the selected area to the **Profile** tab.



Using the Category Selector

Once you have defined a study area, you can view all of the available profile reports for the area.

- Click the **Report Categories** fly-out in the right-hand margin of the PCensus window, and lock the category selector with the pushpin icon.

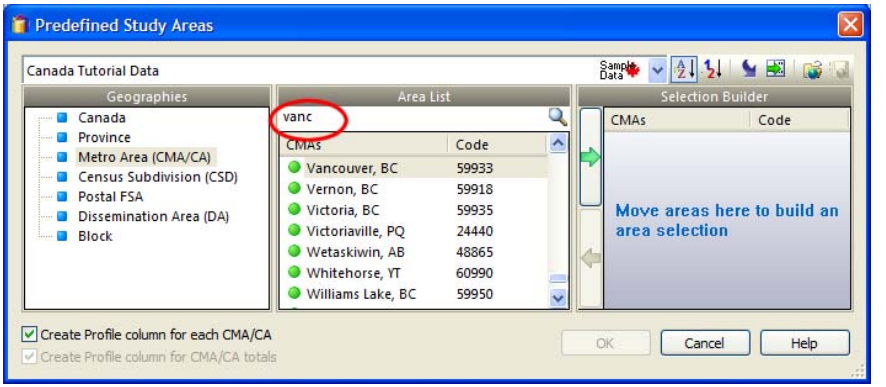


- Use the mouse to select data categories to display in the profile window.

> *Note: You can right-click on any category and set it as the default to be displayed when you start a project.*

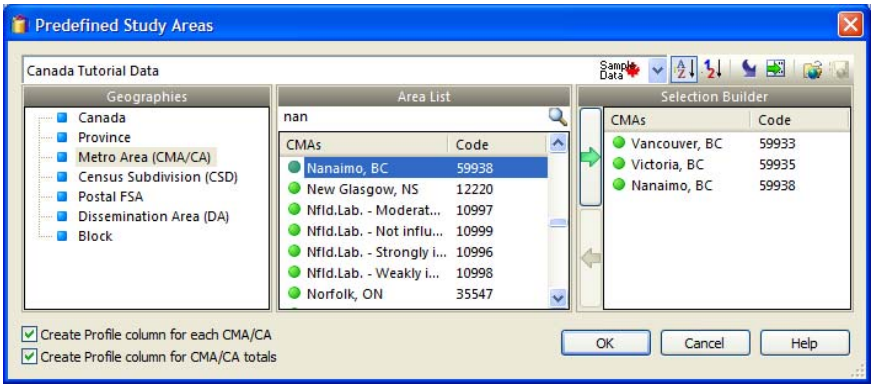
Create a Profile Column for Selected Cities

- Click **Create a Predefined Study Area** to display the **Predefined Study Areas** dialog box.
- Highlight **Metro Area (CMA/CA)** in the list of available geographies
- Begin typing the name **Vancouver** in the search box until **Vancouver, BC** is visible in the Area List.



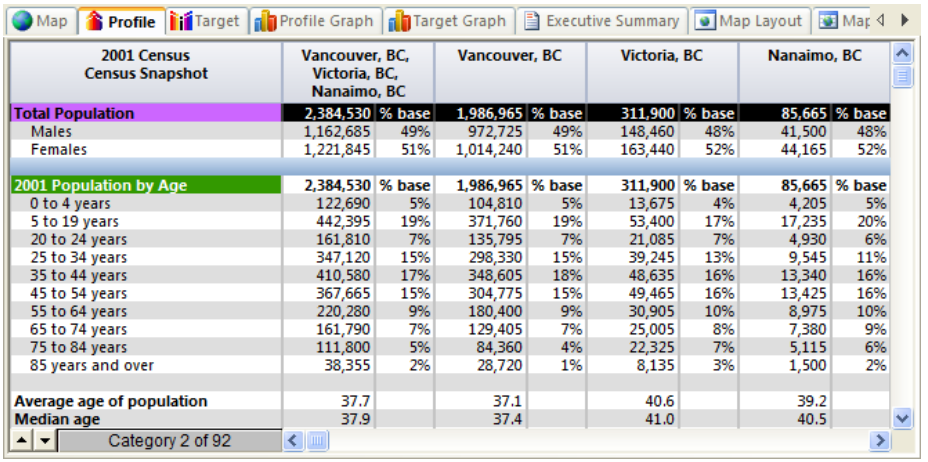
- Move **Vancouver, BC** into the **Selection Builder**.

- Move one or more additional Metro Areas in the same way.



When the selection box contains more than one selected area, both check-boxes (Create Profile Column for Each County and Create Profile Column for County Totals) are enabled.

- Check both boxes and click **OK** to display the columns.



2001 Census Census Snapshot	Vancouver, BC, Victoria, BC, Nanaimo, BC		Vancouver, BC		Victoria, BC		Nanaimo, BC	
Total Population	2,384,530	% base	1,986,965	% base	311,900	% base	85,665	% base
Males	1,162,685	49%	972,725	49%	148,460	48%	41,500	48%
Females	1,221,845	51%	1,014,240	51%	163,440	52%	44,165	52%
2001 Population by Age	2,384,530	% base	1,986,965	% base	311,900	% base	85,665	% base
0 to 4 years	122,690	5%	104,810	5%	13,675	4%	4,205	5%
5 to 19 years	442,395	19%	371,760	19%	53,400	17%	17,235	20%
20 to 24 years	161,810	7%	135,795	7%	21,085	7%	4,930	6%
25 to 34 years	347,120	15%	298,330	15%	39,245	13%	9,545	11%
35 to 44 years	410,580	17%	348,605	18%	48,635	16%	13,340	16%
45 to 54 years	367,665	15%	304,775	15%	49,465	16%	13,425	16%
55 to 64 years	220,280	9%	180,400	9%	30,905	10%	8,975	10%
65 to 74 years	161,790	7%	129,405	7%	25,005	8%	7,380	9%
75 to 84 years	111,800	5%	84,360	4%	22,325	7%	5,115	6%
85 years and over	38,355	2%	28,720	1%	8,135	3%	1,500	2%
Average age of population	37.7		37.1		40.6		39.2	
Median age	37.9		37.4		41.0		40.5	

A profile has been created for each of the selected counties, with an additional column for their aggregate.

What Can I Do Now?

- **Explore the Profile Browser** to see the various data categories available (page 143).
- **Index the Profile Columns** to compare the study areas to a benchmark area (page 146).
- **Add More Study Areas to the Project**: create additional profile columns, either for **Predefined** areas as described above, for **Circular** areas (page 35), for **Drive time** areas (page 39) or for arbitrary **Polygons** (page 45).
- **Print the Profile Report** (page 125).
- **Export the Profile** for use with other software applications (page 129).
- **Customize the profile** with the data template editor (page 149).

6 The Executive Summary Report

Objective

Display a narrative report summarizing the characteristics of a study area.

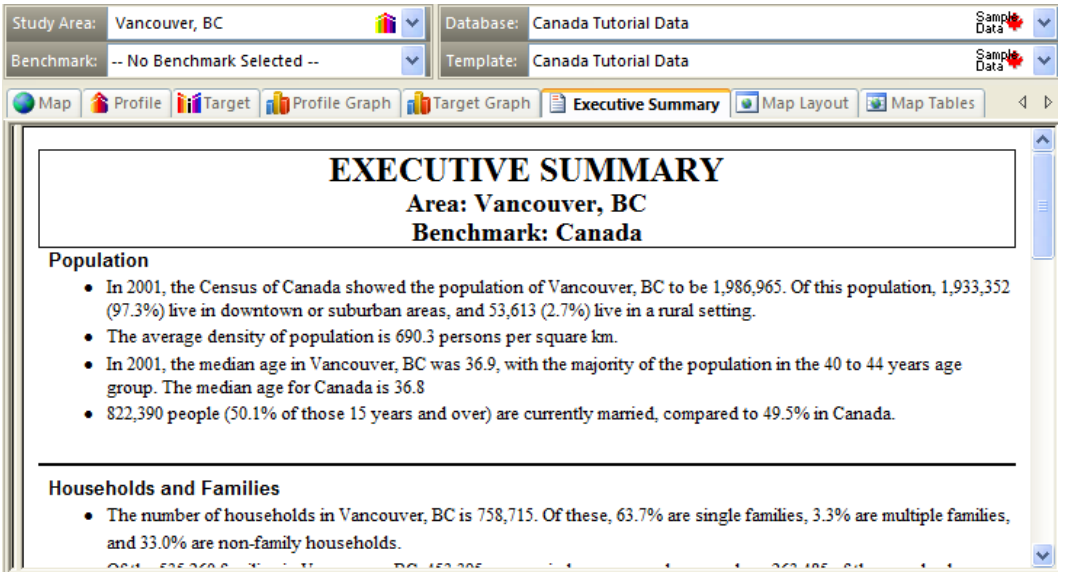
Background

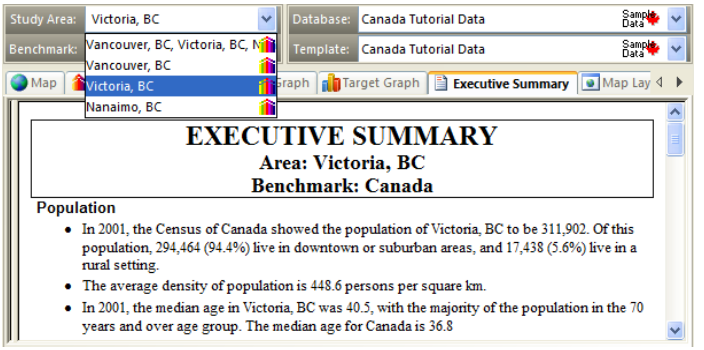
The executive summary report describes the demographics of an area in "plain English". The executive summary is based on a special "template" that is installed with each database.

Note: Some databases may not have an associated Executive Summary. Executive Summaries cannot be customized or created by the PCensus user; please contact your PCensus supplier if you require customized reports.

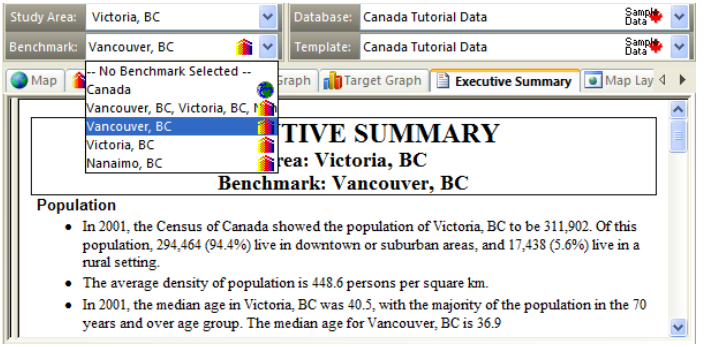
Steps to Create an Executive Summary Report

- Create a profile containing two or more study areas, as described in the preceding chapter.
- Select the **Executive Summary** tab to display the report for the currently selected Study Area.





- Use the **Study Area** selector to view executive summaries for other study areas in your project.



- Use the **Benchmark** selector to change the comparison area used in the executive summary from the United States to other study areas in your project.

What Can I Do Now?

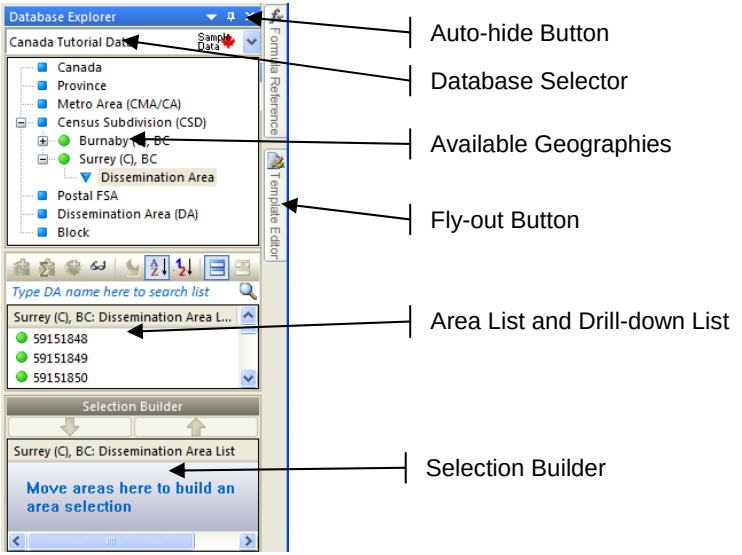
- Click the Print icon  to print the executive summary.

7 Using the Database Explorer

The Database Explorer Window

The Database Explorer is a new feature introduced in PCensus version 9. It provides a quick way to specify "predefined" geographic study areas (e.g. states, counties, ZIP codes), and places these areas in the hierarchy of census geography (Appendix 2 – Census Geography, page 166).

The Database Explorer is normally only visible when it is in use; otherwise it is hidden and represented by a "fly-out button" on the right-hand side of the PCensus window. Click this button to display the page.



- The **Auto-hide** button is a push-pin icon that locks the Database Explorer page in place and prevents it from being hidden when you click in another window.
- The **Database Selector** is a pull-down list that lets you choose the database to be used in the project.
- The **Available Geographies** list shows the geography types that are represented in the selected database.
- The **Area List/Drill-down List** window serves two functions: If a geography type is selected in the Available Geographies list, it contains a list of areas

of the selected type. If a specific area is selected, it shows a list of the geographic types that can be selected within the area.

- The **Selection Builder** lets you create a list of areas that can be aggregated to a single study area.

Features of Database Explorer

Database Explorer provides several advantages over the methods for "predefined area" selection in older versions of PCensus:

- It allows improved visualization of the geographical relationships between areas.
- It allows you to limit selection based on enclosing geographies (for example, you can display just those ZIP codes that are contained in a specified place or county).
- You can select multiple areas, such as a group of ZIP codes, and simultaneously create study area columns for each of them, or aggregate them into a single study area.
- The "**Hot-link**" feature allows instantaneous viewing of data for any selected area and shifts the map view to the area.

Database Explorer provides all of the functionality available in the Predefined Study Area Dialog (page 21), with the additional advantages that it can be accessed immediately at any time, and can be used for ad hoc *"hot-link" queries.*

➢ Click the **Database Explorer** button in the right-hand margin of the PCensus Window to open the Database Explorer Fly-out.

➢ Click the Auto-hide pushpin to lock the window.

The **Area List** panel of Database Explorer includes a tool bar that provides access to major functions, as well as a "right-click" context menu.

Profile individually: creates separate profile columns for all currently selected areas.

Profile Aggregated: creates a single profile column for the aggregate of all currently selected areas.

Map Areas: marks the centroids of currently selected areas on the map.

Hot Link: toggles the Hot Link feature (page 32).

Drill Down: enables the drill-down feature (page 31).

List Name: displays and searches areas by name.

List Code: displays and searches areas by identifying code ("FIPS" code).

Selection Builder: toggles the selection builder window.

Add to Selection Builder: adds selected areas in the area list to the selection builder.

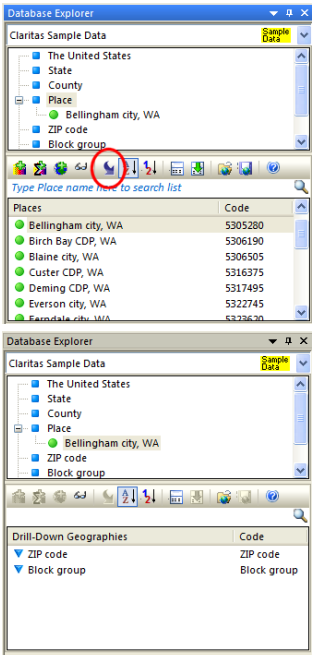
Load Areas File: imports selected areas from a file.

Save Areas: exports selected areas to a file.

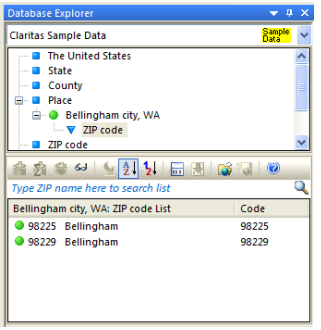
Drilling Down Geographies

If you are using a database for the entire United States, clicking **ZIP Code** in the **Available Geographies** list would show all the 30,000 ZIP codes in the selection list.

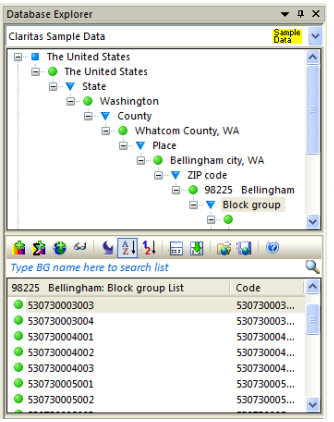
The **Drill-down** feature in Database Explorer lets you display a more manageable list of ZIP codes by limiting the selection to an enclosing geography, for example Bellingham City.



- Highlight **Place** in the **Available Geographies** list.
- Double-click **Bellingham City, WA** in the **Area** list.
- Click the Drill-down icon to add Bellingham as a new level in the list of available geographies.
- Select the new entry to display the drill-down geographies available for Bellingham (ZIP Code and Block group).



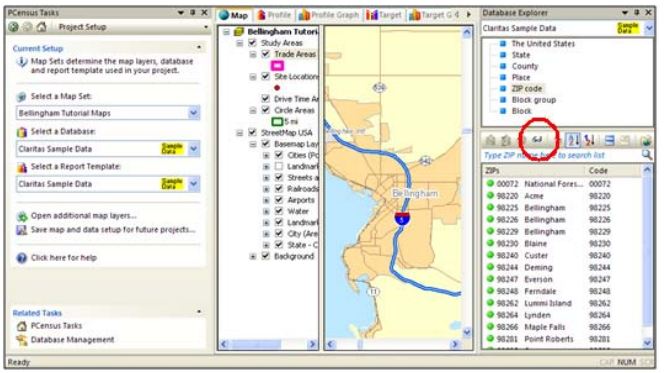
- Double-click ZIP Code in the **Drill-down Geographies** list (or click the drill-down icon) to display the two ZIP codes in Bellingham.
- Drag the required ZIP codes into the profile tab to create new study area columns.



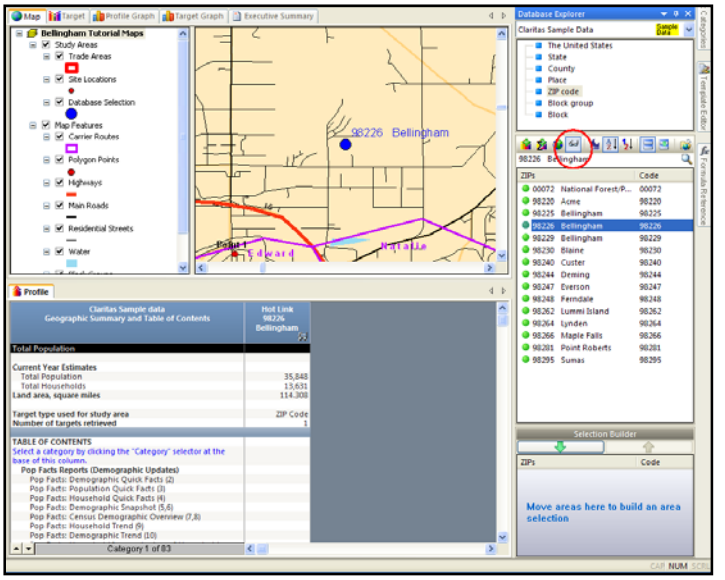
The drill-down procedure can be repeated at any geographical level.

Hot Links

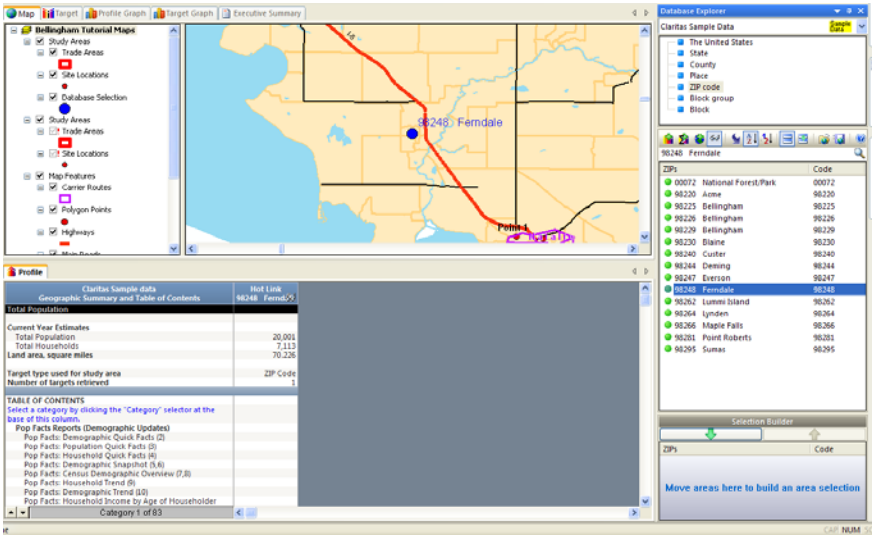
The **Hot Link** feature lets you quickly scan the area list to preview profiles without defining permanent study areas. You can also hot-link areas to the map so that locations selected in the area list are automatically displayed on the map.



- Select the Hot link  icon.



PCensus creates a split window (see Split Views, page 13), and simultaneously marks the location of the selected area on the map and creates a temporary column for the area in the profile.



- Change the selection in the Area List, and notice how the map and profile columns are updated.

8 Profile a Circular Area (Radius Report)

Objective

Create a Profile for the area within a specified radius of a site.

Background

The "radius" report has long been a favorite method for characterizing the trading area of a business location.

> *A **Drive Time** study area (page 39) may provide a more realistic method of defining a trading area than a radius. A radius assumes that customer behavior is controlled by the "straight-line" distance from a location, and does not take into account factors such as bridges or traffic conditions.*

To create a circular study area, we must specify the **location** on which the area is centered (typically, a business location) and the **radius range(s)** defining the area.

PCensus provides several methods for specifying a location:

- By entering the **street address** of the location.
- By **pointing** on the map with the mouse.

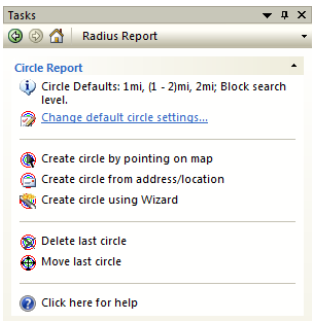
Radius ranges can be defined as:

- **Circle**: the entire area within a specified distance of the location.
- **Ring**: the area between two specified distances from the location (for example between one and two miles).

Steps to Profile Circular Areas by Address

We will select an address in Surrey, BC for our site location.

> *Selection of a location by Pointing is described in the Drive Time example, page 39*

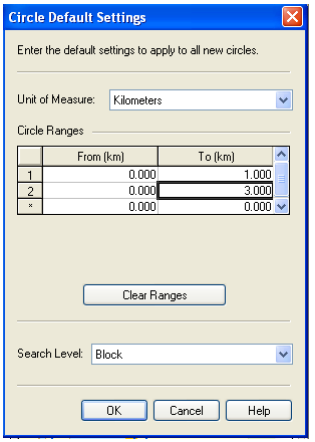


- Select **Profile Radius Study Area** in the PCensus **Tasks** Window.
- Click **Change default circle settings**.

Default Circle Settings

Many organizations consistently use the same circular patterns to characterize the demographics of diverse site locations; this may typically be three concentric radii (1, 3 and 5 miles) or concentric zones (0 to 1 mile, 1 to 2 miles, 2 to 3 miles).

The **Default Circle Settings** dialog lets you specify the required pattern in advance; it will only need to be re-specified if you wish to create a different pattern.



- Select the **Units of Measure** (miles or km.)
- Enter the distances to define three circular zones, for example:

From	To	
0.0	**1.0**	**Circle with 1 mile radius.**
1.0	**2.0**	**Ring – Area between 1 mile and 2 miles radius.**
0.0	**2.0**	**Circle with 2 mile radius.**

- Select the **Search Level** (normally the smallest area type available in the database).
- Click **OK** to close the dialog.
- Click **Select Site by Address/location** in the **Radius Report** task pane.

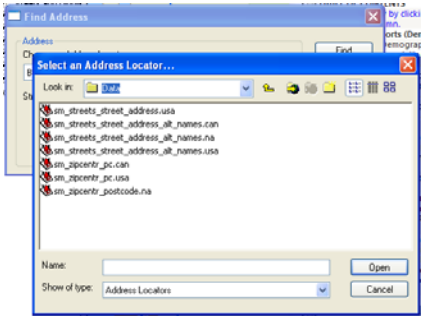
Address Searching using ArcView

ArcView uses **Address Locators** for locating addresses and geocoding. The address location process refers to databases (for example street network files) installed on your computer, but do not require the map to be open for display.

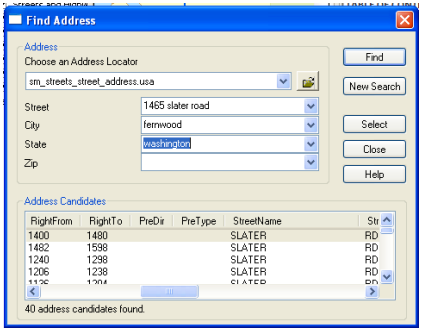
Map products supplied by ESRI (for example, StreetMap North America or StreetMap Pro) include address locators, or you can create them from your own maps using ArcToolBox.

An address locator is a special file (file type .loc) that contains information providing linkage to a street map product. When an address locator is active, supplied street address information is used to compute the latitude/longitude coordinates of the location.

When you are specifying a location for radius or drive time study areas, PCensus will display the Find Address dialog box.

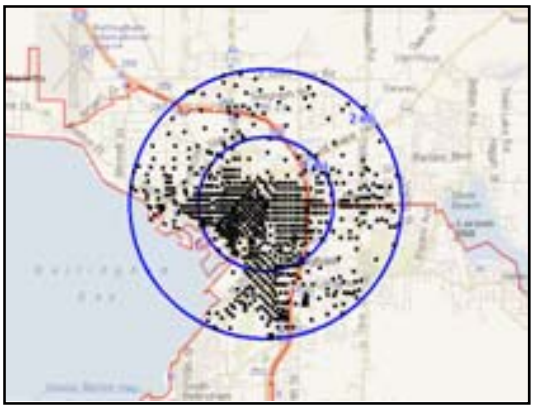


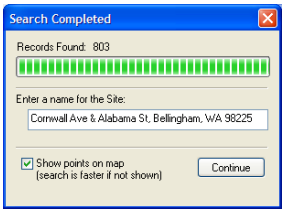
Address Locator(s) that have already been used in a PCensus session are selectable from the pull-down list. Otherwise, you must browse for a suitable address locator by clicking the  icon. The Address Locators for StreetMap North America can be found in the StreetMap folder:



- Type as much of the address as possible (if you do not know the exact spelling, the postal code or other components, it may still be possible to resolve the address) and click Find.
- If the address is ambiguous, a number of candidates may be displayed. Highlight the appropriate entry and click Select.

PCensus retrieves all the data targets (Blocks) within the defined circles and displays their locations as black dots to indicate the search progress.

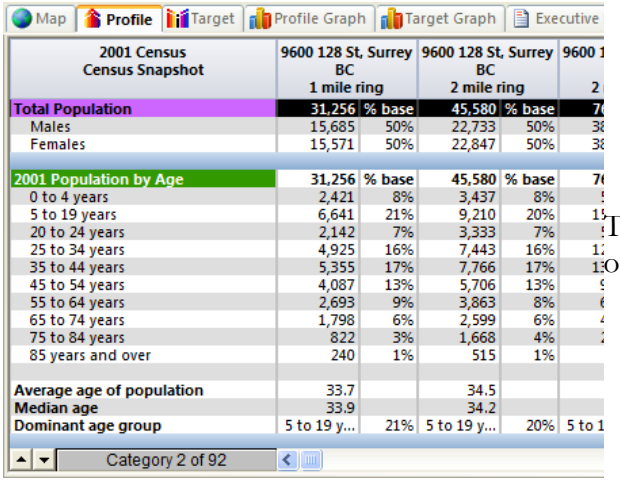




The **Search Completed** dialog provides an opportunity to review the data coverage and to provide an appropriate name for the site.

- Click Continue to display the profile.

*If you prefer not to have PCensus pause at the completion of a search, select **Options** from the **Tools** menu and uncheck **Wait after search to view points on the map**.*



Map | Profile | Target | Profile Graph | Target Graph | Executive

2001 Census Census Snapshot	9600 128 St, Surrey BC 1 mile ring		9600 128 St, Surrey BC 2 mile ring		9600 1 2
Total Population	31,256	% base	45,580	% base	7(
Males	15,685	50%	22,733	50%	3{
Females	15,571	50%	22,847	50%	3{
2001 Population by Age	31,256	% base	45,580	% base	7(
0 to 4 years	2,421	8%	3,437	8%	
5 to 19 years	6,641	21%	9,210	20%	1
20 to 24 years	2,142	7%	3,333	7%	
25 to 34 years	4,925	16%	7,443	16%	1
35 to 44 years	5,355	17%	7,766	17%	1
45 to 54 years	4,087	13%	5,706	13%	
55 to 64 years	2,693	9%	3,863	8%	(
65 to 74 years	1,798	6%	2,599	6%	
75 to 84 years	822	3%	1,668	4%	
85 years and over	240	1%	515	1%	
Average age of population	33.7		34.5		
Median age	33.9		34.2		
Dominant age group	5 to 19 y...	21%	5 to 19 y...	20%	5 to 1

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The **Profile** tab contains columns for your three circular areas.

What Can I Do Now?

- **Explore the Profile Browser** to see the various data categories available (page 143).
- **Index the Profile Columns** to compare the study areas to a benchmark area (page 146).
- **Modify your Study Area** (for example by changing the specified radii): click the **Edit/Search Study Area** icon  .
- **Add More Study Areas to the Project**: create additional profile columns, either for **Predefined** areas (page 21), for additional **Circular** areas, for **Drive time** areas (page 39) or for arbitrary **Polygons** (page 45).
- **Print the Profile** (page 125).
- **Export the Profile** for use with other software applications (page 129).
- **Customize the Profile** (page 149).
- **Combine Shapes to Create Complex Study Areas** (page 217).

9 Profile a Drive Time Area

Objective

Create a Profile for the area within a specified drive time from a location.

Background

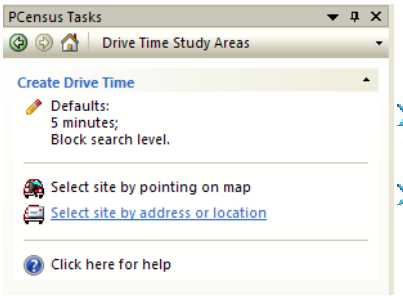
The Drive Time zone is a useful method for predicting the trade areas around a business location. We can define a study area as a polygon containing all the points from which it is possible to drive to our location in a specified number of minutes. The drive time calculation takes into account factors such as one-way streets and road classifications, and we can specify the likely driving speeds for different types of roads within the area, such as Interstate highways or suburban streets.

Note: To profile drive time study areas, you must purchase the optional PCensus drive time module (Freeway). However, all PCensus installations include sample drive time data for the area around Bellingham, WA, so you will always be able to work through the example described in this section.

Steps to Profile a Drive Time Area by Pointing

For this example, we will select our site location by pointing on the map with the mouse cursor.

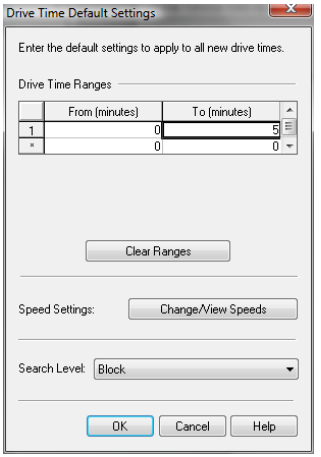
*Selection of a location by **Address** is described in the **Circle** example, page 35.*



- Select **Profile a Drive Time Study Area** in the **PCensus Tasks** Window.
- Click **Change default drive time settings**.

Default Drive Time Settings

The default circle settings dialog lets you specify the required pattern of drive time zones in advance; it will only need to be re-specified if you wish to create a different pattern.

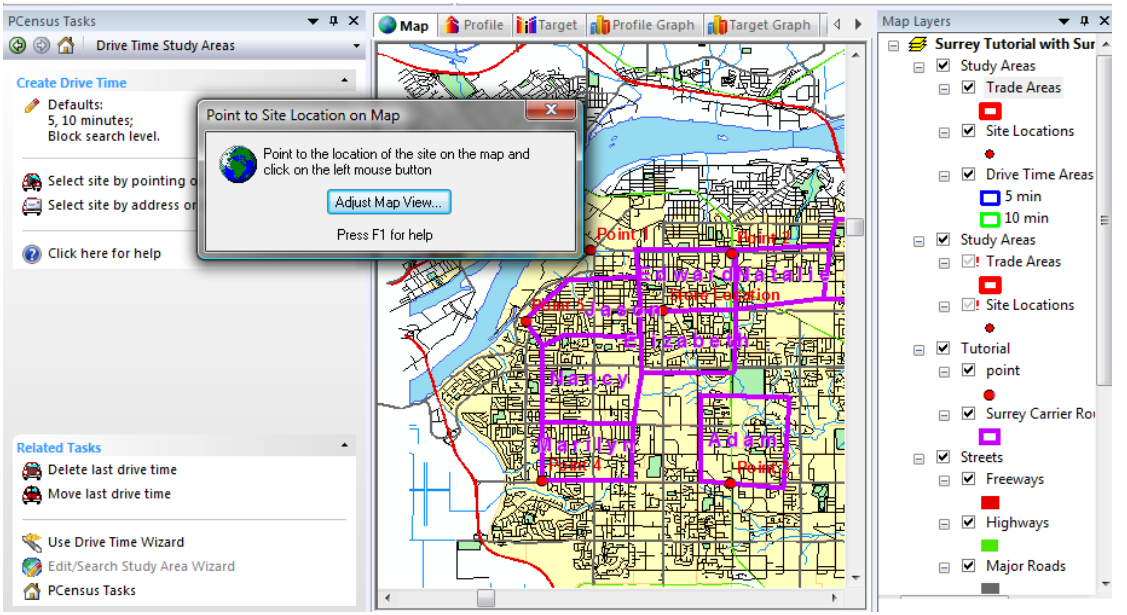


- Enter the drive times as shown to define 5 and 10 minute drive times.

> *You can click **Change/View Speeds** to change the expected driving speeds (in miles/hour or km/hour) for each road classification.*

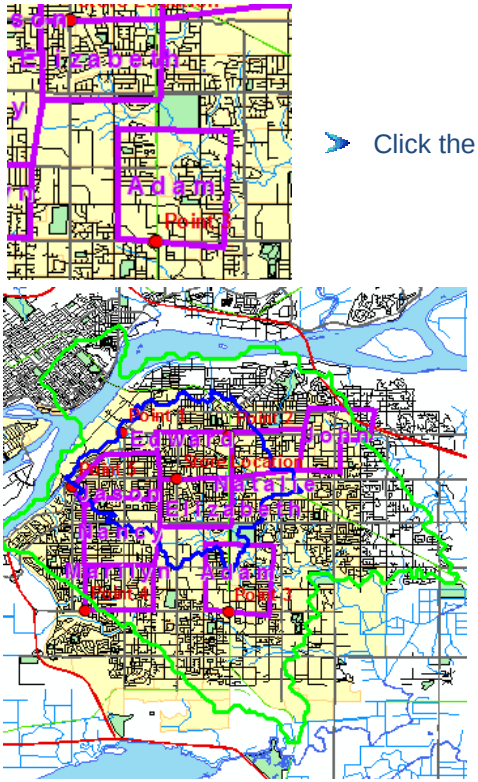
- Select the **Search Level** (normally the smallest area type available in the database).
- Click **OK** to close the dialog
- Click **Select Site by pointing on map** in the **Drive Time Report** task pane.

- Select Change/View Speeds and the **Advanced** tab in the **Drive Time Settings** dialog. Ensure the Country is set to **Canada.**



The displayed map view may not show the exact area where your study area is located. If this is the case,

- Click Adjust Map View... to access the map navigation tools.
- Use the zoom, pan and other navigation controls to display the required map view. Click **Continue** when finished.



➤ Click the cursor on a site location.

PCensus retrieves all the data targets (Blocks) within the defined areas and displays their locations as black dots to indicate the search progress.

➤ When the search is complete, click Continue to display the profile.

Map | Profile | Target | Profile Graph | Target Graph | Executive Summary

2001 Census Census Snapshot	Site E 0 min - 5 min		Site E 0 min - 10 min	
Total Population	**67,538**	**% base**	**224,012**	**% base**
Males	33,788	50%	111,177	50%
Females	33,750	50%	112,835	50%
2001 Population by Age	**67,538**	**% base**	**224,012**	**% base**
0 to 4 years	5,151	8%	17,273	8%
5 to 19 years	13,771	20%	49,198	22%
20 to 24 years	4,756	7%	15,867	7%
25 to 34 years	10,957	16%	35,087	16%
35 to 44 years	11,571	17%	38,326	17%
45 to 54 years	8,566	13%	29,412	13%
55 to 64 years	5,788	9%	18,382	8%
65 to 74 years	3,912	6%	11,780	5%
75 to 84 years	2,232	3%	6,690	3%
85 years and over	723	1%	1,734	1%
Average age of population	34.4		33.5	
Median age	34.2		33.5	
Dominant age group	5 to 19 years	20%	5 to 19 years	22%
Families	**18,339**	**% base**	**61,725**	**% base**

The **Profile** tab contains columns for our drive time areas.

What Can I Do Now?

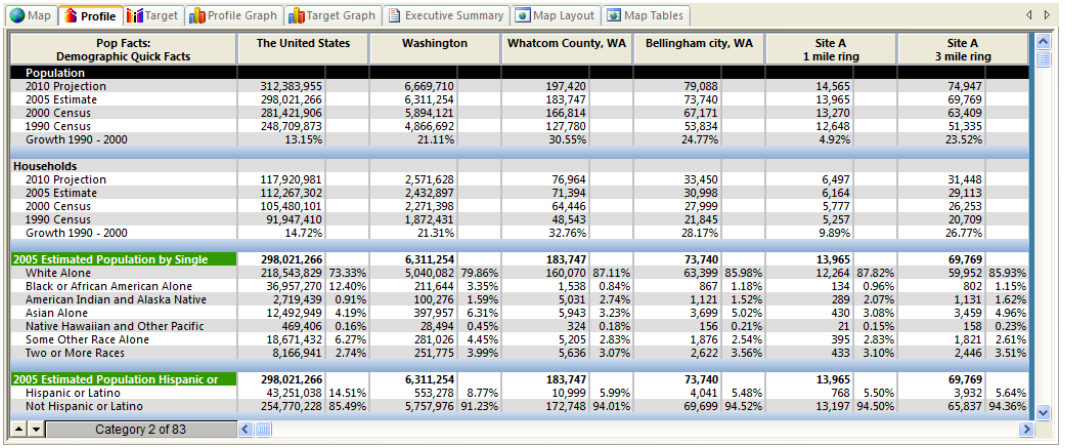
- **Explore the Profile** to see the various data categories available (page 143).

- **Index the Columns** to compare the study areas to a benchmark area (page 146).
- **Modify the Study Area** (for example by changing the specified driving times or speeds): click the **Edit/Search Study Area** icon  .
- **Add More Study Areas to the Project**: create additional profile columns, either for **Predefined** areas (page 21), for **Circular** areas (page 35), for additional **Drive time** areas or for **Polygons** (page45).
- **Export the Profile** for use with other software applications (page 129).
- **Customize the profile** with the data template editor (page 149).
- **Combine Shapes to Create Complex Study Areas** (page 217).

10 Using the Study Area Manager

Background

In the preceding chapters, we created a number of study areas that are represented as multiple columns in the profile browser.



Map | Profile | Target | Profile Graph | Target Graph | Executive Summary | Map Layout | Map Tables

Pop Facts: Demographic Quick Facts	The United States		Washington		Whatcom County, WA		Bellingham city, WA		Site A 1 mile ring		Site A 3 mile ring	
Population												
2010 Projection	312,383,955		6,669,710		197,420		79,088		14,565		74,947	
2005 Estimate	298,021,266		6,311,254		183,747		73,740		13,965		69,769	
2000 Census	281,421,906		5,894,121		166,814		67,171		13,270		63,409	
1990 Census	248,709,873		4,866,692		127,780		53,834		12,648		51,335	
Growth 1990 - 2000	13.15%		21.11%		30.55%		24.77%		4.92%		23.52%	
Households												
2010 Projection	117,920,981		2,571,628		76,964		33,450		6,497		31,448	
2005 Estimate	112,267,302		2,432,897		71,394		30,998		6,164		29,113	
2000 Census	105,480,101		2,271,398		64,446		27,999		5,777		26,253	
1990 Census	91,947,410		1,872,431		48,543		21,845		5,257		20,709	
Growth 1990 - 2000	14.72%		21.31%		32.76%		28.17%		9.89%		26.77%	
2005 Estimated Population by Single	**298,021,266**		**6,311,254**		**183,747**		**73,740**		**13,965**		**69,769**	
White Alone	218,543,829	73.33%	5,040,082	79.86%	160,070	87.11%	63,399	85.98%	12,264	87.82%	59,952	85.93%
Black or African American Alone	36,957,270	12.40%	211,644	3.35%	1,538	0.84%	867	1.18%	134	0.96%	802	1.15%
American Indian and Alaska Native	2,719,439	0.91%	100,276	1.59%	5,031	2.74%	1,121	1.52%	289	2.07%	1,131	1.62%
Asian Alone	12,492,949	4.19%	397,957	6.31%	5,943	3.23%	3,699	5.02%	430	3.08%	3,459	4.96%
Native Hawaiian and Other Pacific	469,406	0.16%	28,494	0.45%	324	0.18%	156	0.21%	21	0.15%	158	0.23%
Some Other Race Alone	18,671,432	6.27%	281,026	4.45%	5,205	2.83%	1,876	2.54%	395	2.83%	1,821	2.61%
Two or More Races	8,166,941	2.74%	251,775	3.99%	5,636	3.07%	2,622	3.56%	433	3.10%	2,446	3.51%
2005 Estimated Population Hispanic or	**298,021,266**		**6,311,254**		**183,747**		**73,740**		**13,965**		**69,769**	
Hispanic or Latino	43,251,038	14.51%	553,278	8.77%	10,999	5.99%	4,041	5.48%	768	5.50%	3,932	5.64%
Not Hispanic or Latino	254,770,228	85.49%	5,757,976	91.23%	172,748	94.01%	69,699	94.52%	13,197	94.50%	65,837	94.36%

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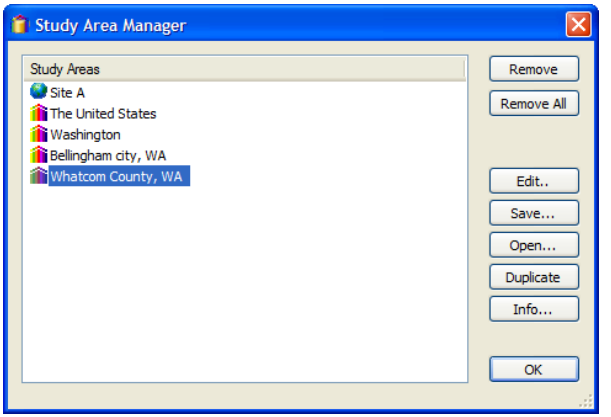
The **Study Area Manager** allows us to selectively remove unwanted areas from our project.

➢ Click the **Study Area Manager** icon  in the PCensus tool bar.

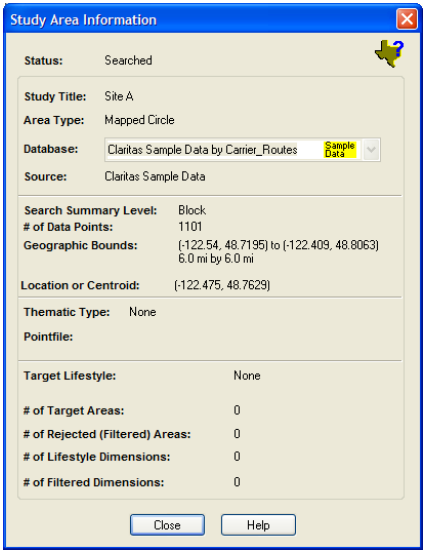


➢ Select a study area and click the **Remove** button.

The **Study Area Manager** dialog contains additional buttons:

- **Edit**: Change the study area definition and re-search the area.

- **Save** and **Open**: save the current study area definition so that it can be opened in a new project.
- **Duplicate**: make a copy of the study area that can be edited and displayed alongside the original area.
- **Info:** display the **Study Area Information** dialog.



11 Profile a Traced Polygon Area

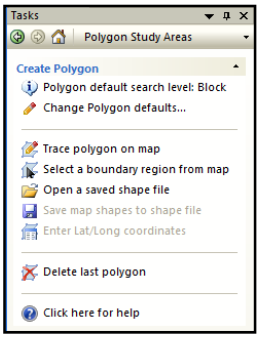
Objective

Create a Profile for the area within a polygon specified by tracing on the map.

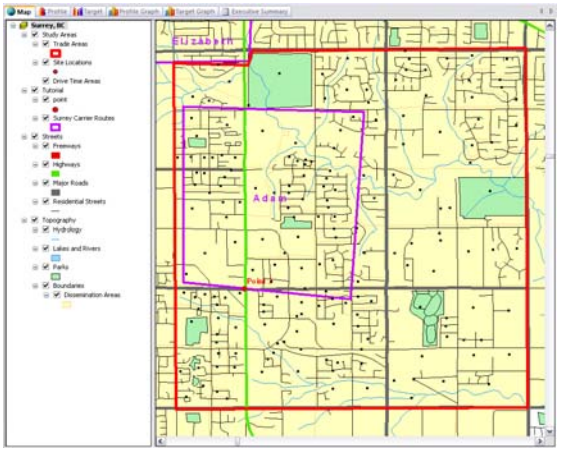
Background

Traced polygons provide a flexible method for defining a study area. You may already have local knowledge of the areas where your customers live or you may want to define an area in the vicinity of an established transportation corridor.

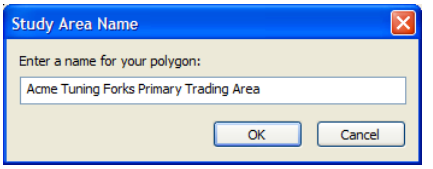
Steps to Profile a Polygon



- Select **Profile Polygon Study Area** in the **PCensus Tasks** Window.
- Click **Trace polygon on map.**

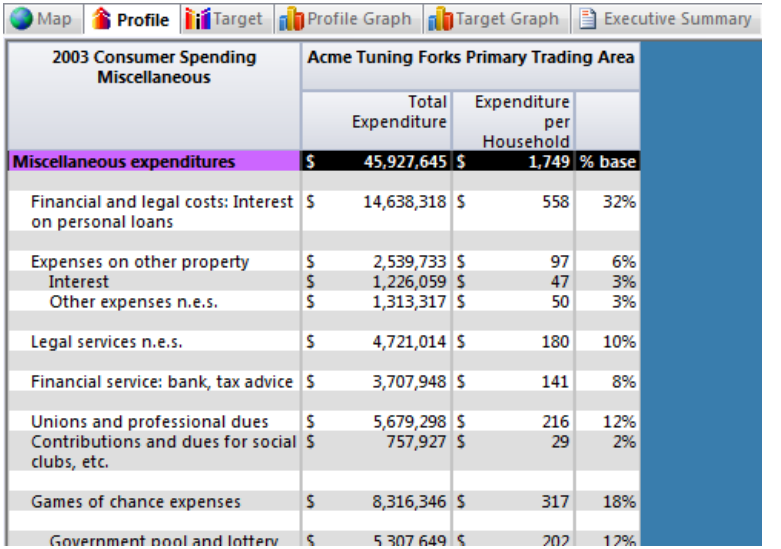


- Use the cross-hair cursor (+) to trace a polygon on the map similar to the one shown.
- Click on each point in order; when you reach the last point, double-click on it to close the polygon.



- Enter a suitable title for your polygon area.
- Click **OK**.

The **Profile** tab contains a column for our polygon area.



2003 Consumer Spending Miscellaneous	Acme Tuning Forks Primary Trading Area		
	Total Expenditure	Expenditure per Household	
Miscellaneous expenditures	**$ 45,927,645**	**$ 1,749**	**% base**
Financial and legal costs: Interest on personal loans	$ 14,638,318	$ 558	32%
Expenses on other property	$ 2,539,733	$ 97	6%
Interest	$ 1,226,059	$ 47	3%
Other expenses n.e.s.	$ 1,313,317	$ 50	3%
Legal services n.e.s.	$ 4,721,014	$ 180	10%
Financial service: bank, tax advice	$ 3,707,948	$ 141	8%
Unions and professional dues	$ 5,679,298	$ 216	12%
Contributions and dues for social clubs, etc.	$ 757,927	$ 29	2%
Games of chance expenses	$ 8,316,346	$ 317	18%
Government pool and lottery	$ 5,307,649	$ 202	12%

What Can I Do Now?

- **Explore the Profile Browser** to see the data categories available (page 143).
- **Index Profile Columns** to compare study areas to a benchmark area (page 146).
- **Add More Study Areas to the Project**: create additional profile columns, either for **Predefined** areas (page 21), for **Circular** areas (page 35), for **Drive time** areas (page 39), or for additional **Polygons**.
- **Print the Profile** (page 125).
- **Export the Profile** for use with other applications (page 129).
- **Customize the profile** with the data template editor (page 149).
- **Combine Shapes to Create Complex Study Areas** (page 217).

12 Profiling Polygons from a Map Layer

Objective

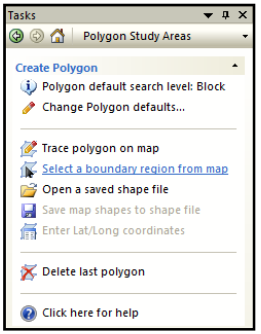
Capture polygons defined in a map layer, and use them to define study areas.

Background

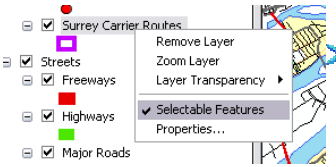
If you have maps that show the areas you need, such as trade areas or school districts, you can select these areas directly and use them as study area polygons. To illustrate this capability, we will use a map outlining the areas assigned to seven newspaper carriers (Edward, Natalie, John, Samantha, Eric, Frederick and Margaret).

Steps to Profile a Polygon

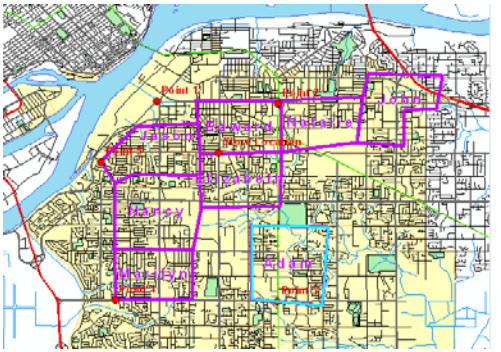
- Create a new PCensus project and open the **Surrey, BC Tutorial Maps** map set in the **Project Setup** pane.



- Click Select a boundary region from map

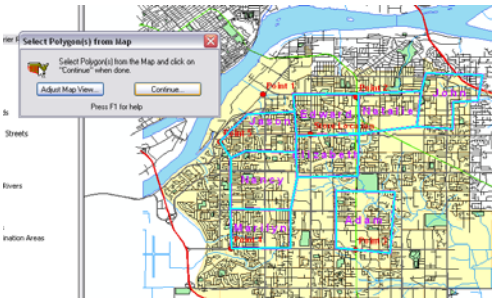


- Right-Click the **Surrey Carrier Routes** layer and click on **Selectable Features** to qualify the boundaries for selection.

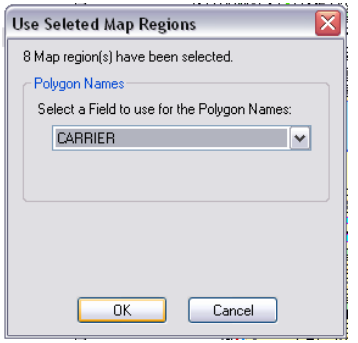


- Click on the **Select** button from the ArcView toolbar
- Click in one of the polygons to make a selection. The selected polygon will be shaded in turquoise.

The floating dialog box provides a control that lets you adjust the map view if necessary.

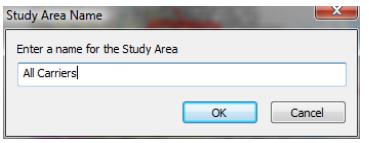


- Press the **Shift** key, and while it is pressed, click the other polygons one at a time to select them.
- Click Continue... in the floating dialog.



The **Use Selected Map Objects** dialog lets us select a data field associated with the map layer to be used for naming our study areas.
The **Carrier** field contains the names of our newspaper carriers (Edward, Natalie, etc.)

- Click OK.



- Enter a name for the study area.
- Click **OK** to display the profile.

The profile browser contains a column for each of the carrier routes.

Map | Profile | Target | Profile Graph | Target Graph | Executive Summary

2001 Census Census Snapshot	Area Union All Carriers		John		Natalie		
Total Population	**110,616**	**% base**	**15,658**	**% base**	**8,935**	**% base**	
Males	54,608	49%	7,465	48%	4,347	49%	
Females	56,009	51%	8,193	52%	4,588	51%	
2001 Population by Age	**110,616**	**% base**	**15,658**	**% base**	**8,935**	**% base**	
0 to 4 years	8,610	8%	1,146	7%	600	7%	
5 to 19 years	23,151	21%	2,964	19%	1,669	19%	
20 to 24 years	7,616	7%	1,005	6%	595	7%	
25 to 34 years	17,817	16%	2,577	16%	1,519	17%	
35 to 44 years	18,928	17%	2,857	18%	1,584	18%	
45 to 54 years	14,321	13%	2,043	13%	1,234	14%	
55 to 64 years	9,104	8%	1,181	8%	680	8%	
65 to 74 years	6,222	6%	934	6%	525	6%	
75 to 84 years	3,637	3%	721	5%	395	4%	
85 years and over	1,003	1%	170	1%	130	1%	
Average age of population	34.0		35.3		35.8		
Median age	33.9		35.4		35.5		
Dominant age group	5 to 19 years	21%	5 to 19 years	19%	5 to 19 years	19%	5 tc
Families	**30,392**	**% base**	**4,337**	**% base**	**2,459**	**% base**	
Persons per family	3.1		2.8		2.8		
Two-parent families	24,361	80%	3,157	73%	1,904	77%	
With no children at home	9,358	31%	1,505	35%	905	37%	
With children at home	15,070	50%	1,682	39%	999	41%	
Lone-parent families	5,930	20%	1,150	27%	550	22%	
Total children at home	38,833		4,843		2,628		
Children per family	1.3		1.1		1.1		
Households	37,958		6,668		3,673		

Category 2 of 92

What Can I Do Now?

- PCensus provides several other methods for selecting map objects. For example, you can pick **Select...** from the **Map** menu to select objects from a map layer that satisfy specified criteria. To use these options, you must work directly in the Map tab (i.e. without using the study area wizard). When you have selected the required objects, click the **Use Selected** icon  in the PCensus toolbar to start the wizard process.
- The "use selected map objects" feature is very powerful. It can also be used with selected "point" objects on a map, for example representing store locations or residences. When point objects are used, PCensus starts the **Batch Sites Wizard** (page 225) to define circles or drive time areas of specified size around each location.
- **Use selected polygons to create User Defined Target Areas** (page 231).

13 Using ArcGIS Maps

Objective

Use Maps from other sources in PCensus.

Background

In the preceding chapters, we defined a geographical study area using a local street map for Surrey, BC.

For real projects, we would normally use other maps, for example StreetMap North America which is part of the ESRI Data & Maps package supplied with ArcView.

PCensus can use maps or map layers supplied in the standard ESRI .mxd, .lyr or .shp formats, provided that these maps use the latitude/longitude coordinate system. Maps using other coordinate systems must be transformed to a compatible system using the tools provided by ArcView.

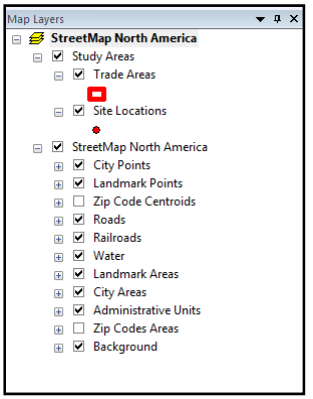
Once a map has been used in PCensus it is registered as a PCensus "map set" so that it can be easily recalled for future projects with all included map layers. The current zoom level and field of view are recorded in the map set, so when the map set is reused, it will immediately display the same geographical area that was visible when the map set was created.

It is possible to create many map sets that refer to the same underlying maps. For example, if you are using a regional map such as the StreetMap extension, you can create separate map sets for all the regions that are of interest to you.

Using StreetMaps

To follow the steps in this chapter, you must install and register the **StreetMapstm North America** extension. You will also need maps from the **Data & Maps** package, which includes Census and ZIP code boundaries.

The StreetMaps North America MXD document can be opened in the Project Setup task pane in the usual way by clicking **Open Additional Map Layers** in the **Project Setup** Task Window.



The Legend Window shows all the "layers" in the map and lets you control their visibility. Use the check boxes to turn specific layers on and off, and click the + and – boxes to expand or collapse the various groups.
You can change the order of layering by dragging with the mouse.

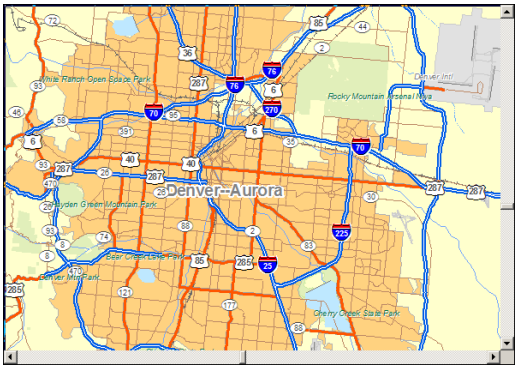
Note that the **Trade Area** and **Site Locations** layers are added by PCensus to display user-defined study areas (circles and polygons). These layers cannot be changed.

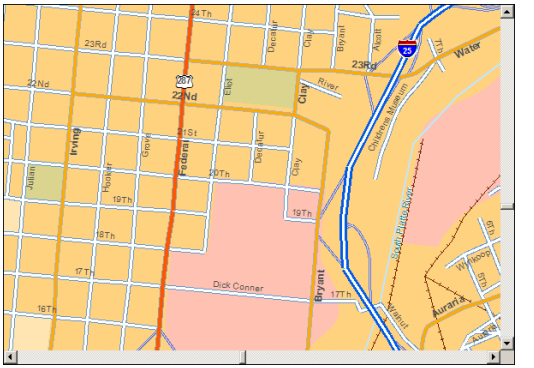
Changes to the StreetMap NA group will not be preserved by PCensus; however, you can create new versions by editing in ArcMap.

The Mapping toolbar provides icons that allow you to navigate to different parts of the map window.

Note: the toolbar is usually "docked" at the right-hand side of the map window, but it can be dragged to other locations.

Try using the  ,  and  to zoom in to the Denver area. As you zoom in, more and more detail is displayed, until you can see labeled streets





Zoom back to a view showing all of Denver (similar to the map on the left).

Assuming that we expect to need a map of Denver as a basis for future PCensus projects, we can save this map view as a map set (see Appendix 4 - Creating a Map Set).

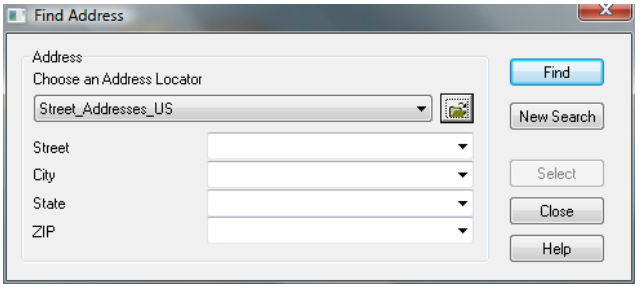
Using ArcGIS Address Locators

ArcGIS uses Address Locators for locating addresses and geocoding. The address location process refers to databases (for example street network files) installed on your computer, but do not require the map to be open for display.

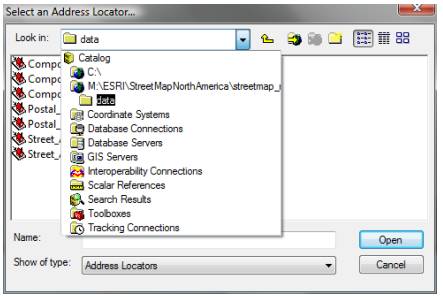
Map products supplied by ESRI, for example StreetMap North America or StreetMap Pro, include address locators, or you can create them from your own maps using ArcToolBox.

An address locator is a special file (file type .loc) that contains information providing linkage to a street map product. When an address locator is active, supplied street address information is used to compute the latitude/longitude coordinates of the location.

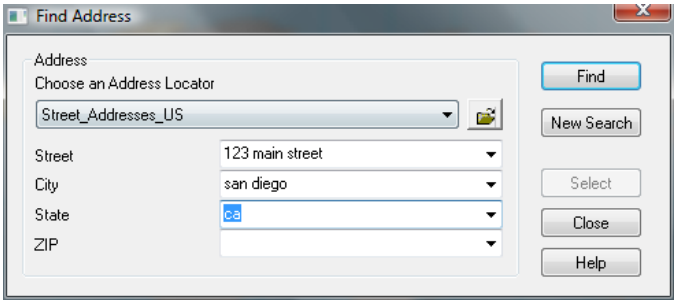
The address-searching functions of PCensus, for example specifying a location for radius or drive time study areas, display the **Find Address** dialog box.



Address Locator(s) that have already been used in a PCensus session are selectable from the pull-down list. Otherwise, you must browse for a suitable address locator by clicking the  icon. The Address Locators for StreetMap North America can be found in the StreetMap folder:



Type as much of the address as possible (if you do not know the exact spelling, the ZIP code or other components, it may still be possible to resolve the address) and click Find.



If the address is ambiguous, a number of candidates may be displayed. Highlight the appropriate entry and click Select.

What Can I Do Now?

Experiment with the features of the map window to change the contents and appearance of maps.

14 Use "Data Fit" to Define a Circle or Drive Time Based on Demographics

Objective

Find an area (radius or drive time) that contains about 500 dwellings built before 1939.

Background

In the examples we have seen so far, we have created circles or drive time areas specified in miles or minutes respectively. Sometimes we may not know in advance what the physical dimensions of our area should be; instead, we may want to profile an area that contains a specified population, or number of households, and let PCensus determine the optimum radius or drive time.

The **Data Fit** method lets you specify a variable to be used, and the value for that variable for which a circle or drive time area is to be generated, for example:

- A drive time zone containing a population of 10,000 people.
- A circle containing 500 dwellings built before 1939.

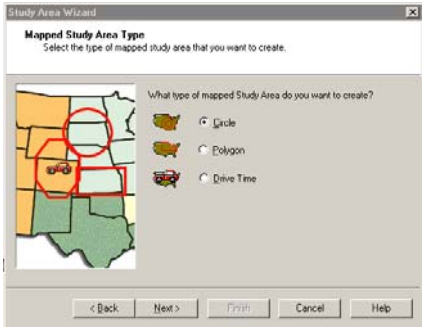
To create a **Data Fit** circle, PCensus generates a series of circles (or drive times) of different sizes and evaluates the selected variable for each one. The optimum size is determined by a "convergent" process: once it has been determined that one radius is too large and that another is too small to provide the required result, intermediate circles are tried until a suitable approximation has been obtained.

An important consideration in using the **Data Fit** method is that it should only be used with variables that would reasonably be expected to be proportional to the size of the study area; for example, a variable like Average Income cannot be used, as it is unlikely to be proportional to the radius of the study area.

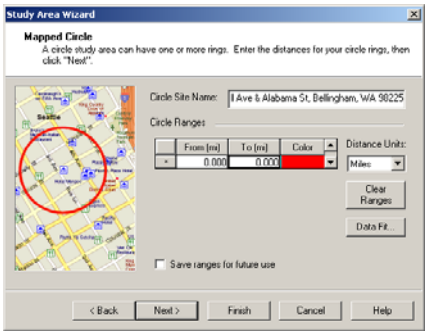
The specified data value is unlikely to be matched exactly, because the inclusion or exclusion of a single database record invariably changes the result by more than one unit. The **Data Fit** process includes a "tolerance" setting to specify how closely we wish to match the required value. A small tolerance value may greatly increase the number of iterations required.

Steps to Profile a Data Fit Circle

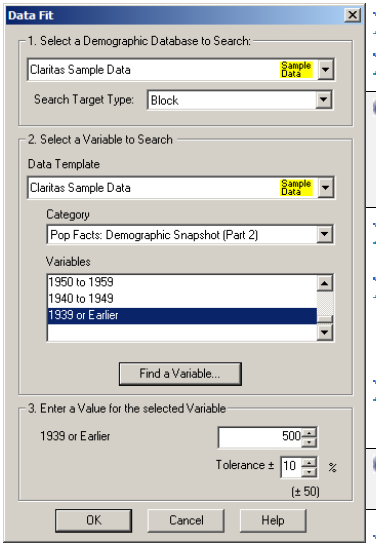
Note: The Data Fit Feature is only available when you define study areas using the PCensus Wizards.



- Switch to the Wizards task pane and click **Run Wizards**.
- Click **Create Mapped Study Area**.
- Select Circle and click Next >.
- Define a circle based on the **Cornwall Avenue** and **Alabama Street** location and advance to the **Mapped Circle** dialog. Do not enter any circle ranges.



- Click Data Fit...



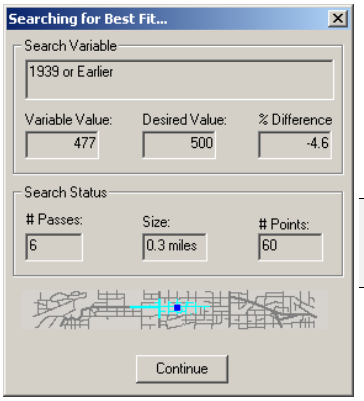
- Select the **Claritas Sample Data**.
- Set the Search **Target Type** to **Block**.

*This sets the level at which the database will be searched when testing circles. Use **Block** for small areas to increase resolution, or **Block group** for larger areas to increase performance.*

- Set the **Data Template** to **Claritas Sample Data**.
- Use the Find Variable... button (page 145) to find the data item **1939 or Earlier** (in the **Demographic Snapshot** category).
- Set the required value for the selected variable to **500**.

*The default **Tolerance** value of **10%** will be suitable for most purposes.*

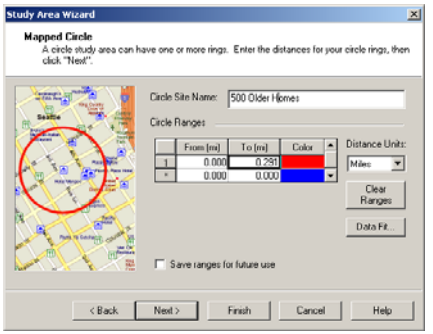
- Click OK.



The **Searching for Best Fit** dialog monitors the progress of the analysis. In the example, 6 passes (candidate circles) were tried, the final one giving a result of 477 units, which is within the specified tolerance of 10%.

Note: In this case, setting the tolerance to a lower value (e.g. 1%) will have no effect on the outcome, due to the finite size of the retrieved blocks.

Click Continue.



The **Data Fit** circle matching our criteria has a radius of 0.291 miles.

- Enter a suitable site name reflecting the significance of the area, for example **500 Older Homes**.
- Click Next >, and continue to create the profile as usual.

PCensus displays the finished profile.

Pop Facts: Demographic Snapshot (Part 2)	500 older homes 0 - 0.310686 mi	
2005 Estimated Housing Units by Units in Structure*	**1,058**	
1 Unit Attached	49	4.65%
1 Unit Detached	710	67.14%
2 Units	81	7.61%
3 to 19 Units	125	11.85%
20 to 49 Units	2	0.21%
50 or More Units	90	8.54%
Mobile Home or Trailer	0	0.00%
Boat, RV, Van, etc.	0	0.00%
Dominant structure type	1 Unit Det...	
2005 Estimated Housing Units by Year Structure Built	**1,058**	
1999 to March 2005	30	2.88%
1995 to 1998	6	0.53%
1990 to 1994	35	3.29%
1980 to 1989	30	2.83%
1970 to 1979	67	6.29%
1960 to 1969	91	8.64%
1950 to 1959	124	11.76%
1940 to 1949	136	12.84%
1939 or Earlier	539	50.94%
2005 Estimated Median Year Structure Built**	1,939	
Dominant Year Structure Built	1939 or E...	

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What Can I Do Now?

- Try using the **Data Fit** method for drive times instead of circles.

Note In small areas, this may result in significant divergence from the required values, as drive times are calculated to the nearest minute. In practice, the difference between, say, a four-minute and five-minute drive time would be almost meaningless, but could represent a large difference in included population.

15 Thematic Mapping with Boundaries

Background

Thematic boundary maps let us visualize the value of any variable by coloring regions on a map according to the value of a variable, highlighting areas where the value is high or low.

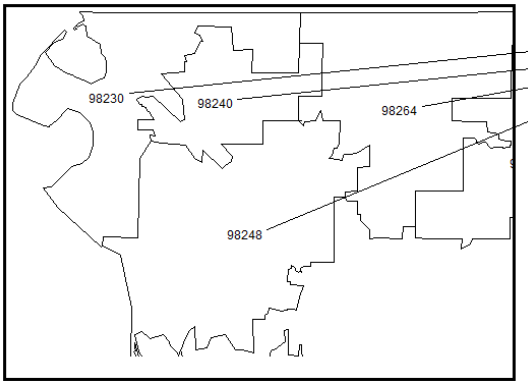
PCensus databases are not intrinsically connected to any map layers, so we must tell PCensus how the data contained in each database record (target) will be associated with a map boundary. There are two ways that we can define this association:

- Match a "code" common to the data target and the map boundary. Typical examples of codes would be a ZIP code (5 characters) or a block group code (12 characters). This method is called "Code Matching".
- Find the target record(s) whose centroids (defined by latitude and longitude) are located in each boundary. This method is called "Point-in-Polygon".

Matching Data Points to Boundaries by Code Matching

This method should always be used when there is an exact correspondence of codes between boundaries and database targets

The simplest case occurs when there is a one-to-one correspondence between database records and the mapped boundaries. For example, if the database contains exactly one record for every ZIP code, and the map layer contains corresponding boundaries for each ZIP code.



ZIP Code	Total Population	Total Households	Median Income
98230	12,559	5,082	49,750
98240	2,993	1,031	58,961
98264	18,145	6,483	53,395
98248	20,001	7,113	51,764

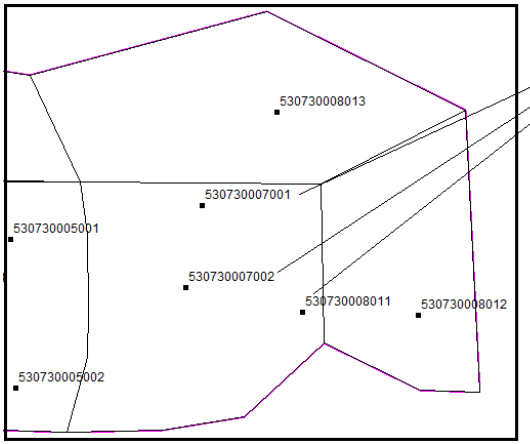
In this case, PCensus can transfer the data values to the map by matching the database target codes to the map layer codes.

See Chapter 16, Create a Thematic Boundary Map, for an example of data matching by code.

Matching by Point-In-Polygon

This method should only be used when there is no matching code between boundaries and database geography.

This is the most generalized method, as it requires no structural relationship between the targets and the boundaries. For example, block group targets from the PCensus database can be re-aggregated to shade areas representing school districts or trade areas.



Block Group	Total Population	Total Households	Median Income
530730007001	4,059	1,532	45,685
530730007002	2,903	1,209	25,962
530730008011	1,775	702	52,571
530730004001	2,895	1,302	41,818
530730008013	2,477	989	37,532
530730004003	2,273	966	51,045
530730005001	1,809	758	45,279
530730004002	1,757	805	54,736
530730005002	1,689	836	28,988
530730005004	1,457	703	41,689
530730005001	924	517	15,985
530730008012	815	364	48,558
530730005005	792	385	34,702

In the illustration, a map boundary contains three block group centroids; PCensus must compute an aggregate value from the three block group records, and associate the resulting value with the boundary.

If the data value to be thematically mapped represents "count" data such as Total Population or Total Households, the computation is straightforward: the value assigned to the mapped region will be the total of the values of the contained targets.

If the data value does not represent a count, totaling the values will not be appropriate; for example, if we total the "median income" values of the three block groups in the illustration, the result will be meaningless. In this case, PCensus must average the values of the three block groups to compute a useful value.

PCensus cannot automatically determine whether it is appropriate to total or to average a particular variable; you are required to indicate whether the selected value should be handled as a "count" (to be aggregated) or a "ratio or percentage" (to be averaged).

Use of the Point-in-Polygon method for thematic mapping is not recommended, especially when mapping non-additive variables such as medians. Instead, you are encouraged to use the PCensus Custom Geography feature (see Chapter 34) to create a new target type corresponding to your mapped boundaries. This approach will allow the use of the preferred code-matching method for all thematic mapping tasks.

16 Create a Thematic Boundary Map

Background

This chapter describes the method for creating a thematic boundary map when there is a one-to-one correspondence between mapped boundaries and the target records available in a PCensus database. For example, to create a map in which Postal FSA boundaries are shaded according to median income, you must have installed:

- A PCensus database containing data at the Postal FSA summary level.
- A map layer (.lyr file) or shape file (.shp file) of Postal FSA boundaries of similar vintage to the database.

Note: Postal FSA areas can change from year to year in response to changes in the postal delivery system. This can cause problems if maps of an inappropriate vintage are used for thematic mapping. Other summary levels, such as block groups and census tracts rarely change between censuses.

When a suitable correspondence between map and database exists, thematic mapping uses the "Code-Matching" process described in Chapter 15 to assign data to the regions in the map layer.

In previous versions of PCensus, this meant that thematic mapping using boundary types not represented in the database required re-aggregation of data assigned by the "Point-in-Polygon" method. However, the Custom Geography feature introduced in PCensus version 9 (see chapter 34) allows us to create thematic maps for any type of boundary using the code-matching method.

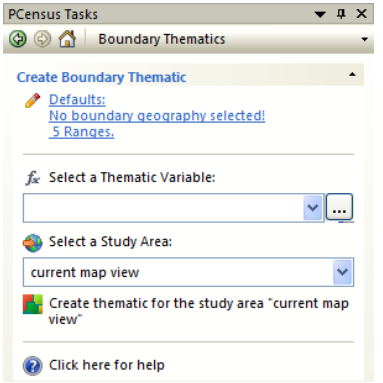
Steps to Create a Thematic Boundary Map

Creating a thematic map requires the following choices:

- The level of geographic detail required, and the method to be used for representing data on the map (thematic defaults).
- The variable to be mapped.
- The extent of the area to be mapped (i.e. the study area).

Set the Thematic Mapping Defaults

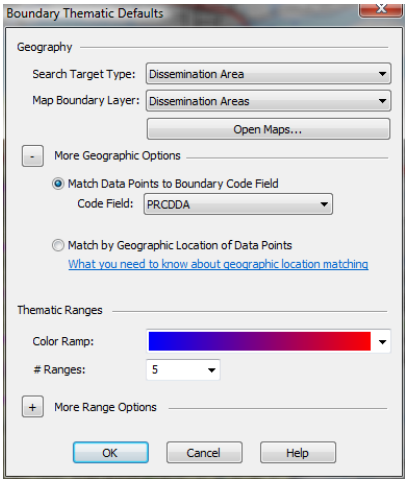
The **Boundary Thematic Defaults** dialog box lets you specify how data will be applied to the map. The settings that you make for a specific combination of maps and databases are "remembered" by PCensus between sessions, so it is not normally necessary to change them for each new map.



- Start a project using the **Surrey, BC Map Set**.
- Open the **Boundary Thematics** task pane.

The current settings are summarized in an informational entry in the task pane, for example:

- Click **Defaults:** to display the **Boundary Thematic Defaults** dialog box.



The **Geography** section is used to specify how the data records in the PCensus database will be associated with boundaries in a map layer:

- **Search Target Type** selects the geographic level to be used (based on levels available in the current database).

- Select **Dissemination Area** in the **Search Target Type** list.

- **Map Boundary Layer** selects the map layer containing boundaries to be thematically shaded.

*The pull-down lists all currently open map layers. If no suitable layer is open, click **Open Maps…** to access additional map files.*

Select the **Dissemination Areas** layer from the **Map Boundary Layer** list.

The DA boundaries in the map layer will correspond to the target records representing DAs in the PCensus database.

Every DA in a PCensus database is identified by a unique eight-digit code.

See Appendix 2 – Census Geography for descriptions of the identifying codes associated with different types of target areas.

Similarly, every block group boundary represented in the map layer has an associated code. Depending on the source of the map, the name of the data field containing the code may vary (it could be called "**Code**" , "**DA**", "**PRCDDA**" or other variants.)

Under **More Geographic Options**, select **Match Data Points to Boundary Code Field**.

*The option **Match by Geographic Location of Points** is provided for compatibility with previous PCensus versions to allow point-in-polygon matching. Its use is not recommended.*

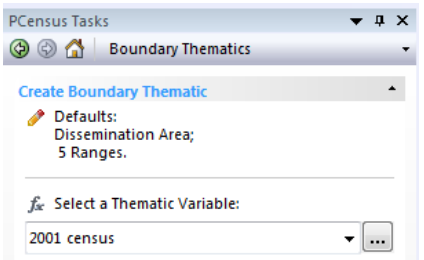
Select **PRCDDA** from the pull-down list (this is the code field used in the Dissemination Area sample map).

The remaining settings in the Boundary Thematics Defaults dialog box allow you to control the appearance of the generated thematic map and its associated legend, including color scheme and the number of discrete ranges to be displayed.

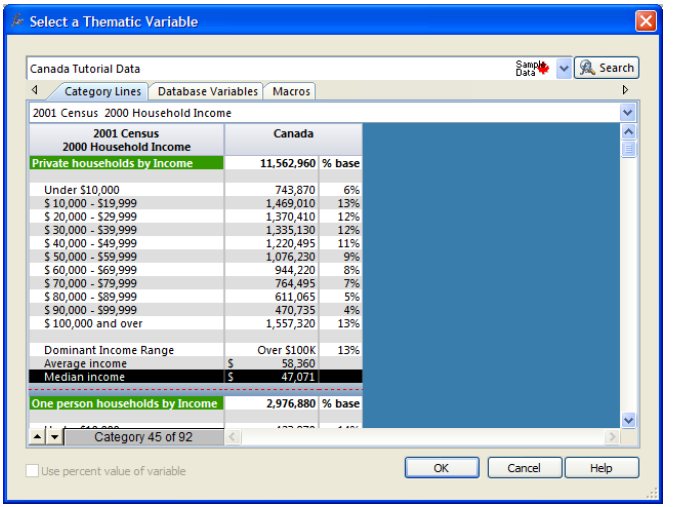
Click OK to close the **Boundary Thematic Defaults** dialog box.

Select the Variable to be Displayed in the Thematic Map

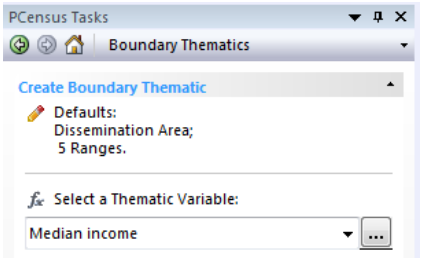
Any variable in the current database can be used to create the thematic map. The **Select a Thematic Variable** dialog box lets you pick a variable from any category.



Click the ... box next to the **Select a Thematic Variable** list.



- Select the variable to be used for thematic mapping, for example **Median Household Income**.
- Click OK to return to the **Boundary Thematic** task pane.



- The selected variable has been added to the **Select a Thematic Variable** list.

*The **Select a Thematic Variable** list contains a list of recently used variables that can be selected for future maps.*

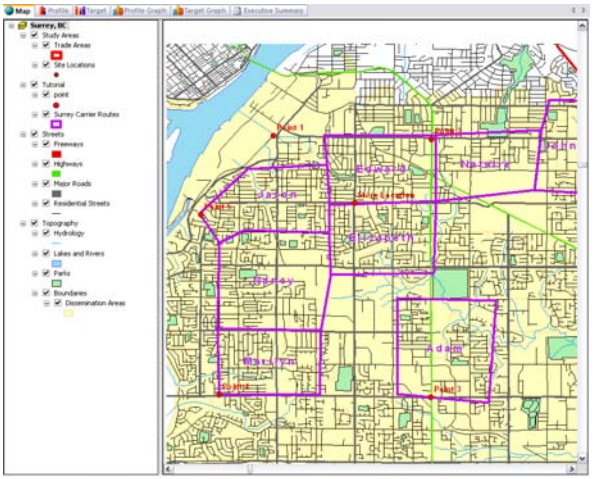
Select the Area to Map

The term "study area" refers to our geographic area of interest. Study areas include any of the area types described in the preceding chapters:

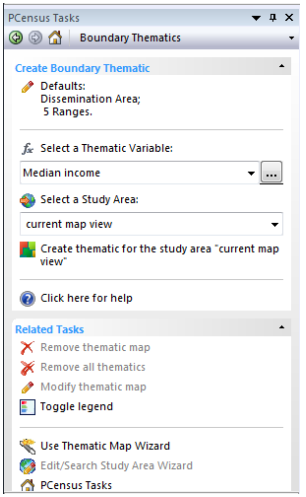
- Predefined study areas (Provinces, CMAs, Postal FSAs etc.)
- Circular areas.
- Drive time areas.
- Polygon areas.

If you have already defined a study area during the current PCensus session, it can be used to set the geographic limits of your thematic map.

Alternatively, if you have not defined a study area, you can create a thematic map that covers the area currently displayed in the map window. We will use this capability in the example that follows.



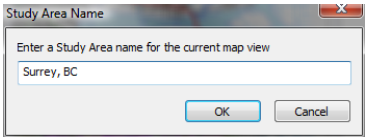
- Use the Navigation tools to adjust the map view to the area that you wish to cover with the thematic map.



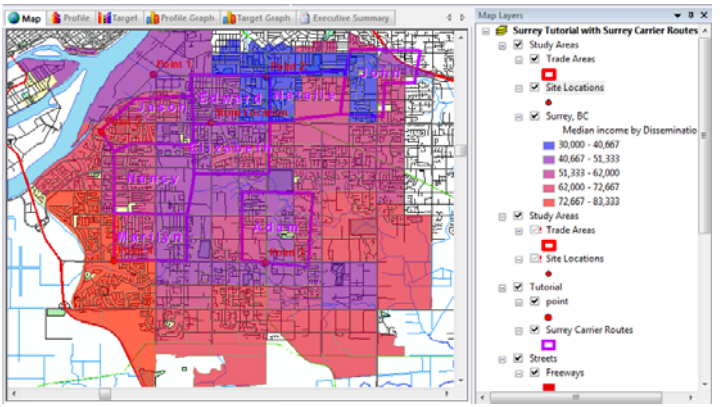
- Select **Current Map View** in the **Select a Study Area** list.

If your project contains other study areas (e.g. predefined areas, radius areas, etc.), they will appear in the list. You can use them to define the limits of your thematic map.

- Click **Create Thematic for Current Map View**.



- Enter a title that describes the area to be mapped and click **OK**.



The thematic map appears in the map window with the corresponding legend in the ArcView layer control pane.

Note that the colored areas are opaque, and they obscure the underlying map layers.

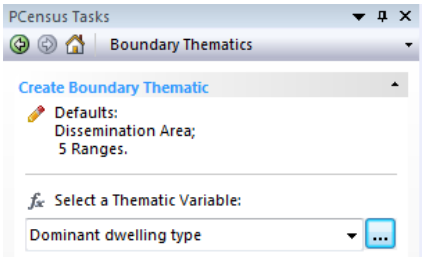
- Right-click the thematic layer in the legend.
- Click **Layer Transparency** and select a suitable transparency level.

Alternatively, you can change the layer order by dragging to expose the underlying layers.

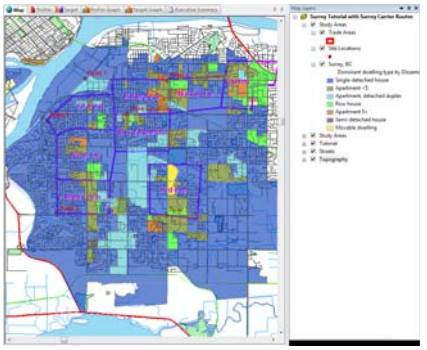
Mapping "Discrete" Values

In the example above, we created a thematic map by breaking the distribution of numerical data values into ranges, and assigning colors to the map areas corresponding to each range.

The "Dominant Group" data type does not produce a numerical result; instead it assigns a text description to each area.



- Click the ... box next to the **Select a Thematic Variable** list.
- Select **Dominant dwelling type** from the **2001 Census Dwellings** category.
- Click **Create Thematic for the study area "Surrey, BC."**



PCensus automatically assigns colors to each of the possible values of the variable.

17 Create a Thematic Point Map

Objective

Create a thematic point map for Vancouver with colored dots representing the median household income for each DA.

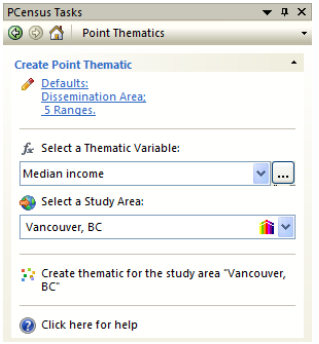
Background

Thematic Point maps provide a simple method to display data on a map by creating colored dots at the centroid of each target contained in a PCensus study area. This method can be used even if no corresponding boundary map is available. A thematic point map can be created for any target type present in a PCensus database.

The disadvantage of the thematic point map is that it does not delineate the boundaries of the colored areas.

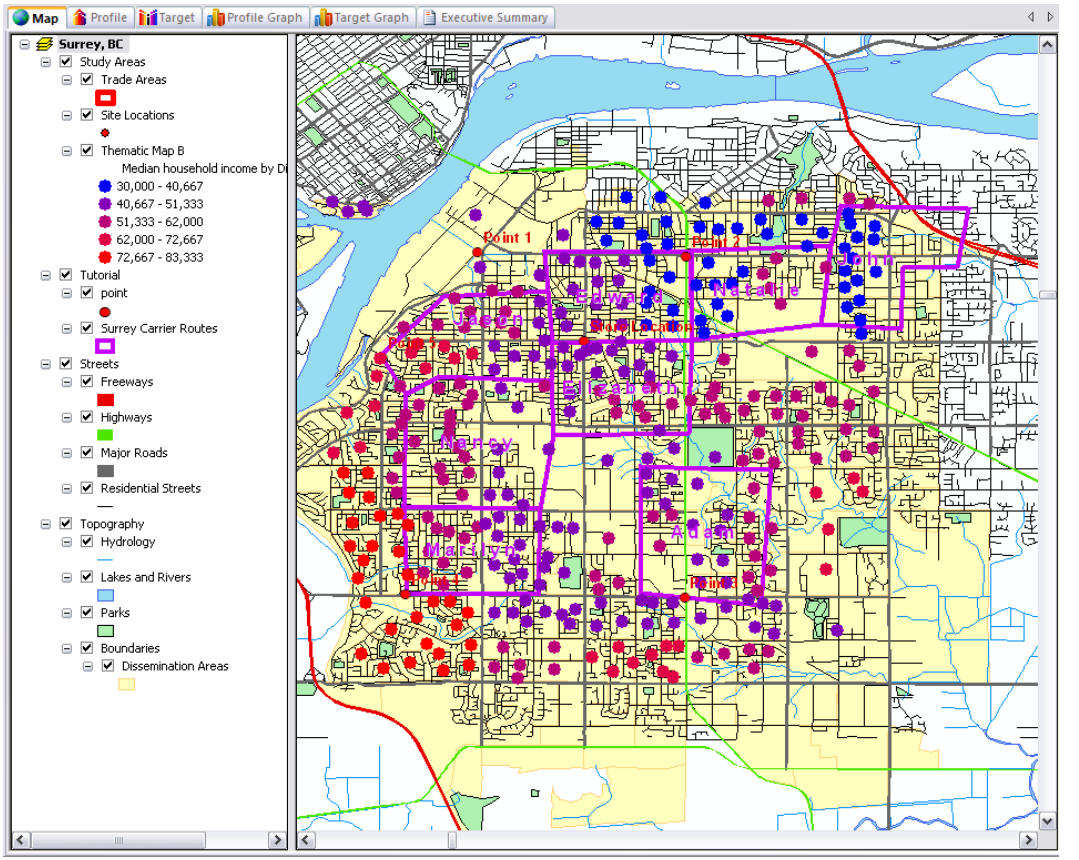
Steps to Create a Thematic Point Map

A thematic point map can be created for an existing study area, or for the current map view.



- Define a study area for **Vancouver CMA**.
- Open the **Point Thematics** task pane.
- Select the **Vancouver** Study Area.
- Click **Defaults:** and set the **Target Type** to **Dissemination Area**.
- Select **Median Household Income** in the **Select A Thematic Variable** list.
- Click **Create Thematic** for the study area "Vancouver"

Change the zoom slightly to refresh the window, and PCensus displays the finished thematic map, with a legend identifying the values identified by each color.



18 Create a Dot Density Map

Objective

Create a thematic map of the United States in which the density of dots in each state represents the population of the state.

Background

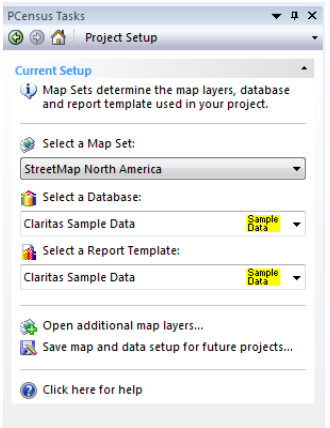
A dot-density map associates the value of a database variable (for example, population) with boundaries in a map layer, and then shades the map layer with randomly spaced dots, the density of which represents the value of the variable.

To create a dot-density map, you must open a suitable boundary map layer. In the example below, we will use a boundary map of US states. In principal, this method can be used with almost any type of boundary; you must select a suitable target type that corresponds to the areas in the map.

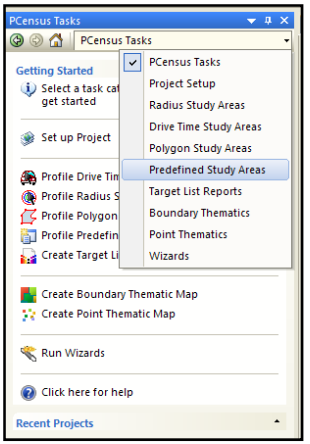
The Dot Density map is an advanced map that is not currently available as a specific PCensus "task". To create this type of map, you must use the Mapping Wizard that guides you through the required series of choices.

Steps to Create a Dot Density Map

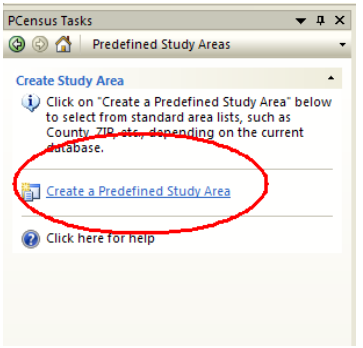
*This tutorial requires the installation of **StreetMap North America** from your **ESRI Data & Maps and StreetMap North America DVD**.*



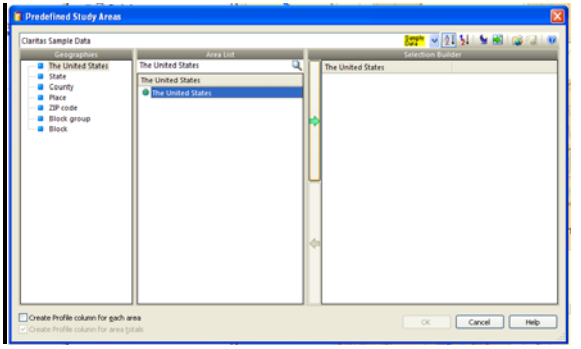
- From the **Project Setup** task pane, select **open additional map layers…**
- Open **StreetMap North America** from the ESRI directory where it is saved



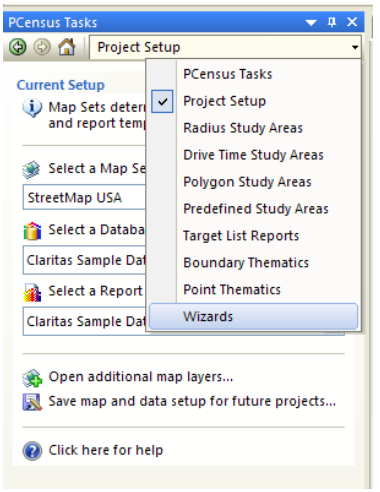
- Before you can create the Dot Density map, you will have to define a predefined study area for all of the US. Select the **Predefined Study Areas** task from the **PCensus Tasks** drop-down menu bar.



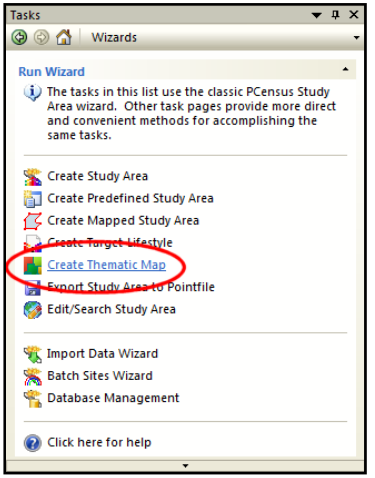
- Click on **Create a Predefined Study Area**



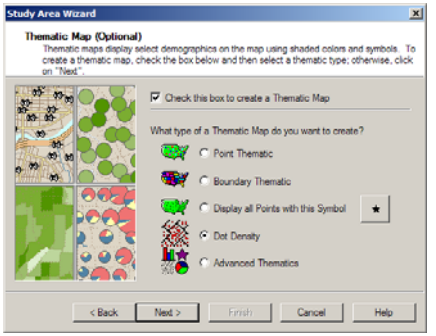
- Add **The United States** to the **Selection Builder** as a predefined study area



- Select **Wizards** from the **PCensus Tasks** drop-down menu bar.



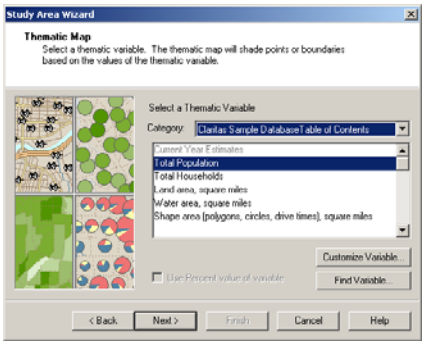
- Select **Create Thematic Map** from the **Wizards** page.



- Check the box 

.
- Select **Dot Density**.
- Click 

.

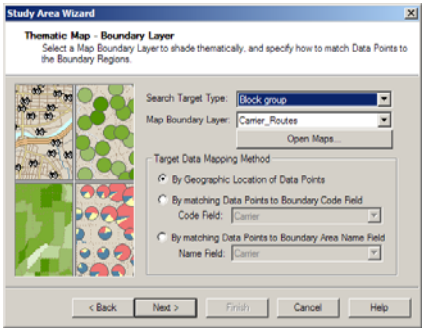


- Select **Total Population** in the list of variables.
- Click Next >.

- Select Count or total.

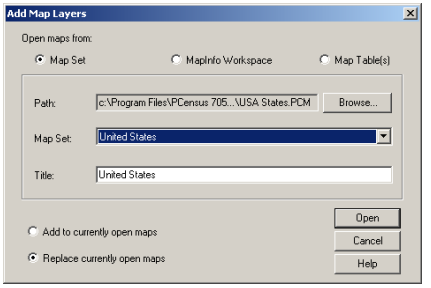
> *PCensus uses this selection to determine whether values should be aggregated across boundaries or averaged. It is only required when the point-in-polygon method is used to assign data to boundaries, resulting in more than one data point per boundary.*

- Click Next >.

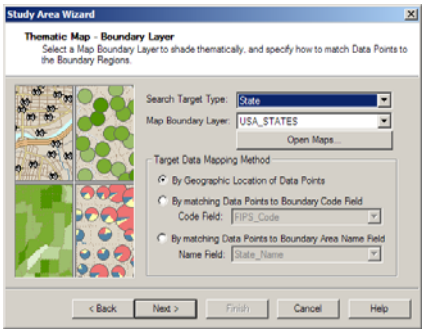


> *Before we can continue, we must open a suitable map to define our regions.*

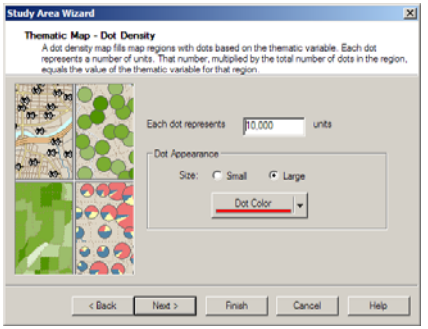
- Click Open Maps... to display the **Open Maps** dialog box.



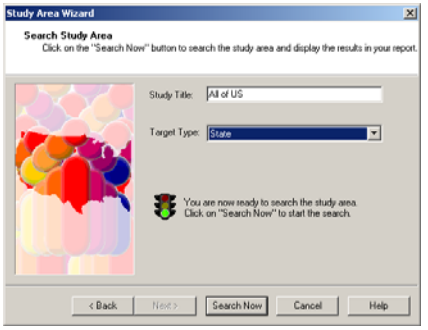
- Select the Map Set **United States**.
- Click Open to return to the **Thematic Map** dialog box
- Click Next >.



- Select the **Target Type** "**State**" and the **Map Boundary Layer** "**USA_STATES**".
- Click Next >.

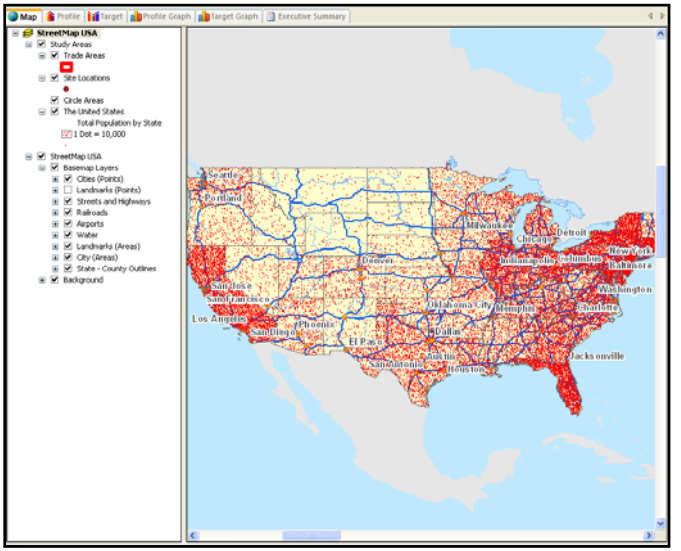


- Click Finish.



- Select Target Type: State to indicate that we will be mapping state areas.
- Click Search Now.
- When the search is complete, click Continue to close the progress indicator.
- Zoom in slightly to see the refreshed map

PCensus displays the finished thematic map.



19 Create an Advanced Thematic Map

Objective

Use the Advanced Thematic Mapping feature to create a "pie chart thematic map" showing the proportions of racial groups.

Background

The **Advanced Thematic** feature provides full access to the ArcView thematic mapping process, which creates complex thematic maps and allows comprehensive control over the methods used to apply data to the map.

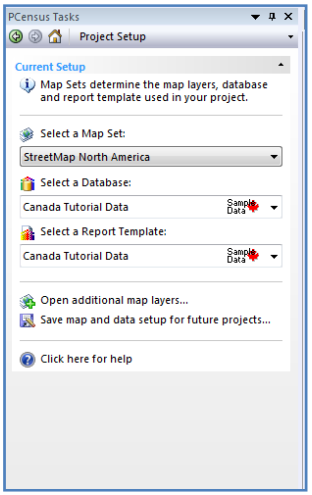
For complete information on using the Data Mapping Wizard, please refer to the ArcView system documentation.

Steps to Create an Advanced Thematic Map

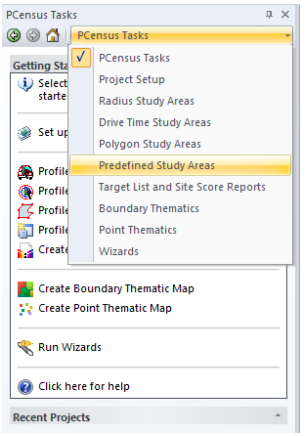
- Click **Run Wizards** in the Task pane.

Start the **Create Thematic Map** wizard, as described in Chapter 18, and follow the Wizard steps until the **Lifestyle Target List (optional)** dialog box is reached.

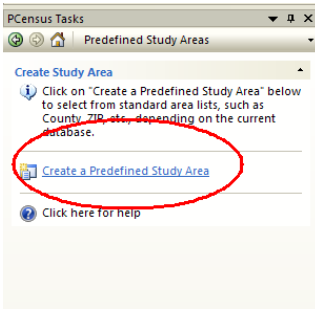
In this example, we will use Lifestyle Targeting (see page 87) to select the variables to be displayed. While this is not strictly necessary, it provides an opportunity to define variable labels that are easily recognizable in the dialogs provided by ArcView.



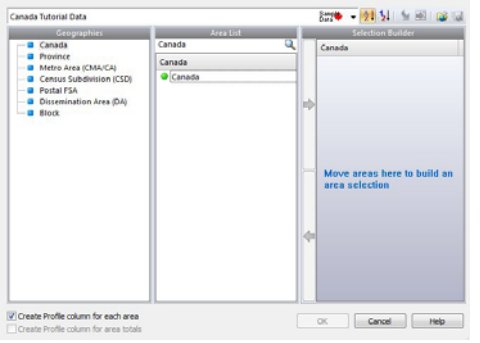
- From the **Project Setup** task pane, select **open additional map layers…**
- Open **StreetMap North America** from the ESRI directory where it is saved



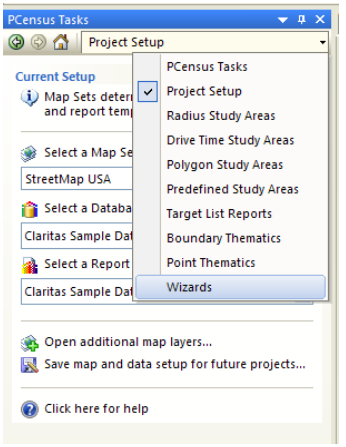
- Before you can create the Dot Density map, you will have to define a predefined study area for the **Canada**. Select the **Predefined Study Areas** task from the **PCensus Tasks** drop-down menu bar.



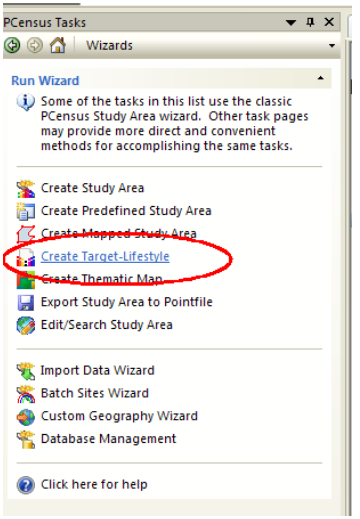
- Click on **Create a Predefined Study Area**



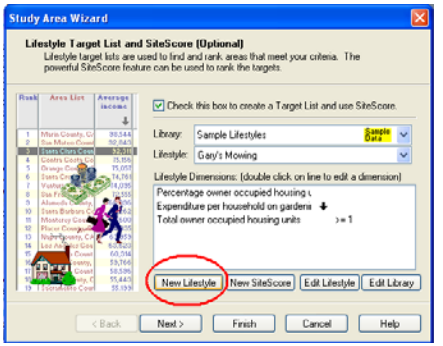
- Add **Canada** to the Selection Builder as a predefined study area



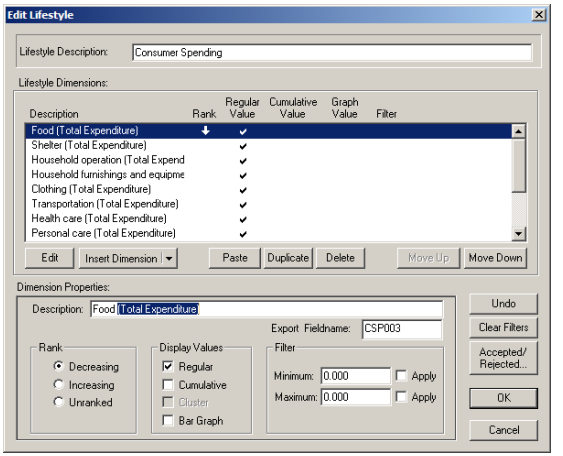
- Select **Wizards** from the **PCensus Tasks** drop-down menu bar.



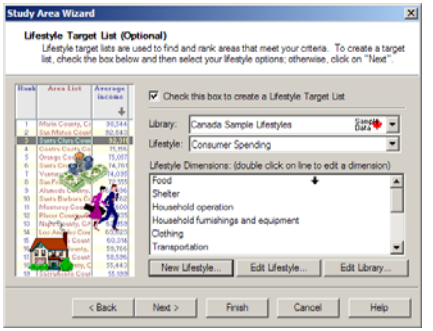
- Select **Create Target-Lifestyle** from the **Wizards** page.



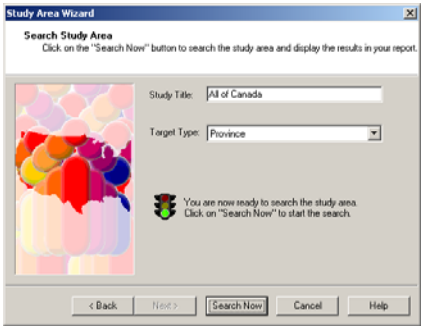
- Select **New Lifestyle** from the **Study Area Wizard**



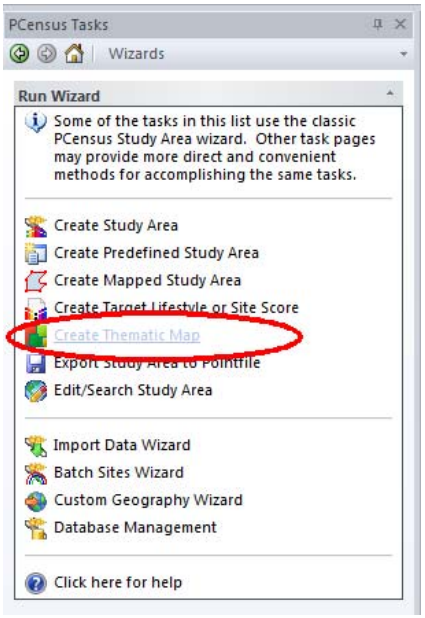
- Change the **Lifestyle Description** to **Consumer Spending**.
- Use the Paste button to add the variables from the **2003 Consumer Spending Summary** category as shown.
- Click OK.



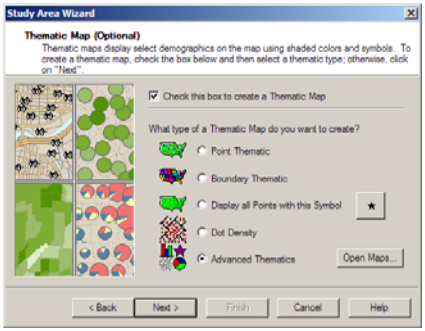
- Click Next >

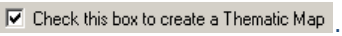


- Select **Search Now** at the Province Level.
- When the search is complete, click Continue to close the progress indicator.



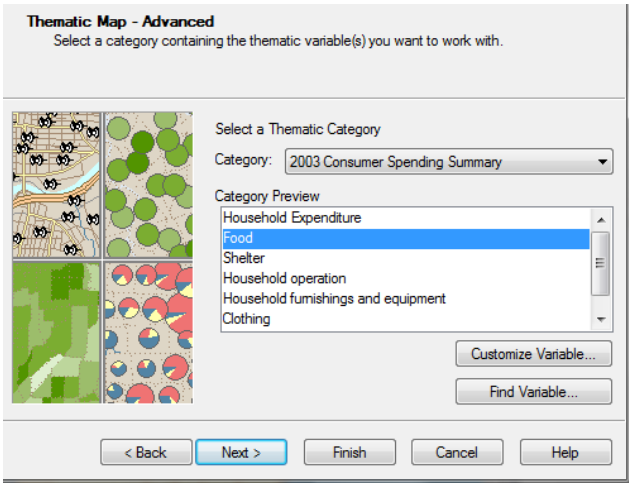
- From the Wizards task pane select **Create Thematic Map**



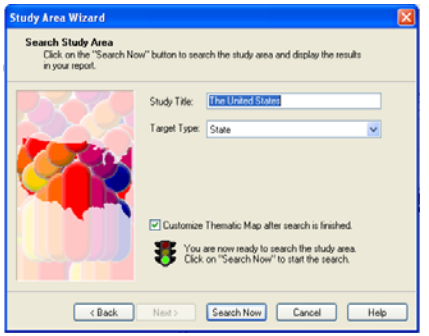
- Check the box 

.
- Select 

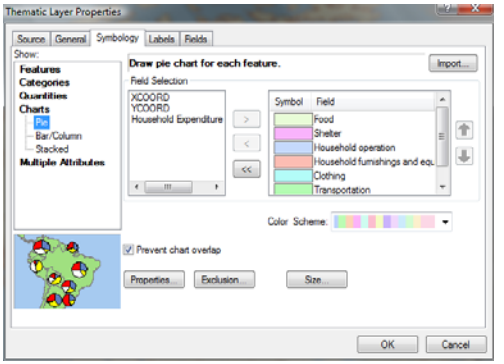
.



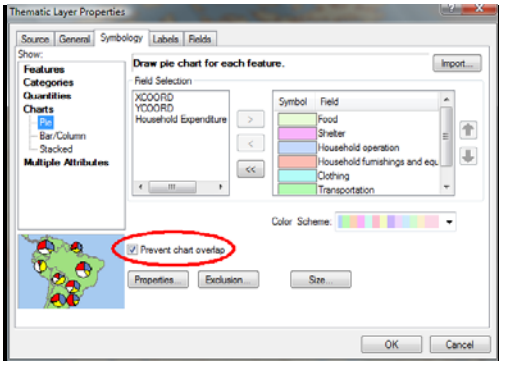
*An important feature of **Advanced Thematic Mapping** is its capability to create "multivariate" maps such as pie charts or column charts. For this reason, we do not select a specific variable at this point; we only select the category that contains the variables of interest. The actual selection will be made after the study area has been searched.*



- Set the **Target Type** to Province and ensure the check box is selected for the **Customize Thematic Map after search is finished** option
- Click on the **Search Now** button

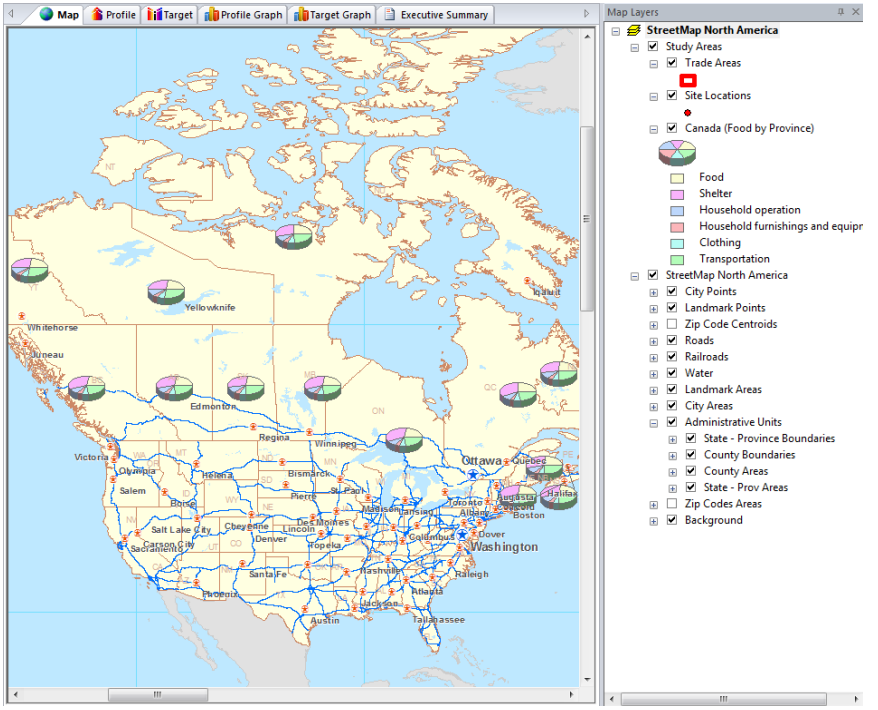


- Select the **Symbology** tab and select **Charts** from the **Show:** dialog
- With the Pie Chart option highlighted, select the variables **Food**, **Shelter, Operation, Furnishing, Clothing and Transportation**.

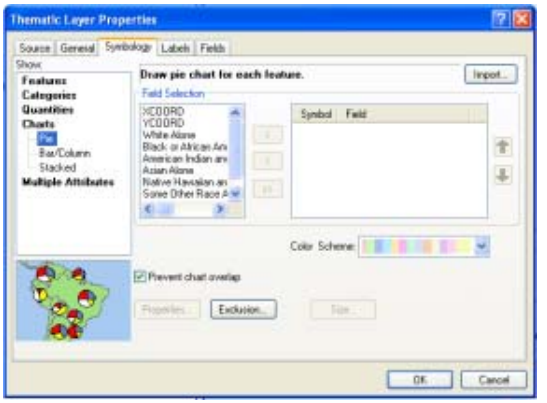


- Uncheck the **Prevent Chart Overlap** checkbox.
- Select **OK**

PCensus displays the finished map.



Note: If the pie charts do not appear as shown, you may need to adjust the Style settings provided by ArcView



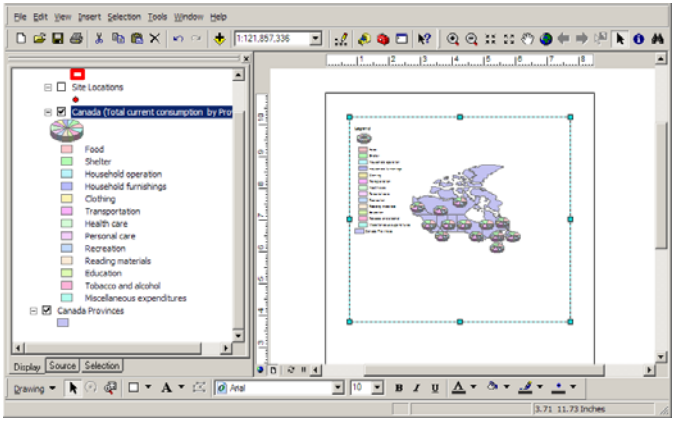
- Right-click on the **Canada** layer and click on **Properties**.
- Experiment with the **Size…** or other settings to produce a satisfactory map.

What Can I Do Now?

You can use the features of ArcMap to manipulate the map in ways not supported by PCensus. For example, follow these steps to add a legend to your printed map.

- Switch to the **Map** tab.
- Click  in the tool bar and specify a name and location for the mxd document.

PCensus will ask you if you wish to open the map in ArcMap.



- Open your exported map in ArcMap
- Select **Layout View** from the **View** menu
- Select **Legend** from the **Insert** menu and follow the wizard steps to specify the required elements.

Experiment with creating different types of thematic maps by selecting other options.

20 Create a Target List

Objective

Identify areas within a study area that match the criteria defined by a "**Lifestyle**".

Background

Lifestyle Targeting is a powerful feature that lets you identify areas called **targets** within your study area that match a specific demographic profile. For example, you might want to find Postal codes where the average income is between $40,000 and $50,000, and the population is expected to increase by five percent in the next five years.

Lifestyle targeting creates a sorted list of the target areas that meet your criteria, showing the values of any variables (dimensions) that you have defined. The target list is displayed in the **Target List** tab, and can be printed or exported to other programs.

To use lifestyle targeting, you must define a **Lifestyle**, which is like a "recipe" for your target population. The PCensus Lifestyle Editor lets you build a list of the dimensions that you consider to be important for your study, and to apply **Filters** that restrict the selected targets based on the value of one or more of these dimensions. The Lifestyle Editor also specifies the order in which the selected targets will be listed, so you can easily identify your most (or least) favorable areas.

Lifestyle targeting is especially powerful when used with databases to which you have attached your own data (page 193); this provides a flexible method for **Penetration Analysis** (page 249).

Steps to Create a Target List

We will use a simple (and fictitious) example to see how Lifestyle targeting could be used to solve a marketing problem.

Gary Smart, marketing manager for an upscale automobile dealership, needs to identify a marketing area for a new model of luxury commuter vehicle. He has obtained a list of names and addresses of families living in the Vancouver area, and he wants to use these addresses to mail out his advertising materials.

Mailing is expensive, so he must make sure that as many pieces as possible go to homes which will potentially be interested in his products, i.e. wealthy areas in areas where a substantial number of people commute regularly.

Using Targeting, it is easy to identify the FSAs in Vancouver that meet these criteria. FSAs are the first three characters of a postal code, so Gary can use them to select prospects from his mailing list.

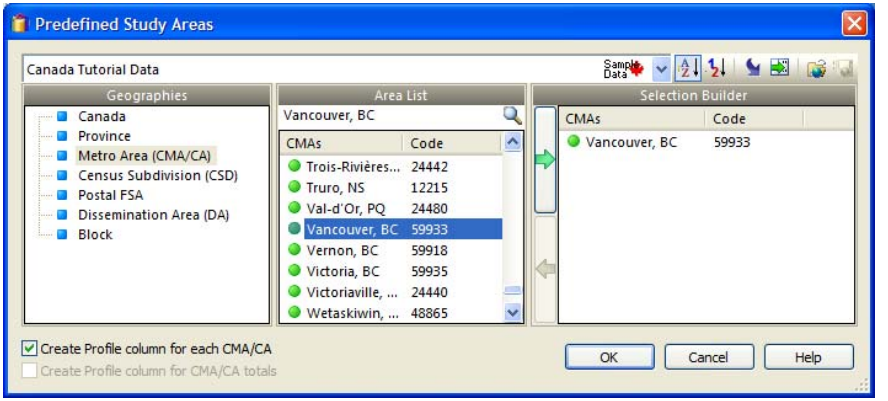
The following steps show the procedure that Gary will use to select the best FSA codes.

Specify the Study Area.

The first step in creating a target list is to define the study area, the overall area of interest. The study area can be a predefined area (see Chapter 5, Profile a Predefined Area) or other geographical area such as a circle (Chapter 8) or drive time area (Chapter 9).

For this example, we will use **Vancouver, BC** for our study area.

- Select **Create a Predefined Study Area** from the Tasks window.

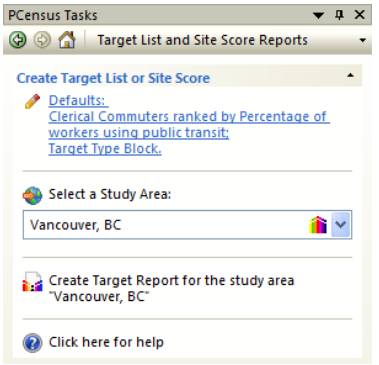


- Create a Profile Column for Vancouver, using the **Canada Tutorial Data**.

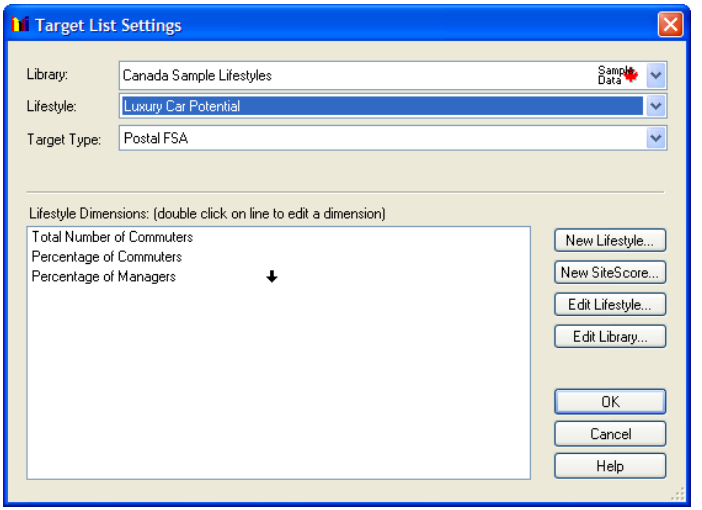
Select a Lifestyle

To create a target report, we must use a **Lifestyle** definition; we can either create a new lifestyle or re-use one that was used in a previous project.

We have started a definition for Gary's project. To see what we have done so far:



- Open the **Target List Reports** pane in the PCensus Tasks window.
- Check that **Vancouver, BC** is selected as the Study Area.
- Click **Change default report settings…** to display the **Target List Settings** dialog box.

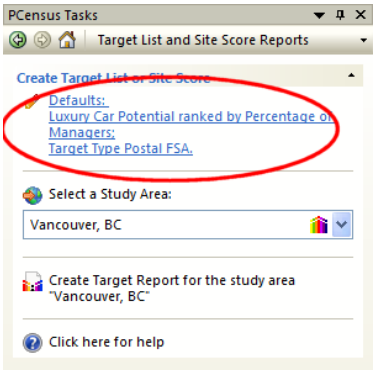


- Select **Luxury Car Potential** in the **Lifestyle** list.

  The **Lifestyle Dimensions** window shows the three quantities we have selected to display as columns in the target list:

  - **Total Number of Commuters:** the number of workers living in a different Census Subdivision than their place of employment.
  - **Percentage of Commuters:** the number of commuters as a percentage of the total number of workers.
  - **Percentage of Managers:** the percentage of workers in managerial occupations.

- Select **Postal FSA** as the **Target Type**.
- Click **OK** to close the dialog.



The **Defaults:** entry now shows a summary of the settings to be used.

➢ Click **Create Target Report for the study area "Vancouver, BC"**.

Map | Profile | Target | Profile Graph | Target Graph | Executive Summa

Rank	Vancouver, BC Postal FSA List	Total Number of Commuters	Percentage of Commuters	Percentage of Managers
1	V6C Vancouver, BC	35	26.9	28.0
2	V7S West Vancouver, BC	2,665	57.9	22.6
3	V7W West Vancouver, BC	2,265	53.0	22.0
4	V7T West Vancouver, BC	2,170	58.4	21.8
5	V7V West Vancouver, BC	3,910	57.8	21.6
6	V6L Vancouver, BC	1,035	23.4	21.0
7	V7R North Vancouver, BC	4,665	63.8	20.1
8	V6Z Vancouver, BC	1,355	22.4	17.8
9	V4P Surrey: White Rock, BC	1,885	43.1	17.7
10	V6B Vancouver, BC	1,165	19.4	17.5
11	V7G North Vancouver, BC	3,560	62.0	17.5
12	V4A Surrey: White Rock, BC	6,875	44.2	17.0
13	V4L Delta, BC	2,110	54.7	16.9
14	V3E Port Coquitlam, BC	7,825	60.4	16.7
15	V7N North Vancouver, BC	4,915	62.2	16.6
16	V6J Vancouver, BC	2,935	24.7	16.5
17	V7H North Vancouver, BC	4,270	63.7	16.4
18	V6M Vancouver, BC	1,520	22.1	16.2
19	V6N Vancouver, BC	1,810	26.6	15.8
Accepted	93 Targets	462,955	46.6	11.6
Rejected	0 Targets	0		
Total	93 Targets	462,955	46.6	11.6

Search Target List

The **Target List** browser lists the FSAs, with columns representing the three dimensions defined in the lifestyle:

The areas are listed in decreasing order of the "**Percentage of Managers**" dimension.

*Note that the "**Totals**" line (in yellow at the bottom of the screen) gives us the useful information that there are **462,995** commuters in the entire Vancouver study area. This is **46.6** percent of the workforce. The percentage of managers is **11.6**.*

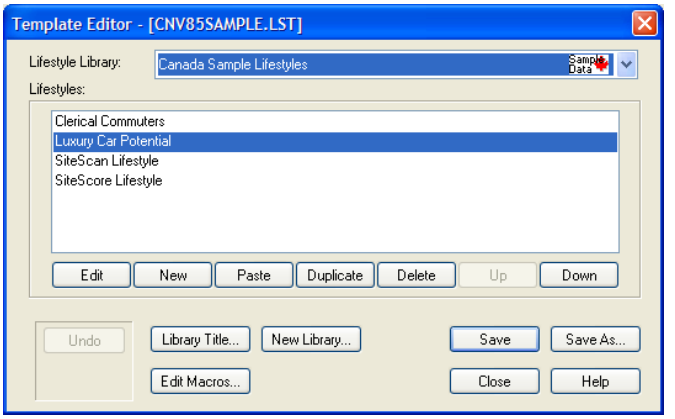
Refine the Lifestyle

Now we will refine the lifestyle to isolate the areas of greatest interest.

➢ Click **Defaults** to redisplay the **Target List Settings** dialog box.

➢ Click **Edit Library** to display the **Template Editor** dialog box.

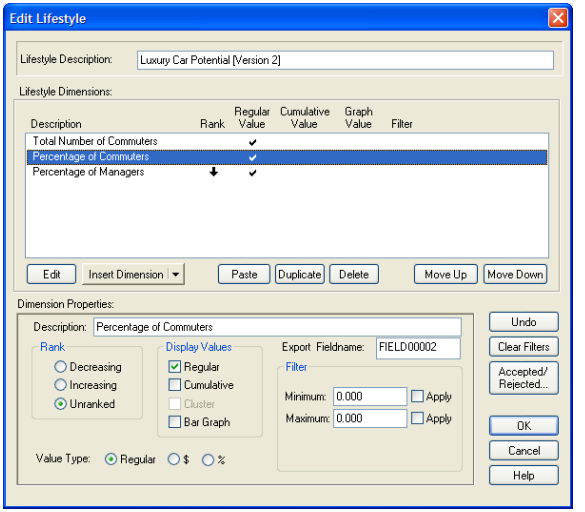
*A **Library** is a collection of lifestyles. You can create new libraries to help you to organize your projects. Note that a library is actually a special type of **Data Template** (see Chapter 32); it can be selected in the Template list to display your dimensions in the Profile browser.*



We will make a copy of the original **Luxury Car Potential** lifestyle so that we can leave the original version intact.

- Select the **Luxury Car Potential** lifestyle.
- Click **Duplicate** to create a new version [version 2].
- Click **Edit** to display the new lifestyle's definition.

*The **Edit Lifestyle** dialog box shows the three dimensions in the lifestyle. As you use the mouse to highlight each dimension, its properties (ranking, display, filter) are displayed in the **Dimension Properties** panel below so that we can revise them.*



Notice that the **Percentage of Managers** dimension is marked with a ↓ in the **Rank** column to signify that the dimension will be used to rank targets in descending order.

We will now apply a **filter** to display only target areas where 60 percent or more of workers commute.

- Highlight the **Percentage of Commuters** dimension.
- Type **60** in the **Filter Minimum** box.
- Click **OK** to close the **Edit Lifestyle** dialog box.
- Click **Close** to exit the editor, and confirm that you wish to save the changes to the library.
- Click **OK** to return to the task pane.

*Note: **Luxury Car Potential [Version 2]** is now the selected lifestyle.*

- Click **Create Target Report for the study area "Vancouver, BC"** to regenerate the report.

Map | Profile | Target | Profile Graph | Target Graph | Executive Summa

Rank	Vancouver, BC Postal FSA List	Total Number of Commuters	Percentage of Commuters	Percentage of Managers
1	V7R North Vancouver, BC	4,665	63.8	20.1
2	V7G North Vancouver, BC	3,560	62.0	17.5
3	V3E Port Coquitlam, BC	7,825	60.4	16.7
4	V7N North Vancouver, BC	4,915	62.2	16.6
5	V7H North Vancouver, BC	4,270	63.7	16.4
6	V7K North Vancouver, BC	4,305	63.6	15.3
7	V4B Surrey: White Rock, BC	5,750	66.2	14.8
8	V4E Delta, BC	4,015	64.9	14.3
9	V7P North Vancouver, BC	3,690	66.4	13.7
10	V3H Port Moody, BC	10,835	75.1	13.1
11	V7J North Vancouver, BC	4,770	61.3	12.8
12	V3C Port Coquitlam, BC	12,115	66.5	12.7
13	V3B Port Coquitlam, BC	14,190	63.8	11.5
14	V3A Langley, BC	12,770	61.9	11.1
15	V3Y Pitt Meadows, BC	5,445	70.9	10.7
16	V3K Coquitlam, BC	9,475	65.7	10.5
17	V3J Coquitlam, BC	11,555	62.3	10.2
18	V3L New Westminster, BC	6,850	62.0	10.0
19	V4C Delta, BC	13,605	66.6	9.3
Accepted	22 Targets	156,575	65.1	12.4
Rejected	71 Targets	306,380	40.7	11.4
Total	93 Targets	462,955	46.6	11.6

Search Target List

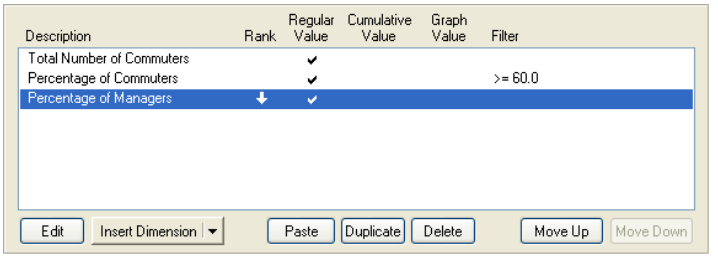
PCensus displays the 22 FSAs that passed our filter. 71 FSAs were rejected, as indicated in the bottom yellow line.

Note that some FSAs in the list are marked "invalid"; these have zero population, resulting in division by zero in the percentage calculations. We could have suppressed these by applying an additional filter that requires the population to be at least one.

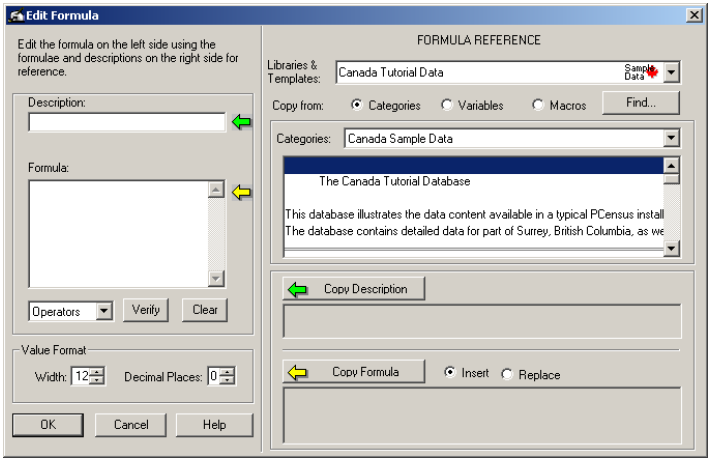
Add a New Dimension to the Lifestyle

- Click the column header button 

to display the column properties menu, and select **Modify Lifestyle…** to display the **Edit Lifestyle** dialog box again.



- Highlight the last dimension (**Percentage of Managers**).
- Click Insert Dimension and select **Formula** from the drop-down list to create a new dimension entry and open the **Edit Formula** dialog box.



Every data item in a PCensus database is called a **variable**, and is referred to by a symbolic name. For example, 2001 Household Count is represented by the name **HSTOT**.

We must supply a formula to define the new dimension. A formula is a mathematical expression consisting of one or more variables or constants and the signs for addition, subtraction, multiplication, and division **(+ - * /).**

The **Edit Formula** window is divided into two panes:

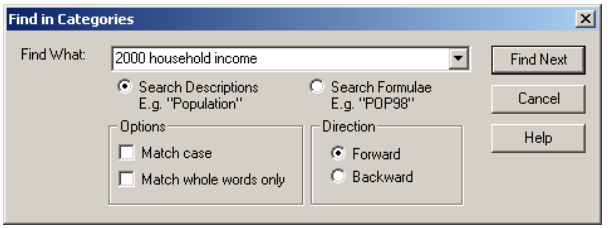
- The left pane is where we enter formulas and descriptions to define our dimensions.

If we knew the names of the variables, we could type the formula directly, but PCensus provides an "expression builder" to help us develop the formulas we need.

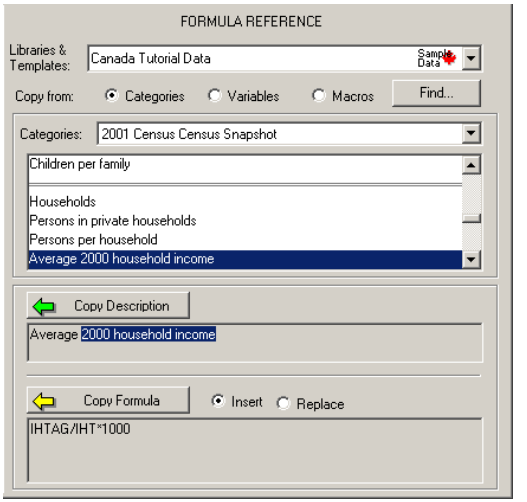
- The right pane, called the **FORMULA REFERENCE** area, provides a source from which we can "paste" pre-defined descriptions and formulas into the appropriate areas in the left-hand pane.

The **Formula Reference** pane allows us to select any of the values that are displayed in the PCensus **Profile** (page 143); the entries are organized in categories just as they are in the profile.

➢ Click Find... in the **FORMULA REFERENCE** panel.



➢ Type "**2000 Household Income**" and click Find Next.



PCensus locates the template category containing the required variable and highlights it.

Note that the description and formula for each variable are displayed in the lower panels.

The formula for average household incomes is: **(IHTAG/IHT*1000)**

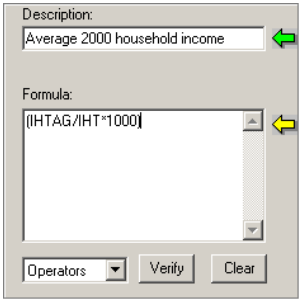
This is based on the following Census variables:

- **IHTAG**: Aggregate household income (in thousands of dollars).

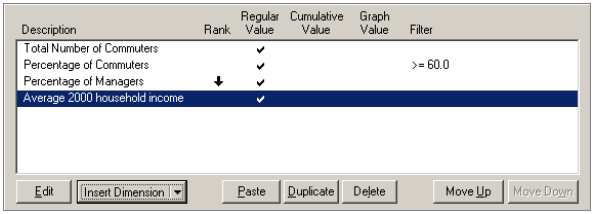
- **IHT**: Total Number of Households reporting income

*The formula divides the aggregate income by the number of households to calculate the average income and multiplies by **1000** to convert to dollars.*

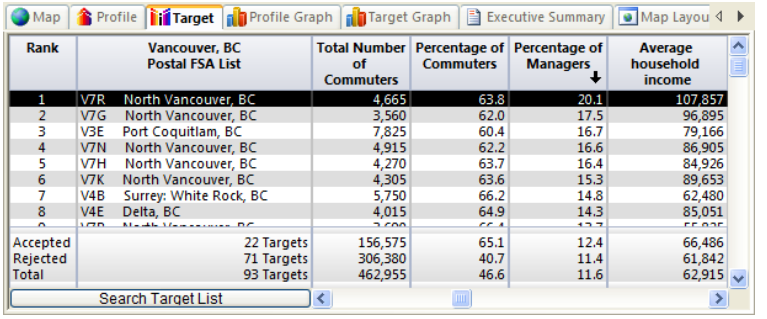
Click Copy Description and then Copy Formula to transfer the entries into the **Description** and **Formula** boxes in the left-hand pane.



Click OK to return to the **Edit Lifestyle** dialog box.



Click OK to re-search the study area and display the updated target list with the new income variable.



Rank	Vancouver, BC Postal FSA List	Total Number of Commuters	Percentage of Commuters	Percentage of Managers	Average household income
1	V7R North Vancouver, BC	4,665	63.8	20.1	107,857
2	V7G North Vancouver, BC	3,560	62.0	17.5	96,895
3	V3E Port Coquitlam, BC	7,825	60.4	16.7	79,166
4	V7N North Vancouver, BC	4,915	62.2	16.6	86,905
5	V7H North Vancouver, BC	4,270	63.7	16.4	84,926
6	V7K North Vancouver, BC	4,305	63.6	15.3	89,653
7	V4B Surrey: White Rock, BC	5,750	66.2	14.8	62,480
8	V4E Delta, BC	4,015	64.9	14.3	85,051
Accepted	22 Targets	156,575	65.1	12.4	66,486
Rejected	71 Targets	306,380	40.7	11.4	61,842
Total	93 Targets	462,955	46.6	11.6	62,915

The FSA areas are listed in descending order of **Percentage of Managers**.

Not surprisingly, the incomes are in roughly the same order. One of the benefits of using Lifestyle Targeting is that it allows us to spot such relationships between variables in an area, which can in turn help us in identifying and understanding demographic patterns.

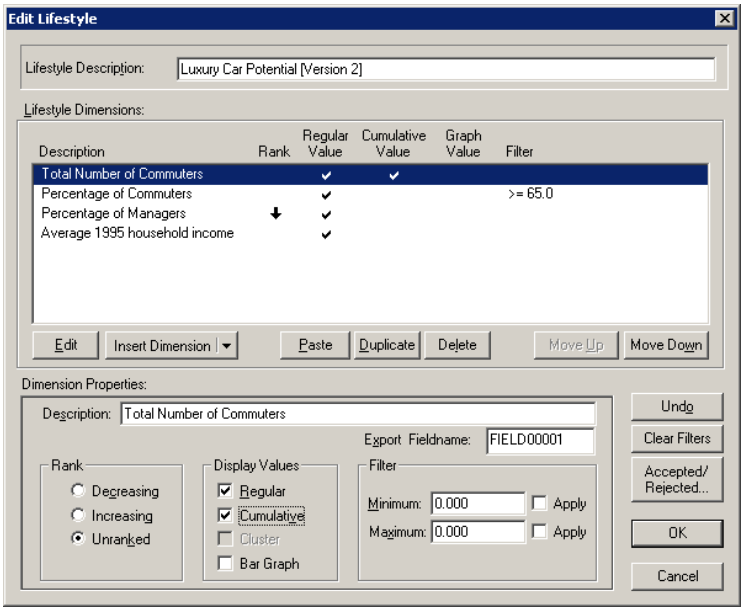
Gary can use the FSA codes highest in the list to select entries from his mailing list. In a real project, where there may be hundreds of qualifying

target areas, he would probably export the targets to a computer file (page 137), which could be processed by a list broker.

Cumulative Display

For a final exercise, let's suppose that Gary has decided that he will mail about 30,000 flyers. PCensus can help him select the most favorable areas that will let him stay within this limit.

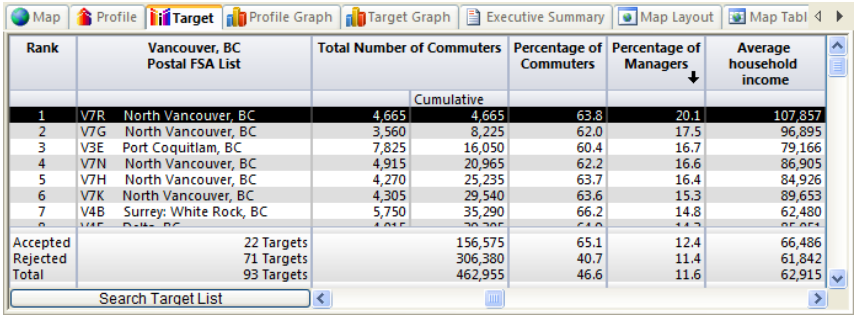
- Click the **Total number of Commuters** column header button and select **Modify Lifestyle** from the menu.
- Highlight the **Total number of Commuters** dimension.



- Check 

in the **Display Values** panel and click **OK**.

We now have a new column in which the **Total number of Commuters** dimension is displayed cumulatively:



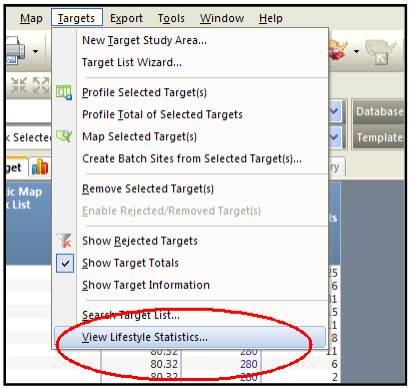
Rank	Vancouver, BC Postal FSA List	Total Number of Commuters	Cumulative	Percentage of Commuters	Percentage of Managers	Average household income
1	V7R North Vancouver, BC	4,665	4,665	63.8	20.1	107,857
2	V7G North Vancouver, BC	3,560	8,225	62.0	17.5	96,895
3	V3E Port Coquitlam, BC	7,825	16,050	60.4	16.7	79,166
4	V7N North Vancouver, BC	4,915	20,965	62.2	16.6	86,905
5	V7H North Vancouver, BC	4,270	25,235	63.7	16.4	84,926
6	V7K North Vancouver, BC	4,305	29,540	63.6	15.3	89,653
7	V4B Surrey: White Rock, BC	5,750	35,290	66.2	14.8	62,480
Accepted	22 Targets	156,575		65.1	12.4	66,486
Rejected	71 Targets	306,380		40.7	11.4	61,842
Total	93 Targets	462,955		46.6	11.6	62,915

Each row in the **Cumulative** column shows the total of all owned residences ranking equal or higher. The numbers displayed get progressively larger down the column.

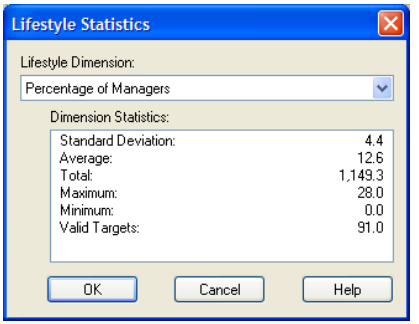
When Gary selects his FSA codes, he will give priority to the highest-ranking ones. The cumulative value shows the size of the potential market, so if he selects the first six areas, he can expect to find 29,540 commuters.

Lifestyle Statistics

During the lifestyle targeting process, PCensus computes basic statistical information for each specified dimension. To see the results of these calculations:



- Select **View Lifestyle Statistics** from the **Targets** menu.



➤ Select the **Lifestyle Dimension** for which you would like to see statistics.

*Note that some statistics may not be meaningful for all dimensions. For example, the **Total** of "Percentage owner occupied housing units" for each target is of limited use.*

What Can I Do Now?

- **Explore the Target List** to see ways to interpret the data (page 165).
- **Export the Target List** for use with other software applications (page 137).

Combine lifestyle targeting with thematic mapping by selecting both options in the Study Area Wizard.

21 Create a Profile Graph

Objective

Display selected elements of a profile project in a colored graph.

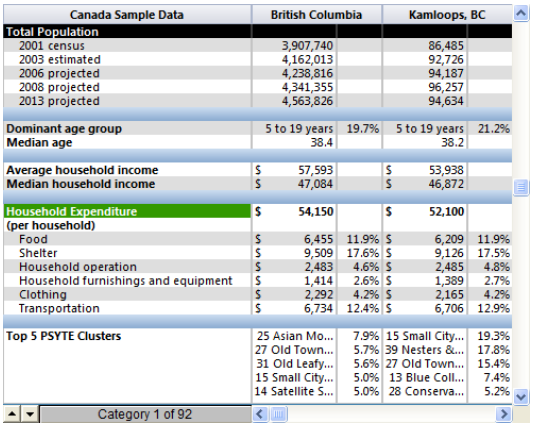
Background

The graphing feature of PCensus provides a method for visualizing the data displayed in the Profile and Target browsers. By default, graphs are displayed in "bar chart" format, but a complete set of graphing methods, such as "pie" or "ribbon" charts is available.

Profile graphs can be used as follows:

- To display the results of a group of variables (for example, households by income range) as a frequency histogram.
- To display results for a variable for comparison between several study areas.
- Combinations of the above types.

Steps to Create a Profile Graph



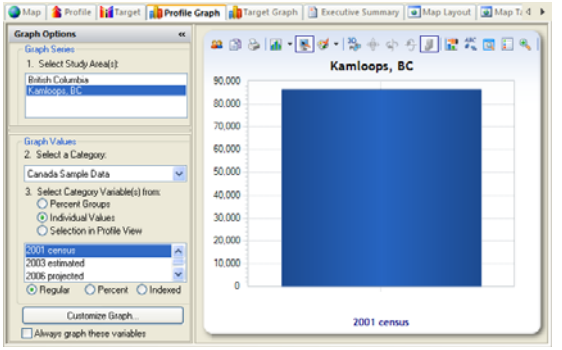
Canada Sample Data	British Columbia		Kamloops, BC	
Total Population				
2001 census	3,907,740		86,485	
2003 estimated	4,162,013		92,726	
2006 projected	4,238,816		94,187	
2008 projected	4,341,355		96,257	
2013 projected	4,563,826		94,634	
Dominant age group	5 to 19 years	19.7%	5 to 19 years	21.2%
Median age	38.4		38.2	
Average household income	$ 57,593		$ 53,938	
Median household income	$ 47,084		$ 46,872	
Household Expenditure	**$ 54,150**		**$ 52,100**	
(per household)				
Food	$ 6,455	11.9%	$ 6,209	11.9%
Shelter	$ 9,509	17.6%	$ 9,126	17.5%
Household operation	$ 2,483	4.6%	$ 2,485	4.8%
Household furnishings and equipment	$ 1,414	2.6%	$ 1,389	2.7%
Clothing	$ 2,292	4.2%	$ 2,165	4.2%
Transportation	$ 6,734	12.4%	$ 6,706	12.9%
Top 5 PSYTE Clusters	25 Asian Mo...	7.9%	15 Small City...	19.3%
	27 Old Town...	5.7%	39 Nesters &...	17.8%
	31 Old Leafy...	5.6%	27 Old Town...	15.4%
	15 Small City...	5.0%	13 Blue Coll...	7.4%
	14 Satellite S...	5.0%	28 Conserva...	5.2%

Category 1 of 92

➢ Create a profile containing two or more study areas, for example a province and a city (page21).

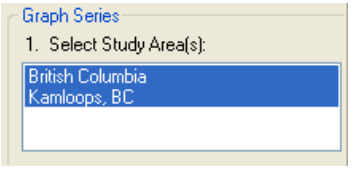
The **Profile** tab contains columns for British Columbia and Kamloops.

➢ To create a graph, select the **Profile Graph** tab.



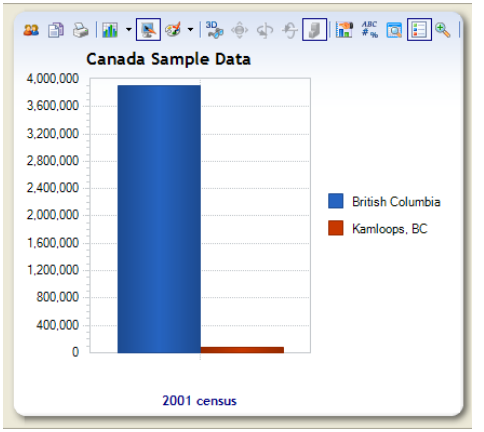
By default, PCensus creates a bar chart for the currently selected variable and study area.

The **Graph Series** panel contains a list of all the study areas in project.

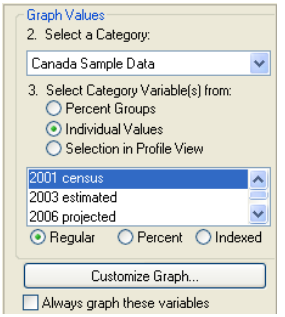


➢ Select area(s) for inclusion in the graph by clicking with the mouse.

*Note: You can select multiple areas by dragging the mouse or by holding down the **CTRL** key while clicking.*

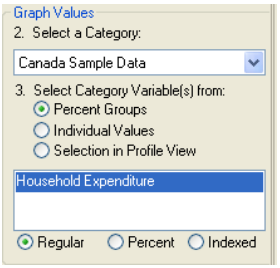


When more than one series has been selected, the data series are superimposed in a single graph to allow comparisons.

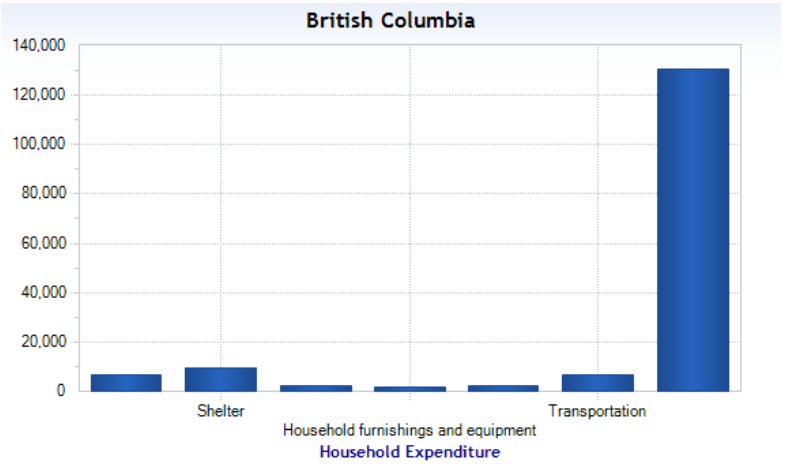


The **Graph Values** panel contains a list of the categories in the profile and a list of the variables in the current category.

The **Select Category Variable(s) from** selector determines the groups of variables that are available to be displayed in the graph:



- Click on **British Columbia** so that only one study area is displayed.
- Select **Percent Groups** to select a series of variables that are grouped in the Percentage Column of the profile report (page 145).
- Select **Household Expenditure**.



Customize the Graph

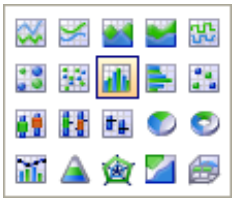
The Profile Graph window contains a tool bar that lets you modify the style and content of graphs.

The tool bar can be hidden or displayed by right-clicking in the graph window.

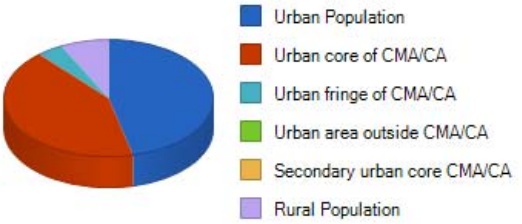
-  **Personalized Charts:** Displays a menu to save or display your favorite chart view.
-  **Copy to Clipboard:** Copies the currently displayed chart.

- **Print...:** Prints the current chart.
- **Gallery:** Selects the chart style (see below).
- **Anti-aliasing:** Turns on edge-smoothing in 3D charts for more attractive appearance.
- **Palette Selector:** Picks colors for chart features.
- **3D/2D:** Toggles 3-dimensional view.
- **Rotated View:** Changes view-point of 3D Chart.
- **Rotate around y axis.**
- **Rotate around y axis.**
- **Clustered Z axis:** Displays multiple study areas side-by-side or interleaved.
- **Axes Settings:** Controls labeling of axes.
- **Point Labels:** Adds numeric labels to bars or nodes.
- **Data Grid:** Displays graphed values in a table.
- **Legend Box:** Displays a legend of colored components.
- **Zoom:** Enables the Zoom tool to examine graph details.
- **Properties:** Displays optional settings in a dialog box.

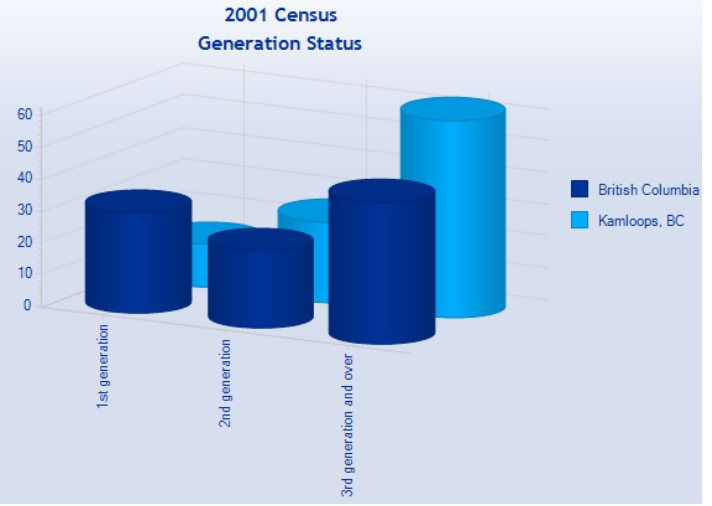
Graph Styles



➢ Click the **Gallery...** tool bar icon to display the graph style selector.



- Select the **Pie Chart** style.



- Experiment with the selection of different categories and customizing options.

This example illustrates the use of a category that displays multiple data columns.

Note: You can change the style and content of graph titles by right-clicking them in the graph window.

22 Create a Target Graph

Objective

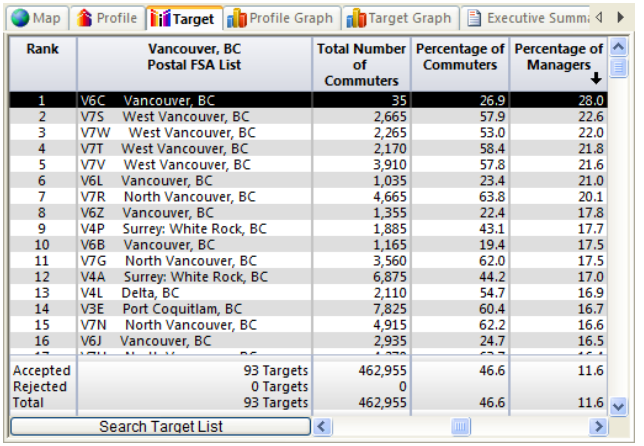
Display dimension values for a target list in a colored graph.

Background

Target graphs are primarily used for displaying comparisons of dimension values between target areas. Target graphs can be used to highlight anomalous values or relationships between variables.

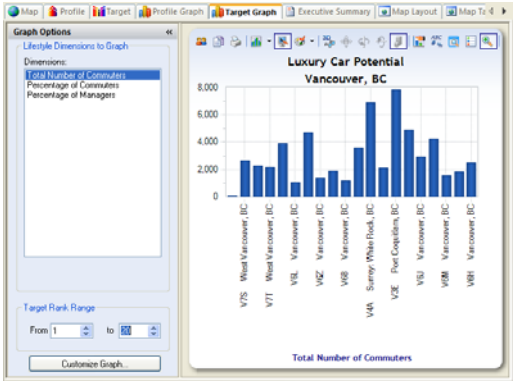
Steps to Create a Target Graph

Create a Lifestyle Target List (page 87)



Rank	Vancouver, BC Postal FSA List	Total Number of Commuters	Percentage of Commuters	Percentage of Managers
1	V6C Vancouver, BC	35	26.9	28.0
2	V7S West Vancouver, BC	2,665	57.9	22.6
3	V7W West Vancouver, BC	2,265	53.0	22.0
4	V7T West Vancouver, BC	2,170	58.4	21.8
5	V7V West Vancouver, BC	3,910	57.8	21.6
6	V6L Vancouver, BC	1,035	23.4	21.0
7	V7R North Vancouver, BC	4,665	63.8	20.1
8	V6Z Vancouver, BC	1,355	22.4	17.8
9	V4P Surrey: White Rock, BC	1,885	43.1	17.7
10	V6B Vancouver, BC	1,165	19.4	17.5
11	V7G North Vancouver, BC	3,560	62.0	17.5
12	V4A Surrey: White Rock, BC	6,875	44.2	17.0
13	V4L Delta, BC	2,110	54.7	16.9
14	V3E Port Coquitlam, BC	7,825	60.4	16.7
15	V7N North Vancouver, BC	4,915	62.2	16.6
16	V6J Vancouver, BC	2,935	24.7	16.5
Accepted	93 Targets	462,955	46.6	11.6
Rejected	0 Targets	0		
Total	93 Targets	462,955	46.6	11.6

The **Target List** browser lists the FSA areas in Vancouver, with columns representing the dimensions defined in the lifestyle.



- Select the **Target Graph** tab.
- By default, PCensus creates a bar chart showing colored bars representing the values of the **Total number of Commuters** dimension.

What Can I Do Now?

Experiment with the options in the **Target Graph** window, including the customization controls.

23 SiteScan - Scan an Area for Potential Sites

Objective

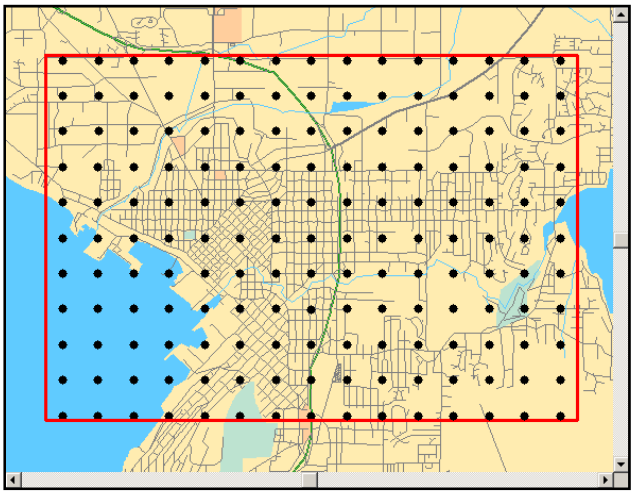
Use SiteScan to identify potentially favorable site locations for providing commercial or public services.

Background

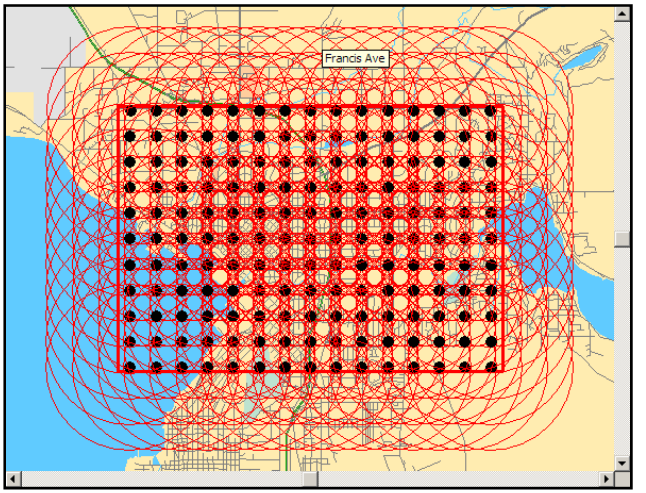
We have seen in the preceding sections how to characterize the trading area for a business location using a circular area or drive time polygon centered on the location.

If we do not have a specific candidate location, we can create profiles for a large number of locations. We can then rank these locations according to demographic criteria and display them in a "hot spot" map that will highlight the most favorable locations.

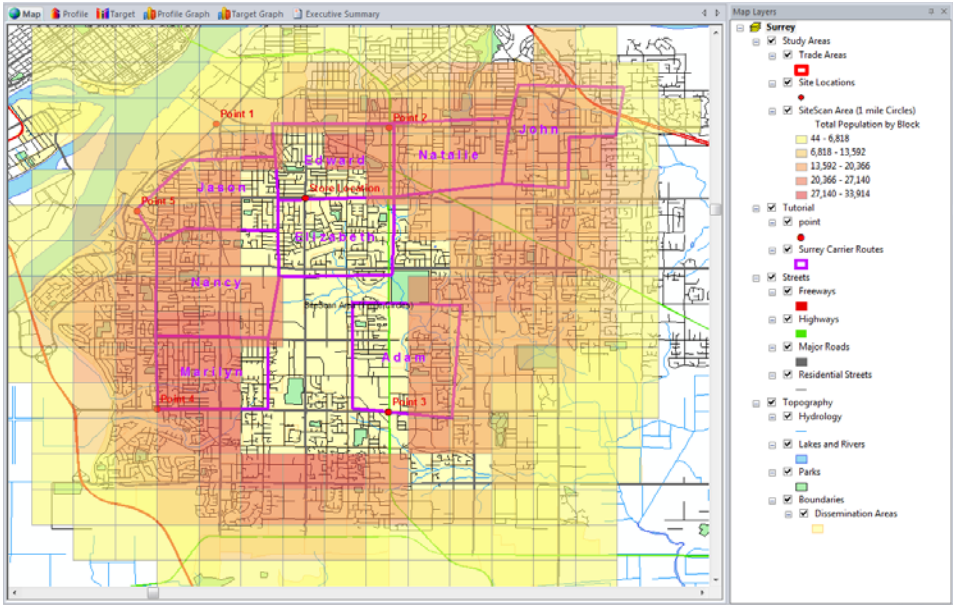
SiteScan allows us to define a "market area" as a rectangle of any size. Within this area, a regular grid of points is established, using a distance that you specify; for example, 0.5 mile.



Each point is used to generate a circle or drive time of specified size (representing a potential trade area); for example, a 1-mile radius.



Each circle is searched, and the demographic results for each circle are used to generate a thematic "hotspot" map using grid squares centered on each point.



Note that this thematic map is very different from a standard "boundary thematic" map (e.g., using census boundaries). In the SiteScan hotspot map, each grid square is colored according to a demographic characteristic (in this case, population within one mile of the cell's center), whereas in a conventional thematic, the colors represent data within the boundary itself.

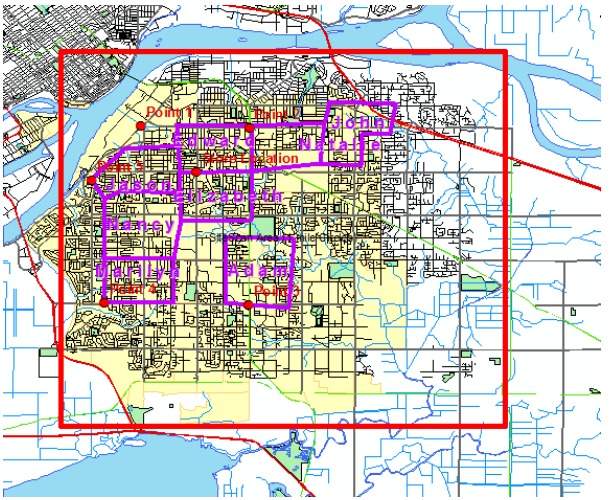
It is quite possible for a grid cell to have a large accessible population even though the cell itself is situated in vacant land (which could make it an ideal site for a new business location.)

Steps to Create a SiteScan Project

- Select **New SiteScan Study Area…** from the **Study Area Wizard**.
- Select 

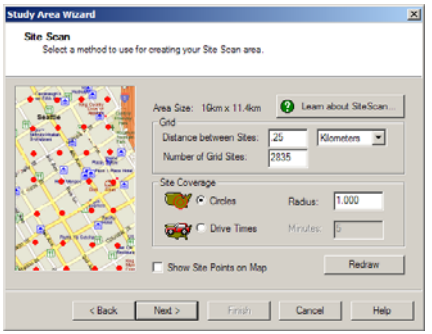
.
- Click 

.



- Use the mouse to "drag" a rectangle across the Surrey, BC area.

You may need to adjust the map view to display the area.

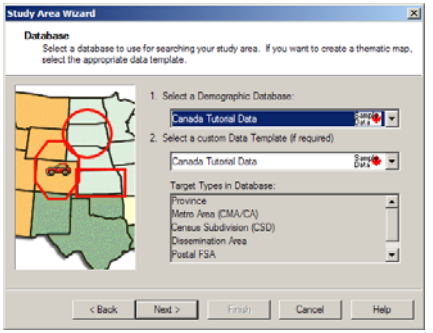


- Specify a grid spacing (**Distance between Sites**) of **.25 km**, and a Circle Radius of **1 km**.

Note that this spacing will generate about 3,000 grid sites in the specified rectangle. There is no specific limit to the number of sites, but very large numbers will result in long search times, as each site must be searched independently.

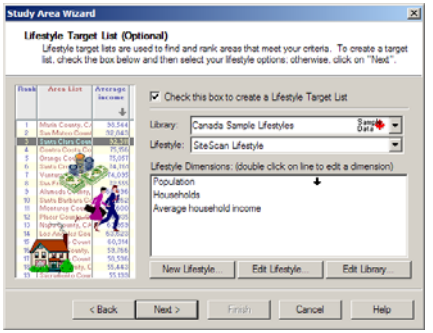
- Click 

.



➤ Check that the **Canada Tutorial Data** is selected.

➤ Click Next >.

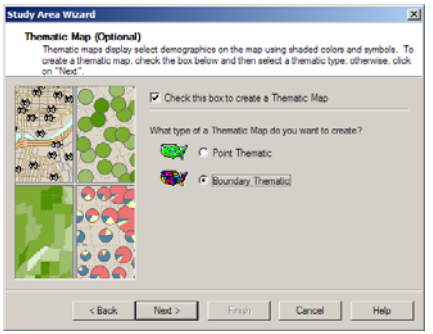


*In **SiteScan** projects, the **Lifestyle Targeting** option is selected by default. You can edit the lifestyle definition to specify the variables that interest you (see page 90).*

➤ Select the Lifestyle "**SiteScan Lifestyle**".

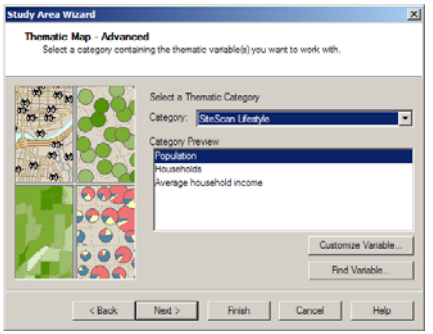
*This lifestyle is provided for the purposes of illustration. It includes **Total Population**, **Total Households** and **Average Household Income**.*

➤ Click Next >.

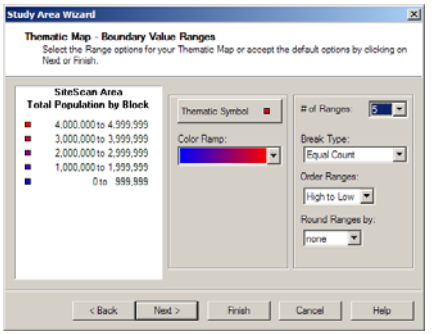


The thematic mapping option is checked by default, to create a SiteScan "hot spot" map.

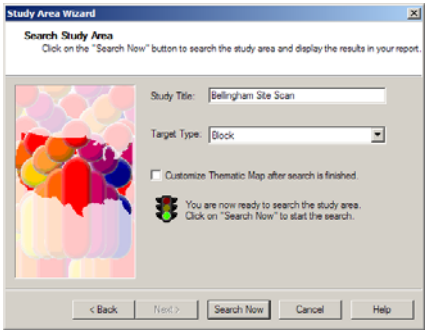
➤ Click Next >.



➤ Select a variable to be used for thematic shading and click Next >.



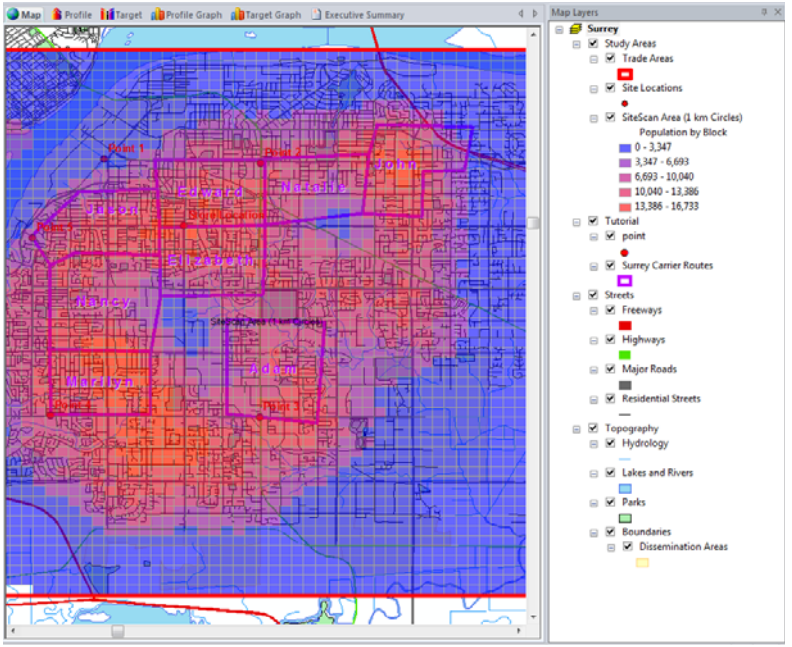
- Select the ranges and associated colors for the thematic map and click Next >.
- Click Next > in the Export Point File dialog.



Note that the search may take several minutes. Depending on the density of data points and your selected circle size, you may wish to increase the speed of searching by selecting block group targets instead of blocks.

- Enter a Title for your study.
- Click Search Now.
- Click Continue to close the progress indicator when the search is complete.

When the search is complete, PCensus generates the hotspot thematic map, highlighting the locations with the highest accessible population.



What Can I Do Now?

- Experiment with SiteScan using different lifestyle dimensions, filters and thematic variables. In particular, try using SiteScore dimensions as described in the following chapter. This is useful for locating potential site locations when you have used modeling to determine multiple demographic factors that you expect to control the performance of a business location.
- Try using drive times or grid squares instead of circles to create SiteScan trade areas.

24 SiteScore - Scoring and Statistics

Objective

Use SiteScore to select and rank targets using multiple variables.

Before You Continue

The concepts and procedures described in this section are of an advanced nature and assume familiarity with statistical concepts such as "median" and "percentile" and with the principles of PCensus lifestyle targeting. Before using SiteScore, it may be helpful to read the following chapters: chapter 20 (Create a Target List) and chapter 33 (Understanding the Target Browser).

Background

The PCensus Lifestyle Targeting feature allows us to rank target areas based on the value of a single specified variable such as "Average Income". Using this approach, we can use "filtering" to select targets in a specified income range, for example greater than $60,000.

However, we may need to select areas based on an optimal combination of two or more variables. Filters can be applied to more than one variable, for example we can select targets where income is greater than $60,000 and median age is over 50. This "pass-or-fail" approach would reject areas that narrowly miss one or both of our criteria, as well as areas that perform exceptionally well on one criterion but fail on the other.

As an example, we may have established that a product would appeal to wealthy, well-educated, aging consumers. Ideally, we would like to find areas that satisfy all three criteria, but this requirement might be too restrictive, resulting in a very small number of candidate targets. In this case, we require a method for computing the overall performance of each target; a target would not necessarily be excluded on the basis of a somewhat lower value for one variable if the other two variables are exceptionally favorable.

SiteScore provides a method for characterizing variables by a "score" as opposed to an actual value. For example, if the median income of a block group is very high compared to other block groups in the study area, the block group might score 90 or more, while if it is very low it might score 10 or less.

In statistical terms, scores are computed by assigning a percentile value to each target; if a target is in the 90th percentile, its score is 90.

Scoring provides two benefits:

- Variables are evaluated on a continuum; instead of "pass-or-fail", we can assess how closely our criteria are met.
- Scores for multiple variables can be combined to generate an "overall" score.

Because the scores for each variable are numeric, they can be combined mathematically (usually by simple addition) to calculate a combined score. If a block group scores **73** for "household income", **79** for "median age" and **91** for "percentage with degree", its overall score is **73+79+91 = 243** out of a possible **300**. **This** score would be normalized (divided by 3 in this case) to give a combined score of **81** out of a possible **100**.

Individual scores may be "weighted". If we felt that income were twice as important as the other two variables, we could multiply its score by 2, so that the overall score of our block group would be **73x2+80+91 = 317** out of a possible **400** (normalized to **79** out of a possible **100**).

The weighting factor may be a negative number. This has the effect of reversing the weighting, for example to give a high score to areas of low income.

A second method of assigning scores is by defining "custom ranges". We may be interested in target areas characterized by medium income levels. In this case, we can assign specific scores to ranges: **$0 to $30,000** might score **50**, **$30,000 to $60,000** might score **100**, and **$60,000 and over** might score **50**.

SiteScore Methodology

SiteScore is implemented by a set of statistical "functions" that can be combined to create mathematical expressions in much the same way that variables can be combined mathematically as customized dimension formulae (see page 93).

Functions are expressed in the form **FunctionName (argument1, … argumentN)**. The first argument is usually a formula expression.

The available statistical functions are as follows. In each case, "**expression**" is a variable or formula, for example **CY_POP**:

Function	Description
Percentile (expression)	Evaluates to the percentile of all targets in which the target falls for the value of **expression**. This is the most commonly used function in SiteScore.
Score (expression, n)	Similar to **percentile()** but more general. The argument n specifies the number of possible classes, for example **n=4** defines quartiles.
TargetValue (expression)	Evaluates to the value of **expression** for each target (see below).
Rank (expression)	Evaluates to the position of each target in descending order of **expression**.
Average (expression)	Evaluates to the average of **expression** for all targets. Result will be identical for all targets.
Total (expression)	Evaluates to the total of **expression** for all targets. Result will be identical for all targets.
Max (expression) and Min(expression)	Evaluates to the highest and lowest values of **expression** for all targets. Result will be identical for all targets.
Median (expression)	Evaluates to the median of **expression** for all targets (i.e. the value for which there is an equal number of targets higher and lower). Result will be identical for all targets.
StdDev (expression)	Evaluates to the standard deviation of **expression** for all targets. Result will be identical for all targets.
Count (expression)	Evaluates to the number of targets for which **expression** yields a valid result (i.e. targets with zero-divisions are excluded). Result will be identical for all targets.

There is an important distinction between statistical functions and the standard expressions that are available in the Formula Reference. Standard expressions are evaluated separately for each target area, whereas the statistical functions can only be evaluated in the context of all targets in a study area (after the study area search has been completed). For this reason, standard expressions cannot be mixed with statistical expressions; the following formula (which might be expected to represent the population of a target as a percentage of the entire study area) would be invalid:

100 * CY_PO / Total (CY_POP)

To emphasize this distinction, the statistical functions can only be used in a special type of dimension called a Statistical dimension (or implicitly in a SiteScore dimension). Similarly, statistical functions cannot be used in formulae used by data templates.They only have meaning in the context of lifestyle targeting.

The statistical function **TargetValue (expression)** is provided to allow calculations of the type illustrated, by converting standard expressions to statistical expressions. The formula

100 * TargetValue (CY_POP) / Total (CY_POP)

will give the required result.

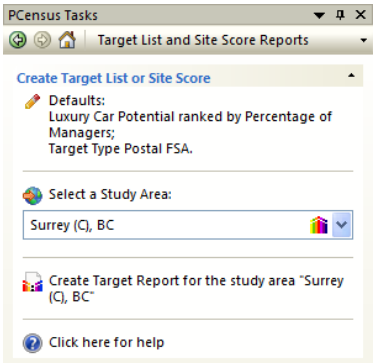
The function **RangeScore ()** is used by SiteScore to calculate custom ranges. However, it is worth noting that this is not a "statistical" function, as the value of its result is not dependent on its comparison with other areas. For this reason, **RangeScore()** can be used in template formulae as well as in lifestyle dimensions.

RangeScore (expression, range1:score1; …; rangeN-1:scoreN-1; *:scoreN)	If **expression** evaluates to the range defined by **rangeN**, the function evaluates to **scoreN**. For example: **RangeScore (@MEDINC_HH_CY,[40000: 50; 60000:100;*:50])** Evaluates to: **50** if income is **< $40,000** **100** if income is **$40,000 to $60,000.** **50** if income is **> $60,000**

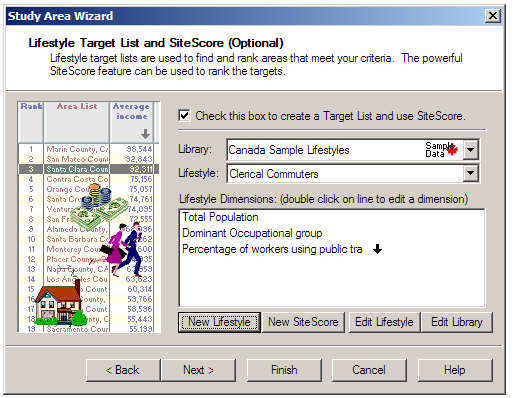
*The syntax for **RangeScore()** is complex. However, the "custom range" method in SiteScore can be used to achieve the same result, as it uses the **RangeScore** function internally.*

Simple Scoring

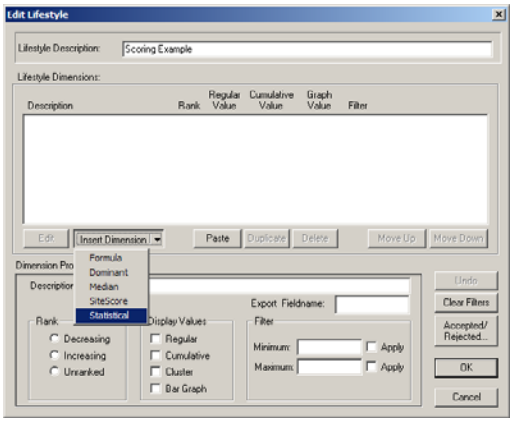
We will begin with a simple example, calculating scores for a single variable (Median Income).



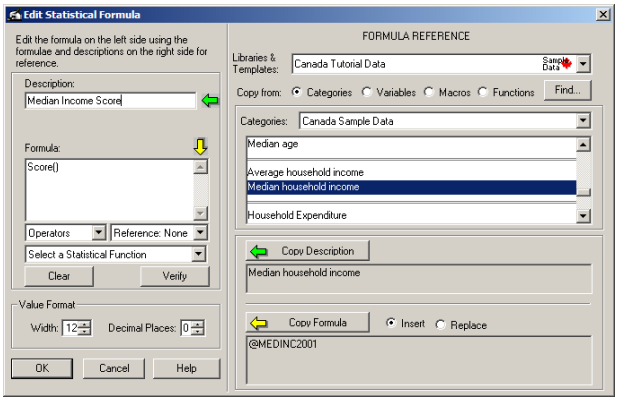
- Create a Profile Column for the Surrey Census Subdivision, using the **Canada Tutorial Data**.
- Open the **Target List Reports** pane in the PCensus Tasks window.
- Check that the **Surrey, BC** is selected as the Study Area.
- Click **Change default report settings…** to display the **Target List Settings** dialog box.



- Click **New Lifestyle**.



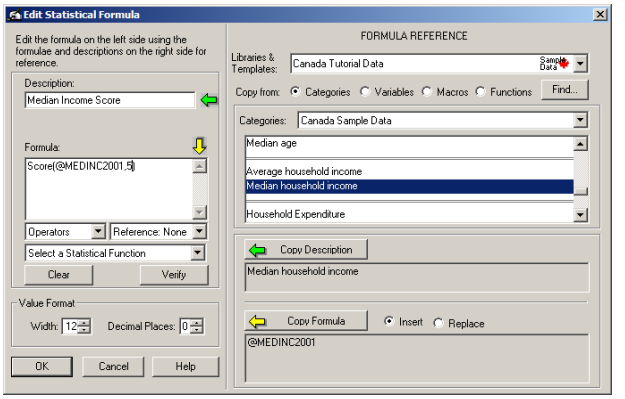
- Click **Insert Dimension** and select **Statistical** from the drop-down list.



- Select the **Score (x, n)** function from the **Select a Statistical Function** drop-down list.

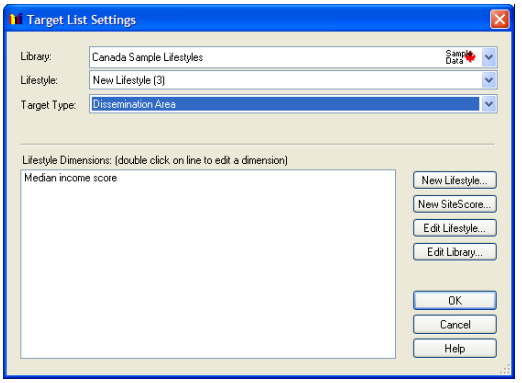
This will insert the term **Score()** in the formula box, with the cursor placed inside the parentheses.

Note the other available Statistical functions (TargetValue, Percentile etc.). These were described in detail in a previous section (see page 114).

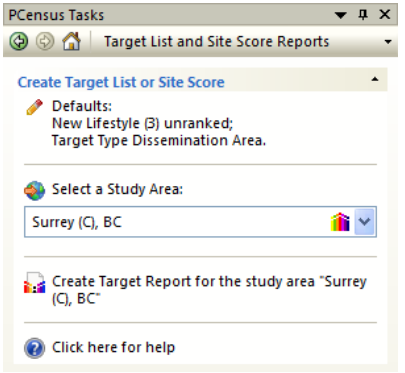


- Use the Copy Formula button to place the formula for **Median Household Income** in the formula.
- Type the second argument for the formula (**,5**). This indicates that we will compute scores on the basis of five equal ranges ("quintiles").
- Type a **Description**, for example **Median Income Score**.

*Note that the formula for median income in this template is a "macro" **@MEDINC2001**. All median values in this template have been expressed as macros, as this allows them to be pasted directly into mathematical formulae, which cannot be done using the standard notation for medians (page 158). For more information on macros, search for the word "macros" in the PCensus Help system.*

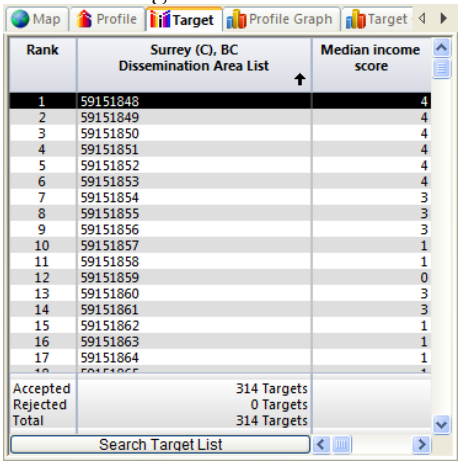


- Click **OK** to close the **Edit Formula** dialog.
- Select **Dissemination Area** as the **Target Type**.
- Click **OK** to close the **Target List Settings** dialog.



- Click **Create Target Report for study area Surrey, BC.**

PCensus displays a target list showing the scores for each DA



The scores are in the range 1 to 5, reflecting our choice for the second argument of the Score(x, n) function.

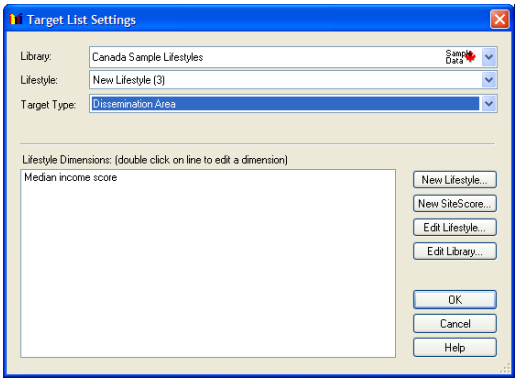
Scoring with Multiple Variables

The statistical functions described above allow us to combine scores mathematically to create an overall score. The following formula:

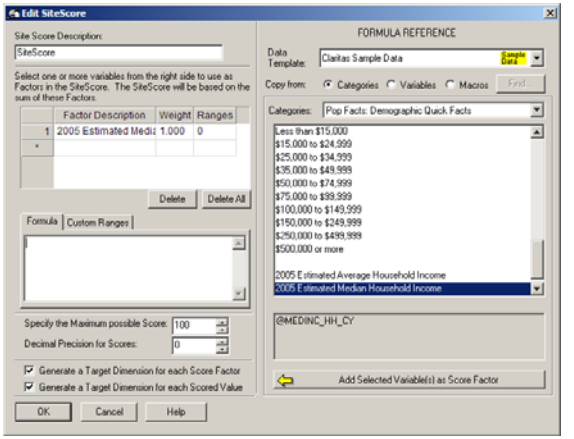
(2*Percentile (@MEDINC_HH_CY)+Percentile (@MEDAGECY))/3

will compute a combined score for median household income and median age by adding the percentile scores for two variables. The Median income score is weighted by a factor of 2, and the overall score divided by 3 to normalize the result to 100.

Formulae of this type can be created to define very complex scoring schemes, but these may become verbose and difficult to manage. To simplify this process, PCensus provides a special type of dimension, called a "SiteScore dimension" that automatically generates the required formulae.

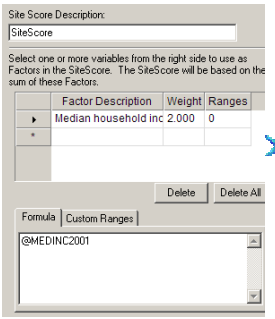


- Click **Change default report settings…** in the Target List task pane.
- Click **New SiteScore**.



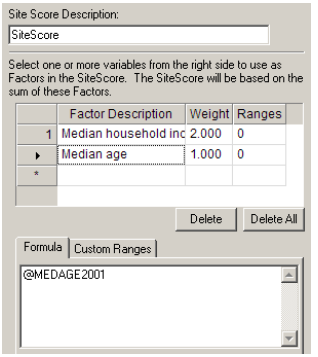
- Select **Median Household income**.
- Click **Add Selected variable(s) as Score Factor**.

The variable description and formula are transferred to the SiteScore panel on the left.



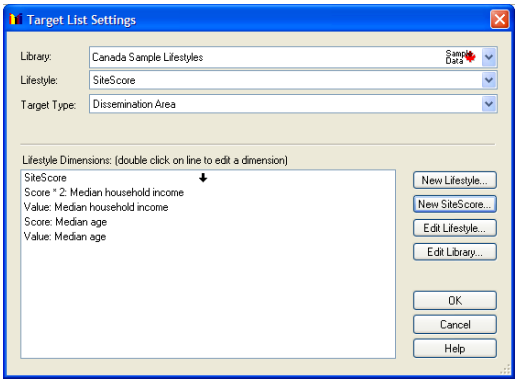
- Double-click on the **Weight** entry and change the specified weighting for this factor from **1** to **2**.

This setting causes the score computed for Median income to be multiplied by 2; median income will thus have double the influence on the overall score than factors with a weight of 1.

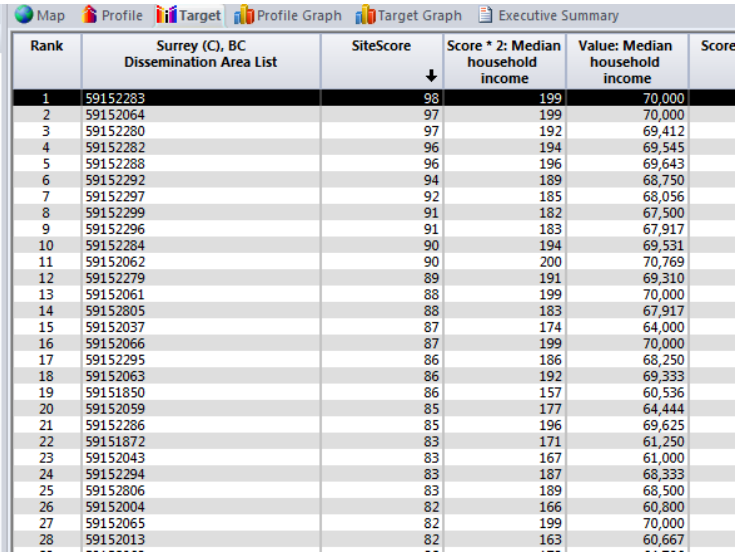


- Click in the first empty factor line, then transfer the variable **Median Age** from the Population Quick Facts category.
- Click OK.

PCensus has inserted our SiteScore (combined) dimension, as well as dimensions for the rank and target value of each factor to help you determine the relative contribution of each factor to the overall score.



- Click **OK** to close the **Target List Settings** dialog.
- In the task pane, click **Create Target Report for the study area "Surrey, BC"**.



Map | Profile | Target | Profile Graph | Target Graph | Executive Summary

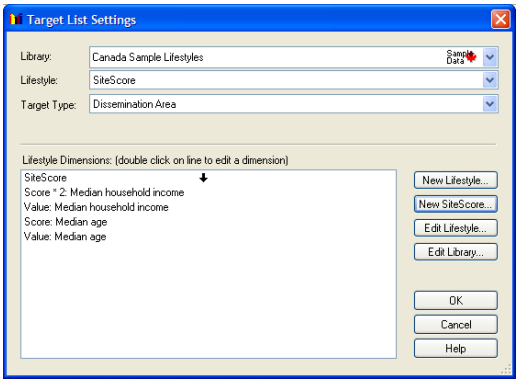
Rank	Surrey (C), BC Dissemination Area List	SiteScore	Score * 2: Median household income	Value: Median household income	Score
1	59152283	98	199	70,000	
2	59152064	97	199	70,000	
3	59152280	97	192	69,412	
4	59152282	96	194	69,545	
5	59152288	96	196	69,643	
6	59152292	94	189	68,750	
7	59152297	92	185	68,056	
8	59152299	91	182	67,500	
9	59152296	91	183	67,917	
10	59152284	90	194	69,531	
11	59152062	90	200	70,769	
12	59152279	89	191	69,310	
13	59152061	88	199	70,000	
14	59152805	88	183	67,917	
15	59152037	87	174	64,000	
16	59152066	87	199	70,000	
17	59152295	86	186	68,250	
18	59152063	86	192	69,333	
19	59151850	86	157	60,536	
20	59152059	85	177	64,444	
21	59152286	85	196	69,625	
22	59151872	83	171	61,250	
23	59152043	83	167	61,000	
24	59152294	83	187	68,333	
25	59152806	83	189	68,500	
26	59152004	82	166	60,800	
27	59152065	82	199	70,000	
28	59152013	82	163	60,667	

The first target in the list has a combined score of 98, representing scores of 199 for income (percentile weighted by 2) and 95 for age. Notice that among the highest ranked targets, some score relatively high for income and low for age, while in other cases the reverse is true.

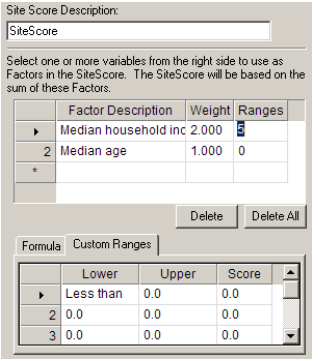
Scoring with Custom Ranges

In the preceding example, we might wish to assign a high score to a specified range of incomes; for example we may only be interested in areas where the median income is between $40,000 and $60,000. In this case, instead of scoring by percentile value, we will assign scores as follows:

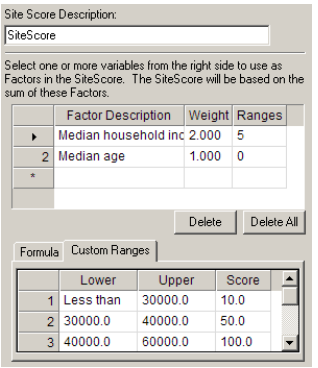
Range	Score
$0 to $30,000	10
$30,000 to $ 40,000	50
$40,000 to $60,000	100
$60,000 to $70,000	50
$70,000 and higher	10



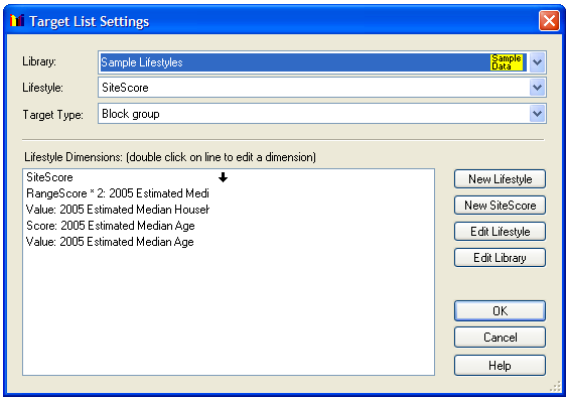
- Click **Defaults:** in the Target List task pane.
- Double-click the **SiteScore** dimension to edit its definition.



- Change the Number of Ranges for the median income factor to 5.



- Enter the custom ranges as shown.
- Click OK.



PCensus has updated the dimensions.

➢ Click **OK** and re-search the study area.

Rank	Surrey (C), BC Dissemination Area List	SiteScore	RangeScore * 2: Median household income	Value: Median household income	Score: Median age	Value: Median age
1	59152251	100	200	45,804	99	61
2	59151974	100	200	42,326	99	58
3	59151983	99	200	42,500	98	53
4	59152195	99	200	49,000	97	51
5	59152082	99	200	42,833	97	49
6	59152254	99	200	42,500	96	49
7	59152175	98	200	46,351	93	41
8	59152196	97	200	49,038	92	41
9	59151969	97	200	43,375	91	41
10	59152194	97	200	48,864	90	40
11	59152187	97	200	45,000	90	39
12	59152808	96	200	48,906	88	39
13	59152192	96	200	49,038	87	38
14	59151943	96	200	52,000	87	38
15	59152252	95	200	45,854	86	38
16	59151906	95	200	55,000	86	38
Accepted	314 Targets	0	200	49,049		33
Rejected	0 Targets	0	0	0		0
Total	314 Targets	0	200	49,049		33

Search Target List

The middle income targets now receive the highest scores.

What Can I Do Now?

- Experiment with using SiteScore dimensions in conjunction with SiteScan (page 107). This is useful for locating potential site locations when you have used modeling to determine multiple demographic factors that you expect to control the performance of a business location.

25 Print a Report

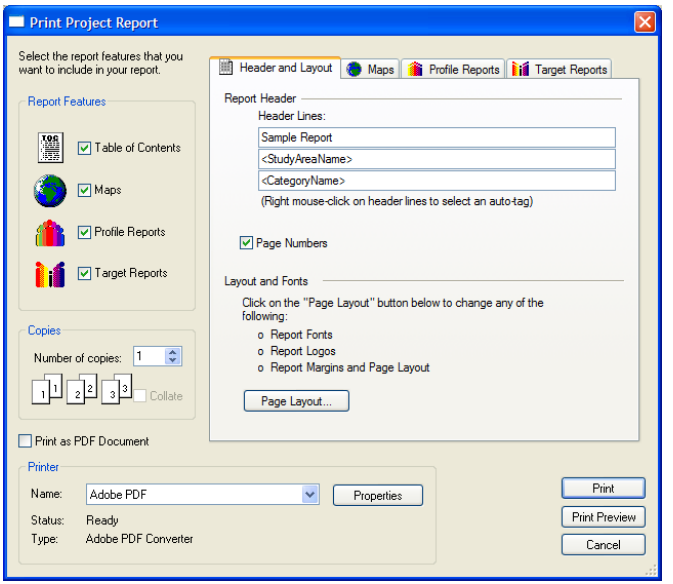
Background

The Project Report feature was introduced in PCensus version 9. It allows you to print all the current components of the project in a single operation, avoiding the necessity of printing the maps and reports separately as in previous versions.

If you wish, you can print the individual reports by clicking the drop-down arrow to the right of the print icon.

Steps to Print the Project Report

- Create a PCensus project that contains a selection of profiles, target lists and maps.
- Click  in the tool bar to display the **Print Project Report** dialog box.



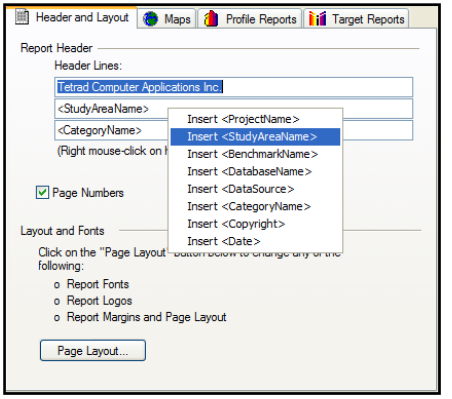
Check the boxes on the left to include the required components:

- Table of Contents.
- Maps.
- Profile Reports.
- Target Reports (if present).

Click on any of the four tabs to set up the items to be printed.

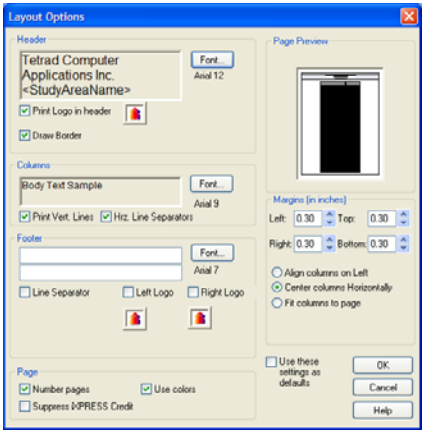
Header and Layout Tab

Enter the text that will appear in the three heading lines of each report page. The text you type will be printed verbatim unless you right-click in a box to select one of the available auto-tags:



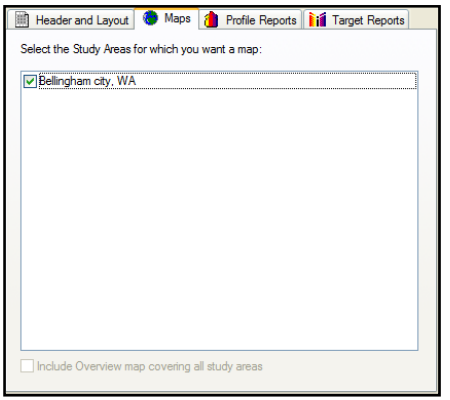
The text inside the brackets will be replaced by the corresponding descriptions when the report is printed.

Click the Page Layout button to display the **Layout Options** dialog and select required fonts and graphical elements.



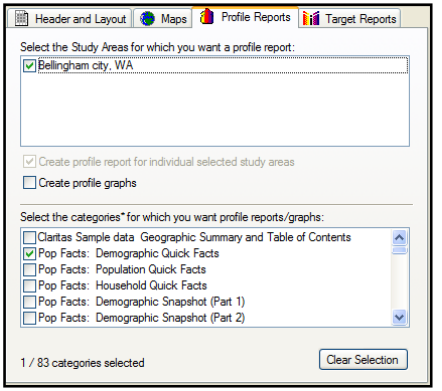
*The **Use these settings as defaults** check box saves the current layout settings for future sessions, including the contents of the Header Lines.*

Maps Tab



- Check the maps to include in the report.

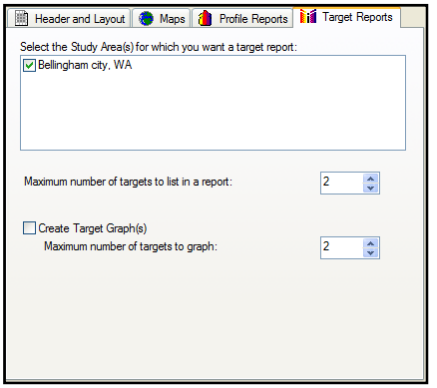
Profile Reports



- Check the **Study Areas** and the **Categories** to be included

You can highlight groups of categories by holding down the Ctrl key and clicking categories individually. Click in a highlighted check-box or press the space bar to check (or clear) the highlighted categories.

Target Reports



- Check the Study Areas for which target lists will be included in the report.

26 Export the Profile

Objective

Export the contents of a profile for use in other applications.

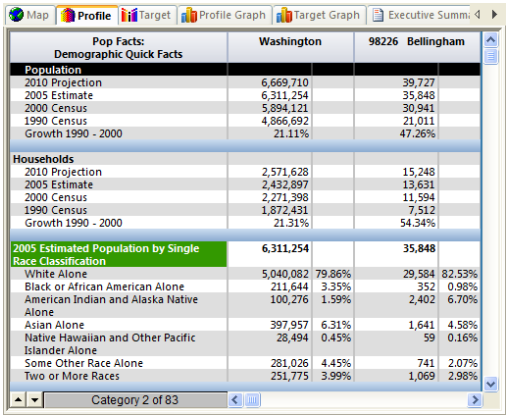
Background

The data in a PCensus project can be exported to a file format suitable for importing to a spreadsheet, database, or word-processing program.

Project export files contain all the descriptive and numerical information in the project.

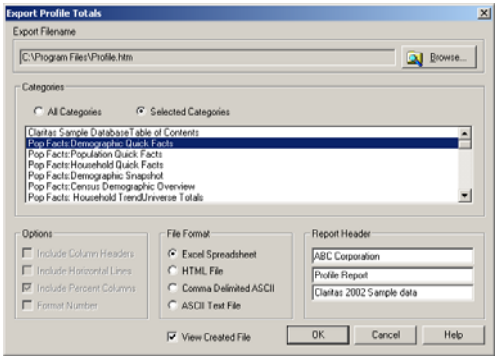
Steps to Export a Profile

- Create a profile containing two or more study areas (for example a state and a ZIP code).



The **Profile** tab contains columns for Washington State and a ZIP code. To export the displayed data:

- Click the Export icon  to display the **Export Profile Totals** dialog box.



- Click  to specify a filename and location for the exported data.
- Select one or more categories for export.
- For HTML or Spreadsheet output, edit the required **Report Header** fields.

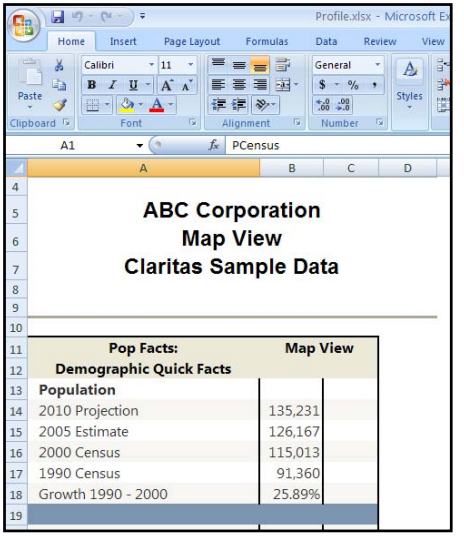
Select one of the available file types:

- Excel spreadsheet.
- HTML file (for use in a Web browser).

For the above types, you can enter heading information to be included.

- Comma Delimited ASCII.
- ASCII text file.

For these types, you can select options for the range of data to be included.



If you click View Created File, the default application for viewing the file type will start automatically (for example Microsoft Excel).

➢ Click OK to create the file.

27 Create a Pointfile

Objective

Export records for the individual counties in Washington State.

Background

A **Pointfile** is a database containing geographically referenced data. The pointfile contains a record for every target record whose internal point is inside your study area.

When you create a pointfile, you must select the geographic target type to be exported; for example, a pointfile record can represent a block group, census tract, county or state. The pointfile will contain a record for every target record whose internal point is inside your study area.

Each pointfile record contains the following information:

- **Area name.** For the target (for example county or place name).
- **Code.** A code suitable for linking with other databases or map files. This is usually a standard census area code (FIPS code for U.S. census areas), or a postal ZIP or FSA code.
- **Longitude** and **latitude.** Coordinates for the target's internal point. This information lets you use the file directly with many mapping systems.
- **Data columns.** For each variable in a selected category. These are normally numeric, unless the data variable evaluates to text (as is the case for "dominant group" variables).
- **Status Field.** This is a character field containing one character for each of the exported variables. The characters are normally all '**0**'s, unless the corresponding variable contains an invalid result (for example an invalid formula, a number too large to be represented, or a division by zero), in which case the character is set to '**1**'.

Data are exported from PCensus by category. Each category is exported to a separate database table. If a category contains multiple columns, each column is exported to a separate table.

Databases can be exported in the following formats:

- For Microsoft Access, a single database is created, containing tables for each exported category or category column.

- For Microsoft Excel, a single workbook is created, containing worksheets for each exported category or category column.
- For dBase or CSV (text with comma separated values), a folder is created, containing files for each exported category or category column.

Limitations

It is possible to export several categories simultaneously. Depending on the selected format, restrictions may be imposed on the number of variables (fields) in a category, or the number of categories that can be exported simultaneously.

The limitations on variable and field counts are imposed by the external database drivers that create the exported files; exceeding these limitations may result in unexpected error messages, although PCensus will attempt to continue processing other categories.

All output formats are limited to 255 columns per table. If an exported category contains more than this number of variables, excess variables will be omitted. No warning is displayed when this occurs.

You can reduce the number of variables to be exported from a category by clearing the check-boxes for unwanted variables in the Structure dialog (see page 134).

Most formats (except dBase) permit column headings of up to 64 characters. When this limit is exceeded, the headings will be abbreviated. For example:

2004 Estimated Population by Single Race Classification: White Alone

will be abbreviated to

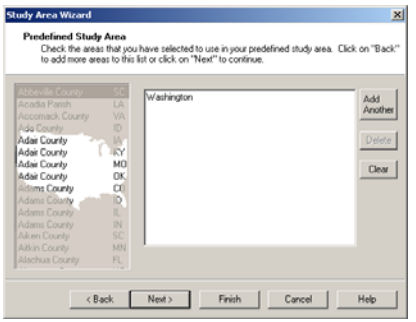
2004 Estimated Population by Si~ace Classification: White Alone.

Exporting large numbers of categories simultaneously may significantly slow the search process.

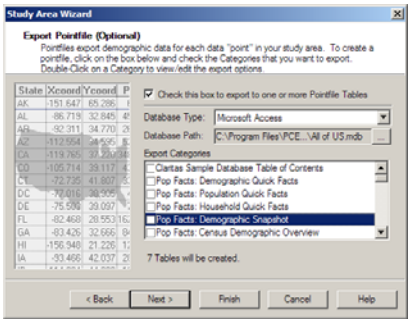
The following table may assist you in selecting a suitable export format.

Format	Advantages	Disadvantages
Microsoft Access	Descriptive Variable names. Multiple output tables stored in a single database.	Limited to 64 category tables or less, depending on content. Multiple categories significantly reduce performance.
Microsoft Excel	Descriptive Variable names. Multiple output tables stored in a single workbook.	Limited to 64 category tables or less, depending on content. Limited to 65,536 target records Multiple categories significantly reduce performance.
dBase	Fastest export, even with multiple categories. Unlimited number of category tables. Output tables stored as separate dBase files.	Cryptic variable names, limited to 10 characters due to dBase format.
CSV	Descriptive Variable names. Output tables stored as separate CSV tables. CSV files can easily be imported to many applications	Limited to 64 category tables or less, depending on content. Multiple categories significantly reduce performance.

Steps to Export a Pointfile



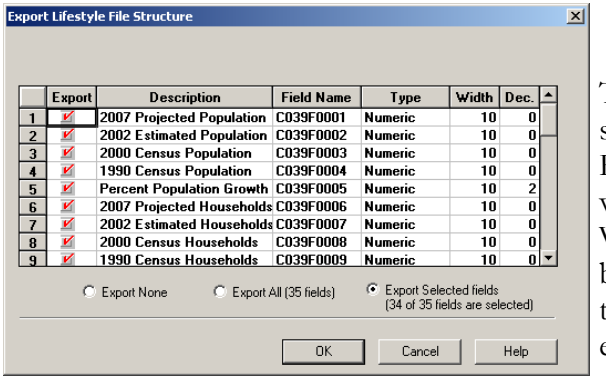
- Create a new project using the Study Area Wizard, and follow the steps to define a study area for Washington State.
- Click Next > in each dialog to advance to the **Export Pointfile (Optional)** dialog box.



➤ Check Check this box to create a Pointfile to display the pointfile options.

The pointfile will be created with a default name and location as shown. If you want to change these:

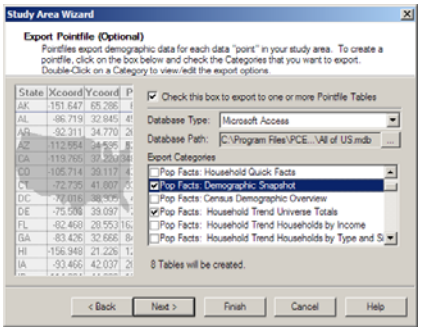
➤ Click Browse to specify a filename and location for the exported data.



➤ Double-click a category to display the **Export File Structure** dialog box.

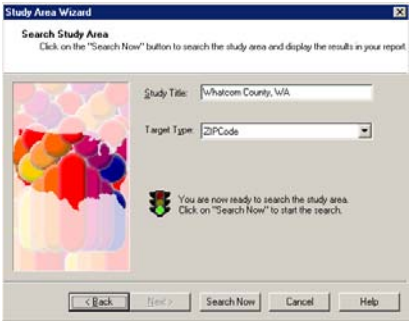
This dialog allows us to modify the structure of the exported pointfile. For example, we could change the variable name **C039F001** to **POP_07**. We can also clear selected check-boxes in the **Export** column to reduce the number of variables that are exported.

➤ Click OK.



➤ Select the categories to be exported, using the check-boxes.

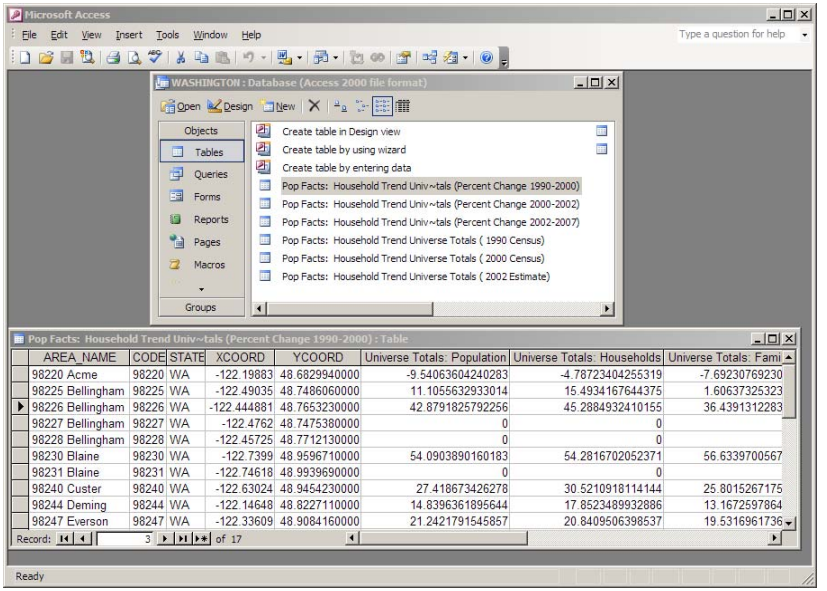
➤ Click Finish to display the **Search Study Area** dialog box.



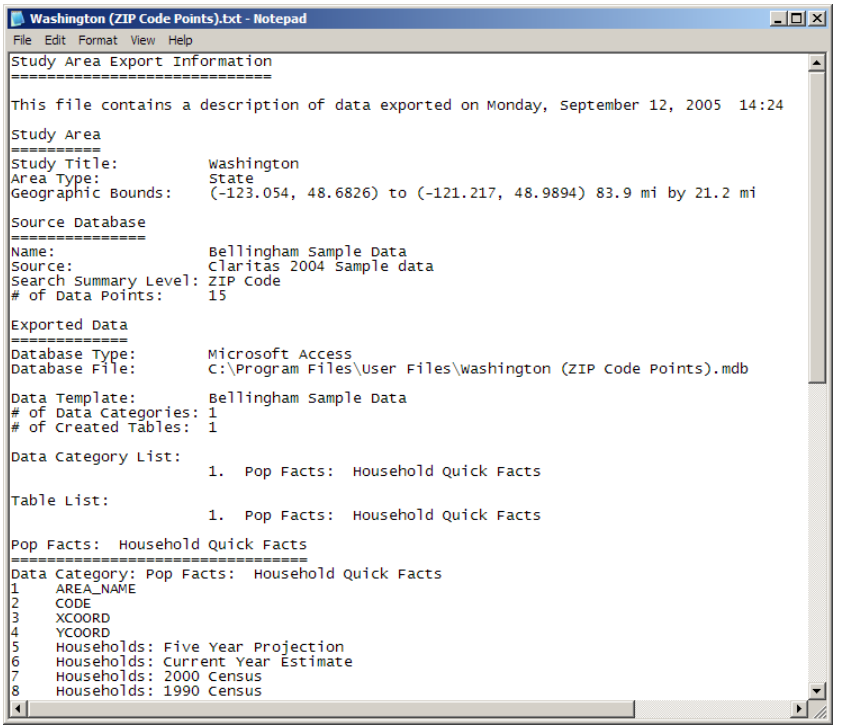
- Select Target Type: ZIPCode to indicate that we will be exporting ZIP code target records.
- Click Search Now.
- When the search is complete, click Continue to close the progress indicator.

What Can I Do Now?

- View the created pointfile by opening it in Microsoft Access:



- View the descriptions of the included variables by opening the text file **Washington (ZIP Code Points).txt** in Notepad.



28 Export the Target List

Objective

Export the contents of a target report in a format suitable for importing into other applications.

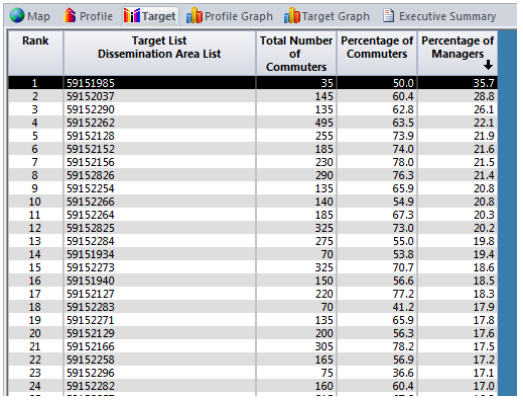
Background

You can export the results of a Target List project to the following file formats:

- **DBase File**: This file format is similar to the Pointfile format (page 131). The exported data fields correspond to the dimensions of the lifestyle.
- **Excel spreadsheet:** Allows display and manipulation of the exported data with Microsoft Excel.
- **HTML File:** Suitable for viewing in a web browser.
- **ASCII file:** Comma-delimited text file suitable for importing into a spreadsheet program.

Steps to Export the Target List

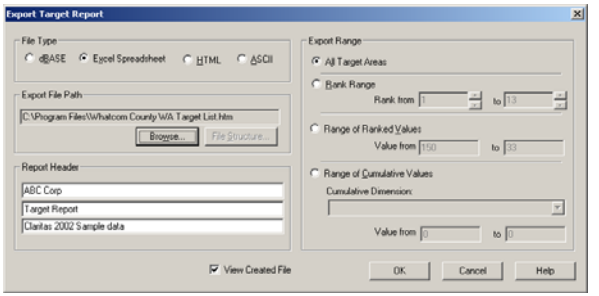
➢ Create a Target List, for example Total Number of Commuters in Surrey (page 87).



Rank	Target List Dissemination Area List	Total Number of Commuters	Percentage of Commuters	Percentage of Managers
1	59151985	35	50.0	35.7
2	59152037	145	60.4	28.8
3	59152290	135	62.8	26.1
4	59152262	495	63.5	22.1
5	59152128	255	73.9	21.9
6	59152152	185	74.0	21.6
7	59152156	230	78.0	21.5
8	59152826	290	76.3	21.4
9	59152254	135	65.9	20.8
10	59152266	140	54.9	20.8
11	59152264	185	67.3	20.3
12	59152825	325	73.0	20.2
13	59152284	275	55.0	19.8
14	59151934	70	53.8	19.4
15	59152273	325	70.7	18.6
16	59151940	150	56.6	18.5
17	59152127	220	77.2	18.3
18	59152283	70	41.2	17.9
19	59152271	135	65.9	17.8
20	59152129	200	56.3	17.6
21	59152166	305	78.2	17.5
22	59152258	165	56.9	17.2
23	59152296	75	36.6	17.1
24	59152282	160	60.4	17.0

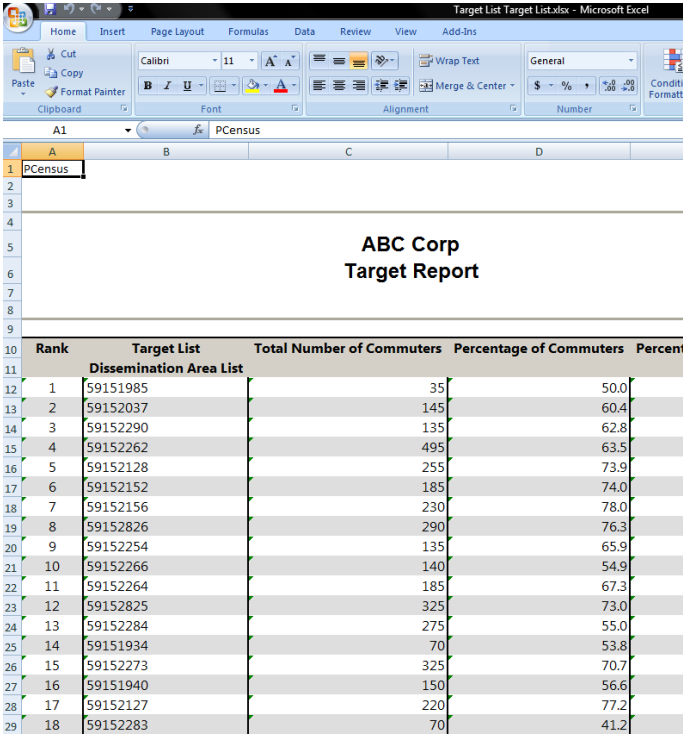
To export the displayed data:

➢ Click the Export icon  to display the **Export Target Report** dialog box.



- Select the **File Type** that you want to create.
- Click Browse... to specify a filename and location for the exported data.
- Make any required Export Range selections.

The setting of the **Toggle Filter** button in the tool bar determines whether rejected targets will be included in the file.



Rank	Target List Dissemination Area List	Total Number of Commuters	Percentage of Commuters	Percent
1	59151985	35	50.0	
2	59152037	145	60.4	
3	59152290	135	62.8	
4	59152262	495	63.5	
5	59152128	255	73.9	
6	59152152	185	74.0	
7	59152156	230	78.0	
8	59152826	290	76.3	
9	59152254	135	65.9	
10	59152266	140	54.9	
11	59152264	185	67.3	
12	59152825	325	73.0	
13	59152284	275	55.0	
14	59151934	70	53.8	
15	59152273	325	70.7	
16	59151940	150	56.6	
17	59152127	220	77.2	
18	59152283	70	41.2	

If you click View Created File, the default application for viewing the file type will start automatically (for example Microsoft Excel).

- Click OK to create the file.

What Can I Do Now?

- View the created pointfile by opening it in Microsoft Excel
- View the descriptions of the included variables by opening the text file (type **.MPO**) in Notepad

29 Save a Project to Microsoft Word

Objective

Save all the maps, reports, and graphs for a project to a Microsoft Word document.

Background

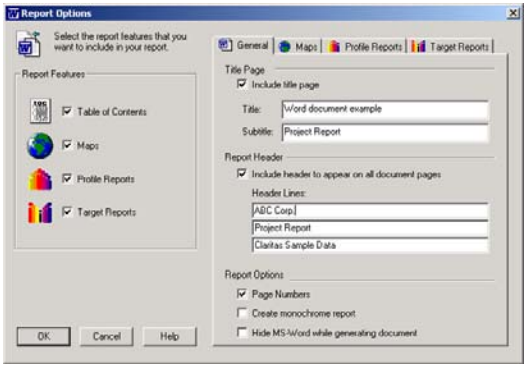
The Microsoft Word feature of PCensus lets you save the results of an entire project to a single document. This is often preferable to printing separate reports, maps, and graphs for each profile or target list. You can:

- Edit the document for layout, appearance and content.
- Print all the project's components in a single operation.
- Distribute the results of your project via email.
- Save the document for later use.

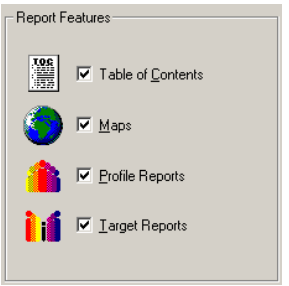
Prior Steps Required

- Create a PCensus project. To see a full range of the components that can be exported, the project should contain at least the following: a user-defined study area, a Target List and a Thematic Map.

Steps to Save a Project to Microsoft Word



- Click the **Word** icon  to open the **Report Options** dialog box.

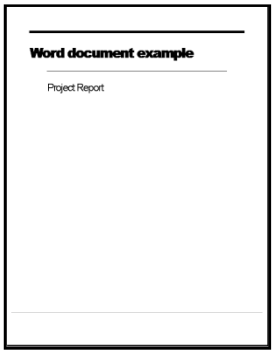


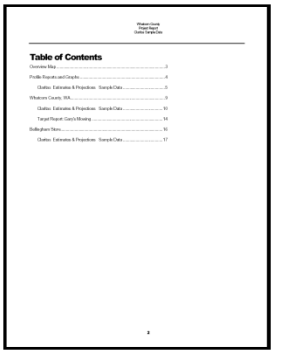
- Use the checkboxes in the **Report Features** panel to select the components to be exported.

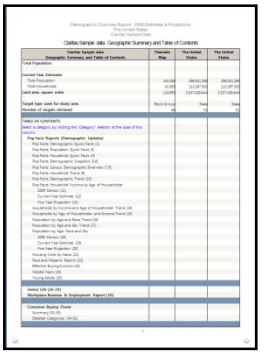
Each component has a corresponding tab in the **Report Options** dialog box for selection of report details such as profile categories.

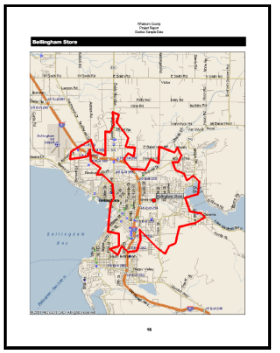
- Enter any required text for report headers or title page, and click OK to generate the Word document.

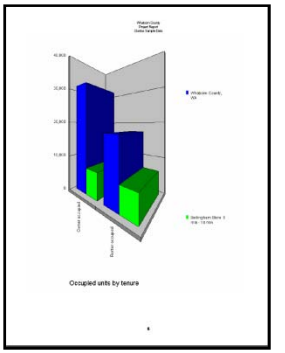
*Note: When exporting profile graphs to a Word document, set up the variables to be graphed in the Profile Graph window, and check the **Always Graph these Variables** check box to ensure that the correct graph is exported.*

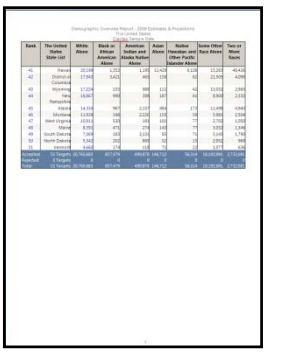












Microsoft Word automatically starts generating and displaying your document. This process may take a few minutes to complete.

*The document is based on a Word template called **Report.dot**. This file is located in the PCensus folder. Advanced Word users may want to modify this template in order to customize the appearance of the reports.*

30 Refresh a Project Using a New Database

Objective

Open a saved project and refresh it using a different database.

Background

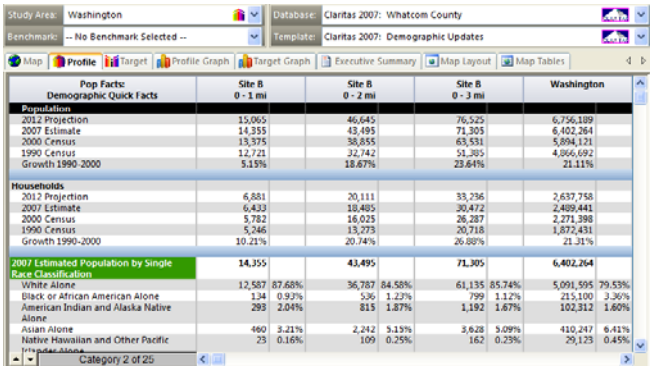
Many databases are updated on an annual basis, especially products that contain current year demographic estimates. Many users need to re-create their old projects each year to reflect the updated data.

The **Update Project Database** feature provides a quick method of refreshing a project with new data.

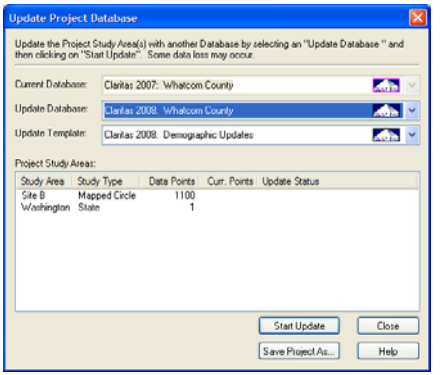
Some restrictions apply to the update process:

- If the new and old databases do not contain identical geographical components (block groups, counties, etc.) it may not be possible to update some types of study areas. For example, a project created with a 1990 vintage census database cannot be updated with a 2000 census database, as the definitions of block groups changed substantially between the two censuses. Fortunately, most year-to-year updates are generally compatible.
- Some project components (such as thematic maps) cannot be updated automatically - you must recreate them manually.

Steps to Update a Project

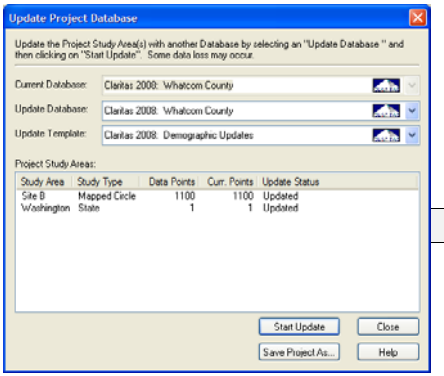


- Create and save a project containing study areas of various types using an obsolete database.
- Open the saved project.
- Select **Update Project Database…** from the **Tools** menu.



- Select an **Update Database** that will be used to refresh the project.
- Click Start Update.

*If you are updating a project to reflect changes in an imported database that has been refreshed with new data (page 207), the **Current Database** and the **Update Database** will be the same.*

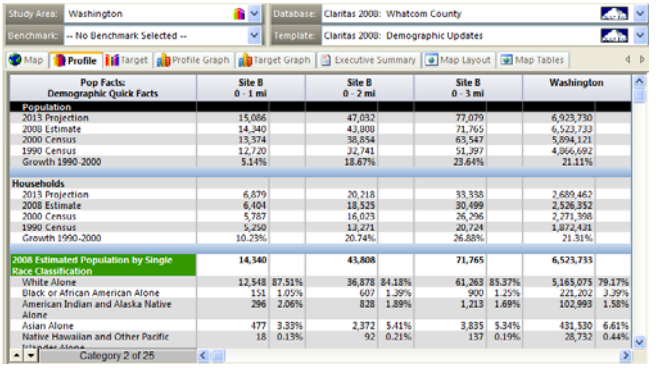


The dialog displays the status of the update process.

- When the update is complete, click Save Project As...

It is not advisable to replace the original project.

- Click Close.



The Profile Browser contains the updated report.

What Can I Do Now?

- Transform a customized template to work with the new database (page 163).

31 Understanding the Profile Browser

Objective

This section describes the features of the Profile Browser.

Background

PCensus databases can contain very large sets of data variables. These variables are organized into **categories** that typically represent single pages of a multi-page report. All categories are populated simultaneously when you search a study area, and the results are displayed in a window called the Profile Browser.

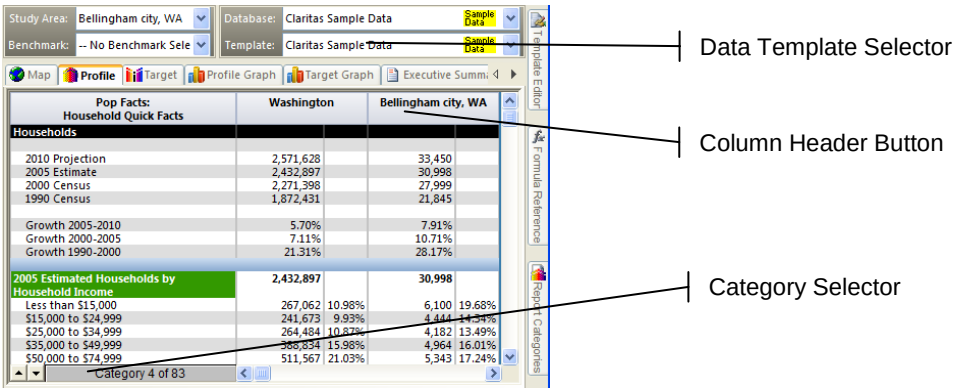
This chapter describes the contents of the profile browser and the methods available for navigating through the categories.

Prior Steps Required

Create a project containing at least two study area profiles. In the examples illustrated below, we have used the **Claritas Sample Data** to display columns for Washington State and the city of Bellingham.

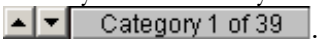
Templates and Categories

The Profile Browser consists of a **Description Column** containing text describing the displayed variables and any number of **Data Columns**. Each data column represents a study area.

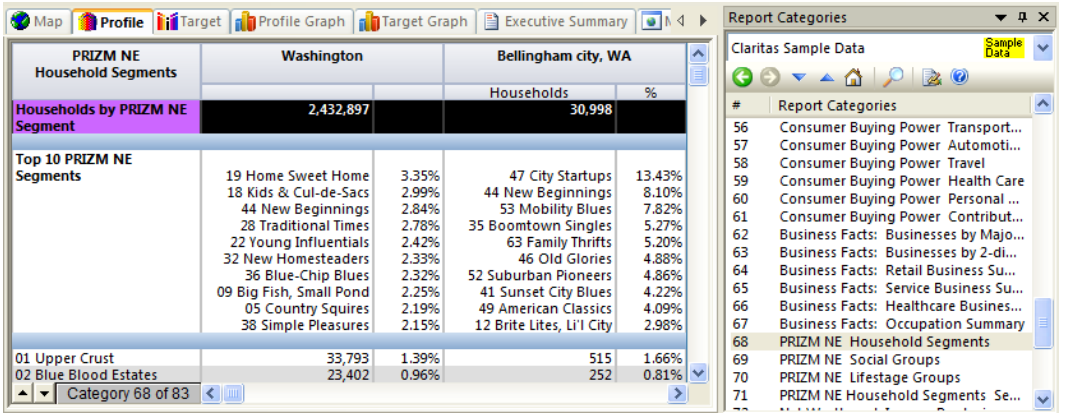


The contents of the profile browser are defined by a **Data Template**. Every PCensus database is installed with a standard template, and you can customize profiles by creating new templates (page 149).

If the database in use has more than one associated template, you can select the one you want using the **Data Template Selector**.

The profile may contain many categories of data, as shown by the Category selector 

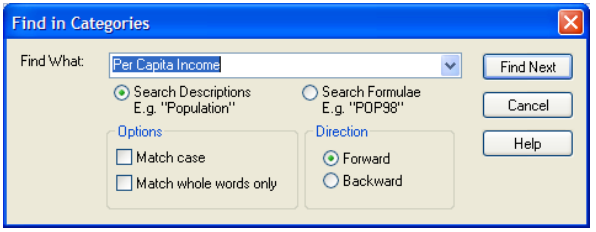
. Click on the arrowheads to display the next or previous categories. To browse quickly through categories, click the **Report Categories** "fly-out button" in the right-hand margin.



The data categories available depend on the source of the data and the specific components that you have purchased. The sample database illustrated contains data supplied by Nielsen Claritas Inc. and contains the following components:

- **Population Facts**: A selection of useful demographic data based on the U.S. Census.
- **Consumer Buying Power**: Estimates of total and per-household expenditure on a wide variety of products and services.
- **Business Summary Counts**: Counts of businesses and employees.
- **PRIZM**: Counts of households assigned to 66 demographic segments such as **Upper Crust** or **Shotguns & Pickups**.

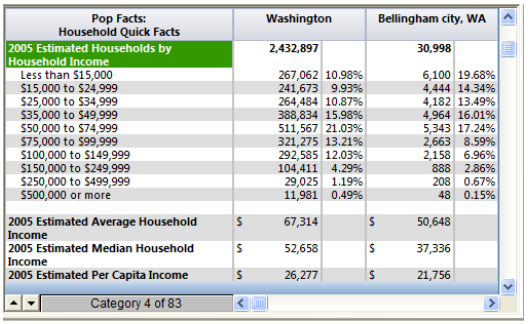
If you don't know which category contains a specific data item, you can search for it.



➢ Select **Find** from the **Edit** menu, and enter the text to be found (for example "**per capita income**").

The Percentage Column

When working with distribution data, for example, the distribution of household incomes, it is often useful to display the percentage of data in each class. Categories that include this type of data have a percentage sub-column to accommodate this.



Pop Facts: Household Quick Facts	Washington		Bellingham city, WA	
2005 Estimated Households by Household Income	2,432,897		30,998	
Less than $15,000	267,062	10.98%	6,100	19.68%
$15,000 to $24,999	241,673	9.93%	4,444	14.34%
$25,000 to $34,999	264,484	10.87%	4,182	13.49%
$35,000 to $49,999	388,834	15.98%	4,964	16.01%
$50,000 to $74,999	511,567	21.03%	5,343	17.24%
$75,000 to $99,999	321,275	13.21%	2,663	8.59%
$100,000 to $149,999	292,585	12.03%	2,158	6.96%
$150,000 to $249,999	104,411	4.29%	888	2.86%
$250,000 to $499,999	29,025	1.19%	208	0.67%
$500,000 or more	11,981	0.49%	48	0.15%
2005 Estimated Average Household Income	$ 67,314		$ 50,648	
2005 Estimated Median Household Income	$ 52,658		$ 37,336	
2005 Estimated Per Capita Income	$ 26,277		$ 21,756	

Category 4 of 83

The profile line containing the universe entry (total of all classes) is designated as the "percent base", and the subsequent lines containing the distribution classes contain percentage entries calculated against the defined base.

Multi-Column Reports

The data categories we have seen so far contain a single numeric data column for each study area (with an optional percentage column). In many cases, it is useful to display additional columns, for example to allow side-by-side comparison of data from different years.

➢ Select the category **Pop Facts: Household Trend Households by Income** to see an example of a multi-column report.

Pop Facts: Household Trend	Bellingham city, WA					
	2000 Census	%	2005 Estimate	%	2010 Projection	%
Population	67,171		73,740		79,088	
Percent Change			9.78%		7.25%	
Households	27,999		30,998		33,450	
Percent Change			10.71%		7.91%	
Families	13,990		15,549		16,820	
Percent Change			11.14%		8.17%	
Housing Units	29,474		32,594		35,171	
Percent Change			10.59%		7.91%	
Group Quarters Population	4,593		4,697		4,762	
Percent Change			2.26%		1.38%	
Average Household Size	2.24		2.23		2.22	
Percent Change			-0.34%		-0.24%	
Income Totals						
Aggregate($MM) Household Income	1,264		1,570		1,866	
Percent Change			24.16%		18.87%	
Per Capita	$ 19,379		$ 21,756		$ 24,036	
Percent Change			12.26%		10.48%	

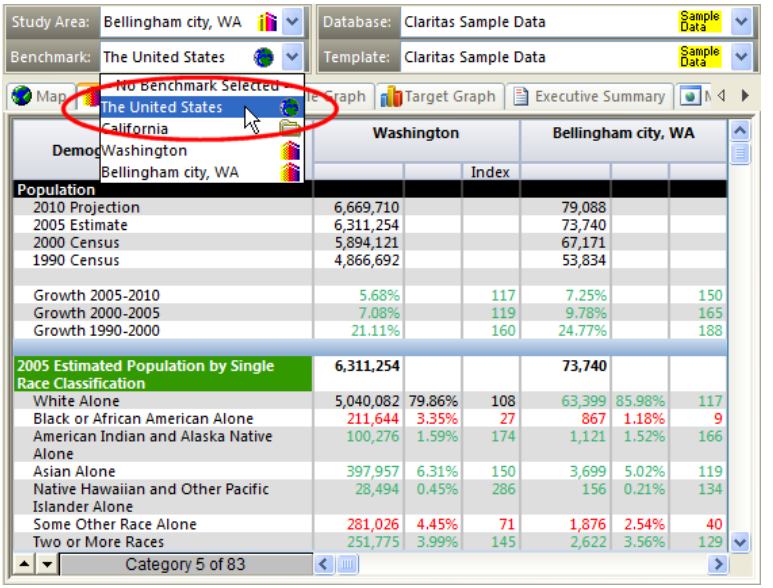
Benchmarking Profile Columns

It is often desirable to compare the profiled results for a study area with another area called a **Benchmark**. We can define any number of study areas in a profile. Each area is displayed in a separate column so that we can view the results side-by-side in the browser.

PCensus allows you to designate an area as a **Benchmark** area against which other columns can be compared. An **Index** value is calculated for each variable, based on the selected benchmark value.

The available Benchmark areas include any study area in your project, as well as the database "Universe" (i.e. the United States).

➢ Select a Benchmark area from the pull-down list.



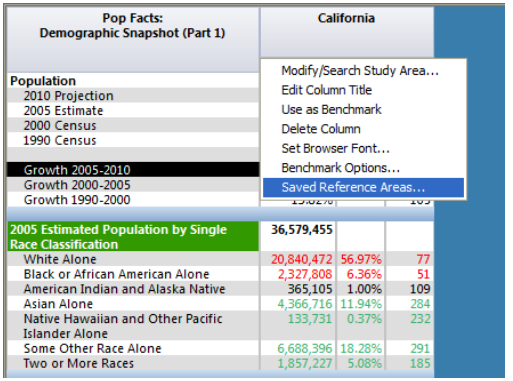
When a Benchmark has been selected, an **Index** sub-column is displayed for each study area, showing the values calculated as percentages of the benchmark. Results are color-coded to highlight differences.

*To change the color-scheme, left-click a column header button to select **Benchmark Options**.*

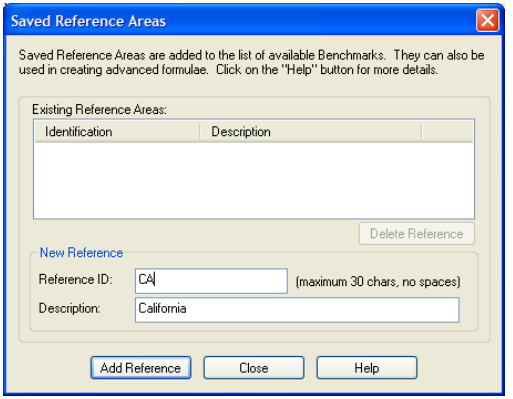
Saving Reference Areas

Any area represented by a profile report column can be saved as a **Reference Area** that can be used as a benchmark area in future projects. For example, we can save the State of California as a reference area.

- Create a Profile column for the State of California.



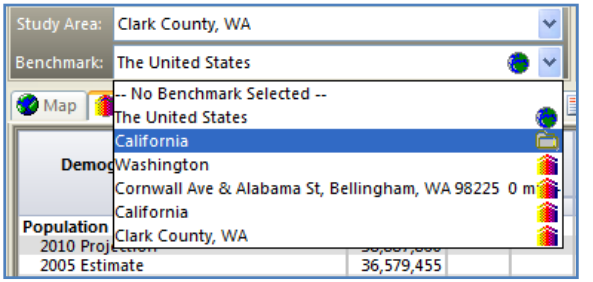
- Click in the column header for California and select **Saved Reference Areas** from the displayed menu.



- Change the **Reference ID** to a symbolic name such as **CA** (optional).
- Click Add Reference.

The saved reference area will only apply to projects created with the current database. Each database has its own set of reference areas. The Reference ID can be used in template and lifestyle formulae as an "operator" (see page 160).

Create a new study area (e.g., Clark County, WA).



Select the saved reference area as a benchmark.

The folder icon identifies California as a saved reference area, as opposed to the United States "universe" or a study area in the current project.

What Can I Do Now?

- **Customize the Profile**: You can organize the profile browser to suit your specific needs. For example, if the items that interest you are normally contained in different categories, you can create a new category which contains only these items (page 149).

32 Customizing the Profile

Objective

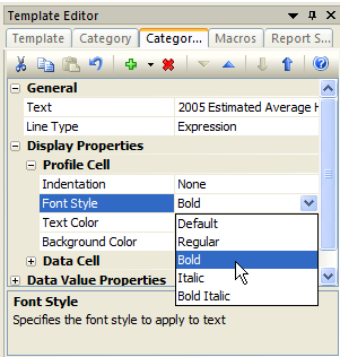
Use the **Data Template Editor** to customize the content and appearance of the profile browser, printed reports and exported files.

Background

Every PCensus database is installed with a **Data Template** that defines the content and appearance of the Profile browser (page 143). The template editor lets you create a new template containing categories specific to your needs, select variables to be displayed, and organize and enhance the appearance of profiles by specifying properties such as text style, color and indentation.

The data template defines the content of data files exported from PCensus for use in other applications, so you can use the template editor to create customized export files.

The current version of the PCensus template editor uses "property sheets" in place of the tabbed dialog box used in earlier versions. Property sheets permit a more intuitive organization of the available editing options.



Property sheet entries behave differently for different functions. For example, the entry "**Text**" allows you to type information to be displayed, while "**Font Style**" provides a pull-down selection. Other entries may contain a button ... to display a more complex dialog control.

Controls in the property sheet are hidden until they are selected by clicking inside them.

The "**+**" and "**-**" check-boxes respectively expand and collapse sections of the property sheet to hide rarely-used advanced settings until they are needed.

Prior Steps Required

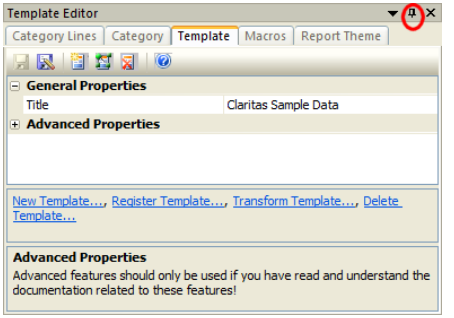
- Read the chapter **Understanding the Profile Browser**, (page 143).
- Create a project using the **Claritas Sample Data** and containing two profiled study areas (for example, the State of Washington and Bellingham city).

Create a New Template

> *The standard data templates provided with PCensus databases cannot be modified by the template editor. If you make changes to them, you will be prompted to save your changes to a new template.*

For the purposes of this tutorial, we will create a new template.

- Click the **Edit Report Template** icon  to display the **Template Editor** pane.

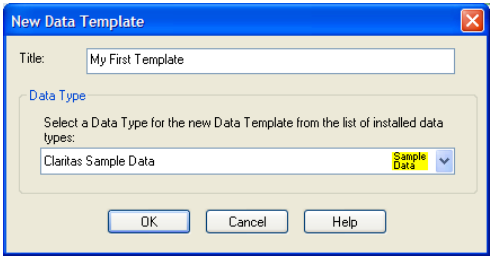


- Click the auto-hide pushpin icon  to lock the dialog in position.

The **Template Editor** pane contains the following tabbed pages:

Category Lines	Control contents and appearance of individual lines (text and numerical content, font, indentation. etc.)
Category	Control contents and appearance of entire category (Category title, columns and sub-columns).
Template	Control properties of the entire template (title, links to database)
Macros	Define macros for shorthand representation of complex formulae.
Report theme	Control the overall appearance of reports (default fonts, shading, etc.)

- Select the **Template** tab and click the **New Template…** link.



- Enter a title for your template (for example, **My First Template**).

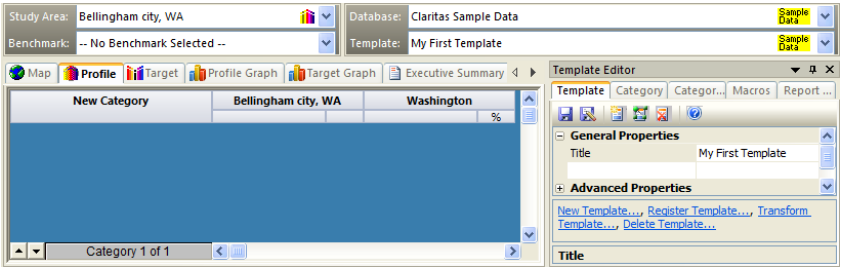
  The title you enter will appear in the **Data Template** Selector (page 143).

- Select the **Claritas Sample data** data type.

> *Because all PCensus databases contain different sets of variables, a custom template can only be used with the database for which it was created – in this case the **Claritas Sample Data**. This selection means that you can use your customized template for any project that uses the **Claritas Sample Data.***

- Click **OK**.

  The new template contains a single category with no data lines.

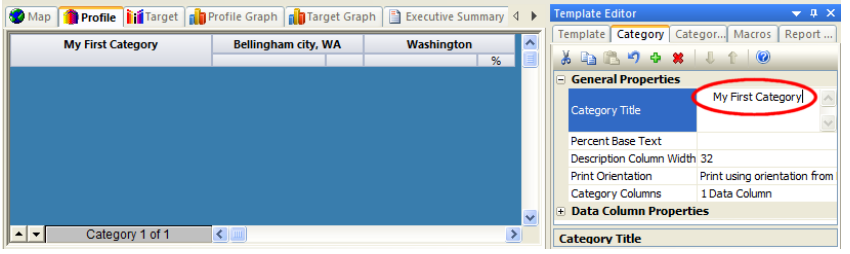


Edit the Category Heading

- Select the **Category** tab in the Template Editor.

  The new template contains a single, empty category called "**New Category**".

- Edit the **Category Title**, **(My First Category)**.



Note that as soon as you press **Enter**, the corresponding heading in the profile browser is updated.

Paste lines into a Category

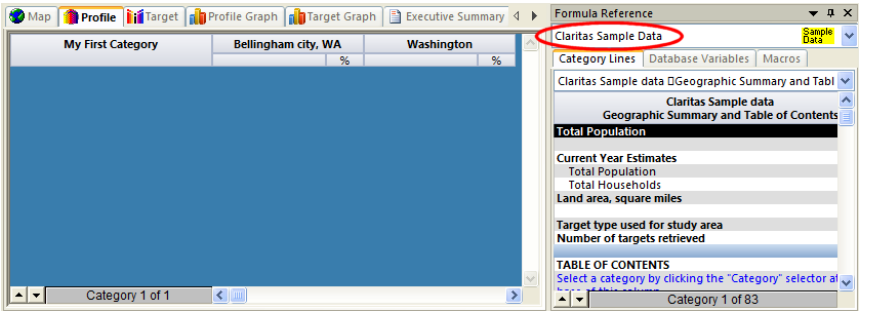
There are several methods for creating detail lines in a template category. The simplest and most intuitive method is to copy or drag lines from an existing template.

*The **Formula Reference** panel provides a convenient source of "ready-made" formulae. The Formula Reference panel contains a formatted list of all the data items in a selected template.*

Click the **Formula Reference** fly-out button in the right-hand margin of the PCensus window and lock it in position with the pushpin icon.

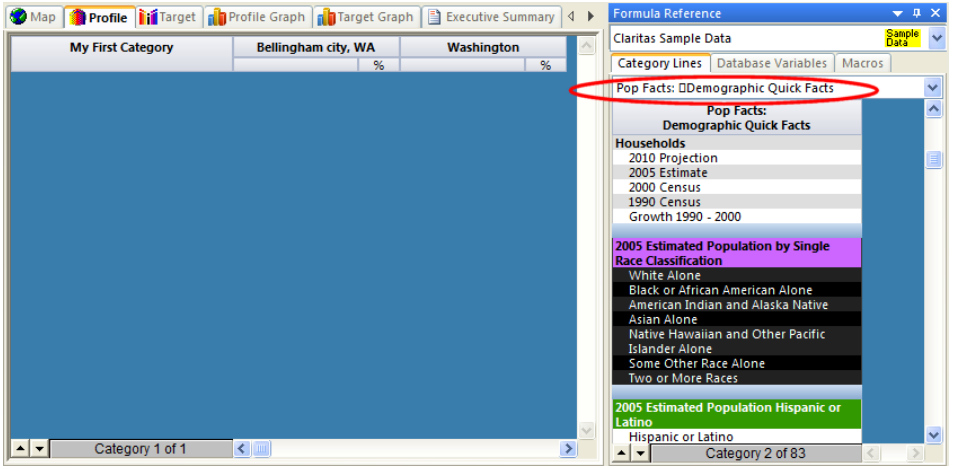
As you become familiar with the interface, you will find that fly-outs can be used quickly and efficiently without locking.

Select the template that contains the line or lines you wish to copy (in this case "**Claritas Sample Data**").

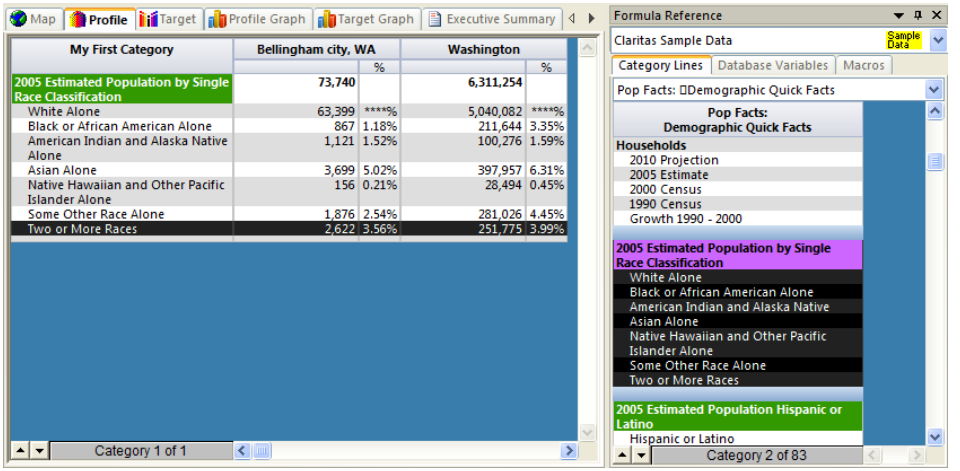


*Each data template refers to one specific database (In this case **Claritas Sample Data**). You cannot paste variables from a database into a template that refers to a different database.*

- In the **Category Lines** tab, select the category containing the lines you wish to include in your custom template (e.g. **Demographic Quick Facts**), and highlight them by dragging the mouse.



- Drag the selected lines into the profile browser.



In the illustration, note that the default column widths do not allow the percentage values to display completely; they are replaced by asterisks. This can easily be corrected by dragging the vertical lines to increase the column width.

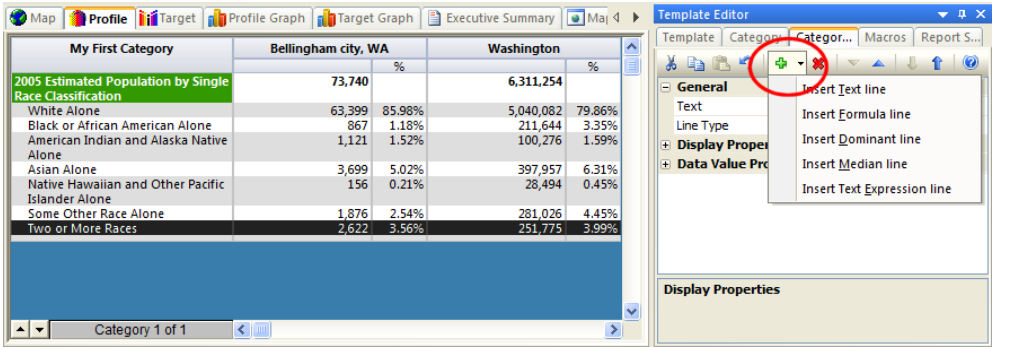
Organize the lines in a Category

The **Category Lines** tab contains icons that allow you to control the contents of the category.

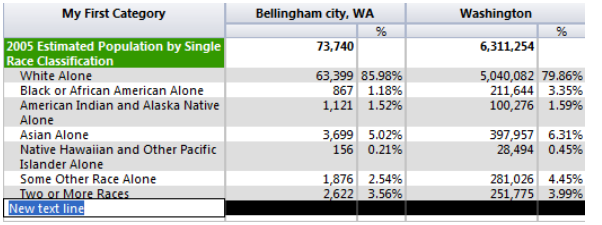
	Cut selected lines from the profile to the clipboard.
	Copy selected lines from the clipboard.
	Paste selected lines from the clipboard.
	Undo reverses the effect of your last change.
	Insert Line adds a detail line to the profile (use the pull-down to specify type of line).
	Delete the current line from the profile.
	Change the current line selection.
	Move the selected line(s) up or down in the profile.

Add Text to a Profile Category

- Click with the mouse to highlight a line in the profile browser.
- In the **Category Lines** tab of the Template Editor, click the arrow next to the **Insert Line** icon to display the types of line that can be inserted.



- Select **Insert Text Line…** to create a new line in the browser after the selected line.



When the line is inserted, it contains the placeholder text "**New Text Line**". Double-click the text in the browser to edit the entry as required.

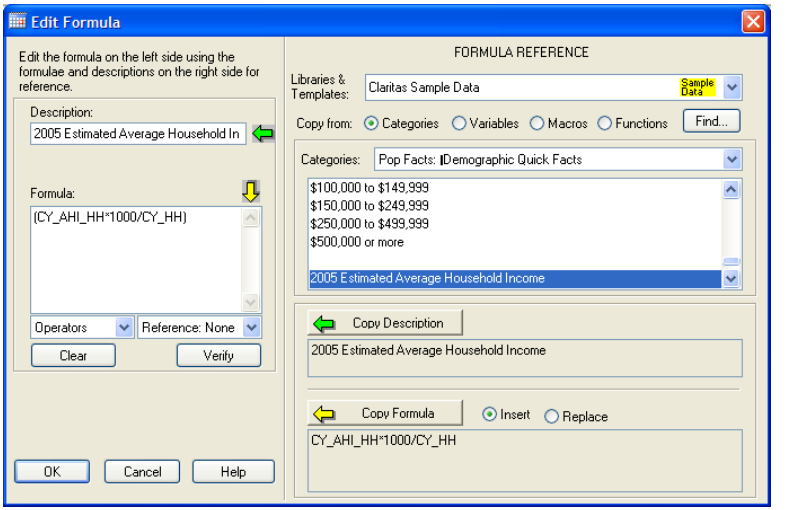
To insert a blank line in the profile, just insert a text line and delete all the text.

Create New Detail lines

The **Detail Lines** in the profile browser can be any of the following:

Text line	Contains text in the description column, but no values in the study area columns.
Formula line	Contains text in the description column and numeric values in the study area columns.
Median Line	A special type of formula line that displays a median value (e.g. median household income) computed from the distribution of incomes.
Dominant or Top "n" Line	Contains text in the description column and the study area columns. Identifies the dominant member or members of a group of formulae.
Text Expression Line	Contains Text in the description column, and the results of a text expression in the study area column.
Separator line	Line drawn to break up the category into smaller groups.
Page Break line	Forces a new page in printed reports.

- Use the **Insert Line** icon  to add a **Numeric Expression Line** to the profile and display the **Edit Formula** dialog box.



- Check that the **Claritas Sample Data** is selected in the **Libraries & Templates** list.

This is the template from which we will copy the formula.

- Click the Find... button and locate the text **Average Household Income.**

- Double-click **2005 Estimated Average Household Income** to insert the formula and description in the left-hand panel.
- Click OK.

My First Category	Bellingham city, WA		Washington	
		%		%
2005 Estimated Population by Single Race Classification	73,740		6,311,254	
White Alone	63,399	85.98%	5,040,082	79.86%
Black or African American Alone	867	1.18%	211,644	3.35%
American Indian and Alaska Native Alone	1,121	1.52%	100,276	1.59%
Asian Alone	3,699	5.02%	397,957	6.31%
Native Hawaiian and Other Pacific Islander Alone	156	0.21%	28,494	0.45%
Some Other Race Alone	1,876	2.54%	281,026	4.45%
Two or More Races	2,622	3.56%	251,775	3.99%
New text line				
2005 Estimated Average Household	50,648		67,314	

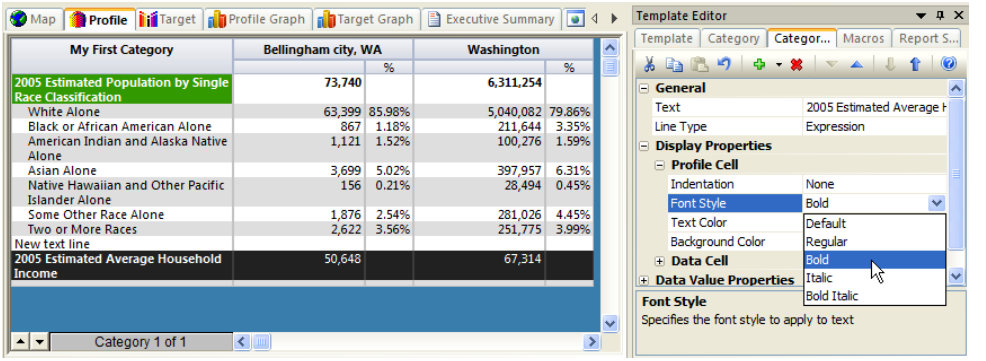
You can double-click any value entry in the profile to display the Edit Formula dialog and view the underlying formula.

Formatting Lines in the Profile

Formatting can enhance the appearance and readability of the profile browser. Here are some suggestions:

- Use bold lettering for headings.
- Indent groups and sub-groups of data.
- Use color or italics to emphasize specific lines.

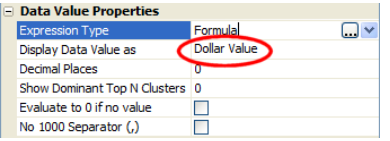
*The default appearance of the Profile, for example alternate line shading, is determined by the current report style, as selected in the **Report Styles** tab of the template editor.*



- Expand the **Display Properties** and **Profile Cell** sections in the **Category Lines** tab. Note that the **Data Cell** section allows formatting changes in the Data columns of the profile.
- Highlight a line in the profile, and change the **Font Style** to **Bold**.

*Notice that the change is immediately reflected in the browser. All of the formatting controls (for example **Font Style** and **Text Color**) can be applied to multiple selected lines.*

The **Data Value Properties** entries in the Category Line tab control the contents of the profile's data columns.



For example:

- Click the ... button in the Expression Type entry to display the Edit Formula dialog.
- Set **Display Data Value as** to "**Dollar Value**" to add a "**$**" sign to a numeric value.
- Change the number of decimals to display for a numeric value.

Entering a negative number of decimal places will round the value to the specified level. For instance, **-3** will cause the value **1,234,567** to display as **1,235,000**

The **Percent/Index Properties** entries let you identify a line as a **Percent Base** or a **Percent of...** value in the percentage column (page 166).

*The entries in the **Export** tab do not affect the appearance of the profile. They define the format of the Pointfile (page 131) that will be exported when this category is selected for export.*

Saving Your Changes

PCensus will automatically prompt you to save the changes to your customized template when you close the project or select another template. You can also save your work at any time by clicking the **Save Template** icon  .

Advanced Data Types in the Profile

PCensus provides special types of data items that can be used in Profile reports (and Lifestyles): the **Median** and the **Dominant Group**.

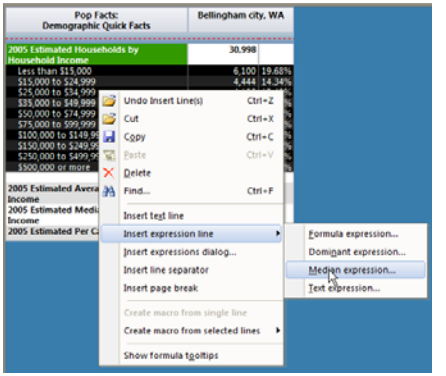
Although the template editor provides the necessary tools to create these types, it is more likely that you will be able to paste suitable entries from a supplied template. However, we will briefly describe the ways in which the types are implemented.

To see how these data types are used, select the **Claritas Sample Data** in the **Template Selector**.

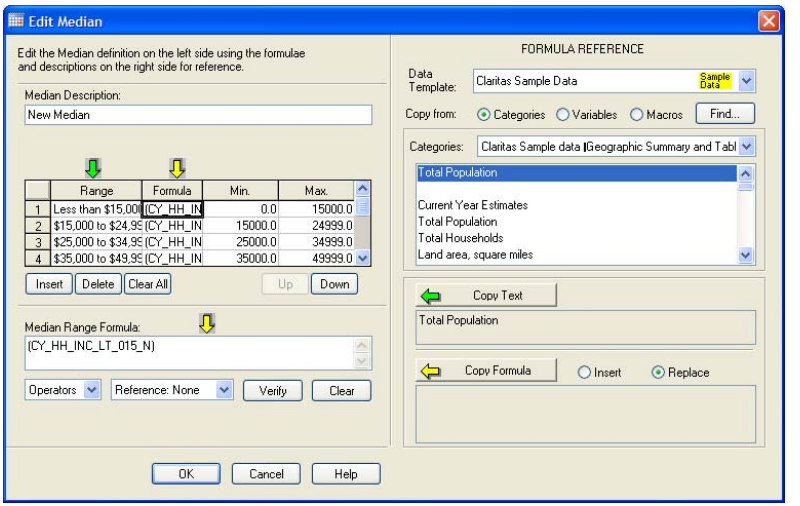
Median Values

The **Median** value type allows calculation of medians based on the distribution of values in a population.

*The **Median** is an important statistical measure indicating the mid-point of a distribution. For example, if the **Median Household Income** in an area is **$50,000**, there are equal numbers of households above and below this level.*



- In the **Pop-Facts: Demographic Quick Facts** category, highlight all the income ranges as shown by dragging the mouse cursor.
- Right-click in the highlighted selection and select **Insert Expression Line** and **Median Expression**.



The **Edit Median** dialog box associates each variable that defines a distribution class with the limits of the class. The associations are populated automatically, using the data for each selected class in the profile. For

example, **CY_HH_INC_LT_015_N** represents the number households with income in the range $0 to $15,000.

PCensus uses this information to calculate the income level where there are equal numbers of households with lower and higher incomes. This value is displayed as the **Median**.

➢ Click OK to insert the **New Median** line in the profile.

Pop Facts: Demographic Quick Facts	Bellingham city, WA	
2005 Estimated Households by Household Income	30,998	
Less than $15,000	6,100	19.68%
$15,000 to $24,999	4,444	14.34%
$25,000 to $34,999	4,182	13.49%
$35,000 to $49,999	4,964	16.01%
$50,000 to $74,999	5,343	17.24%
$75,000 to $99,999	2,663	8.59%
$100,000 to $149,999	2,158	6.96%
$150,000 to $249,999	888	2.86%
$250,000 to $499,999	208	0.67%
$500,000 or more	48	0.15%
New Median	37,336	
2005 Estimated Average Household Income	$ 50,648	
2005 Estimated Median Household Income	$ 37,336	
2005 Estimated Per Capita Income	$ 21,756	

*The median values in the original template are implemented as Macros; this allows them to be used in mathematical formulae. Double-click on the value for **2005 Estimated Median Household Income** to see an example. For information on the use of macros, search for the word "macro" in the PCensus Help system.*

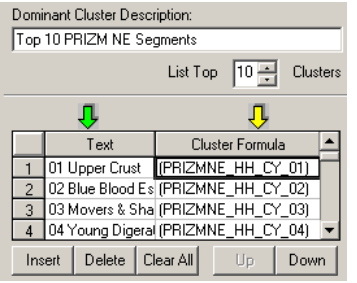
Dominant Groups

The **Dominant group** or **Top** "**n**" value type provides a method to display descriptive rather than numerical information in a profile. When a database contains grouped variables such as age ranges, income ranges, or cluster segments, we may want to display the name of the group that has the greatest number of entries.

➢ Select **Top 10 PRIZM Segments** in the profile.

PRIZM NE Household Segments	Bellingham city, WA	
	Households	%
Households by PRIZM NE Segment	30,998	
Top 10 PRIZM NE Segments	47 City Startups	13.43%
	44 New Beginnings	8.10%
	53 Mobility Blues	7.82%
	35 Boomtown Singles	5.27%
	63 Family Thrifts	5.20%
	46 Old Glories	4.88%
	52 Suburban Pioneers	4.86%
	41 Sunset City Blues	4.22%
	49 American Classics	4.09%
	12 Brite Lites, Li'l City	2.98%

➢ Double-click on the selected entry (in the data column) to display the **Edit Dominant Cluster** dialog box.



This dialog identifies the variables defining each member of the group. For example, **PRIZMNE_HH_CY_01** represents the number of households assigned to the PRIZM segment "**01 Upper Crust**".

PCensus evaluates the formula for each group, and displays the specified **Top n** results in a sorted list in the Profile column.

Benchmark and Universe "Operators"

Sometimes we may want to create a template formula that references a value for an area other than the current study area. For example, in the **Consumer Buying Power** report, we need to calculate market indexes relative to the United States. This is accomplished by including special "operators" in the formula. The available operators are:

- **Universe** - The total scope of the database (All of the United States or Canada).
- **Benchmark** - the currently defined benchmark area (see page 146). If no benchmark is selected, this defaults to the **Universe**.
- **Reference Area** - The "Reference ID" of a saved reference area (e.g. **CA**) (see page 147).

The reference operator may be prepended to any variable name in a formula. For instance, the index of total expenditure (**CBP_C001**) relative to the United States would be calculated thus:

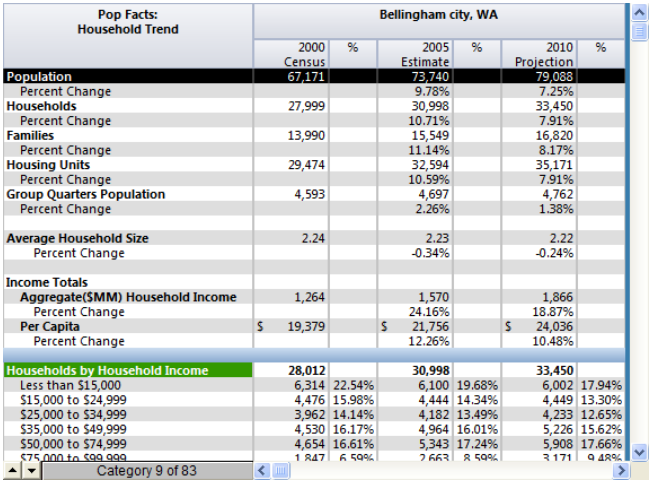
(CBP_C0001/CY_HH)/(Universe.CBP_C0001/Universe.CY_HH)*100

Multi-Column Reports

The formatting of multi-column reports is complex, and you should be comfortable with the basic operation of the template editor before you attempt to create or modify them.

In a multi-column report, each detail line can have two or more formulae associated with it, each formula defining an entry in the respective column. Each column has its own characteristics, such as the presence or absence of "percentage" entries.

As an example, select the **Pop Facts: Household Trend** report.



Pop Facts: Household Trend	Bellingham city, WA					
	2000 Census	%	2005 Estimate	%	2010 Projection	%
Population	67,171		73,740		79,088	
Percent Change			9.78%		7.25%	
Households	27,999		30,998		33,450	
Percent Change			10.71%		7.91%	
Families	13,990		15,549		16,820	
Percent Change			11.14%		8.17%	
Housing Units	29,474		32,594		35,171	
Percent Change			10.59%		7.91%	
Group Quarters Population	4,593		4,697		4,762	
Percent Change			2.26%		1.38%	
Average Household Size	2.24		2.23		2.22	
Percent Change			-0.34%		-0.24%	
Income Totals						
Aggregate($MM) Household Income	1,264		1,570		1,866	
Percent Change			24.16%		18.87%	
Per Capita	$ 19,379		$ 21,756		$ 24,036	
Percent Change			12.26%		10.48%	
Households by Household Income	**28,012**		**30,998**		**33,450**	
Less than $15,000	6,314	22.54%	6,100	19.68%	6,002	17.94%
$15,000 to $24,999	4,476	15.98%	4,444	14.34%	4,449	13.30%
$25,000 to $34,999	3,962	14.14%	4,182	13.49%	4,233	12.65%
$35,000 to $49,999	4,530	16.17%	4,964	16.01%	5,226	15.62%
$50,000 to $74,999	4,654	16.61%	5,343	17.24%	5,908	17.66%
$75,000 to $99,999	1,847	6.59%	2,663	8.59%	3,171	9.48%

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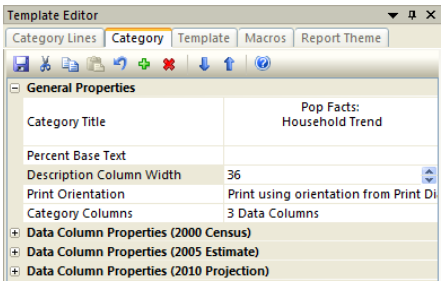
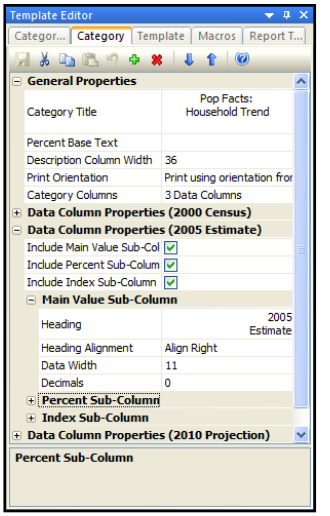
This report contains columns for three different years, each with a percentage sub-column.

The **Category** tab of the template editor includes controls to add  , remove  or re-order  the data columns. There is a separate **Data Column Properties** entry for each column.



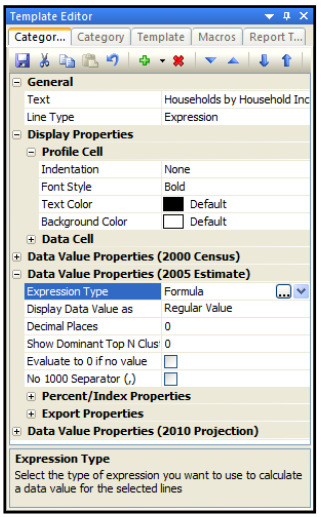
*The **Category** tab contains controls that affect the entire category (Category title, number of columns and sub-columns, etc.)*

Expand the entry for a column to see the settings for the column and its sub-columns.



The **Category Lines** tab contains corresponding entries to define the contents and appearance of data values in each column.

*The **Category Lines** tab contains controls that affect the individual lines in a category (Formulae, formatting, etc.)*

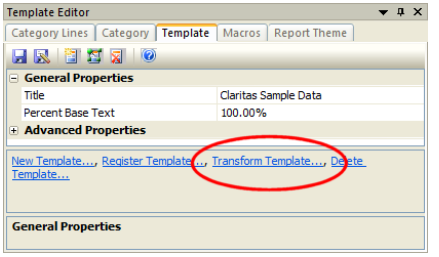


*Note: A quick way to review or change the definition of a numeric value in the report is to double-click the entry in the profile browser. This will display the **Edit Formula** dialog box for the selected entry.*

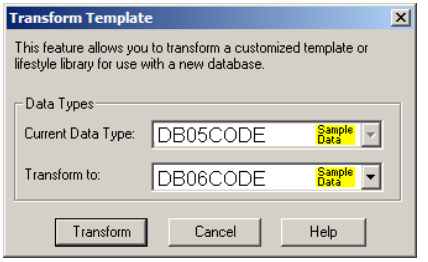
Transform a Data Template to Work with a Different Database

A given data template can only be used with one specific type of database. If you have created a custom template using current year data for the year 2008, you may wish to use it when the 2009 data release becomes available, but your template cannot be attached directly to the new database. Instead, you must use the **Transform Template** feature. Before you begin, ensure that the new database has been installed and registered.

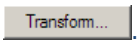
- Create a project using your custom template.
- In the **Template** tab, select **Transform Template**.



- Select the new database type with the **Transform to** selector.



The Database Type codes will contain sufficient recognizable text to identify the correct type.

- Click 

.

As a rule, templates can only be transformed between database types from the same vendor, as the data content and codes used to represent specific variables must be the same. Only variables represented by identical codes in both databases can be transformed. For example, if current year population is represented by **POP_CY** in both databases, it can be transformed. If it is **POP_05** in one database and **POP_06** in the other, the transformation will fail for this variable.

PCensus will provide an estimate of the percentage of variables that can be successfully transformed.

Note that the transformation process will not change any text descriptions in the database. The words "2005 estimated population" would need to be edited manually to read "2006 estimated population" in the transformed template.

33 Understanding the Target Browser

Objective

This section describes some advanced features of the **Target List** browser.

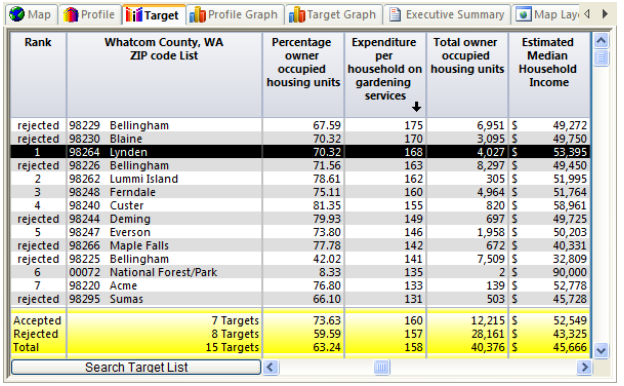
Prior Steps Required

In order to follow the operations described here, you must create a target list as described in the section **Create a Target List** starting on page 87. The examples below use the **Claritas Sample Data**.

Viewing Rejected Targets

By default, target records rejected by the lifestyle filters are not displayed in the **Lifestyle Target** list.

- Click the  button in the tool bar to make the rejected targets visible.



Rank	Whatcom County, WA ZIP code List	Percentage owner occupied housing units	Expenditure per household on gardening services	Total owner occupied housing units	Estimated Median Household Income
rejected	98229 Bellingham	67.59	175	6,951	$ 49,272
rejected	98230 Blaine	70.32	170	3,095	$ 49,750
1	98264 Lynden	70.32	168	4,027	$ 53,395
rejected	98226 Bellingham	71.56	163	8,297	$ 49,450
2	98262 Lummi Island	78.61	162	305	$ 51,995
3	98248 Ferndale	75.11	160	4,964	$ 51,764
4	98240 Custer	81.35	155	820	$ 58,961
rejected	98244 Deming	79.93	149	697	$ 49,725
5	98247 Everson	73.80	146	1,958	$ 50,203
rejected	98266 Maple Falls	77.78	142	672	$ 40,331
rejected	98225 Bellingham	42.02	141	7,509	$ 32,809
6	00072 National Forest/Park	8.33	135	2	$ 90,000
7	98220 Acme	76.80	133	139	$ 52,778
rejected	98295 Sumas	66.10	131	503	$ 45,728
Accepted	7 Targets	73.63	160	12,215	$ 52,549
Rejected	8 Targets	59.59	157	28,161	$ 43,325
Total	15 Targets	63.24	158	40,376	$ 45,666

- Click  again to hide them.

*Note that the rejected records do not affect the values in the **Cumulative** column.*

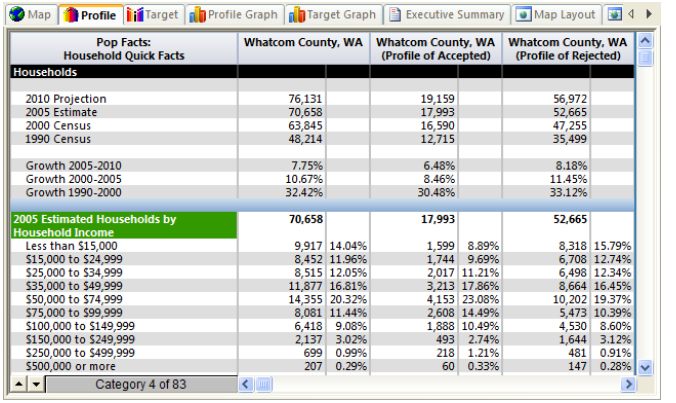
Interpreting the Target List

When a target list is created and one or more records are rejected by filters, three new columns are created in the **Profile** browser:

- A column for the **total of all targets** in the study area.
- A column for the total of all records that passed the filters (**Accepted**).
- A column for the total of all records that were **Rejected** (not passed by the filters).

*The **Accepted** and **Rejected** columns can be turned off by clicking the* Accepted/ Rejected... *button in the **Edit Lifestyle** dialog box (page 91).*

Select the **Profile** tab to view these columns.



Pop Facts: Household Quick Facts	Whatcom County, WA		Whatcom County, WA (Profile of Accepted)		Whatcom County, WA (Profile of Rejected)	
Households						
2010 Projection	76,131		19,159		56,972	
2005 Estimate	70,658		17,993		52,665	
2000 Census	63,845		16,590		47,255	
1990 Census	48,214		12,715		35,499	
Growth 2005-2010	7.75%		6.48%		8.18%	
Growth 2000-2005	10.67%		8.46%		11.45%	
Growth 1990-2000	32.42%		30.48%		33.12%	
2005 Estimated Households by Household Income	**70,658**		**17,993**		**52,665**	
Less than $15,000	9,917	14.04%	1,599	8.89%	8,318	15.79%
$15,000 to $24,999	8,452	11.96%	1,744	9.69%	6,708	12.74%
$25,000 to $34,999	8,515	12.05%	2,017	11.21%	6,498	12.34%
$35,000 to $49,999	11,877	16.81%	3,213	17.86%	8,664	16.45%
$50,000 to $74,999	14,355	20.32%	4,153	23.08%	10,202	19.37%
$75,000 to $99,999	8,081	11.44%	2,608	14.49%	5,473	10.39%
$100,000 to $149,999	6,418	9.08%	1,888	10.49%	4,530	8.60%
$150,000 to $249,999	2,137	3.02%	493	2.74%	1,644	3.12%
$250,000 to $499,999	699	0.99%	218	1.21%	481	0.91%
$500,000 or more	207	0.29%	60	0.33%	147	0.28%

We can examine the differences between the **Accepted** and **Rejected** populations to gain insight into the reasons that these populations are different. This analysis may in turn enable us to design new Lifestyles that we can use to find similar favorable targets.

*The indexing feature (page 146) can help us identify the variables that correlate to the accepted and rejected populations. When this procedure is used in conjunction with databases to which you have attached your own data (page 193), it provides a flexible method for **Penetration Analysis** (page 249).*

Zooming to a Target Record

Sometimes we may want to get more information about a specific target in the Target List; for example it may have anomalous values in one or more dimensions that we want to explain.

- Highlight a target in the list (for example, the ZIP code **98226 Bellingham**).
- Click the **View Target Profile** button  .

> *As a shortcut, you can just double-click a target. You can view profiles for any target, even if has been rejected by the filters.*

Pop Facts: Household Quick Facts	Whatcom County, WA		Whatcom County, WA (Profile of Accepted)		Whatcom County, WA (Profile of Rejected)		98226 Bellingham	
Households								
2010 Projection	76,131		19,159		56,972		15,248	
2005 Estimate	70,658		17,993		52,665		13,631	
2000 Census	63,845		16,590		47,255		11,594	
1990 Census	48,214		12,715		35,499		7,512	
Growth 2005-2010	7.75%		6.48%		8.18%		11.86%	
Growth 2000-2005	10.67%		8.46%		11.45%		17.57%	
Growth 1990-2000	32.42%		30.48%		33.12%		54.34%	
2005 Estimated Households by Household Income	**70,658**		**17,993**		**52,665**		**13,631**	
Less than $15,000	9,917	14.04%	1,599	8.89%	8,318	15.79%	1,316	9.65%
$15,000 to $24,999	8,452	11.96%	1,744	9.69%	6,708	12.74%	1,544	11.33%
$25,000 to $34,999	8,515	12.05%	2,017	11.21%	6,498	12.34%	1,629	11.95%
$35,000 to $49,999	11,877	16.81%	3,213	17.86%	8,664	16.45%	2,415	17.72%
$50,000 to $74,999	14,355	20.32%	4,153	23.08%	10,202	19.37%	3,083	22.62%
$75,000 to $99,999	8,081	11.44%	2,608	14.49%	5,473	10.39%	1,621	11.89%
$100,000 to $149,999	6,418	9.08%	1,888	10.49%	4,530	8.60%	1,457	10.69%

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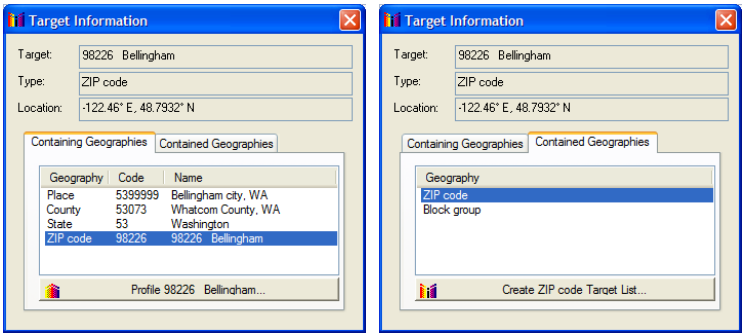
A new column has been created in the profile browser for the selected ZIP target area.

Target Properties

Right-clicking an area in the target list allows you to display the **Target Information** dialog.

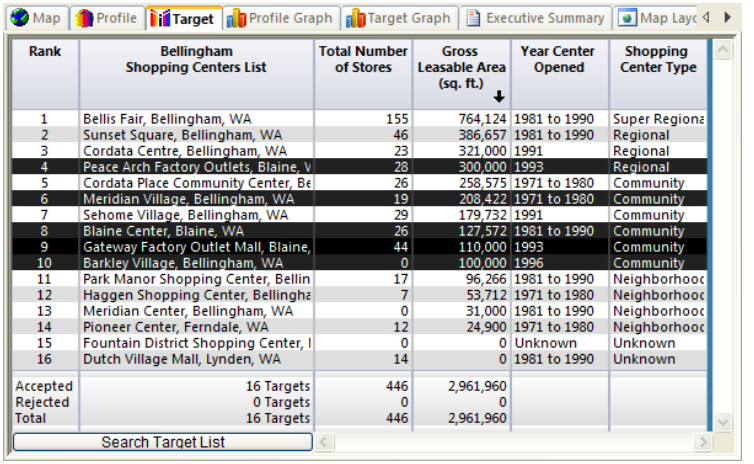


The **Contained Geographies** tab shows the component target geographies into which the selected target can be divided. For example, a ZIP Code area contains block group targets. The **Create ... Target List** button creates a target list at the selected level, using Whatcom County as the study area. This operation is called "drilling down".

The **Containing Geographies** tab lists the larger geographies of which the selected target is part; for example ZIP code 98226 is located in the Bellingham MSA , Whatcom County and in the State of Washington. The **Profile ...** button creates a profile column for the selected geography. This operation is called "drilling up".

Create Batch Sites for Selected Targets

Right-clicking in the target list allows you to create batch sites (page 225) for selected targets. This can be done with any target type, but it is most likely to be used with "point" type data such as shopping centers or imported point data (page 183).



Rank	Bellingham Shopping Centers List	Total Number of Stores	Gross Leasable Area (sq. ft.)	Year Center Opened	Shopping Center Type
1	Bellis Fair, Bellingham, WA	155	764,124	1981 to 1990	Super Regiona
2	Sunset Square, Bellingham, WA	46	386,657	1981 to 1990	Regional
3	Cordata Centre, Bellingham, WA	23	321,000	1991	Regional
4	Peace Arch Factory Outlets, Blaine, V	28	300,000	1993	Regional
5	Cordata Place Community Center, Be	26	258,575	1971 to 1980	Community
6	Meridian Village, Bellingham, WA	19	208,422	1971 to 1980	Community
7	Sehome Village, Bellingham, WA	29	179,732	1991	Community
8	Blaine Center, Blaine, WA	26	127,572	1981 to 1990	Community
9	Gateway Factory Outlet Mall, Blaine,	44	110,000	1993	Community
10	Barkley Village, Bellingham, WA	0	100,000	1996	Community
11	Park Manor Shopping Center, Bellin	17	96,266	1981 to 1990	Neighborhooc
12	Haggen Shopping Center, Bellingha	7	53,712	1971 to 1980	Neighborhooc
13	Meridian Center, Bellingham, WA	0	31,000	1981 to 1990	Neighborhooc
14	Pioneer Center, Ferndale, WA	12	24,900	1971 to 1980	Neighborhooc
15	Fountain District Shopping Center, I	0	0	Unknown	Unknown
16	Dutch Village Mall, Lynden, WA	14	0	1981 to 1990	Unknown
Accepted	16 Targets	446	2,961,960		
Rejected	0 Targets	0	0		
Total	16 Targets	446	2,961,960		

Select the targets to be used as batch locations (to make multiple selections you can drag the mouse or use Shift-click or Ctrl-click combinations). Right-click in the selection to start the Batch site Wizard. You can optionally create a new project; this allows you to select a different database (for example to retrieve demographic data for each shopping center).

Map | Profile | Target | Profile Graph | Target Graph | Executive Summary | Map Layout | Map Tables

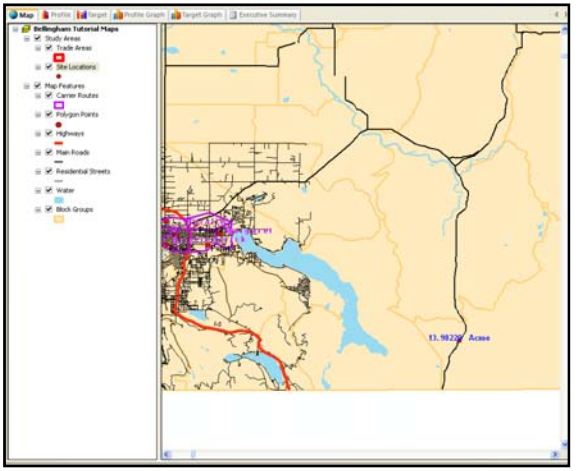
Pop Facts: Demographic Quick Facts	Peace Arch Factory Outlets, Blaine, WA 0 - 5 mi		Meridian Village, Bellingham, WA 0 - 5 mi		Blaine Center, Blaine, WA 0 - 5 mi		Gateway Factory Mall, Blaine, 0 - 5 mi
Population							
2010 Projection	13,734		95,389		12,282		13,809
2005 Estimate	12,798		88,777		11,296		12,867
2000 Census	11,742		80,681		9,939		11,804
1990 Census	8,629		64,075		6,581		8,671
Growth 1990 - 2000	36.08%		25.92%		51.02%		36.14%
Households							
2010 Projection	5,149		39,454		4,865		5,171
2005 Estimate	4,798		36,497		4,491		4,819
2000 Census	4,397		32,889		3,963		4,416
1990 Census	3,136		25,538		2,662		3,150
Growth 1990 - 2000	40.20%		28.78%		48.90%		40.17%
2005 Estimated Population by Single Race Classification	**12,798**		**88,777**		**11,296**		**12,867**
White Alone	11,644	90.98%	77,043	86.78%	10,140	89.76%	11,700
Black or African American Alone	122	0.96%	960	1.08%	146	1.29%	124

Category 2 of 83

Locating a Target on the Map

Sometimes we may want to see where a specific target is located.

- Highlight the ZIP code target **98220 Acme**.
- Click the **View Target on Map** button  .

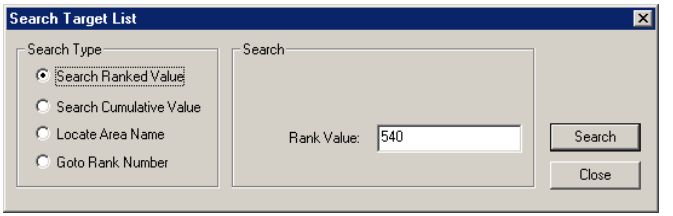


The Map zooms to the location of the target and marks it with a symbol and a label.

Searching the Target List

The Target List browser provides a Search tool that allows you to jump to a specific target.

- Select the **Target List** tab.
- Click the Search Target List button at the base of the window.



This dialog box provides a number of methods for jumping to a specific record in a long list of targets. Select the method by clicking the buttons in the **Search Type** panel.

- **Search Ranked Value**: Jump to the first target where the value of the ranking dimension is greater (or less if rank is descending) than a specified number.

For example, the first block group with average income greater than $40,000.

- **Search Cumulative Value**: Jump to the first target where the cumulative value of a dimension evaluates to a number greater (or less) than a specified number.

This is a quick way to identify a group of favorable targets that together contain a specified population; for example the block groups in a study area that contains the wealthiest 5,000 families.

- **Locate Area Name**: Jump to the first target who's **Area Name** matches the typed text.

*This feature allows you to check whether a specific area passed the defined filters; for example, is **Cowlitz County** in the target list?*

- **Go to Rank Number**: Jump to the target at a specified position in the list.

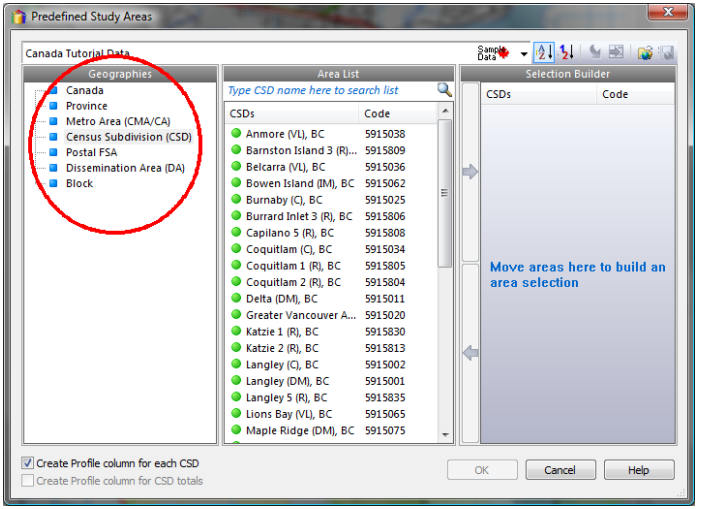
For example, find the 10th wealthiest block group.

34 Create Custom Geographies

Background

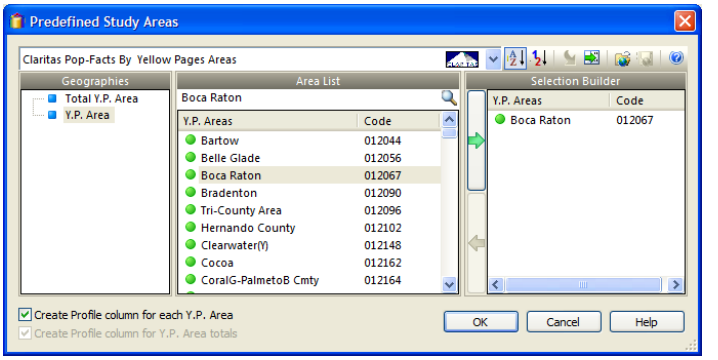
Each PCensus database contains a number of predefined geographical summary levels such as Province, Census Subdivision, Postal FSA or Dissemination Block. The summary levels present in a database define the "Target Types" that can be used for creating target lists (Chapter 20), point files (Chapter 27) or for matching with mapped boundaries to create thematic maps (Chapter 16).

The target types available in a given database are listed in the **Geographies** panel of the Database Explorer or the Predefined Study Area dialog:



A fundamental feature of PCensus is its ability to re-aggregate data from a collection of target records whose centroids are located within an area defined by a polygonal boundary in a map layer (see Chapter 12). The Custom Geography Wizard extends this capability by automatically re-aggregating data against each of the boundaries contained in a map layer and using the resulting aggregations to create a new PCensus database containing a target type representing the boundaries.

The Custom Geography Wizard can be used with any type of mapped boundary. Common uses include school districts, franchise areas, postal carrier routes or "Yellow Pages" coverage areas. Once a new geography has been created, it will appear in the Predefined Study Area dialog and the Area List will contain an entry for each boundary.



We can use the custom areas in exactly the same way that we would use the standard target types like Census Subdivisions or Postal FSA's, without further reference to a map layer.

Custom Geographies and Thematic Mapping

The introduction of the PCensus Custom Geography feature has important implications in creating thematic boundary maps using boundary types that do not correspond to standard geographical areas.

PCensus provides two methods for assigning data to boundaries to create thematic maps:

- Relating data targets to boundaries by "code matching". This requires a one-to-one correspondence between boundary objects in the map layer and target records in the PCensus database. This is the preferred method for thematic mapping, as it provides an unambiguous data linkage, and avoids the requirement to re-aggregate non-additive data values such as averages and medians.
- Assigning data targets to boundaries by point-in polygon matching. This method can be used when map boundaries do not correspond to a target type in the PCensus database. Typically, PCensus would calculate thematic values by aggregating multiple block-level targets contained in each map boundary. Use of this method is discouraged, as there is often no reliable method for re-aggregating non-additive data.

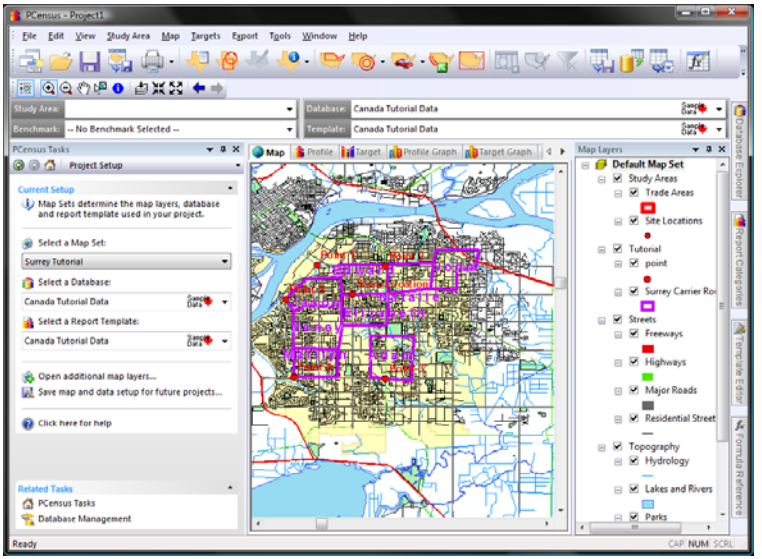
The Custom Geography feature is guaranteed to create a database containing target records that correspond exactly to the mapped boundaries. By creating a custom geography prior to thematic mapping, we can always use the preferred code-matching method to assign the database point objects to the mapped boundaries.

For more discussion of this topic, see Chapter 15, Thematic Mapping with Boundaries.

Steps to Create a Custom Geography

To illustrate this process, we will use the very simple example of the newspaper carrier areas included with the Canada Tutorial Maps.

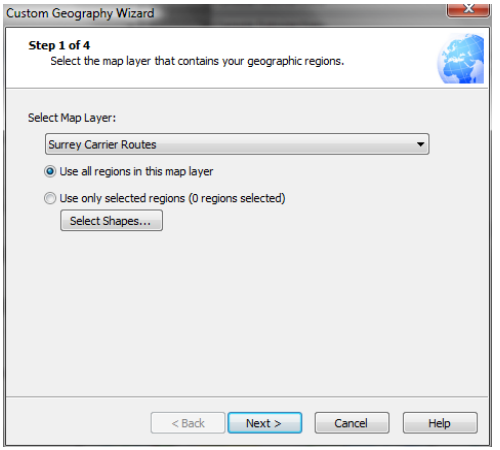
➢ Start a new PCensus Project, selecting the **Surrey, BC** map set in the PCensus task pane.



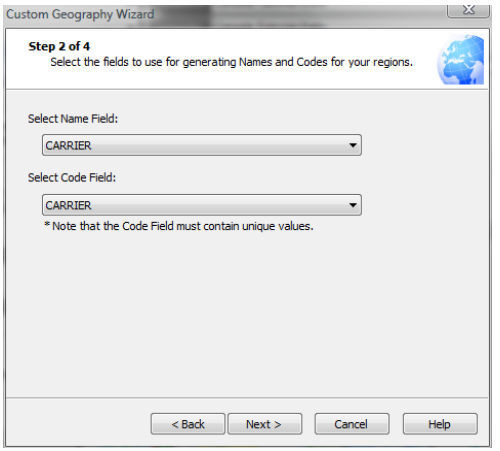
In this case, there are seven boundaries in the map layer, but in practice, the technique can be used with any number of boundaries.

In order to use a map layer, it must have the following attributes:

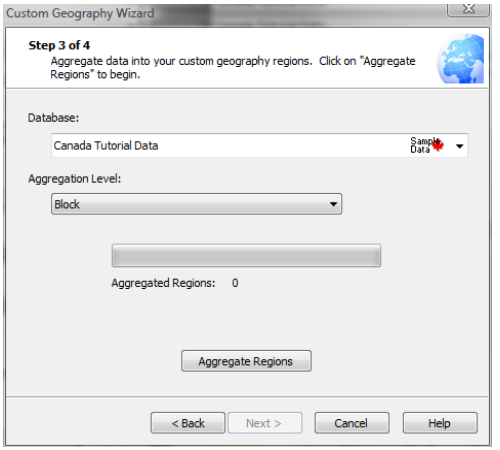
- Each record must have a data field containing a unique identifying code.
- Ideally, each record will have an identifying name field, preferably unique.



- Select **Custom Geography Wizard** from the PCensus **Tools** menu and advance to the **Step 1** wizard page.
- Select the **Surrey Carrier Routes** Map Layer.
- Click **Next**.



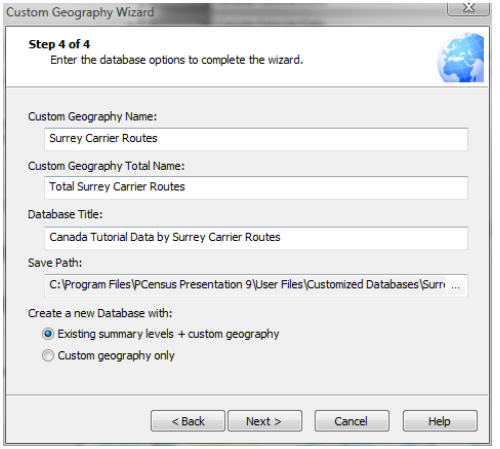
- Select **Carrier** as the **Name** field.
- Select **Carrier** as the **Code** field.
- Click **Next**.



- Select the **Canada Tutorial Data** database.
- Select **Block** as the **Aggregation Level**.
- Click **Aggregate Regions** to begin the processing.

The **Aggregation Level** defines the type of targets that will be aggregated into each boundary. For very small boundaries (for example postal walks), block level will give the best results. However, for larger types such as Yellow Pages boundaries, it may be preferable to use larger targets, such as census tracts, Postal FSA's, or even Census Subdivisions, as the precision provided by blocks may not be warranted. The use of larger targets can make a very significant difference in the time required to aggregate the data.

For maps with many boundaries, the Custom Geography process may take several hours.



- Edit the identifying information for the database.
- Click **Next**.

- **Custom Geography Name** is the name used for the new aggregation level. It will appear in the **Predefined Study Area** dialog and in **Database Explorer**.
- **Custom Geography Total Name** is an additional aggregation level that contains the total of all boundaries.

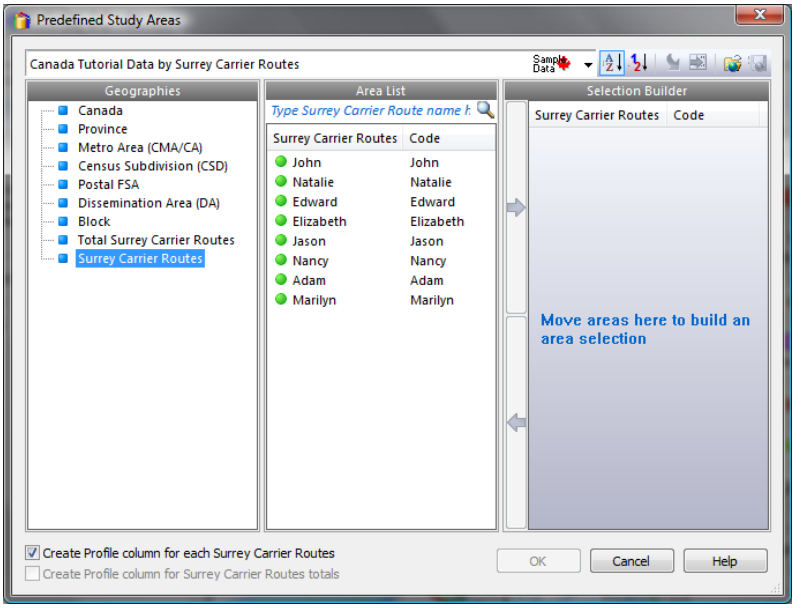
*Note: If boundaries overlap, the values retrieved for the **Total** level will be larger than expected due to multiple counting.*

- **Database Title** will appear in the list of installed databases.

Using the Custom Geography

To use the custom geography in a project:

- Set up a new project, selecting the newly created **Canada Tutorial Data by Surrey Carrier Routes** database.
- Open the Predefined Study Area dialog.



Note the two new entries in the Geographies column, **Total Surrey Carrier Routes** and **Surrey Carrier Routes**. When you select the latter entry, the names of the areas appear in the **Area List** column.

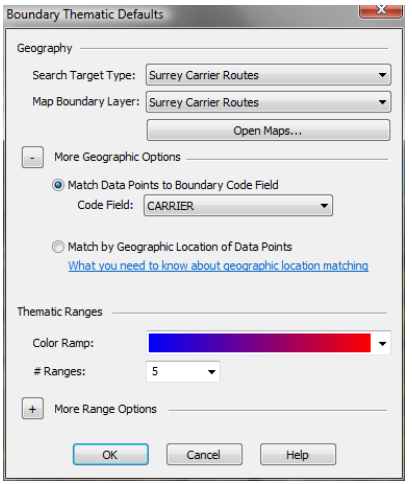
- Create a profile column for **Edward**.

Map | Profile | Target | Profile Graph | Target Gr

2001 Census Census Snapshot	Edward	
Total Population	**12,090**	**% base**
Males	6,073	50%
Females	6,017	50%
2001 Population by Age	**12,090**	**% base**
0 to 4 years	752	6%
5 to 19 years	2,264	19%
20 to 24 years	741	6%
25 to 34 years	1,710	14%
35 to 44 years	2,105	17%
45 to 54 years	1,685	14%
55 to 64 years	1,085	9%
65 to 74 years	883	7%
75 to 84 years	519	4%
85 years and over	200	2%
Average age of population	36.7	
Median age	37.2	
Dominant age group	5 to 19 years	19%
Families	**3,125**	**% base**
Persons per family	3.1	
Two-parent families	2,442	78%
With no children at home	958	31%
With children at home	1,502	48%

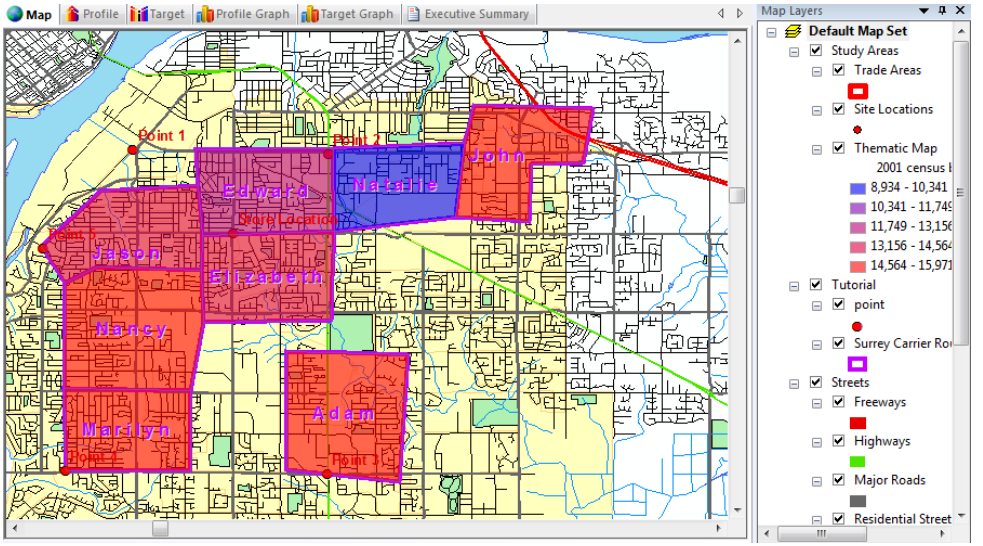
As a further example, we will use the custom geography to create a thematic map.

- Click **Defaults:** in the **Boundary Thematics** Task pane.



- Set the **Search Target Type** to **Surrey Carrier Routes** to select our custom geography.
- Set the **Map Boundary Layer** to **Surrey Carrier Routes** to select the corresponding map layer.
- Select the option to **Match Data Points to Boundary Code Field**.
- Click OK to close the dialog.

Click **Create thematic for current map view**.



35 Using Your Own Data in PCensus

Background

PCensus provides three methods for importing user-supplied data:

- Geocoded Point Data (data records representing individual locations specified by latitude/longitude coordinates or by street address) can be imported to create a "point" database, preserving data for the individual records.
- Geocoded Point Data can be imported to create a labeled map layer.
- Data records characterized by standard codes that match those in a PCensus database (for example ZIP codes or block group FIPS codes) can be appended to the corresponding PCensus records to create an "extended" database.

The preferred method will depend on the content of the imported data and the purpose for which it will be used. If necessary, the methods can be combined to exploit the strengths of each method simultaneously. For example, we can attach point data to a PCensus database as a new "point" target type and simultaneously append summarized data to each target record in the PCensus data.

It is recommended that the "point data" and "append data" methods be combined whenever the imported data is suitable (i.e. it contains both coordinate data and a "key" field such as block group or ZIP code). Combining the methods allows us to access individual records and also to summarize to higher geographical level s such as county or state.

Import records as Point Data

Organizations often maintain and use databases containing location-based data (i.e. records representing geographical locations characterized by latitude/longitude coordinates or by street addresses).

If the imported database does not contain coordinates, PCensus can geocode the locations based on street addresses in the file. Alternatively, there are many programs and services available for geocoding.

A geocoded database can be imported directly into PCensus and data can be retrieved from the resulting database for geographical study areas (circles, drive times, or polygons) or for target lists.

Every record in the imported database will be visible in a target list, identified by name, in contrast to databases created by extending a standard PCensus

database (page 193). The latter method "rolls up" (summarizes) the individual data records into areas defined in the PCensus database.

A limitation on PCensus databases created by importing geocoded data is that such data lacks the implicit geographical hierarchy of standard PCensus databases. In other words, data cannot be retrieved for predefined areas like places or counties. This limitation can be avoided by combining the "point data" and "append data" import methods.

Extend an Installed PCensus Database

The PCensus **Data Import** feature lets you append your own data to an existing PCensus database. After you have imported your data, you will be able to create profiles, targets, maps, and graphs using your data, either on its own or in conjunction with PCensus demographic data.

A typical use for this feature would be in customer penetration studies (page 249). In this usage, you can attach your customer file to a PCensus database, and then create a target report comparing your customer counts to the population at large. You can quickly analyze the demographic profiles of the areas where your best (or worst) customers live and then use PCensus targeting to find similar areas.

The import process matches standard codes in your data to corresponding codes in a PCensus database. For example, if the data that you want to import contains addresses, you could match the FSA code for each record with the corresponding PCensus FSA code.

Mapping Point Data

PCensus provides the capability to read data from standard database formats (xls, dbf, mdb, etc.) and display labeled symbols on a map. Each symbol represents a point defined in the database.

If the database contains latitude/longitude coordinates, the map points can be created directly. Failing this, records can be geocoded on the basis of address.

Types of Imported Data

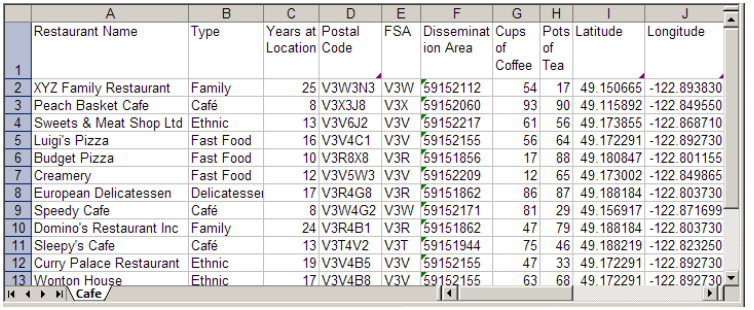
Data can be imported into PCensus from files in Excel, dBase or Access format. In a typical database, each record will represent a single geographical

location, represented by latitude/longitude coordinates or by street address. Typical examples are:

- Address lists of clients or contacts.
- Lists of business locations (bank branches, physicians' offices, etc.).
- Geographically indexed demographic data, such as Census data, for Canada, the United States or other countries.

We will illustrate this chapter and the chapters that follow with a typical file (in xls format) containing records representing bank branches in Whatcom county, WA. The file is installed with PCensus in this folder:

C:\Program files\PCensus\Tutorial Files



	A	B	C	D	E	F	G	H	I	J
1	Restaurant Name	Type	Years at Location	Postal Code	FSA	Dissemination Area	Cups of Coffee	Pots of Tea	Latitude	Longitude
2	XYZ Family Restaurant	Family	25	V3W3N3	V3W	59152112	54	17	49.150665	-122.893830
3	Peach Basket Cafe	Café	8	V3X3J8	V3X	59152060	93	90	49.115892	-122.849550
4	Sweets & Meat Shop Ltd	Ethnic	13	V3V6J2	V3V	59152217	61	56	49.173855	-122.868710
5	Luigi's Pizza	Fast Food	16	V3V4C1	V3V	59152155	56	64	49.172291	-122.892730
6	Budget Pizza	Fast Food	10	V3R8X8	V3R	59151856	17	88	49.180847	-122.801155
7	Creamery	Fast Food	12	V3V5W3	V3V	59152209	12	65	49.173002	-122.849865
8	European Delicatessen	Delicatessei	17	V3R4G8	V3R	59151862	86	87	49.188184	-122.803730
9	Speedy Cafe	Café	8	V3W4G2	V3W	59152171	81	29	49.156917	-122.871699
10	Domino's Restaurant Inc	Family	24	V3R4B1	V3R	59151862	47	79	49.188184	-122.803730
11	Sleepy's Cafe	Café	13	V3T4V2	V3T	59151944	75	46	49.188219	-122.823250
12	Curry Palace Restaurant	Ethnic	19	V3V4B5	V3V	59152155	47	33	49.172291	-122.892730
13	Wonton House	Ethnic	17	V3V4B8	V3V	59152155	63	68	49.172291	-122.892730

Cafe

The data fields (columns) in this file can be classified as follows:

Classification		Type	Name
Identification Fields		Text	Restaurant Name City Postal code Province
Location Fields		Numeric	Latitude Longitude
Key Fields (Suitable for linking to records in a PCensus database)		Text	Postal Code Dissemination Area
Data Fields	Numeric Data	Numeric	Cups of Coffee Pots of tea
	Numeric Data (non-additive)	Numeric	Years at location
	Text Data or Unique Value Data	Type Postal Code, FSA	Type Postal Code, FSA

PCensus can import these types of data fields:

- **Numeric Data** is data than can be meaningfully aggregated between records; we can add the total amounts on deposit for all the banks in a study area to calculate a useful number.
- **Non-additive Numeric Data** cannot be meaningfully aggregated across records. Calculating the sum of "years in business" for all the banks in an area would not generally be useful. However, we can calculate the "average years in business" using this entry.
- **Text Data** such as names, addresses or similar attributes.
- **Unique Value Data** specifies an attribute for each data record, usually as a word or phrase. "Bank type" may contain "Commercial", "Savings & Loan" or other values. PCensus examines the data to find all possible variants of the contents, and creates a numeric data field for each one. The content of each field is incremented every time the corresponding text is encountered in the import data. This allows the text to be displayed in profile reports using the "dominant group" data type.
- **Segment Codes** such as PRIZM codes. (See chapter 45, Using Segmentation Data for Customer Analysis.)

Data Import Examples

The chapters that follow provide step-by-step examples of the techniques for importing data:

- Chapter 36, Importing Point Data.
- Chapter 37, Appending Your Data to a PCensus Database.
- Chapter 38, Importing Data to Create a Point Map.
- Each of these examples makes use of a sample database of restaurant locations in Surrey, BC. Although the processes are treated separately in these chapters, they can be combined as required: for example to create a database containing both point level and summarized data in a single step.

36 Importing Point Data

Objective

Import point data into PCensus for retrieval by drive time, circle or polygon study areas, and for creating target lists. The resulting database will contain records for each point, without reference to an installed PCensus database.

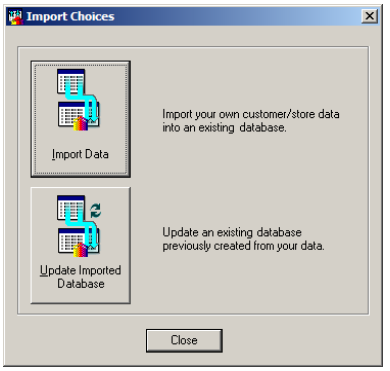
Prior Steps Required

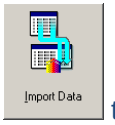
Create or obtain a database in a format supported by PCensus (Excel, dBase, or Access), preferably containing records geocoded with Latitude and Longitude coordinates. An example file has been provided for demonstration purposes. This file contains data for Restaurant locations in Surrey, BC.

To understand the concepts described in this chapter, you should first read these chapters:

- Profiling Drive Time Areas (page 39)
- Create a Target List (page 87).

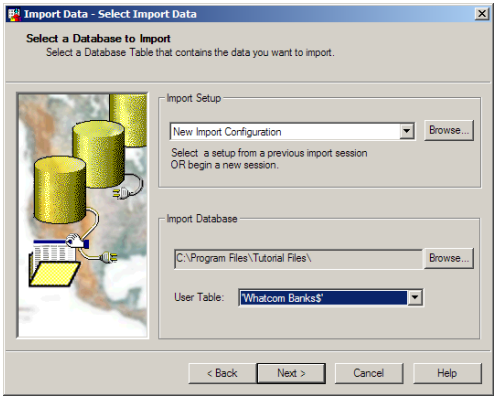
Steps in Creating a PCensus Database



- Click the **Import** icon  in the PCensus tool-bar to display the **Import Choices** dialog box, or select **Import Wizards** from the **Tools** menu.
- Click 

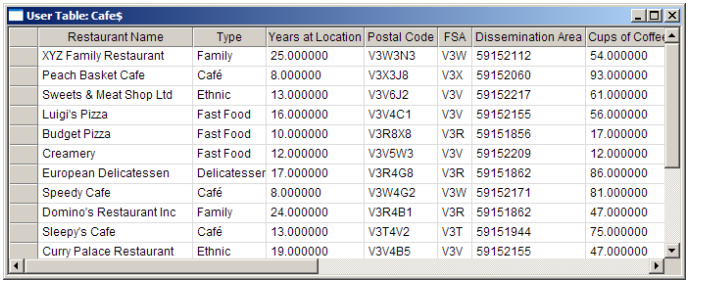
to start the **Create Database Wizard**.
- Advance to the **Select Import data** Wizard page.

Select the Data to Import



- Click the Browse... button in the **Import Database** panel.
- *Select* **Files of Type: Excel (*.xls).**
- *Open file* **Restaurant.xls** *in the* ***Program Files\PCensus\Tutorial Files*** *folder*.

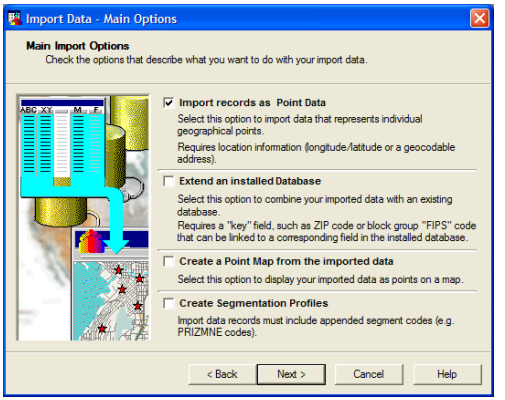
*The **Import Setup** panel lets us re-use similar import configurations from previous sessions. It is not used the first time we import data.*



Restaurant Name	Type	Years at Location	Postal Code	FSA	Dissemination Area	Cups of Coffe
XYZ Family Restaurant	Family	25.000000	V3W3N3	V3W	59152112	54.000000
Peach Basket Cafe	Café	8.000000	V3X3J8	V3X	59152060	93.000000
Sweets & Meat Shop Ltd	Ethnic	13.000000	V3V6J2	V3V	59152217	61.000000
Luigi's Pizza	Fast Food	16.000000	V3V4C1	V3V	59152155	56.000000
Budget Pizza	Fast Food	10.000000	V3R8X8	V3R	59151856	17.000000
Creamery	Fast Food	12.000000	V3V5W3	V3V	59152209	12.000000
European Delicatessen	Delicatesser	17.000000	V3R4G8	V3R	59151862	86.000000
Speedy Cafe	Café	8.000000	V3W4G2	V3W	59152171	81.000000
Domino's Restaurant Inc	Family	24.000000	V3R4B1	V3R	59151862	47.000000
Sleepy's Cafe	Café	13.000000	V3T4V2	V3T	59151944	75.000000
Curry Palace Restaurant	Ethnic	19.000000	V3V4B5	V3V	59152155	47.000000

The contents of the file are displayed in a new window for verification.

- Click Next >.

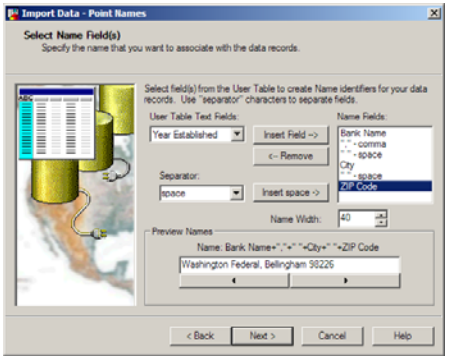


- Check Import records as Point Data.
- Click Next >.

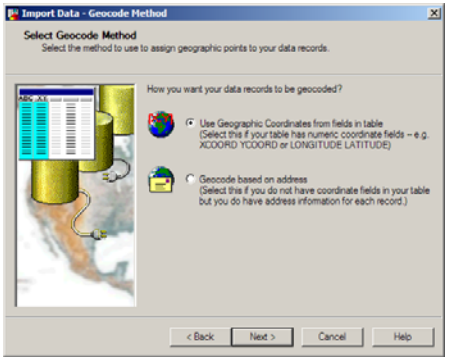
Identify the Area Names

The next dialog box allows you to specify the name that will be used to represent each record in PCensus.

*In this case the "**Bank Name**" field will be sufficient, but if necessary we can build complex names of the form <city><comma><space><state>.*



- Select **Restaurant Name** in the **User Table Text Fields** list and click Insert Field --> to transfer it to the **Name Fields** box.
- Add any other fields or punctuation required to specify unique names as shown.
- Click Next > to advance to the **Geocode Method** dialog.



- Select Use Geographic Coordinates from fields in table.
- Click Next >.

Geocoding

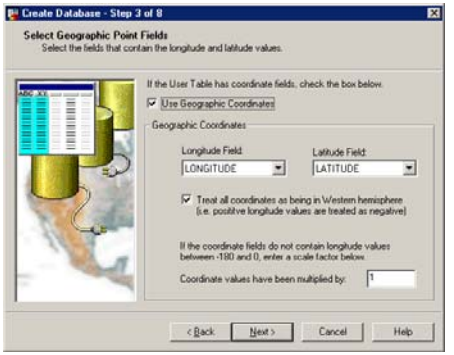
If your data file is not geocoded (i.e. it does not contain latitude and longitude coordinates for each record), it may still be possible to create a PCensus database. PCensus can geocode databases internally, provided that the data records contain street addresses.

To use the internal geocoder, select Geocode based on address and follow the steps to identify the necessary address fields and map layers.

The success of the geocoding process depends on several factors. For example, the consistency with which the street addresses are specified in the database and the quality of the street network table used can both affect results.

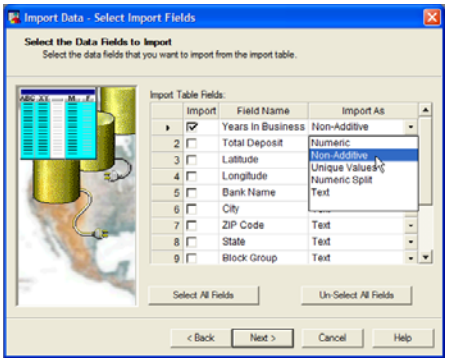
The geocoder works interactively, allowing you to resolve ambiguities and spelling errors in the addresses, but for large or problematic databases it is recommended that a dedicated geocoding service or software application be used to geocode the file before importing it into PCensus.

Identify the Geographic Coordinates



- Verify that the latitude and longitude fields are correctly assigned.
- Click Next >.

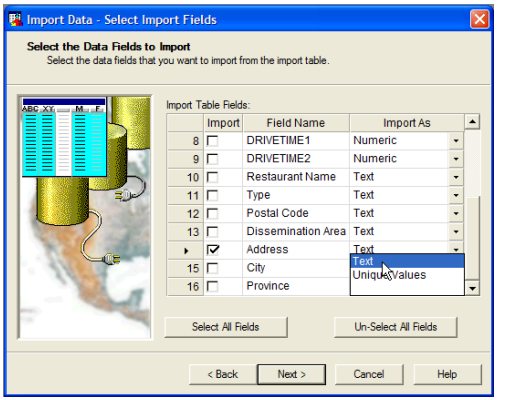
Identify the Variables in the Imported Data



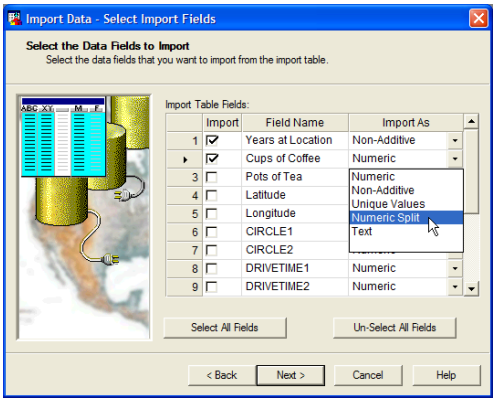
This dialog allows us to select the variable we wish to import, and to specify how each variable will be treated.

- Check the box for **Years at Location**.
- Select **Non-additive** from the **Import As** pulldown.

Years at Location is a numeric field, but it would not be appropriate to aggregate it for all banks in a study area. The Non-Additive attribute will cause this value to be averaged instead of aggregated.



- Check the box for **Address**
- Select Text from the Import As pull-down list.

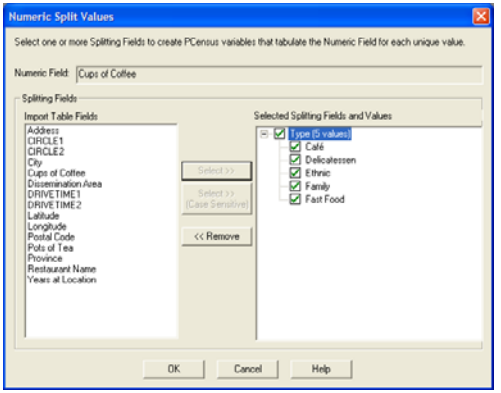


- Check the box for **Cups of Coffee**.

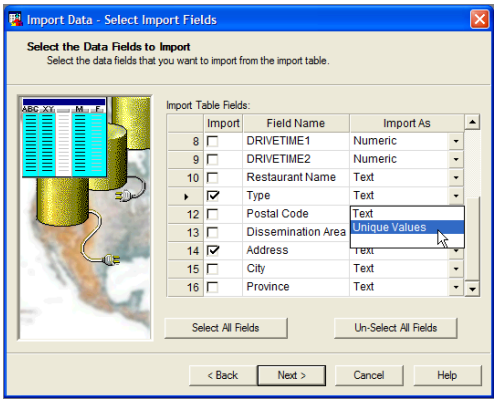
*We will treat this as a **Numeric variable**. The servings for all restaurants in a study area will be aggregated.*

- Select **Numeric Split** from the **Import As** pull-down list

*This will allow us to tally **Cups of Coffee** separately for the different **Restaurant Types.***

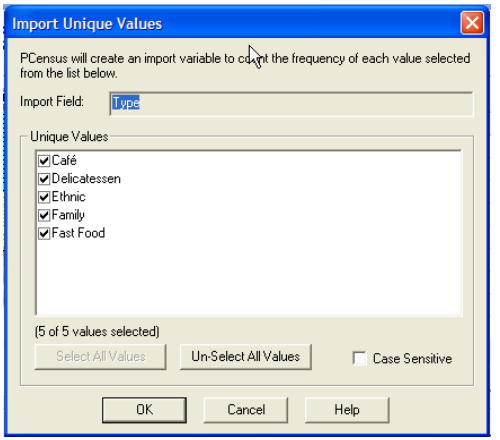


- Select **Type** from the **Import Table Fields** and click Select >> to move it to the right-hand pane.
- Expand the **Type** list to see the types represented in the imported data.
- Click



- Check the box for **Type.**
- Select **Unique Values** from the **Import As** pull-down list

*Note that we have already used this field to define the **numeric split**, above.*

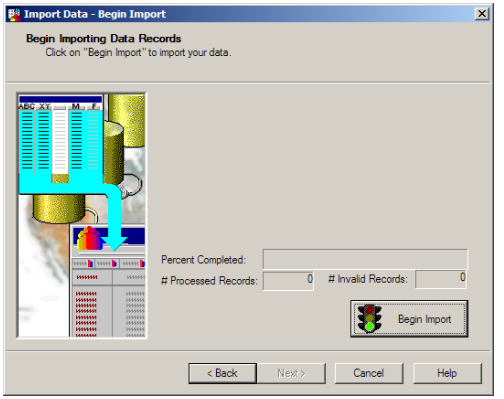


PCensus classifies all the represented values in the specified field.

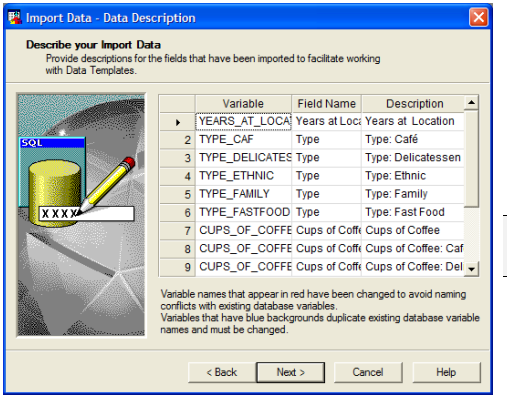
Blank fields will create a class called "No Value".

- Click OK.
- Click Next >.

Create the Database



- Click **Begin Import** to create the database.
- Click **Next** when finished.

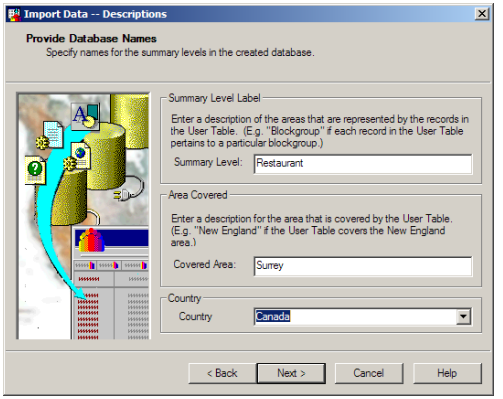


- If necessary, double-click in the **Description** field to edit descriptions for the variables that will appear in PCensus reports.

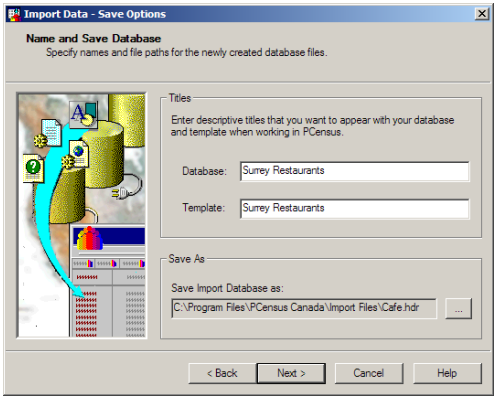
This step is optional. If nothing is entered, the variable names will be used.

- Click **Next**.

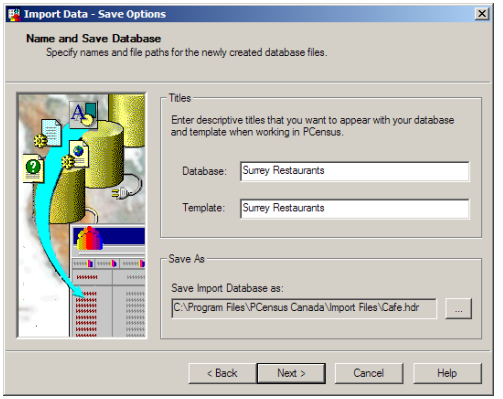
Note that for the "unique value" field ***Office Type****, separate fields have been generated for each represented value (****OFFICE_TYPE_BRANCHOFFICE****,* ***OFFICE_TYPE_HOMEOFFICE*** *etc.) For the "Numeric Split" variable Total Deposit,* ***TOTAL_DEPOSIT_COMMERCIAL*** *and similar fields were created.*



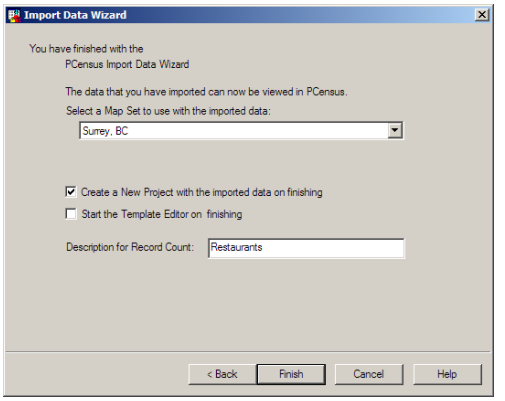
- Enter a description for the **Summary Level** represented by database records (in this case **Restaurants**).
- Enter a description for the geographical **Area Covered** by the database (in this case **Surrey**).
- Click Next >.



- Enter names by which the new Database (**Surrey Restaurants**) and its Template will be identified in PCensus.
- Click Next >.



- Enter names by which the new Database (**Surrey Restaurants**) and its Template will be identified in PCensus.
- Click Next >.



The database creation process automatically creates a variable that allows you to see the number of imported records contained in a study area. In this case it will represent the number of cafes.

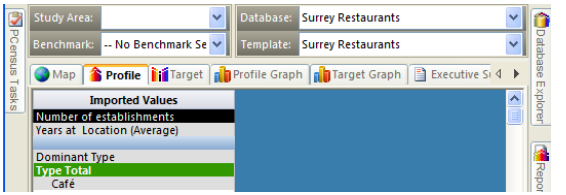
- Change the **Description for Record Count** to **Restaurants**.
- Click Finish.

The new database is complete and ready for use.

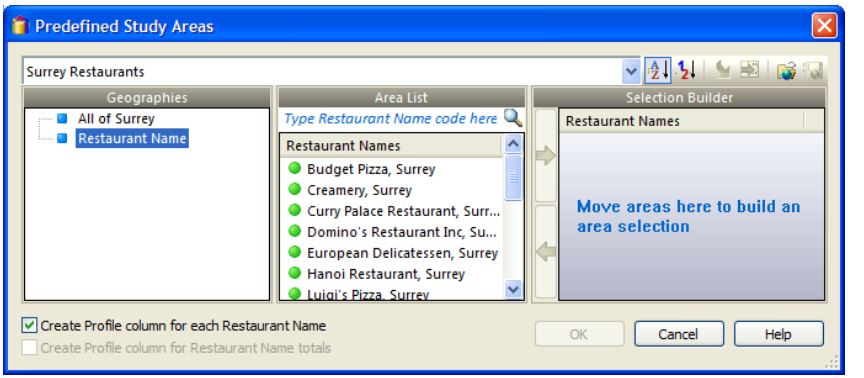
Using the new database

When the import is complete, you can use the new database just like a standard PCensus database:

- Start a new PCensus Project.
- Select the **Surrey Restaurants** database.

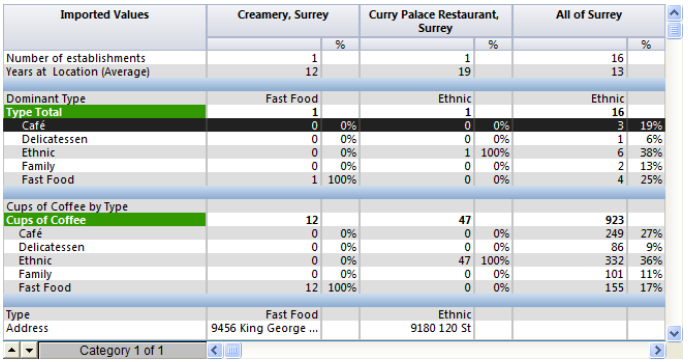


- Select **Create a Predefined Study Area** in the task pane.



*The available Area Types are **All of Surrey**, which will generate a summary profile for all imported records and **Restaurant Name**, which will generate a profile for a specific location.*

- Select one or more **Bank Branches** and click **OK** to generate the profile.



Imported Values	Creamery, Surrey		Curry Palace Restaurant, Surrey		All of Surrey	
		%		%		%
Number of establishments	1		1		16	
Years at Location (Average)	12		19		13	
Dominant Type	Fast Food		Ethnic		Ethnic	
Type Total	1		1		16	
Café	0	0%	0	0%	3	19%
Delicatessen	0	0%	0	0%	1	6%
Ethnic	0	0%	1	100%	6	38%
Family	0	0%	0	0%	2	13%
Fast Food	1	100%	0	0%	4	25%
Cups of Coffee by Type						
Cups of Coffee	12		47		923	
Café	0	0%	0	0%	249	27%
Delicatessen	0	0%	0	0%	86	9%
Ethnic	0	0%	47	100%	332	36%
Family	0	0%	0	0%	101	11%
Fast Food	12	100%	0	0%	155	17%
Type	Fast Food		Ethnic			
Address	9456 King George ...		9180 120 St			

Category 1 of 1

➢ Create an additional profile column for **All of Surrey**.

A data template has been automatically created for the imported data. You will probably wish to modify this template for your own purposes.

Note how the different data types are displayed in the profile:

- Non-additive values (Years at location) are averaged across the study area.
- Unique values (Type) are displayed as a "dominant" variable type (page 159), and counts are displayed for the individual classifications.
- Numeric variables (Cups of Coffee) are summed across the entire study area.
- Numeric split variables (Cups of Coffee) are summed across the entire study area. Values are summarized for all types (Cups of Coffee by Type), and for individual bank types (Café, Delicatessen, etc.)
- Text variable (Type, Address) is displayed verbatim.

As a result of this process, the column for an individual restaurant reproduces the specific information for that establishment, whereas a column for an aggregated study area (polygon, circle etc.) contains a summary for the entire area.

What Can I Do Now?

- Create a target list using the imported data.
- Use the individual data points as locations for circle or drive time study areas.
- Use this method of importing data in conjunction with the method described in the next section (Appending Your Data to a PCensus

Database), which allows you to combine your data with the demographic data supplied with PCensus.

- Create a point map showing the locations of your data points.
- Use the Refresh feature (page 207) to refresh your database or add new data columns.

37 Appending Your Data to a PCensus Database

Objective

Import your own data (facilities, sales, etc.) into PCensus by attaching the data to an installed PCensus database. Use the resulting database to create reports combining your data and PCensus demographics.

Background

If your data records contain census area codes for dissemination areas (DAs), census tracts etc, you can use these codes to attach your data. Such codes can be attached using commercially available mapping or geocoding software packages. DA matching allows more detailed analysis of your data than is possible using Postal FSA codes.

The advantages and disadvantages of the two methods can be summarized as follows:

	Attach by FSA Code	Attach by DA code
Advantage	Most address-based data already contains postal codes, so the file can be attached to PCensus without the requirement of geocoding.	The small geographical footprint of most DAs permits more detailed analysis of your data. DA matching allows you to define study areas using all of the target types defined in the PCensus database.
Disadvantage	FSAs are relatively large, and may not be homogeneous; assignment of demographics will be less precise. FSA matching only allows you to define study areas using target types of FSA Code and higher.	Requires adding DA codes before data can be attached to PCensus.

PCensus will automatically roll up your imported data to the same levels of geography supported by the installed PCensus database (for example, census tract, CSD, CMA, or Province).

You can import data into PCensus from many common database formats, including Microsoft Excel, dBase, or Microsoft Access.

When you import data, PCensus creates a new "virtual" database by joining a copy of your data to the installed PCensus database. The new database appears as a registered database, with its own data template, while the original database is left unchanged. You can import as many data files as you want, attaching each one to the same PCensus database. Each one will create a separate virtual database.

The new template contains a category listing your imported data, as well as all the original categories from the installed database. You can use the PCensus template editor to enhance this template, and combine data elements from the imported and installed databases.

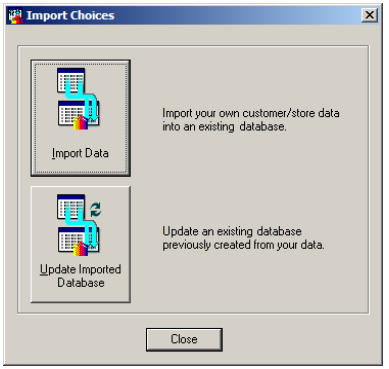
PCensus always works with a copy of your imported data, so if you make changes to it in the future, you must repeat the import process or refresh the database with new data (page 207). Otherwise, your changes will not be reflected in the imported data.

A limitation on PCensus databases created by attaching data to a PCensus database is that the resulting database cannot access data for individual import records – they are all aggregated to higher geographical levels such as FSA codes or Provinces. This limitation can be overcome by importing the data as Point data (page 183).

Prior Steps Required

Create or obtain a database in a standard format (for example Excel, dBase, etc.) containing records geocoded with Census DA codes. An example file has been provided for demonstration purposes. This file contains restaurant data for Surrey, BC.

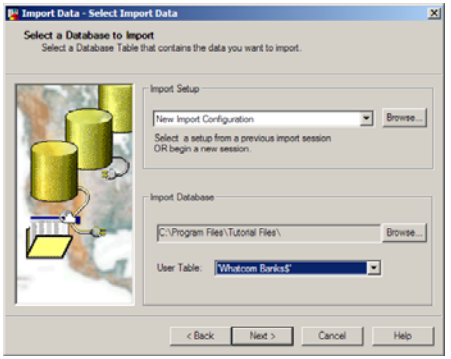
Steps in Attaching Data to PCensus by FSA code



- Click the **Import** icon to display the **Import Choices** dialog box, or select **Import Wizards** from the **File** menu.
- Click 

to start the **Create Database Wizard**.
- Advance to the **Select Import data** Wizard page.

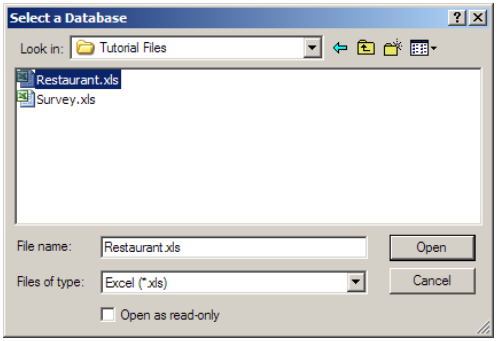
Select the Data to Import



*The **Import Setup** panel lets you re-use similar import configurations from previous sessions; it is not used the first time we import data.*

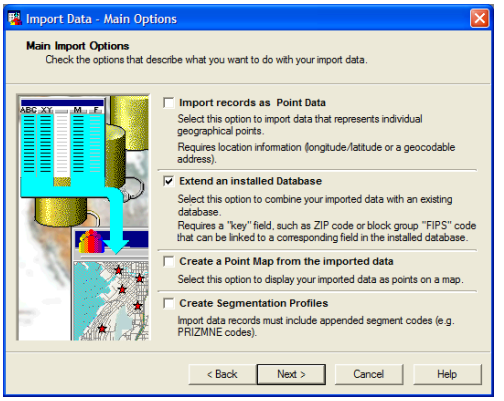
- Click the 

button in the **Import Database** panel.



- Select **Files of Type: Excel (*.xls)**.
- Open the file **Restaurant.xls** in the **Program Files\PCensus\Tutorial Files** folder.

*Notice that the field **Dissemination Area** contains an 8-character code that was added by a geocoding program. The field **FSA** contains the restaurant's FSA **code**.*

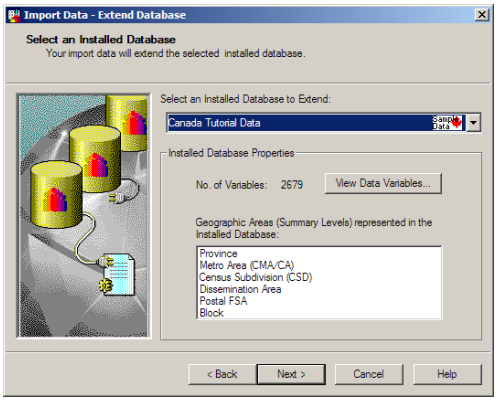


- Check ☑ Extend an installed Database.
- Click Next >.

Specify the PCensus Database that will be Extended

You must now select the installed PCensus database that will be extended with your imported data. Your data will be appended as a new category.

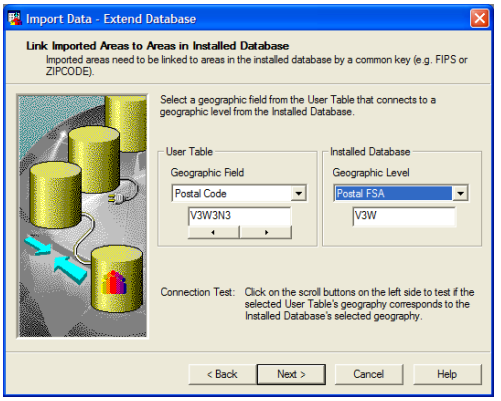
The PCensus database must contain a summary level that corresponds to the linking key in your input data. (FSA code in this example.)



- Select the database **Canada Tutorial Data**.
- Click Next > to continue.

Specify How Data will be Merged

The next dialog box determines how the "key" field in your data will match the corresponding field in PCensus. The **Geographic Field** selector in the **User Table** panel lists the fields in your database, and the **Geographic Level** selector in the **Installed Database** panel shows the summary levels available in the installed PCensus database.



- Make sure that the **FSA** field in the **Geographic Field** selector matches the **FSA** in the **Geographic Level**.

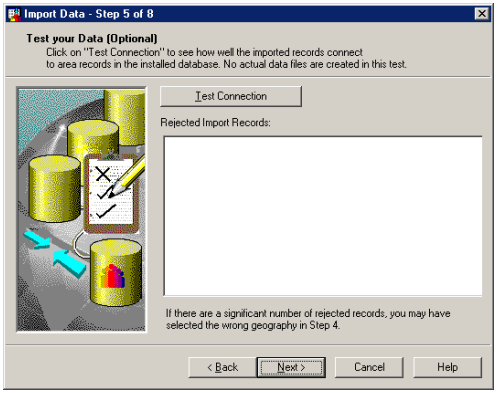
The keys beneath the selectors give an indication of how well the keys match. The two files should track each other when the ◄ and ► buttons are used to scan through the respective files.

*The **Postal Code** field can me used to link to FSAs. PCensus will ignore the last three characters when matching keys.*

- Click Next > to continue.

Test the Linkage (Optional Step)

In some cases, there may be errors in your data (for example, non-existent FSA codes) that will cause a large number of mismatches. The next dialog box allows you to preview the matching process and decide whether to continue.

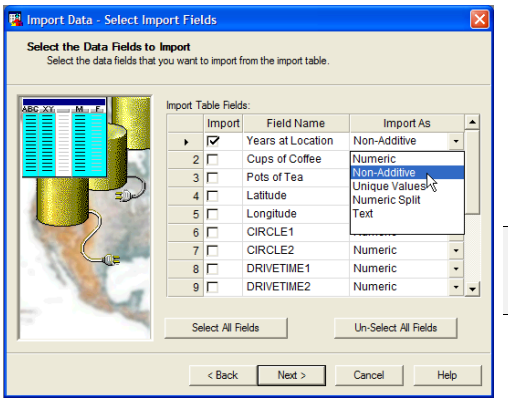


- Press the Test Connection button.

If a large number of mismatches occur, you may want to cancel the operation and check your data for validity.

- Click Next > to continue.

Identify the Variables in the Imported Data



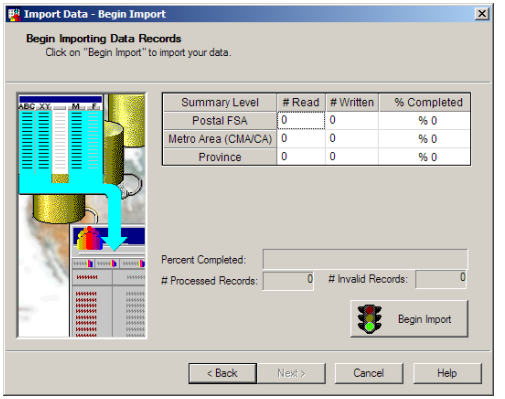
- Define **Years at Location** as a **Non-Additive** value.
- Define **Cups of Coffee** as a **Numeric Split** on **Type**.
- Define **Type** as a **Unique Value**.

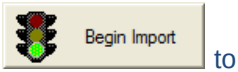
*Note: **Text** data can only be imported if the point data option is used. Otherwise, text must be treated as Unique Values.*

- Click 

.

Build the PCensus Database



- Click 

to complete the import operation.

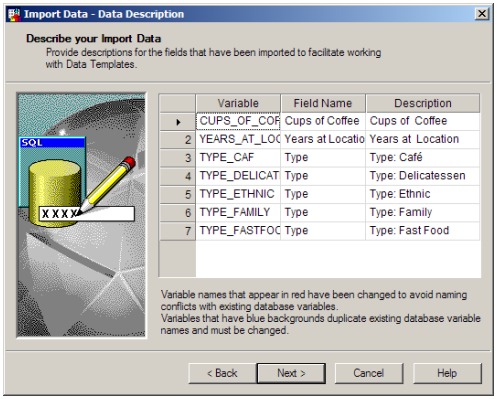
If a file contains more than one record in the same FSA code, the records will be aggregated into a single record in the new PCensus database.

The Sample Database contains records at several geographic levels. Of these, the Metro Area and Province levels are higher in the geographic hierarchy than FSA codes, and can be used to create rollups. Other area types such as dissemination areas, census tracts or places that do not normally circumscribe FSA codes are ignored.

- Click 

to continue.

Describe your Data

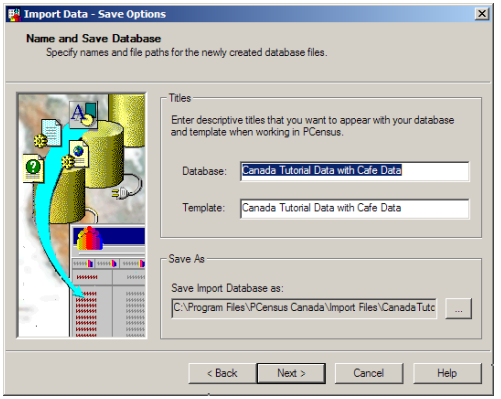


- If necessary, double-click in the **Description** field to edit descriptions for the variables that will appear in PCensus reports.

This step is optional; if nothing is entered, the variable names will be used.

- Click Next >.

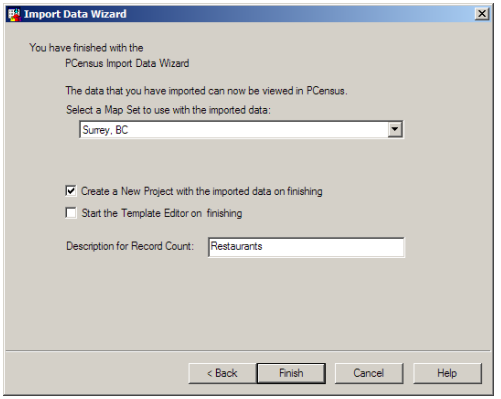
Save the Database



This dialog allows you to optionally enter new names for the database and template.

*The default name consists of the original database name followed by "with **filename** Data".*

- Click Next > to continue.

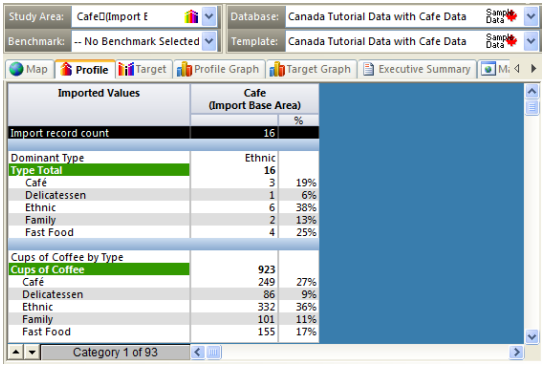


The database creation process automatically creates a variable that allows you to see the number of imported records contained in a study area. In this case it will represent the number of cafes.

- Change the **Description for Record Count** to **Bank Branches**.
- Click Finish.

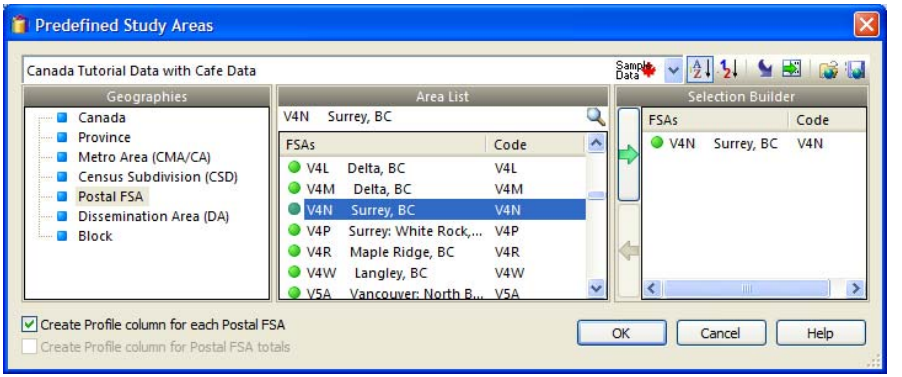
The new database is complete and ready for use.

Using the Extended Database

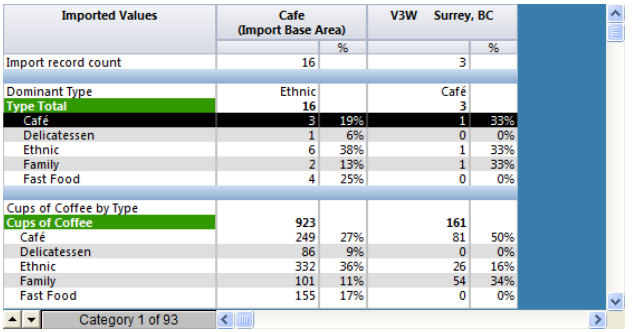


By Default, PCensus creates a profile column in the current project using the database we created. The profile contains a predefined study area comprising all the ZIP codes that contain at least one bank. This study area is automatically saved as a Reference Area (see page 147).

In the Task pane, create a new predefined study area for Postal Code **V3W**.



*Only the Summary levels of **FSA code** or higher, for example, **Province** or **Metro Areas**, will contain imported data; these are the types that can be rolled up from the FSA level.*



Imported Values	Cafe (Import Base Area)		V3W Surrey, BC	
		%		%
Import record count	16		3	
Dominant Type	Ethnic		Café	
Type Total	16		3	
Café	3	19%	1	33%
Delicatessen	1	6%	0	0%
Ethnic	6	38%	1	33%
Family	2	13%	1	33%
Fast Food	4	25%	0	0%
Cups of Coffee by Type				
Cups of Coffee	923		161	
Café	249	27%	81	50%
Delicatessen	86	9%	0	0%
Ethnic	332	36%	26	16%
Family	101	11%	54	34%
Fast Food	155	17%	0	0%

Category 1 of 93

The Profile shows a summary of data for FSA **V3W**.

*Note that the **Category** selector now shows 93 categories: our imported data plus the original 92 categories in the PCensus database.*

Attaching Data by Dissemination Area Code

When we use PCensus to profile areas, it is preferable to use a database aggregated at the DA level, in order to achieve the maximum resolution of circles and polygons.

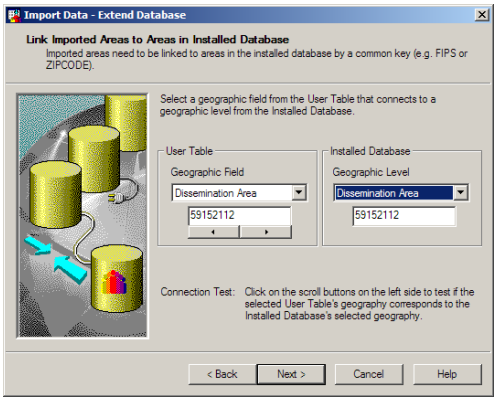
Before you can attach your data to a DA level database, it must be geocoded to dissemination areas; i.e., every record in your database must have a field containing the 8-character code for the DA in which it is located.

*DA codes are used by Statistics Canada to identify the various areas for which data are collected. Each DA has a unique code that identifies the province (2 digits), and DA (6 digits) in which it is located. See the section **Demographics and the Census** in the PCensus Help.*

A number of software packages are available that can attach census codes to a database containing addresses; this process is referred to as geocoding.

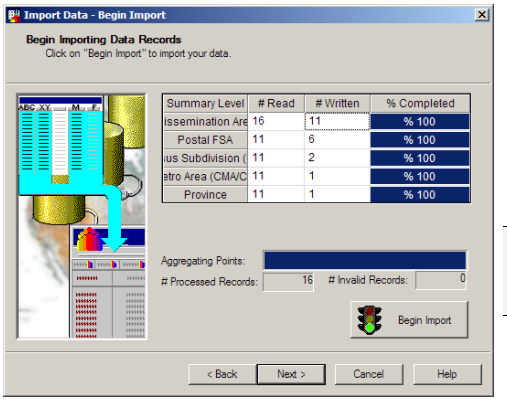
The process of importing data at the DA level is identical to that used for FSA codes (page 195), except that in Step 4, we select matching fields corresponding to dissemination areas instead of FSA codes. In the illustration on page 202, the imported file contains a field labeled Dissemination Area that was added by a geocoding program.

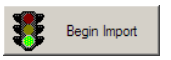
➢ Repeat the steps for attaching data up to the step **Compare Imported Areas…** (page 196).



- Select **Dissemination Area** in the **Geographic Field** list.
- Select **Dissemination Area** in the **Geographic Level** list.
- Click 

twice to advance to the Database Building step.



- Click 

to complete the import operation.
- Continue to the end of the Wizard.

*Remember to give the database a name that distinguishes it from the earlier FSA code version, for example, **Restaurant Data (DA).***

What Can I Do Now?

- Use this method of importing data in conjunction with the method described in the previous chapter Importing Point Data, which allows you to create a new database independent of census geography.
- Read the chapter Penetration Analysis – a CRM Tool (page 249) to see how an extended database can be used for **Penetration Analysis**.

Use the Refresh feature (page 207) to refresh your database or add new data columns.

38 Importing Data to Create a Point Map

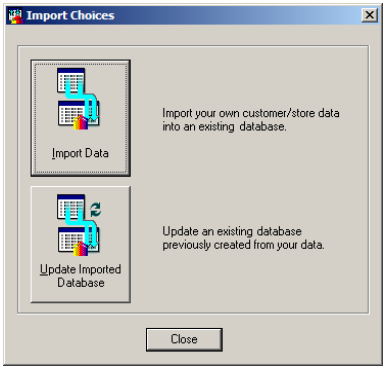
Objective

Import point data from a user database to create a map layer.

Prior Steps Required

Create or obtain a database in a standard format, for example Excel, dBase, etc., preferably containing records geocoded with Latitude and Longitude coordinates. An example file has been provided for demonstration purposes. This file contains fictitious data concerning units of coffee and tea consumed.

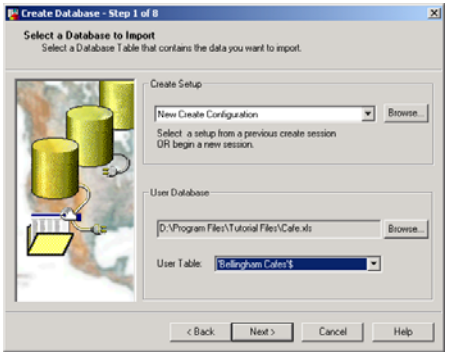
Steps in Mapping Imported Data



- Click the **Import** icon  to display the **Import Choices** dialog box, or select **Import Wizards** from the **File** menu.
- Click 

to start the **Create Database Wizard**.
- Advance to the **Select Import data** Wizard page.

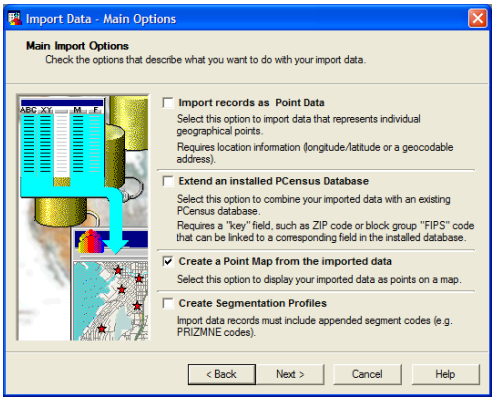
Select the Data to Import



*The **Create Setup** panel lets you re-use similar import configurations from previous sessions; it is not used the first time we import data.*

- Click the 

button in the **Import Database** panel.
- Open **Restaurant.xls** in the **Program Files\PCensus\Tutorial Files** folder.



- Check **Create a Point Map from the imported data**.
- Click Next > twice to advance to the **Map Point data** page.

- Select Use Geographic Coordinates from fields in table.
- Click Next > twice to advance to the **Select Geocode Method** page.

Geocoding

If your data file has not been geocoded (i.e. it does not contain latitude/longitude coordinates for each record), it may still be possible to create a map. PCensus has the ability to geocode databases internally, provided that:

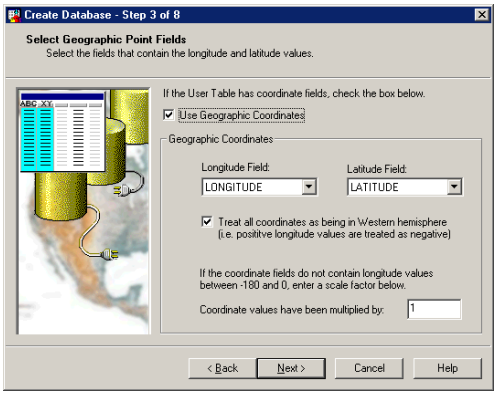
- The data records contain street addresses.
- You have installed a suitable map table to allow the mapping system (which runs in the background) to resolve the addresses in your data and convert them to latitude/longitude.

To use the internal geocoder, select Geocode based on address and follow the steps to identify the necessary address fields and map layers.

The success of the geocoding process depends on several factors: the consistency with which the street addresses are specified in the database, and the quality of the street network table used.

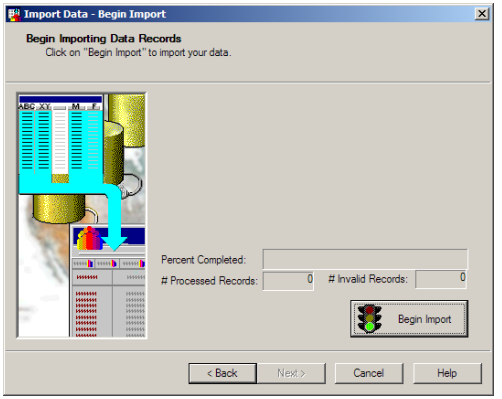
The geocoder works interactively, allowing you to resolve ambiguities and spelling errors in the addresses, but for large or problematic databases it is recommended that a dedicated geocoding service or software application be used to geocode the file before importing it to PCensus.

Identify the Geographic Coordinates



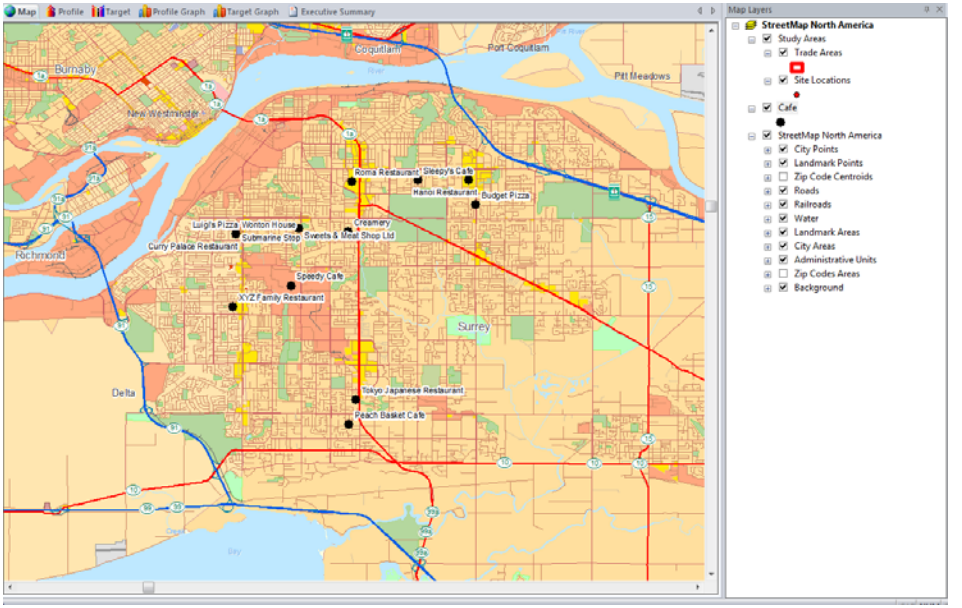
- Verify that the latitude and longitude fields are correctly assigned.
- Click Next >.

Create the Map



- Click Begin Import to create the database.
- Click Next > when finished.

Click Finish in the confirmation dialog to display the new map layer.



39 Refresh Imported Data

Background

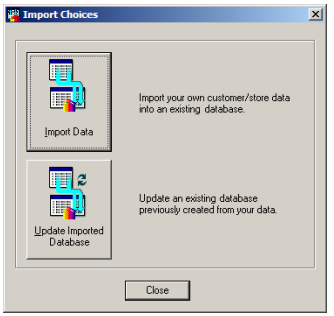
If the data that you have imported into PCensus is time-sensitive, you may need to update the PCensus database with a new version of your data from time to time. For example, if your database contains monthly cash balances or sales figures, you may need to import the changed data on a regular basis.

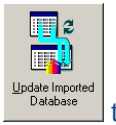
PCensus provides a convenient method to refresh your database by re-importing the supplied data. The refresh process assumes that the new database is in precisely the same format as the old one, including number of records, sort order and field naming. The updated file is assumed to be in the original location with the original name. If these conditions are not met, you must repeat the import process to create a new extended database; you cannot use the update procedure.

A second method of updating imported data allows us to append additional data fields to an already-extended database. This provides the benefit that we can extend a database multiple times, overcoming the limit of 256 data columns that is common to many file formats (e.g. Excel). If we wish to import more than 256 columns of data, we can append several databases one after the other. In this process, all of the consecutive data files must correspond record by record to the first file.

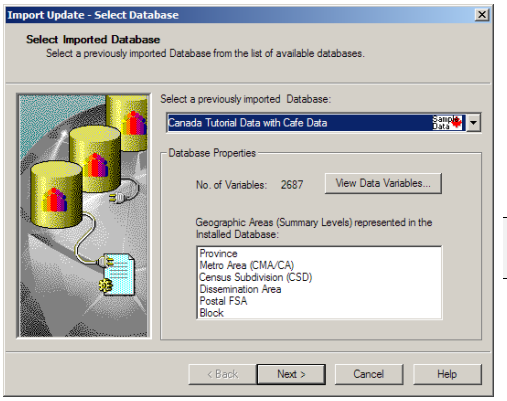
Refresh an Extended Database

For the purposes of this demonstration, we will assume that the database that was imported in chapter 37, Appending Your Data to a PCensus Database has changed (if you wish, you can use Excel to change some of the data fields). To begin the process:



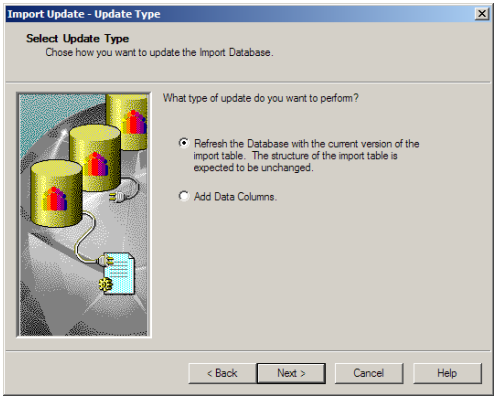
- Click the **Import** icon  to display the **Import Choices** dialog box, or select **Import Wizards** from the **File** menu.
- Click 

to start the **Create Database Wizard**.

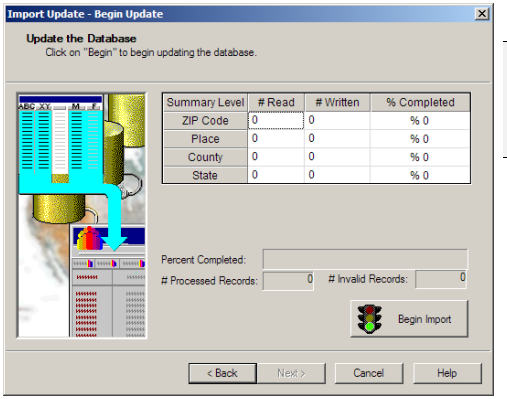


- Select the **Canada Tutorial with Café Data**.
- Click Next >.

The list only includes databases that contain imported data.



- Select **Refresh the Database…**
- Click Next >.



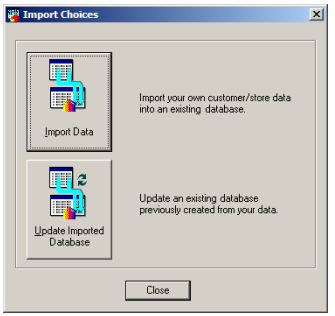
Note that you will not be prompted to specify a file containing the updated data. PCensus assumes that the original file has been updated.

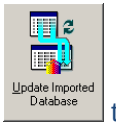
- Click Begin Import to complete the update.
- Click Next >.
- Click Finish in the final dialog.

If you have created and saved PCensus projects using the original version of the extended database, the update will not be reflected in the project when you open it. To update the project with the new data, use the Refresh Project feature (page 141).

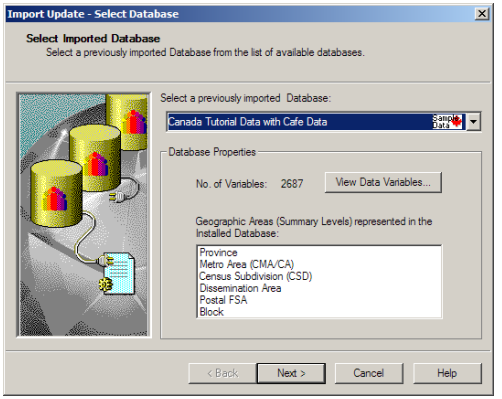
Add New Data Fields to an Extended Database

To illustrate this process, we will add a new data item to the Whatcom County Bank database.



- Click the **Import** icon  to display the **Import Choices** dialog box, or select **Import Wizards** from the **File** menu.
- Click 

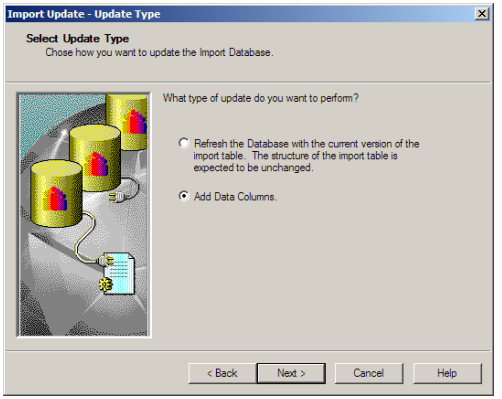
to start the **Create Database Wizard**.



- Select the **Canada Tutorial with Café Data**.
- Click 

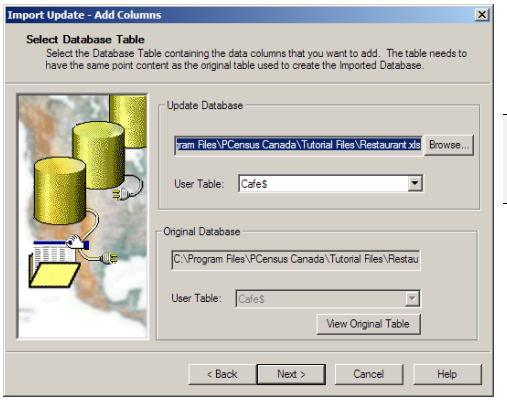
.

The list only includes databases that contain imported data.



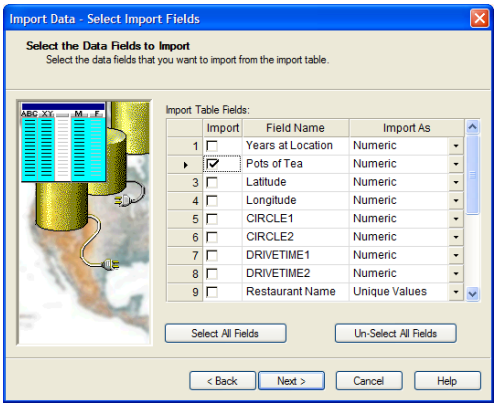
- Select **Add Data Columns**
- Click 

.

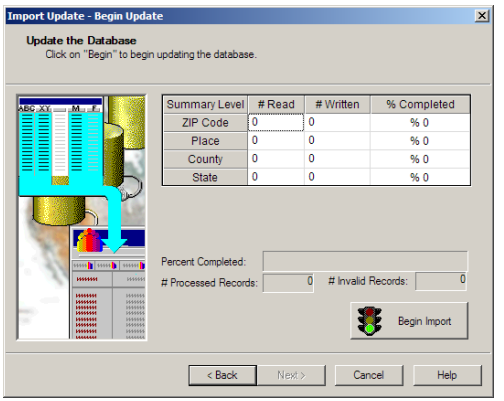


For this example we will add a new data column from the original file, so we do not need to select a different "User Table".

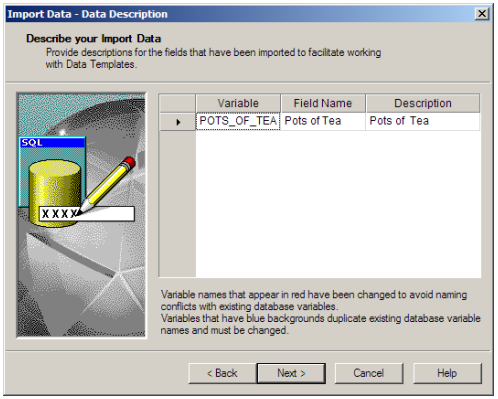
- Click Next > to advance to the **Select Import Fields** step.



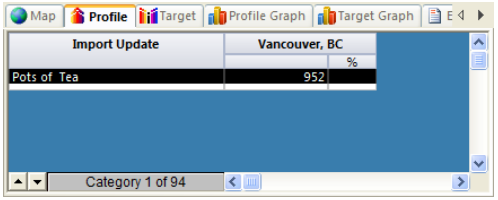
- Select **Pots of Tea** as a numeric variable.
- Click Next >.



- Click Begin Import to complete the update.
- Click Next >.



- Review the displayed variable names and descriptions.
- Click Next >.
- Click Finish in the final dialog.



- Create a project to review the imported data.

Each time new variables are appended, they are displayed in a separate category in the data template.

40 Using “Donut” Study Areas

Objective

Create a polygon study area containing an exclusion zone.

Background

The need occasionally arises to define a study area that contains one or more “holes” (i.e. areas whose population we do not wish to include in our study). Such holes, also referred to as “Exclusion Areas”, can easily be added to our study area definition.

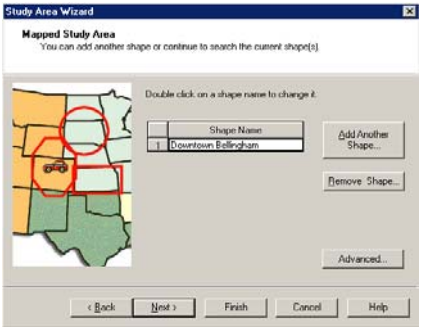
This operation requires the use of advanced features that are only accessible when using the study area “wizard”. You cannot access the features using the task window.

Steps to Create a “Donut” Study Area

- Click the **New Polygon** icon  in the PCensus tool bar to start the study area wizard.

- Select (•) Tracing on Map and click Next >.

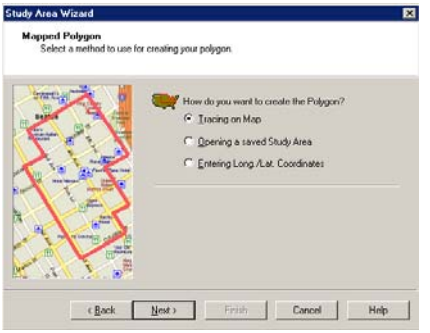
- Use the cross-hair cursor (+) to trace a polygon on the map similar to the one shown.



- Click the Add Another Shape... button.

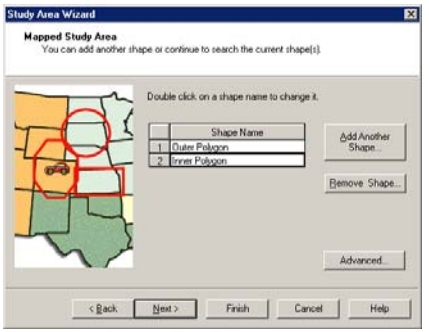
- Select Polygon and click Next >.

> *The Exclusion area process also allows us to combine polygons, circles and drive times interchangeably.*

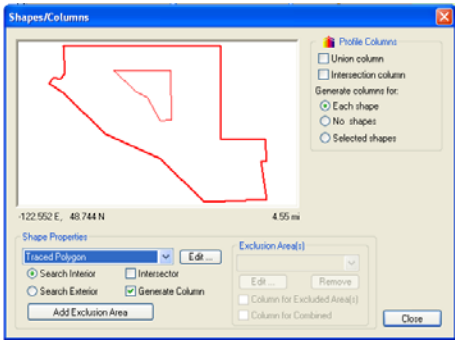


- Select Tracing on Map and click Next >.

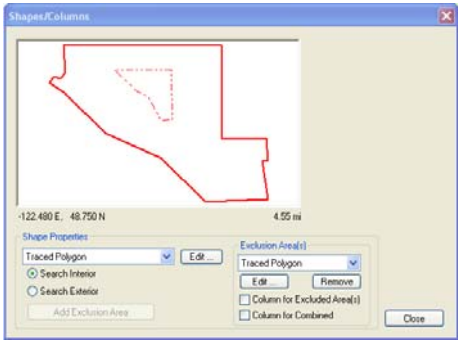
- Trace a smaller polygon inside the original one.



- Double click the shape names and edit them to identify the **Outer** and **Inner** polygons.
- Click the Advanced... button to display the **Shapes/Columns** dialog box.



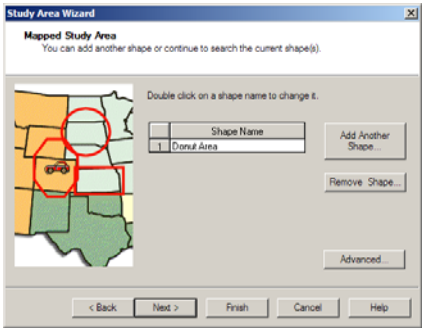
- Click Add Exclusion Area.



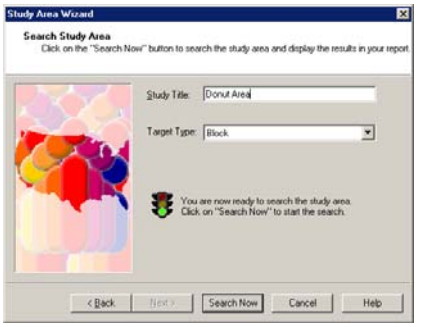
PCensus automatically recognizes the contained area and converts it to an exclusion area.

If you wish, you can select the option to generate a separate profile column for the excluded area.

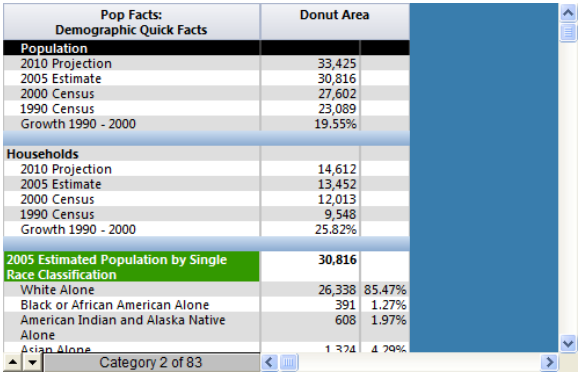
- Click Close to return to the **Study Area Wizard**.



- Double click the shape name and change it to **Donut Area**.
- Click Finish.



➢ Click Search Now.



Pop Facts: Demographic Quick Facts	Donut Area	
Population		
2010 Projection	33,425	
2005 Estimate	30,816	
2000 Census	27,602	
1990 Census	23,089	
Growth 1990 - 2000	19.55%	
Households		
2010 Projection	14,612	
2005 Estimate	13,452	
2000 Census	12,013	
1990 Census	9,548	
Growth 1990 - 2000	25.82%	
2005 Estimated Population by Single Race Classification	**30,816**	
White Alone	26,338	85.47%
Black or African American Alone	391	1.27%
American Indian and Alaska Native Alone	608	1.97%
Asian Alone	1,324	4.29%

Category 2 of 83

The profile contains a column for our donut study area.

41 Complex Mapped Study Areas

Objective

Define study areas using combinations of circles, drive times and polygons.

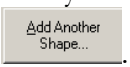
Background

In the majority of PCensus projects, you will use only one shape (a polygon, a drive time area or a set of concentric circles) to define a study area. However, there may be circumstances when it is better to use a combination of shapes, for example:

- To create an area by merging several smaller polygons, that may be non-contiguous.
- To study the fringes of a city, excluding the central core (donut area).
- To study the overlapping parts of two polygons, for example that part of a trading area that falls within a political division.
- To eliminate selected part(s) of a concentric circle set.
- To search several neighboring or overlapping areas simultaneously (this can be much faster than treating them as separate study areas).

Multiple Shapes

There are two ways in which you can define a study area by combining shapes:

- After you define a shape using the Study Area Wizard, the **Mapped Study Area** dialog box contains a button 

. Click this button to return to the Mapped Study Area Type dialog box and define additional shapes.
- Batch Site Processing (page 225) allows you to import multiple circle or drive time definitions from an external database.

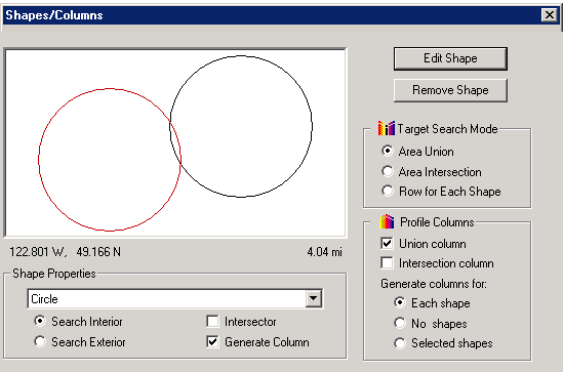
Shape Properties

For most purposes, we define study areas using a single shape, which can actually consist of a set of concentric circles or drive times, and our study area will be defined as the entire area within the shape.

When we work with multiple shapes, however, we may need to specify the ways that the shapes interact with each other, for example:

- To define a study area as the area of overlap between two shapes.
- To define a "donut" area – the area that is **inside** one polygon, but **outside** another one.

We can apply properties to shapes using the **Shapes/Columns** dialog box, which is accessed by clicking the Advanced... button in the **Mapped Study Area** dialog box.



This dialog box defines the interactions between multiple shapes. When multiple shapes are present, their definitions and attributes can be modified individually.

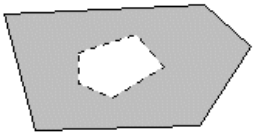
*For detailed information on the features of this dialog box, press the **F1** key to access the PCensus Help system.*

A shape can have the following properties:

- **Interior/Exterior** property.
- **Intersector** property.
- **Generate Column** property.

Interior/Exterior Property

The **Interior/Exterior** attribute determines whether a shape will include target points inside or outside its boundary. See "Steps to Create a "Donut" Study Area", page 213.

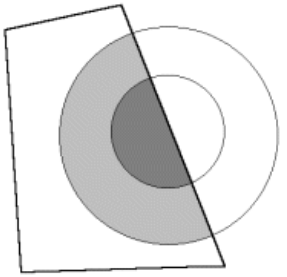


The inner polygon has the **Exterior** property.

The Intersector Property

The **Intersector** property is an advanced feature that provides methods to allow the effect of one shape to be modified by other shapes. **If a shape is an intersector, it will generate a column that aggregates only those data points inside both the intersector and at least one other (non-intersector) shape.**

The most common application of intersectors is for the modification of circular or drive time study areas. See "Steps to Create a Modified "Radius" Study Area", page 220.



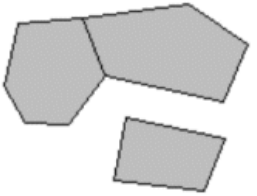
The concentric circle set has the **Intersector** property. Only the part of the circle inside the polygon will be searched.

Each of the shaded areas will generate a separate profile column.

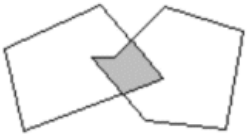
Profile Columns

The **Generate Column** property indicates that the selected shape will be represented by a column in the profile browser.

When more than one shape has been defined for a study area, a special set of controls allows us to specify which shapes or combinations of shapes will be represented by columns in the project's profile browser:

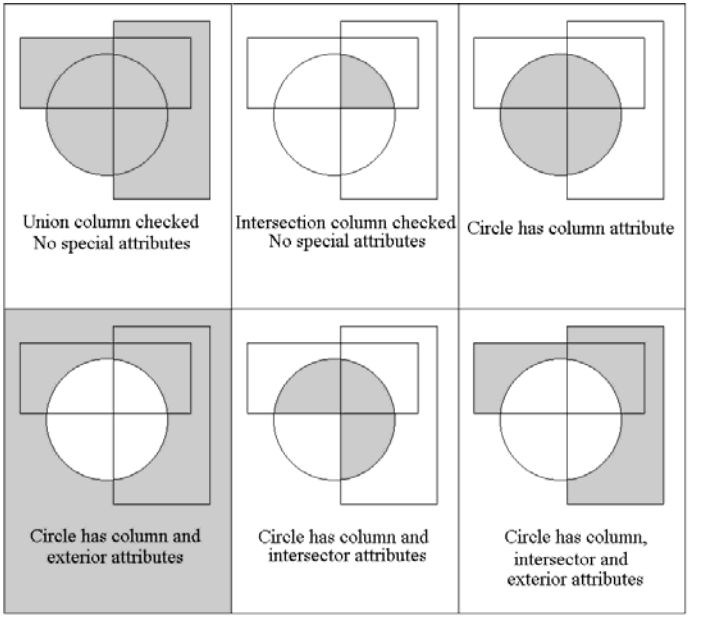


A **Union** column contains the total data for the shaded area.



An **Intersection** column contains data for the area where all shapes overlap.

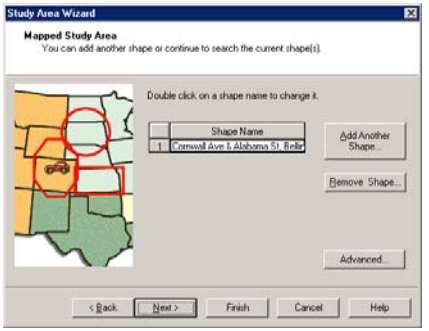
The following illustration shows the effect of some complex combinations of properties. In each case, the shaded area will generate a profile column.



Steps to Create a Modified "Radius" Study Area

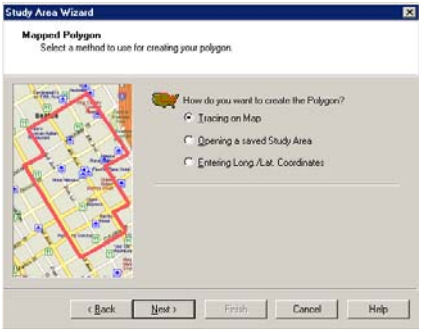
This operation requires the use of advanced features that are only accessible when using the study area "wizard". You cannot access the features using the task window.

Click the **New Circle** icon  in the PCensus tool bar to start the study area wizard.

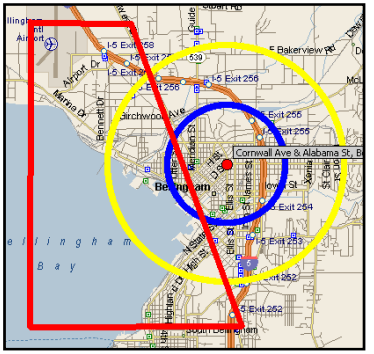


- Follow the steps to create a circle study area until you reach the **Mapped Study Area** dialog box as shown.
- Click the Add Another Shape... button.

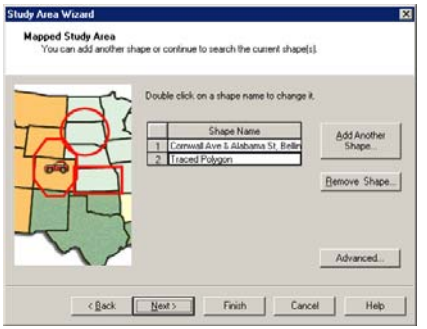
- Select Polygon and click Next >.



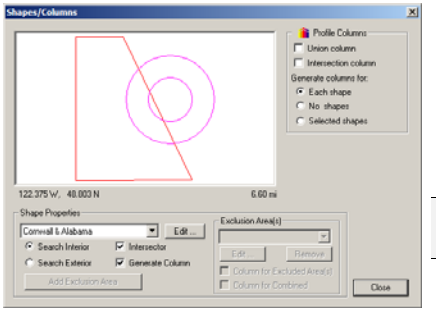
- Select Tracing on Map and click Next >.



- Trace a polygon that cuts off part of the circle set.
- Double click the last point to close it.



- Click the Advanced... button to display the **Shapes/Columns** dialog box.

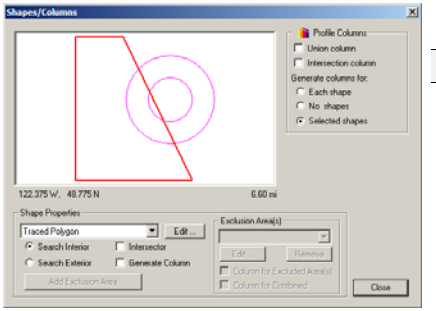


- Select the Circle area, either by clicking in the diagram or selecting it in the **Shape Properties** list.
- Check the Intersector button.

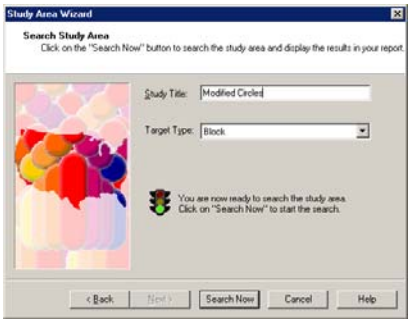
*If the circle is an **intersector**, only that part that is intersected by another shape will be searched.*

- Select the **Polygon**.
- Clear the Generate Column.

The polygon is of no interest by itself.



- Clear the Union column box.
- Clear the Intersection column box.
- Click **Close** to return to the **Study Area Wizard**.
- Click Finish.



- Edit the Study Title to **Modified circles**.
- Click Search Now.

Pop Facts: Demographic Quick Facts	Cornwall Ave & Alabama St, Bellingham, WA 98225 0 - 1 mi		Cornwall Ave & Alabama St, Bellingham, WA 98225 0 - 2 mi	
Population				
2010 Projection	2,008		10,859	
2005 Estimate	1,971		10,612	
2000 Census	1,923		10,335	
1990 Census	1,813		9,083	
Growth 1990 - 2000	6.10%		13.78%	
Households				
2010 Projection	825		3,865	
2005 Estimate	797		3,746	
2000 Census	763		3,621	
1990 Census	731		3,509	
Growth 1990 - 2000	4.40%		3.19%	
2005 Estimated Population by Single Race Classification	**1,971**		**10,612**	
White Alone	1,774	90.01%	9,143	86.15%
Black or African American Alone	17	0.88%	119	1.12%
American Indian and Alaska Native	33	1.66%	164	1.55%

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The profile contains columns for the parts of the circle areas that also fall inside the polygon.

What Can I Do Now?

The two examples above illustrate the most common uses for combined polygons. Many other combinations are possible.

The other common situation where multiple shapes may be used is in **Batch Site Processing** (page 225). In this case, the shapes are usually used to create separate profile columns; and it is seldom necessary to define complex relationships between them.

42 Batch Site Processing

Objective

Create a set of profile reports based on drive time areas around a set of business locations.

Background

Companies that have a large number of business locations often want to create separate profile reports for each location. It would be tedious to find locations one at a time on the map and create the reports separately, so PCensus allows you to import a list of locations from an external database; it then automatically creates separate reports for each site.

> *This capability is of particular benefit when the reports need to be updated on a regular basis, for example, whenever a new "current-year estimates" database becomes available. With batch processing, this task becomes a simple matter of re-running the batch file against the new data.*

A side-benefit of batch site processing is the ability to display the individual site results row by row in a PCensus **Target List** report, to allow quick comparison of their demographic characteristics (see Chapter 43, User Defined Target Areas, page 231).

Whenever multiple sites have been defined in a project, either by processing a batch site file, or by sequentially defining individual study areas, you can use the **Page Columns** control in the **Print Profile Report** dialog box to allow printing of each site as a separate report. The **Page Columns** control provides additional options for printing batched reports.

Requirements for a Batch Site File

A batch site file must be created externally to PCensus using a database program. Several common file formats are supported, including Excel, dBase and Microsoft Access. In each case, the information for each site to be processed is contained in a single record or table row. The following information is required for each site:

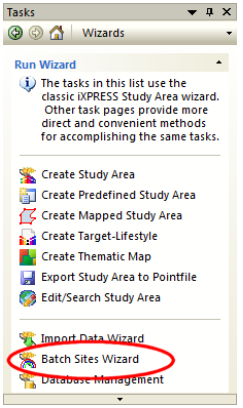
- **Site identification:** A text field containing a company name, store name or other information to identify the site in reports generated by PCensus.
- **Latitude** and **Longitude:** Coordinates of locations in decimal degrees, to allow automatic generation of circle or drive time study areas centered on

each location. If the database does not contain coordinates, PCensus can geocode the locations based on street addresses.

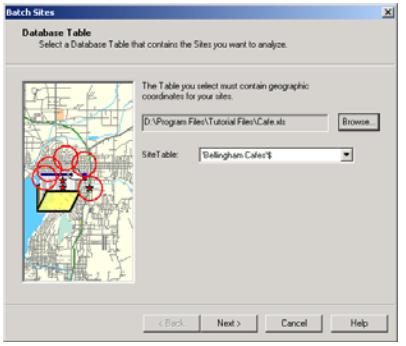
- **Circle radius** (Optional): One or more fields specifying a radius around the site (in miles or kilometers).
- **Drive time** (Optional): One or more fields specifying a drive time zone around the site (in minutes).

The optional radius and drive time fields allow different sized circles or drive times to be applied to each site. If these fields are not specified, identical radii or drive times will be applied to each site.

Steps to Process Batch Sites



- Select **Batch Sites Wizard** in the **Wizards** task pane.

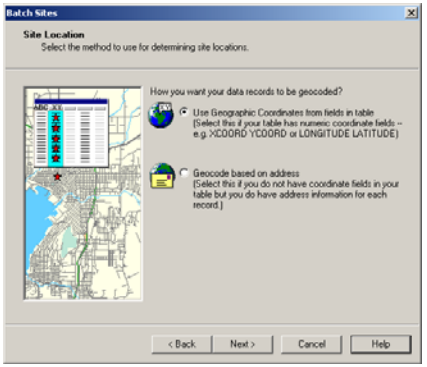


- Click Browse... to open a file of site locations.
- Select **Files of Type: Excel (*.xls)**.
- Open the file **Restaurant.xls** in the **Program Files\PCensus\Tutorial Files** folder.

The contents of the file are displayed in a new window for verification.

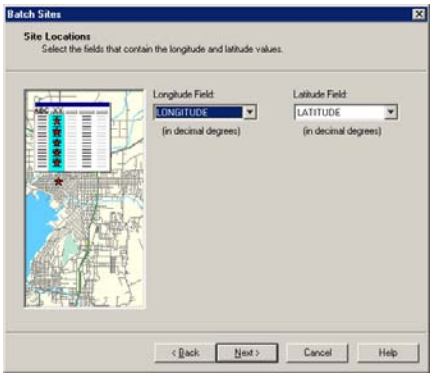
- Click Next >.

Specify Latitude and Longitude



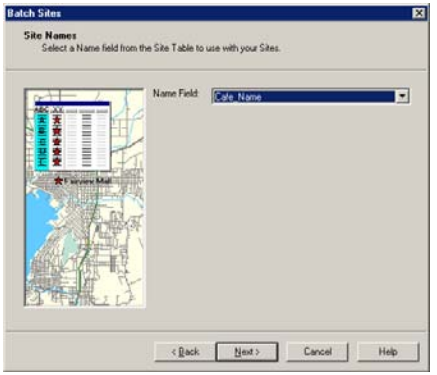
If your batch site file does not contain latitude/longitude coordinates, PCensus may be able to geocode records based on street addresses (page 185).

- Select Use Geographic Coordinates from fields in table.
- Click Next >.



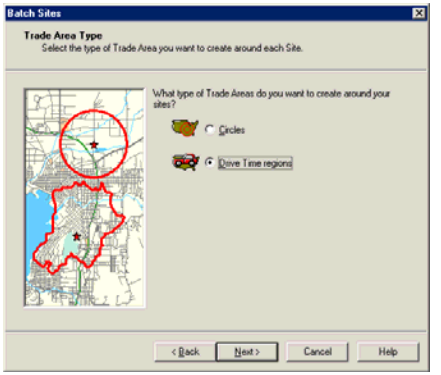
- Verify that the **Latitude Field** and **Longitude Field** are correctly assigned.
- Click Next >.

Select a Field for Naming Sites



- Select the field that contains text to identify the site locations; in this case **Cafe_Name**.
- Click Next > to continue.

Select the Study Area Type

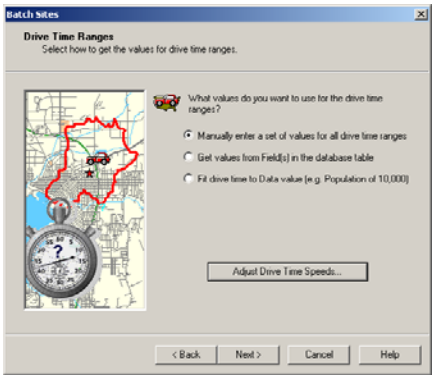


Batch Site reports can be created for circles or drive time polygons.

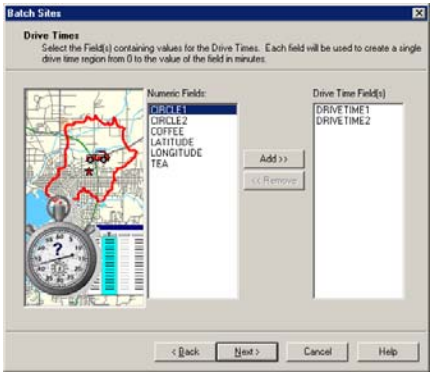
- Check Drive Time regions.
- Click Next > to continue.

We could also define drive times or circles based on demographics, using the "Data Fit" feature (page 55).

If we wanted to apply the same set of drive times to every site, we could enter the values manually, but in this case the batch site file has fields containing individual drive times (in minutes) to be used for each site.



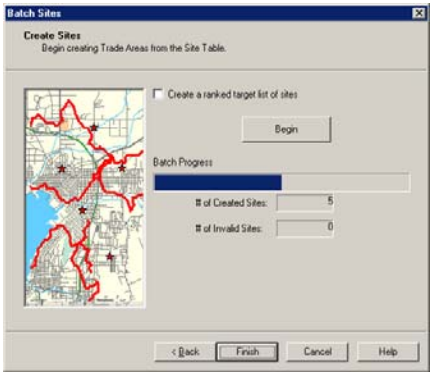
- Check Get values from Field(s) in database table.
- Click Next > to continue.



The batch file includes two numeric fields containing the drive times to be applied to each site.

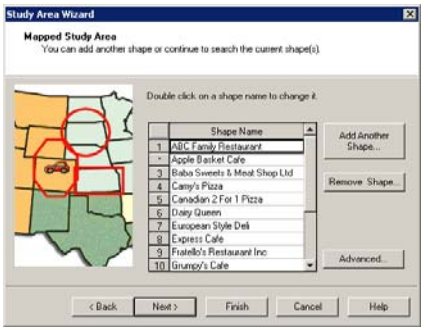
- Select the **Numeric Fields DRIVETIME1** and **DRIVETIME 2** and click Add >> to move them into the **Drive Time Field(s)** column.
- Click Next >.

Create Sites



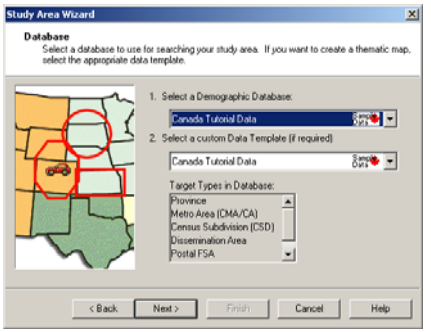
It is possible to use our batch sites to create a target list (see Chapter 43, User Defined Target Areas, page 231); for now we will just create profile reports.

- Clear the ☐ Create a ranked target list of sites box.
- Click Begin to generate the drive times.



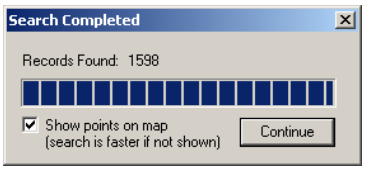
At this point, the Batch Sites Wizard has finished, and control switches to the **Mapped Study Area** dialog box of the Study Area Wizard. The sites to be processed are listed for review.

- Click Next >.



- Select the **Canada Tutorial Data**.
- Click Finish.

Click Search Now in the **Search Study Area** dialog box.



- When the search is complete, click Continue to close the progress indicator.

2001 Census Census Snapshot	Area Union Batch Sites: Cafe$		XYZ Family Restaurant 0 min - 5 min		XYZ Family Restaurant 0 min - 10 min		Peach Basket Cafe 0 min - 5 min	
Total Population	**273,829**	**% base**	**150,101**	**% base**	**272,598**	**% base**	**99,490**	**% bas**
Males	135,821	50%	74,741	50%	135,205	50%	49,335	50
Females	138,008	50%	75,360	50%	137,393	50%	50,155	50
2001 Population by Age	**273,829**	**% base**	**150,101**	**% base**	**272,598**	**% base**	**99,490**	**% bas**
0 to 4 years	20,231	7%	11,726	8%	20,134	7%	7,874	8
5 to 19 years	60,098	22%	33,944	23%	59,817	22%	22,818	23
20 to 24 years	19,561	7%	10,909	7%	19,470	7%	7,220	7
25 to 34 years	41,617	15%	22,905	15%	41,426	15%	15,166	15
35 to 44 years	46,337	17%	24,761	16%	46,103	17%	16,260	16
45 to 54 years	37,924	14%	20,484	14%	37,763	14%	13,522	14
55 to 64 years	23,358	9%	12,992	9%	23,273	9%	8,425	8
65 to 74 years	14,433	5%	7,530	5%	14,376	5%	5,023	5
75 to 84 years	7,970	3%	3,757	3%	7,943	3%	2,628	3
85 years and over	2,063	1%	914	1%	2,057	1%	683	1
Average age of population	33.8		33.1		33.8		33.1	
Median age	33.9		33.1		33.9		32.9	

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The sites specified in the batch file are listed as individual columns. Note that the first column contains an "unduplicated" total for all sites. Each data point is only counted once, even if the drive times overlap.

What Can I Do Now?

- Create a target list using the batch file, (see Chapter 43, User Defined Target Areas, page 231).

43 User Defined Target Areas

Objective

Create a Target List comparing areas defined by drive time polygons.

Background

We have seen how to create a target list report comparing Postal FSA's in Vancouver, BC.

When we use a study area defined by multiple shapes (circles, drive times, or polygons), for example by using **Batch Site Processing** (page 225), we can go a step further and use the shapes themselves as targets in the report.

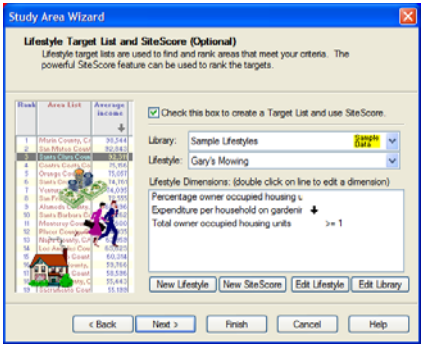
This method provides a powerful tool for comparing the demographics of the trading areas of a large number of sites.

Prior Steps Required

Follow the steps to create Batch Sites for Drive times (page 225) as far as the **Create Sites** dialog box (page 229). This time, do not clear the ☑ Create a ranked target list of sites before clicking Begin to generate the drive times.

➢ Click Next > two more times to advance to the **Lifestyle Target List** dialog box.

Create a Target List of Drive Time Areas



Note that ☑ Check this box to create a Lifestyle Target List *is checked and the details of the* ***Lifestyle Target List*** *dialog box are visible.*

➢ Click Next >.

Note that the option: Row for Each Shape -- Create a Target row for each shape *has been selected automatically. The other options will result in a target list containing individual targets from the database.*

Click Finish.

Click Search Now in the **Search Study Area** dialog box.

Rank	Batch Sites: 'Bellingham Cafes$' Shape List	Percentage owner occupied housing units	Expenditure per household on gardening services	Total owner occupied housing units
1	Rhodes Cafe 0 min - 10 min	53.10	154	17,276
2	Swan Cafe 0 min - 10 min	52.59	153	16,884
3	Harris Ave Cafe 0 min - 10 min	52.56	153	16,826
4	Little Cheerful Cafe 0 min - 10 min	52.58	153	16,885
5	Cafe La Gente 0 min - 10 min	52.58	153	16,885
6	Cafe Akroteri 0 min - 10 min	52.55	153	16,863
7	Cafe Toulouse 0 min - 10 min	52.54	153	16,851
8	Pacific Cafe 0 min - 10 min	52.54	153	16,851
9	Old Town Cafe 0 min - 10 min	52.52	153	16,837
10	Colophon Cafe 0 min - 10 min	50.22	150	14,439
11	Rhodes Cafe 0 min - 5 min	48.94	147	11,576
12	Colophon Cafe 0 min - 5 min	41.43	146	4,585
13	Swan Cafe 0 min - 5 min	45.96	142	10,745
14	Pacific Cafe 0 min - 5 min	45.80	141	10,973
15	Cafe Toulouse 0 min - 5 min	45.80	141	10,973
16	Harris Ave Cafe 0 min - 5 min	44.57	141	10,015
Accepted	20 Targets	49.59	148	267,299
Rejected	0 Targets			0
Total	20 Targets	49.59	148	267,299

Search Target List

The target list contains entries for the specified Drive Time areas for each café.

Note that sites with multiple drive times (0 to 5 minutes, 0 to 10 minutes) have multiple entries in the list. If the lifestyle is not ranked, drive times for each location are consecutive.

What Can I Do Now?

- Use the target list to rank or filter the demographics of each drive time zone in the same manner that we use pre-defined targets like ZIP Codes or Block groups.
- Use user defined target areas to compare the trading areas of large numbers of business locations.
- Use user-defined targeting in conjunction with imported user-supplied data (see Chapter 37, Appending Your Data to a PCensus Database, page 193), for Penetration Analysis (page 249) to compare the performance of business locations.

44 Using Segmentation Data for Market Analysis

Overview

In the preceding chapter, we saw how survey-based profile data can be used to predict penetration and market potential. The PCensus data import feature allows us to use a similar process based on customer data.

To take advantage of this capability, each record of our customer file must include a segment code; in the case of PRIZM, this will be a two-digit code in the range 1-66. The codes represent PRIZM segments (01 Upper Crust, 02 Blue Blood estates etc.)

Records must also include a block group FIPS code, in order that the file can be appended to an installed PCensus database. A number of services are available to append segment codes and block group codes to customer databases; contact your PCensus supplier for information.

For the purposes of this discussion, we will refer to a database of fictitious customers in Whatcom County, contained in the Excel workbook.

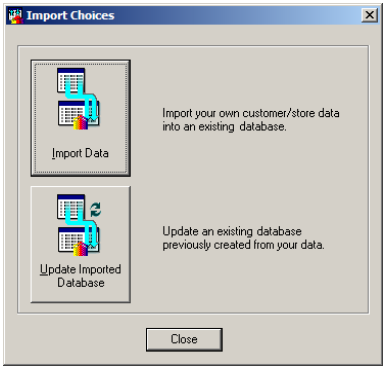
\Program Files\PCensus\Tutorial Files\Import Sample.xls.

	A	B	C	D	E	F	G	H	I
1	Customer Name	PrizmNE Segment	Income	Age	Sex	Purchases	Longitude	Latitude	blockgroup
2	Customer1	09	72241	40	F	1	-122.476502	48.695368	530730012004
3	Customer10	09	42261	29	M	1	-122.789158	48.980347	530730104021
4	Customer100	01	72721	63	F	1	-122.502477	48.719684	530730011003
5	Customer101	56	49091	48	M	1	-123.04958	49.001734	530730110001
6	Customer102	09	136795	36	F	1	-122.350491	48.753727	530730008015
7	Customer103	10	74573	69	F	1	-122.490425	48.739675	530730011001
8	Customer104	09	118699	52	F	1	-123.087046	48.996856	530730110002
9	Customer105	23	88400	29	F	1	-122.578277	48.997813	530730104016
10	Customer106	23	54317	43	M	1	-122.376967	48.683085	530730012003
11	Customer107	28	55444	36	M	1	-122.734904	48.928321	530730104023
12	Customer108	09	90329	66	F	1	-122.789158	48.980347	530730104021
13	Customer109	23	75941	28	F	1	-122.400855	48.857652	530730107001
14	Customer11	23	42449	29	M	1	-122.400855	48.857652	530730107001
15	Customer110	03	91821	46	F	1	-122.414722	48.788564	530730008014
16	Customer111	33	62766	29	F	1	-122.350495	48.918312	530730107003
17	Customer112	53	49595	32	M	1	-122.490651	48.727749	530730011002
18	Customer113	11	47206	53	M	1	-122.396317	48.748032	530730008023

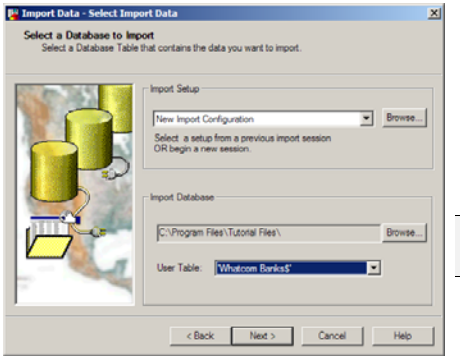
PCensus can calculate penetration ratios for each segment in any geographic area, based on the number of customers for each segment in the area (from

the customer database) and the total number of households for the same segment and area (from the PCensus database).

Steps to Import Segment Coded Data



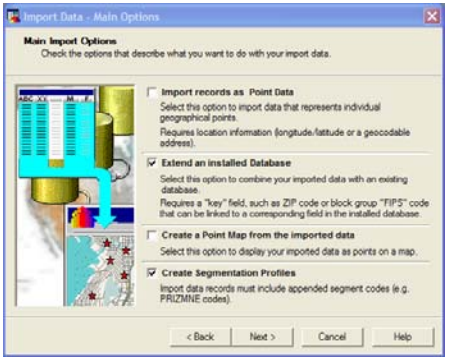
- Start the **Import Data Wizard** from the task pane (or click the **Import** icon) to display the **Import Choices** dialog box.
- Click **Import Data** to start the **Create Database Wizard**.
- Advance to the **Select Import Data** step.



- Click the Browse... button in the **Import Database** panel.
- Select **Files of Type: Excel (*.xls)**.
- Open **Import Sample.xls** in the **Program Files\PCensus\Tutorial Files** folder.

The contents of the file are displayed in a new window for verification.

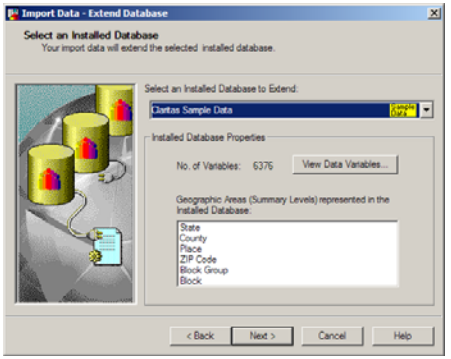
- Click Next > to advance to the **Main Options** page.



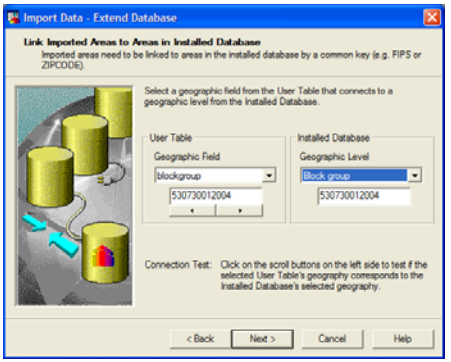
- Check Extend an installed Database.
- Check Create Segmentation Profiles.
- Click Next >.

You must now select the installed PCensus database that will be extended with your imported data. Your data will be appended as a new category.

The PCensus database must contain a summary level that corresponds to the linking key in your input data. (Block group in this example.)



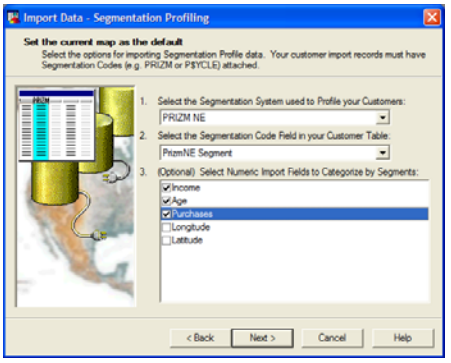
- Select the database **Claritas Sample Data**.
- Click Next > to continue.



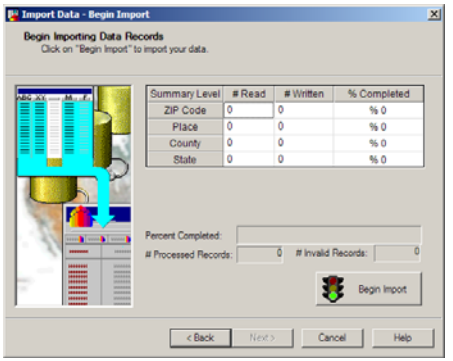
- Make sure that **blockgroup** in the **User Table** selector matches **Block Group** in the **Installed Database**.

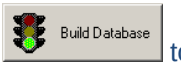
The keys beneath the selectors give an indication of how well the keys match. The two files should track each other when the ◂ and ▸ buttons are used to scan through the respective files.

- Click Next > twice to advance to the **Segmentation Profiling** page.



- Select **PRIZM NE** as the segmentation system to be used.
- Select **PRIZM Segment** as the segmentation code field in the imported data.
- Click Next > twice to advance to the **Begin Import** page.

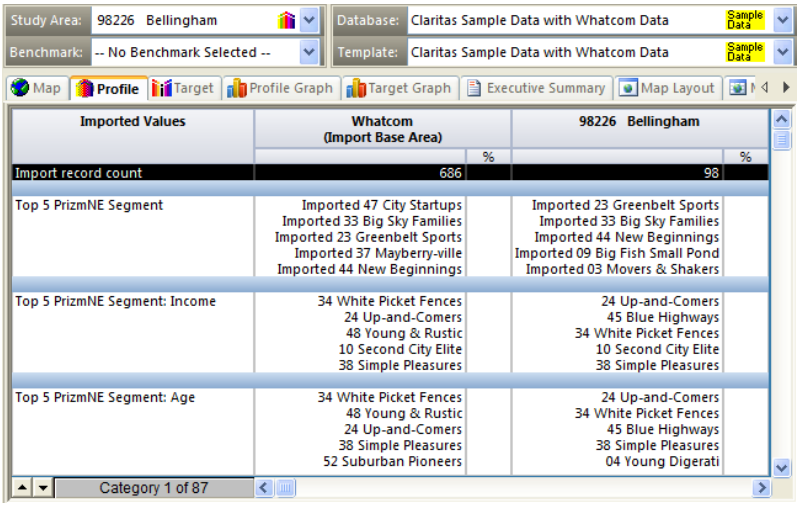


- Click  to complete the import operation.
- Click  in the following dialogs to complete the import process and create a project using the imported data.

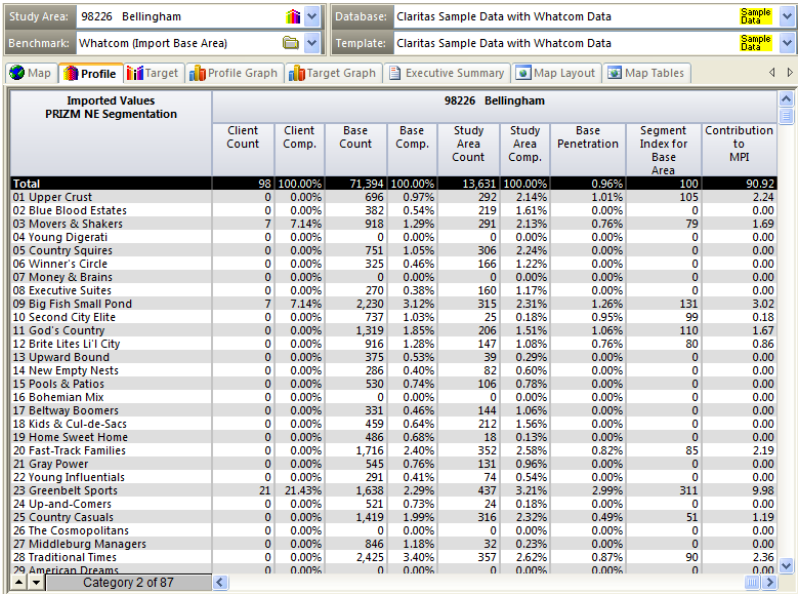
Using the Extended Database

By Default, PCensus creates a new project using the database we created. The project contains a predefined study area comprising all the Block Groups that contain at least one customer. This study area is automatically saved as a Reference Area (see page 147).

- Create a new study area, for example a ZIP code in Bellingham.



- Select the second category in the template to display penetration and Market Potential index (MPI) calculations.



Imported Values PRIZM NE Segmentation	98226 Bellingham								
	Client Count	Client Comp.	Base Count	Base Comp.	Study Area Count	Study Area Comp.	Base Penetration	Segment Index for Base Area	Contribution to MPI
Total	98	100.00%	71,394	100.00%	13,631	100.00%	0.96%	100	90.92
01 Upper Crust	0	0.00%	696	0.97%	292	2.14%	1.01%	105	2.24
02 Blue Blood Estates	0	0.00%	382	0.54%	219	1.61%	0.00%	0	0.00
03 Movers & Shakers	7	7.14%	918	1.29%	291	2.13%	0.76%	79	1.69
04 Young Digerati	0	0.00%	0	0.00%	0	0.00%	0.00%	0	0.00
05 Country Squires	0	0.00%	751	1.05%	306	2.24%	0.00%	0	0.00
06 Winner's Circle	0	0.00%	325	0.46%	166	1.22%	0.00%	0	0.00
07 Money & Brains	0	0.00%	0	0.00%	0	0.00%	0.00%	0	0.00
08 Executive Suites	0	0.00%	270	0.38%	160	1.17%	0.00%	0	0.00
09 Big Fish Small Pond	7	7.14%	2,230	3.12%	315	2.31%	1.26%	131	3.02
10 Second City Elite	0	0.00%	737	1.03%	25	0.18%	0.95%	99	0.18
11 God's Country	0	0.00%	1,319	1.85%	206	1.51%	1.06%	110	1.67
12 Brite Lites Li'l City	0	0.00%	916	1.28%	147	1.08%	0.76%	80	0.86
13 Upward Bound	0	0.00%	375	0.53%	39	0.29%	0.00%	0	0.00
14 New Empty Nests	0	0.00%	286	0.40%	82	0.60%	0.00%	0	0.00
15 Pools & Patios	0	0.00%	530	0.74%	106	0.78%	0.00%	0	0.00
16 Bohemian Mix	0	0.00%	0	0.00%	0	0.00%	0.00%	0	0.00
17 Beltway Boomers	0	0.00%	331	0.46%	144	1.06%	0.00%	0	0.00
18 Kids & Cul-de-Sacs	0	0.00%	459	0.64%	212	1.56%	0.00%	0	0.00
19 Home Sweet Home	0	0.00%	486	0.68%	18	0.13%	0.00%	0	0.00
20 Fast-Track Families	0	0.00%	1,716	2.40%	352	2.58%	0.82%	85	2.19
21 Gray Power	0	0.00%	545	0.76%	131	0.96%	0.00%	0	0.00
22 Young Influentials	0	0.00%	291	0.41%	74	0.54%	0.00%	0	0.00
23 Greenbelt Sports	21	21.43%	1,638	2.29%	437	3.21%	2.99%	311	9.98
24 Up-and-Comers	0	0.00%	521	0.73%	24	0.18%	0.00%	0	0.00
25 Country Casuals	0	0.00%	1,419	1.99%	316	2.32%	0.49%	51	1.19
26 The Cosmopolitans	0	0.00%	0	0.00%	0	0.00%	0.00%	0	0.00
27 Middleburg Managers	0	0.00%	846	1.18%	32	0.23%	0.00%	0	0.00
28 Traditional Times	0	0.00%	2,425	3.40%	357	2.62%	0.87%	90	2.36
29 American Dreams	0	0.00%	0	0.00%	0	0.00%	0.00%	0	0.00

In this category, we compute penetration ratios for each segment based on our imported data. These ratios are computed for a selected "Base Population", and can be extrapolated to other market areas, on the assumption that populations in a given segment will behave similarly in any location.

The PCensus "Benchmark" feature is used to define the Base Population used in the calculations. Thus, by changing the selected benchmark, we can immediately see the result of using a different base for our calculations. The "Import Base Area" reference area created during the import process (all block groups containing one or more customers) is an obvious candidate for a base population, but other areas, such as the entire United States or a specific geographic area could be considered, depending on the scope and distribution of the imported data.

Note: The selection of a suitable base is of critical importance to the creation of a useful analysis. You are strongly recommended to consult with your PCensus data provider before using these techniques for predictive analysis.

The report column contents are defined using the following formulae (using segment **03 Movers and Shakers** as an example):

Column	Description	Formula
Client Count	Total number of actual customers for this segment in the **study area**	**IMPORT_PRIZMNE_HH_CY_03**
Client Composition	Percentage of actual customers in the **study area** that are in this segment	**IMPORT_PRIZMNE_HH_CY_03/ IMPCOUNT*100**
Base Count	Total number of actual customers for this segment in the **base area** (currently selected benchmark area)	**Benchmark.PRIZMNE_HH_CY_03**
Base Composition	Percentage of actual customers in the **base area** that are in this segment	**Benchmark.PRIZMNE_HH_CY_03/ Benchmark.CY_HH*100**
Study Area Count	Total number of households for this segment in the **study area**	**PRIZMNE_HH_CY_03**
Study Area Composition	Percentage of total households in the **study area** that are in this segment	**PRIZMNE_HH_CY_03/CY_HH*100**
Base Penetration	Ratio of actual customers to total households in the **base area** that are in this segment	**Benchmark.IMPORT_PRIZMNE_HH_CY_03/ Benchmark.PRIZMNE_HH_CY_03*100**
Segment Index for Base Area	Ratio of Sample composition to Household composition for the **base area** for this segment	**Benchmark.IMPORT_PRIZMNE_HH_CY_03/ Benchmark.PRIZMNE_HH_CY_03/ Benchmark.IMPCOUNT/ Benchmark.CY_HH*100**
Contribution to MPI	Percentage of households for segment in **study area** multiplied by segment index for **base area**	**PRIZMNE_HH_CY_03/CY_HH* Benchmark.IMPORT_PRIZMNE_HH_CY_03/ Benchmark.PRIZMNE_HH_CY_03/ Benchmark.IMPCOUNT/ Benchmark.CY_HH*100**

Note the extensive use of the "benchmark operator" in the formulae (See page160.)

The individual **Contribution to MPI** results can be totaled to give the overall Market Potential Index for any study area (displayed in the Total line of the profile):

Imported Values PRIZM NE Segmentation	98226 Bellingham								
	Client Count	Client Comp.	Base Count	Base Comp.	Study Area Count	Study Area Comp.	Base Penetration	Segment Index for Base Area	Contribution to MPI
Total	98	100.00%	71,394	100.00%	13,631	100.00%	0.96%	100	90.92
01 Upper Crust	0	0.00%	696	0.97%	292	2.14%	1.01%	105	2.24
02 Blue Blood Estates	0	0.00%	382	0.54%	219	1.61%	0.00%	0	0.00
03 Movers & Shakers	7	7.14%	918	1.29%	291	2.13%	0.76%	79	1.69
04 Young Digerati	0	0.00%	0	0.00%	0	0.00%	0.00%	0	0.00
05 Country Squires	0	0.00%	751	1.05%	306	2.24%	0.00%	0	0.00
06 Winner's Circle	0	0.00%	325	0.46%	166	1.22%	0.00%	0	0.00

The methodology used to calculate MPI will apply to any study area or target area, even in areas geographically remote from the area represented by the imported data. The MPI formula can be "pasted" into a lifestyle dimension, allowing us to compare the relative potential of new markets.

45 Using Segmentation Data for Customer Analysis

Background

In the preceding chapter, we saw how survey-based profile data can be used to predict penetration and market potential. The PCensus data import feature allows us to use a similar process based on customer data.

To take advantage of this capability, each record of our customer file must include a segment code; in the case of PRIZM, this will be a two-digit code in the range 1-66. The codes represent PRIZM segments (01 Upper Crust, 02 Blue Blood estates etc.)

Records must also include a block group FIPS code, in order that the file can be appended to an installed PCensus database. A number of services are available to append segment codes and block group codes to customer databases; contact your PCensus supplier for information.

For the purposes of this discussion, we will refer to a database of fictitious customers in Whatcom County, contained in the Excel workbook

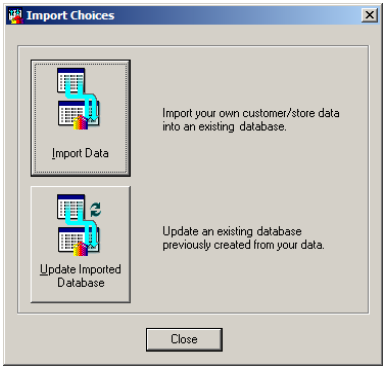
\Program Files\PCensus\Tutorial Files\Import Sample.xls.

	A	B	C	D	E	F	G	H	I
1	Customer Name	PrizmNE Segment	Income	Age	Sex	Purchases	Longitude	Latitude	blockgroup
2	Customer1	09	72241	40	F	1	-122.476502	48.695368	530730012004
3	Customer10	09	42261	29	M	1	-122.789158	48.980347	530730104021
4	Customer100	01	72721	63	F	1	-122.502477	48.719684	530730011003
5	Customer101	56	49091	48	M	1	-123.04958	49.001734	530730110001
6	Customer102	09	136795	36	F	1	-122.350491	48.753727	530730008015
7	Customer103	10	74573	69	F	1	-122.490425	48.739675	530730011001
8	Customer104	09	118699	52	F	1	-123.087046	48.996856	530730110002
9	Customer105	23	88400	29	F	1	-122.578277	48.997813	530730104016
10	Customer106	23	54317	43	M	1	-122.376967	48.683085	530730012003
11	Customer107	28	55444	36	M	1	-122.734904	48.928321	530730104023
12	Customer108	09	90329	66	F	1	-122.789158	48.980347	530730104021
13	Customer109	23	75941	28	F	1	-122.400855	48.857652	530730107001
14	Customer11	23	42449	29	M	1	-122.400855	48.857652	530730107001
15	Customer110	03	91821	46	F	1	-122.414722	48.788564	530730008014
16	Customer111	33	62766	29	F	1	-122.350495	48.918312	530730107003
17	Customer112	53	49595	32	M	1	-122.490651	48.727749	530730011002
18	Customer113	11	47206	53	M	1	-122.396317	48.748032	530730008023

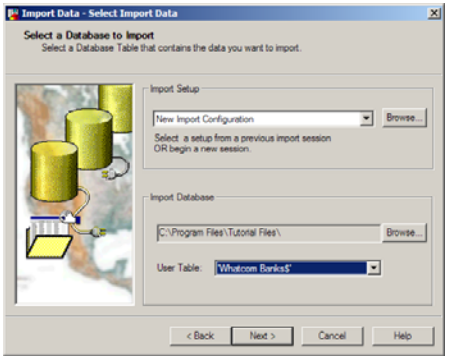
PCensus can calculate penetration ratios for each segment in any geographic area, based on the number of customers for each segment in the area (from

the customer database) and the total number of households for the same segment and area (from the PCensus database).

Steps to Import Segment Coded Data



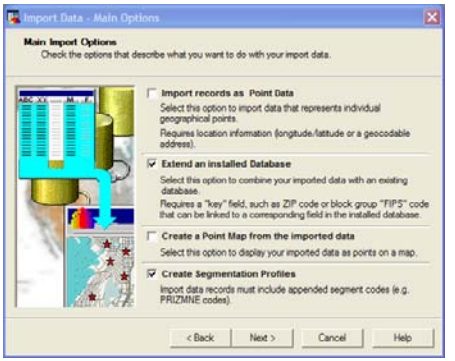
- Start the **Import Data Wizard** from the task pane (or click the **Import** icon) to display the **Import Choices** dialog box.
- Click **Import Data** to start the **Create Database Wizard**.
- Advance to the **Select Import Data** step.



- Click the Browse... button in the **Import Database** panel.
- Select **Files of Type: Excel (*.xls)**.
- Open **Import Sample.xls** in the **Program Files\PCensus\Tutorial Files** folder.

The contents of the file are displayed in a new window for verification.

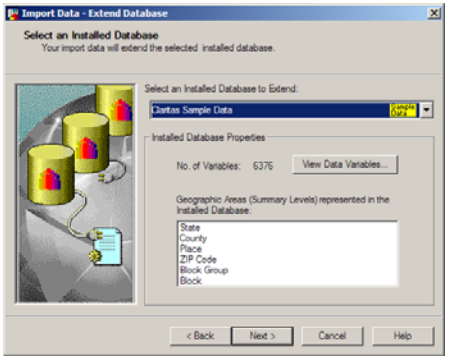
- Click Next > to advance to the **Main Options** page.



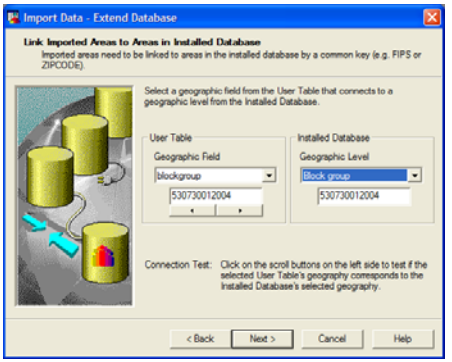
- Check Extend an installed Database.
- Check Create Segmentation Profiles.
- Click Next >.

You must now select the installed PCensus database that will be extended with your imported data. Your data will be appended as a new category.

The PCensus database must contain a summary level that corresponds to the linking key in your input data. (Block group in this example.)



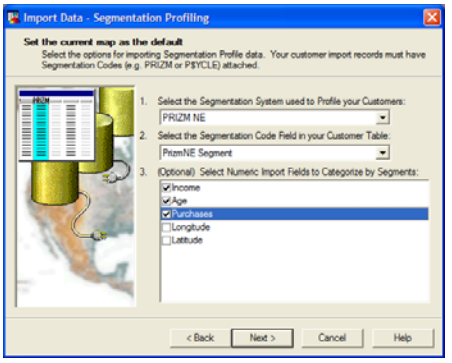
- Select the database **Claritas Sample Data**.
- Click Next > to continue.



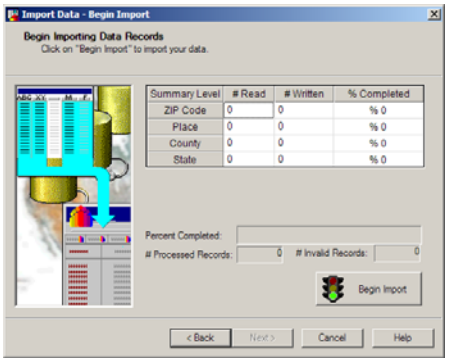
- Make sure that **blockgroup** in the **User Table** selector matches **Block Group** in the **Installed Database**.

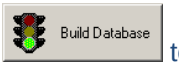
The keys beneath the selectors give an indication of how well the keys match. The two files should track each other when the ◂ and ▸ buttons are used to scan through the respective files.

- Click Next > twice to advance to the **Segmentation Profiling** page.



- Select **PRIZM NE** as the segmentation system to be used.
- Select **PRIZM Segment** as the segmentation code field in the imported data.
- Click Next > twice to advance to the **Begin Import** page.

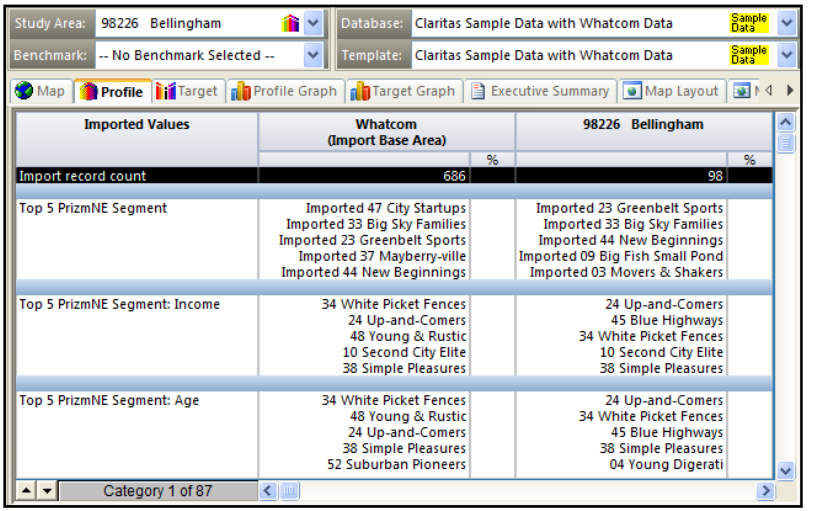


- Click  to complete the import operation.
- Click  in the following dialogs to complete the import process and create a project using the imported data.

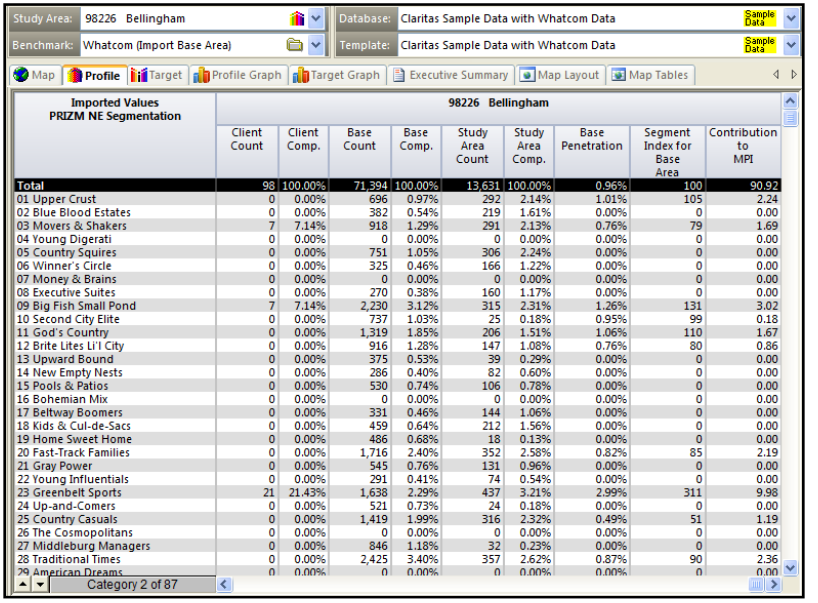
Using the Extended Database

By Default, PCensus creates a new project using the database we created. The project contains a predefined study area comprising all the Block Groups that contain at least one customer. This study area is automatically saved as a Reference Area (see page 147).

- Create a new study area, for example a ZIP code in Bellingham.



- Select the second category in the template to display penetration and Market Potential index (MPI) calculations.



Study Area: 98226 Bellingham | Database: Claritas Sample Data with Whatcom Data
Benchmark: Whatcom (Import Base Area) | Template: Claritas Sample Data with Whatcom Data

Map | Profile | Target | Profile Graph | Target Graph | Executive Summary | Map Layout | Map Tables

Imported Values PRIZM NE Segmentation	98226 Bellingham								
	Client Count	Client Comp.	Base Count	Base Comp.	Study Area Count	Study Area Comp.	Base Penetration	Segment Index for Base Area	Contribution to MPI
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02 Blue Blood Estates	0	0.00%	382	0.54%	219	1.61%	0.00%	0	0.00
03 Movers & Shakers	7	7.14%	918	1.29%	291	2.13%	0.76%	79	1.69
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05 Country Squires	0	0.00%	751	1.05%	306	2.24%	0.00%	0	0.00
06 Winner's Circle	0	0.00%	325	0.46%	166	1.22%	0.00%	0	0.00
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14 New Empty Nests	0	0.00%	286	0.40%	82	0.60%	0.00%	0	0.00
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22 Young Influentials	0	0.00%	291	0.41%	74	0.54%	0.00%	0	0.00
23 Greenbelt Sports	21	21.43%	1,638	2.29%	437	3.21%	2.99%	311	9.98
24 Up-and-Comers	0	0.00%	521	0.73%	24	0.18%	0.00%	0	0.00
25 Country Casuals	0	0.00%	1,419	1.99%	316	2.32%	0.49%	51	1.19
26 The Cosmopolitans	0	0.00%	0	0.00%	0	0.00%	0.00%	0	0.00
27 Middleburg Managers	0	0.00%	846	1.18%	32	0.23%	0.00%	0	0.00
28 Traditional Times	0	0.00%	2,425	3.40%	357	2.62%	0.87%	90	2.36
29 American Dreams	0	0.00%	0	0.00%	0	0.00%	0.00%	0	0.00

Category 2 of 87

In this category, we compute penetration ratios for each segment based on our imported data. These ratios are computed for a selected "Base Population", and can be extrapolated to other market areas, on the assumption that populations in a given segment will behave similarly in any location.

The PCensus "Benchmark" feature is used to define the Base Population used in the calculations. Thus, by changing the selected benchmark, we can immediately see the result of using a different base for our calculations. The "Import Base Area" reference area created during the import process (all block groups containing one or more customers) is an obvious candidate for a base population, but other areas, such as the entire United States or a specific geographic area could be considered, depending on the scope and distribution of the imported data.

Note: The selection of a suitable base is of critical importance to the creation of a useful analysis. You are strongly recommended to consult with your PCensus data provider before using these techniques for predictive analysis.

The report column contents are defined using the following formulae (using segment **03 Movers and Shakers** as an example):

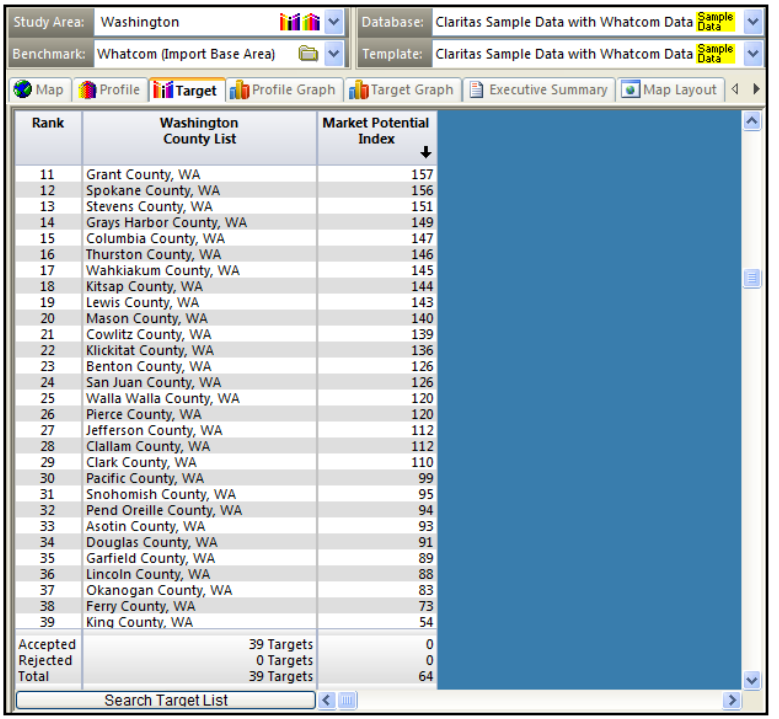
Column	Description	Formula
Client Count	Total number of actual customers for this segment in the **study area**	**IMPORT_PRIZMNE_HH_CY_03**
Client Composition	Percentage of actual customers in the **study area** that are in this segment	**IMPORT_PRIZMNE_HH_CY_03/ IMPCOUNT*100**
Base Count	Total number of actual customers for this segment in the **base area** (currently selected benchmark area)	**Benchmark.PRIZMNE_HH_CY_03**
Base Composition	Percentage of actual customers in the **base area** that are in this segment	**Benchmark.PRIZMNE_HH_CY_03/ Benchmark.CY_HH*100**
Study Area Count	Total number of households for this segment in the **study area**	**PRIZMNE_HH_CY_03**
Study Area Composition	Percentage of total households in the **study area** that are in this segment	**PRIZMNE_HH_CY_03/CY_HH*100**
Base Penetration	Ratio of actual customers to total households in the **base area** that are in this segment	**Benchmark.IMPORT_PRIZMNE_HH_CY_03/ Benchmark.PRIZMNE_HH_CY_03*100**
Segment Index for Base Area	Ratio of Sample composition to Household composition for the **base area** for this segment	**Benchmark.IMPORT_PRIZMNE_HH_CY_03/ Benchmark.PRIZMNE_HH_CY_03/ Benchmark.IMPCOUNT/ Benchmark.CY_HH*100**
Contribution to MPI	Percentage of households for segment in **study area** multiplied by segment index for **base area**	**PRIZMNE_HH_CY_03/CY_HH* Benchmark.IMPORT_PRIZMNE_HH_CY_03/ Benchmark.PRIZMNE_HH_CY_03/ Benchmark.IMPCOUNT/ Benchmark.CY_HH*100**

Note the extensive use of the "benchmark operator" in the formulae (See page160.)

The individual **Contribution to MPI** results can be totaled to give the overall Market Potential Index for any study area (displayed in the Total line of the profile):

Imported Values PRIZM NE Segmentation	98226 Bellingham								
	Client Count	Client Comp.	Base Count	Base Comp.	Study Area Count	Study Area Comp.	Base Penetration	Segment Index for Base Area	Contribution to MPI
Total	98	100.00%	71,394	100.00%	13,631	100.00%	0.96%	100	90.92
01 Upper Crust	0	0.00%	696	0.97%	292	2.14%	1.01%	105	2.24
02 Blue Blood Estates	0	0.00%	382	0.54%	219	1.61%	0.00%	0	0.00
03 Movers & Shakers	7	7.14%	918	1.29%	291	2.13%	0.76%	79	1.69
04 Young Digerati	0	0.00%	0	0.00%	0	0.00%	0.00%	0	0.00
05 Country Squires	0	0.00%	751	1.05%	306	2.24%	0.00%	0	0.00
06 Winner's Circle	0	0.00%	325	0.46%	166	1.22%	0.00%	0	0.00

The methodology used to calculate MPI will apply to any study area or target area, even in areas geographically remote from the area represented by the imported data. The MPI formula can be "pasted" into a lifestyle dimension, allowing us to compare the relative potential of new markets.



Rank	Washington County List	Market Potential Index
11	Grant County, WA	157
12	Spokane County, WA	156
13	Stevens County, WA	151
14	Grays Harbor County, WA	149
15	Columbia County, WA	147
16	Thurston County, WA	146
17	Wahkiakum County, WA	145
18	Kitsap County, WA	144
19	Lewis County, WA	143
20	Mason County, WA	140
21	Cowlitz County, WA	139
22	Klickitat County, WA	136
23	Benton County, WA	126
24	San Juan County, WA	126
25	Walla Walla County, WA	120
26	Pierce County, WA	120
27	Jefferson County, WA	112
28	Clallam County, WA	112
29	Clark County, WA	110
30	Pacific County, WA	99
31	Snohomish County, WA	95
32	Pend Oreille County, WA	94
33	Asotin County, WA	93
34	Douglas County, WA	91
35	Garfield County, WA	89
36	Lincoln County, WA	88
37	Okanogan County, WA	83
38	Ferry County, WA	73
39	King County, WA	54
Accepted	39 Targets	0
Rejected	0 Targets	0
Total	39 Targets	64

46 Penetration Analysis – a CRM Tool

Objective

Use a combination of the tools provided by PCensus to implement a CRM solution to identify and target your best customers. Predict the penetration ratio of a product or service in a market area, and then apply the results to locate new, successful markets.

Background

Customer Relationship Management (CRM) is an information industry term for methodologies and software that assist you to manage customer relationships in an organized way. For example, you might build a database of customer information (perhaps based on exit surveys or customer loyalty programs). This resource can be used by your management and front-line service providers to match product plans, offerings and service locations with customer needs.

The intention of this chapter is to suggest ways that the various capabilities of PCensus can be combined to assess the performance of your business in the contexts of customer data and demographics, and to locate new areas of opportunity.

In particular, we will refer to techniques such as:

- Lifestyle Targeting (page 87)
- Combining your data with PCensus Data (page 193)
- Editing a report Template (page 149)
- Indexing Profile Columns (page 146)

Methodology

To illustrate the concepts of Penetration Analysis, we have provided an "extended" database created by combining customer survey data (entirely fictitious) for a commodity called "Widgets" with our Canada Tutorial Data.

We will see how PCensus can show us the areas where Widget usage is likely to be greatest, and how to identify the demographic factors that might control these usage patterns. We can then use these factors to search for new widget markets.

The **Widget Survey** consisted of a questionnaire circulated to households in Bellingham, with the single question: "**Does your household use Widgets?**"

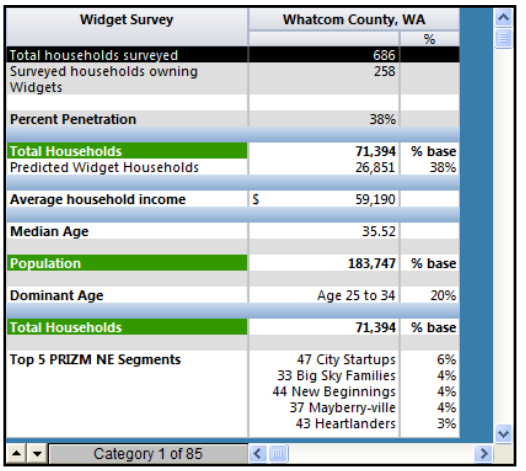
The following steps were used to attach the survey data to the PCensus database.

- The results of the survey were recorded in an Excel worksheet containing the addresses of the respondents. A table column called "Widgets" was set to "**1**" if the answer was "**Yes**" and to "**0**" if it was "**No**".
- The worksheet was geocoded to add a new column containing the block group FIPS code corresponding to the location of each household.
- The data were attached to the Claritas Sample Database as described in "Appending Your Data to a PCensus Database" (page 193).

The resulting "**Widget Survey**" category contains two variables:

- Total Households surveyed
- Surveyed Households owning Widgets

The data template was then edited (page 149) to create some additional data items in the same category:



Widget Survey	Whatcom County, WA	
		%
Total households surveyed	686	
Surveyed households owning Widgets	258	
Percent Penetration	38%	
Total Households	71,394	% base
Predicted Widget Households	26,851	38%
Average household income	$ 59,190	
Median Age	35.52	
Population	183,747	% base
Dominant Age	Age 25 to 34	20%
Total Households	71,394	% base
Top 5 PRIZM NE Segments	47 City Startups	6%
	33 Big Sky Families	4%
	44 New Beginnings	4%
	37 Mayberry-ville	4%
	43 Heartlanders	3%

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Percent Penetration: ratio of Widget owners to total surveyed households, as a percentage.

Total Households

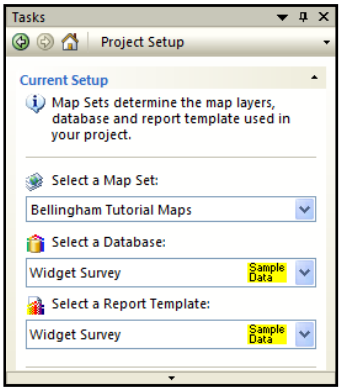
Predicted Widget Households: total households multiplied by penetration ratio.

Average Household Income

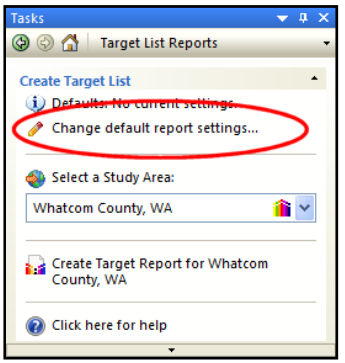
Median Age

Top 5 PRIZM Segments

Steps in Penetration Analysis

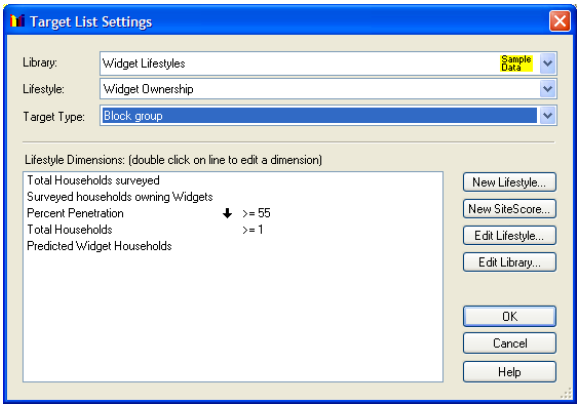


- Set up a new PCensus project using the **Widget Survey** database.
- In the **Predefined study area** task pane, define a study area for **Whatcom County**.



- In the **Target List Reports** task pane, select **Change default report settings**.

We have already created a suitable lifestyle for the project, containing dimensions based on the survey data.



- Select **Block Group** as the **Target Type**.
- Click **OK**.
- Click **Create Target Report for Whatcom County, WA** in the task pane.

Rank	Whatcom County, WA Block group List	Total Households surveyed	Surveyed households owning Widgets	Percent Penetration	Total Households	Predicted Widget Households
1	530730104016	7	7	100%	381	381
2	530730008022	7	7	100%	2,078	2,078
3	530730107001	7	7	100%	549	549
4	530730103011	7	6	86%	630	540
5	530730008014	7	6	86%	2,103	1,803
6	530730104021	7	6	86%	1,177	1,009
7	530730104023	7	6	86%	432	370
8	530730011002	7	6	86%	594	509
9	530730008023	7	6	86%	449	385
10	530730008015	7	6	86%	803	688
11	530730012003	7	6	86%	525	450
12	530730011001	7	6	86%	1,336	1,145
13	530730106004	7	6	86%	202	173
14	530730107003	7	6	86%	696	597
15	530730110002	7	6	86%	146	125
16	530730008013	7	5	71%	830	593
17	530730009003	7	5	71%	910	650
18	530730009002	7	5	71%	2,083	1,488
High Widget Use	28 Targets	196	149	76	21,688	16,487
Low Widget Use	71 Targets	490	109	22	49,706	11,057
Total	99 Targets	686	258	38	71,394	26,851

Search Target List

The lifestyle has a **Filter** that rejects any block groups where the **Percent Penetration** is less than **55%**. Twenty-eight targets are displayed in the list.

➤ Select the **Profile** tab.

Widget Survey	Whatcom County, WA		Whatcom County, WA (Profile of High Widget Use)		Whatcom County, WA (Profile of Low Widget Use)	
		%		%		%
Total households surveyed	686		196		490	
Surveyed households owning Widgets	258		149		109	
Percent Penetration	38%		76%		22%	
Total Households	**71,394**	**% base**	**21,688**	**% base**	**49,706**	**% base**
Predicted Widget Households	26,851	38%	16,487	76%	11,057	22%
Average household income	$ 59,190		$ 71,526		$ 53,808	
Median Age	35.52		39.36		33.94	
Population	**183,747**	**% base**	**56,052**	**% base**	**127,695**	**% base**
Dominant Age	Age 25 to 34	20%	Age 35 to 44	19%	Age 25 to 34	21%
Total Households	**71,394**	**% base**	**21,688**	**% base**	**49,706**	**% base**
Top 5 PRIZM NE Segments	47 City Startups	6%	09 Big Fish, Small Po...	6%	47 City Startups	8%
	33 Big Sky Families	4%	33 Big Sky Families	5%	37 Mayberry-ville	4%
	44 New Beginnings	4%	11 God's Country	5%	53 Mobility Blues	4%
	37 Mayberry-ville	4%	44 New Beginnings	4%	57 Old Milltowns	4%
	43 Heartlanders	3%	51 Shotguns & Picku...	4%	44 New Beginnings	4%

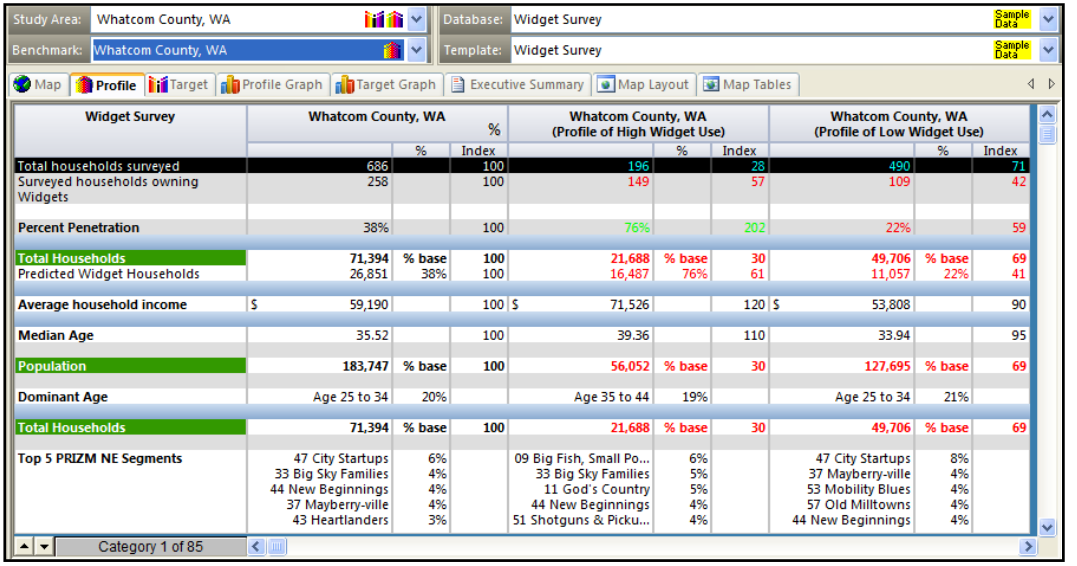
Category 1 of 85

The Profile contains 3 columns:

- The totals for **Whatcom County**.
- The totals for all targets that passed the filter (**High Widget Use**).
- The totals for all targets that were rejected by the filter (**Low Widget Use**).

See page 166 for a description of the accepted/rejected feature.

To emphasize these differences, click in the **Whatcom County** column header, and select **Use as** Benchmark from the menu.



Study Area: Whatcom County, WA | Database: Widget Survey (Sample Data)
Benchmark: Whatcom County, WA | Template: Widget Survey (Sample Data)

Map | Profile | Target | Profile Graph | Target Graph | Executive Summary | Map Layout | Map Tables

Widget Survey	Whatcom County, WA	%	Index	Whatcom County, WA (Profile of High Widget Use)	%	Index	Whatcom County, WA (Profile of Low Widget Use)	%	Index
Total households surveyed	686		100	196		28	490		71
Surveyed households owning Widgets	258		100	149		57	109		42
Percent Penetration	38%		100	76%		202	22%		59
Total Households	**71,394**	**% base**	**100**	**21,688**	**% base**	**30**	**49,706**	**% base**	**69**
Predicted Widget Households	26,851	38%	100	16,487	76%	61	11,057	22%	41
Average household income	$ 59,190		100	$ 71,526		120	$ 53,808		90
Median Age	35.52		100	39.36		110	33.94		95
Population	**183,747**	**% base**	**100**	**56,052**	**% base**	**30**	**127,695**	**% base**	**69**
Dominant Age	Age 25 to 34	20%		Age 35 to 44	19%		Age 25 to 34	21%	
Total Households	**71,394**	**% base**	**100**	**21,688**	**% base**	**30**	**49,706**	**% base**	**69**
Top 5 PRIZM NE Segments	47 City Startups	6%		09 Big Fish, Small Po...	6%		47 City Startups	8%	
	33 Big Sky Families	4%		33 Big Sky Families	5%		37 Mayberry-ville	4%	
	44 New Beginnings	4%		11 God's Country	5%		53 Mobility Blues	4%	
	37 Mayberry-ville	4%		44 New Beginnings	4%		57 Old Milltowns	4%	
	43 Heartlanders	3%		51 Shotguns & Picku...	4%		44 New Beginnings	4%	

Category 1 of 85

We can see some distinct differences between the demographics of the **High Widget Usage** and **Low Widget Usage** groups:

- Average incomes are high (Index **133**) in the **High Widget Usage** areas, and lower (Index **85**) in the **Low Widget Usage** areas.
- Median Age is **38** years in the **High Widget Usage** areas and **33** in the **Low Widget Usage** areas.
- The **PRIZM** segment assignments are different between the two areas.

The database was created artificially in order to emphasize the techniques and results shown in the tutorial. Obviously, the use of real world data would require more subtle interpretation than the simple results shown here.

We can expect that inspection of the other categories in the template would show similar differences between the two populations, for example in education attainment or occupation.

Finding New Markets

We have seen how the combination of Lifestyle Targeting and Profile Indexing can show the demographic differences between areas with high and low penetration of our fictional Widget product.

The next step is to use this knowledge to help us find new areas that are similar in their demographic make-up to the high Widget-usage areas

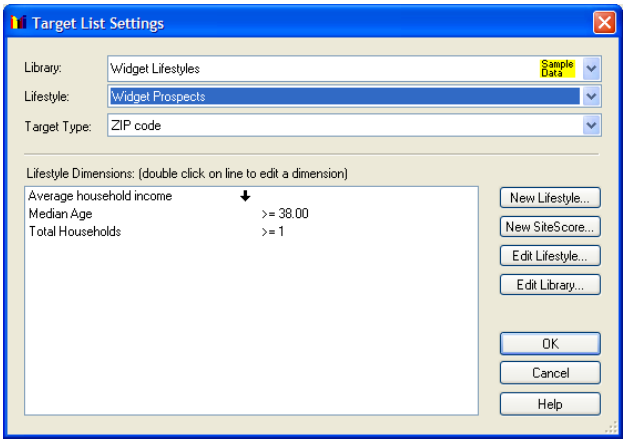
identified by our survey. These new areas will be the focus of our next Widget marketing campaign.

It appears that Widget acceptance may be correlated to these factors:

- Higher median age (**38** years for **High** Widget use versus **32** years for **Low**).
- Higher average income (**$74,866** versus **$47,983**)

We can use Lifestyle Targeting to find other areas that match these demographic criteria; the target areas found will define our prospective market.

In the following example, we will find the most favorable Whatcom County ZIP codes for Widget acceptance.



- Create a new study area for **Whatcom County**.
- In the Default Report Settings dialog, select the **Widget Prospects** lifestyle.
- Set the **Target Type** to **ZIP Code**.

The **Widget Prospects** lifestyle is designed to help us find areas where the demographics match our criteria.

The dimension **Median Age** has a minimum filter of **38**, so only ZIP codes where the median age is greater or equal to this value will be accepted.

We have specified **Average Income** as the ranking dimension, so high income areas will be listed first.

- Create the Target Report.

Rank	Whatcom County, WA ZIP code List	Average household income	Median Age	Total Households
1	98240 Custer	$ 74,357	38.65	1,031
2	98262 Lummi Island	$ 73,672	49.62	433
3	98230 Blaine	$ 65,278	41.18	5,082
4	98244 Deming	$ 62,399	39.83	894
5	98220 Acme	$ 56,929	38.42	162
6	98281 Point Roberts	$ 56,421	46.20	656
Accepted	6 Targets	$ 65,673	41.49	8,258
Rejected	9 Targets	$ 57,959	34.75	62,400
Total	15 Targets	$ 58,860	35.51	70,658

Search Target List

Only six of the 15 ZIP codes passed the filter.

These ZIP codes will be the focus of our Widget marketing campaign.

What Can I Do Now?

The techniques shown here can also be extended to use user defined target areas (page 231). In this case, we could compare the penetration ratios in the trading areas of any numbers of business locations.

Appendix 1 – Database Management

Installing PCensus Databases

Databases are normally delivered on CDs. Exact installation methods may vary, so please follow the instructions printed on the CD or in accompanying documentation.

In most cases, databases are installed by running a **Setup** program supplied on the CD.

To install databases:

- Make sure that PCensus has been properly installed on your computer.
- If PCensus is currently running, close it before continuing.
- Insert the PCensus Database CD in your drive.
- Click the Windows Start button and select Run... .
- Type D:Setup.

*If your CD-ROM drive is not "**D:**", substitute the appropriate letter.*

- Click 

and follow the instructions displayed by the installation program.

Registering Databases for Use on a Network

PCensus databases can be installed on a network server and shared by multiple users; however, before doing this, you should contact Tetrad for information regarding licensing requirements.

The database registration function allows PCensus to find database files that were installed from another workstation. It can also be used to allow access to files that have been installed in a nonstandard way, for example by moving or copying them from one directory to another.

When you install databases they are automatically registered on the local computer.

Each workstation must have its own installed copy of PCensus in a local folder. This is necessary for practicality, and to satisfy the requirements of the PCensus license.

Before a database can be registered, it must be installed on the server. This may be done from any PCensus workstation, using the installation method described above.

To register a previously installed database:

- Select Database Management from the Tools menu.
- Click 

in the Database Management dialog box.
- Specify the database to be registered. This will be a file with the extension ".hdr". Click Browse... to locate the required file and click Register.

PCensus may prompt you to locate additional files to complete the installation. The files have the extensions **".tpl"**, **".ddy"** and **".ico"**; they will probably be in the PCensus folder where the database was originally installed, or on the CD-ROM on which the database was supplied.

Registering Data Templates

On occasion, it may be necessary to install additional data templates, for example to use a custom template created by another user. In order for a template to be displayed in the PCensus **Data Template Selector**, it must be "registered".

- Click 

in the Database Management dialog box.
- Select the template file to be registered. Template files have the extension ".tpl".

If the selected template is on a CD-ROM or other removable medium, it will be copied to the correct location on your hard disk.

When attempting to register a template, you may see an error message regarding missing files. This means that no databases of the type supported by the template have been installed. Install a suitable database and retry the operation.

Deleting Databases

From time to time, you may want to remove PCensus databases and other files from your hard disk. This is often desirable when files such as annually updated **Estimate and Projection** databases are made obsolete by the next year's release.

Databases typically consist of numerous files, the names of which are not obvious, so it is not recommended to delete them using Explorer or similar Windows utilities. Furthermore, manual deletion of registered files can cause operational problems.

PCensus provides a method for safe deletion of unwanted files.

If you are using PCensus on a network, remember that deleting databases or templates will also make them unavailable to other users.

To delete files,

- Click the 

icon in the Database Management dialog box.

PCensus displays the **Delete Files** dialog box.

- Select the type of file to delete (Database, Template or Lifestyle Library).
- Select the correct file from the pull-down list.
- Click the 

button.
- Click 

when finished.

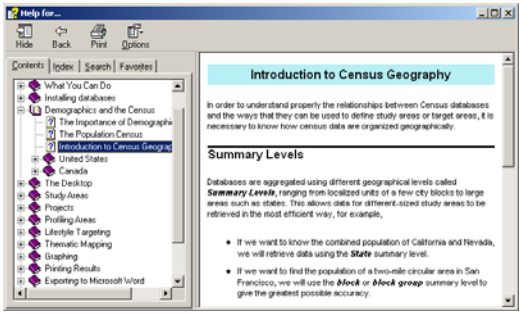
If you delete a file accidentally, you must reload it from the original CD-ROM.

You are advised not to delete the databases or templates that were used to create saved projects that you intend to restore in the future.

Appendix 2 – Census Geography

In order to understand properly the relationships between PCensus databases and the study areas used in PCensus, it is necessary to know how census data are organized geographically. This Appendix provides information specific to the geographical hierarchy used by PCensus databases for Canada.

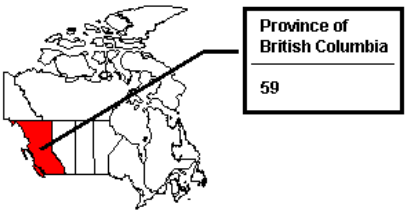
More detailed information on Census Geography can be found in the PCensus online help (click  in the PCensus toolbar).



The information in PCensus databases is aggregated into *summary levels,* each representing a type of geographical area (e.g. census subdivision or census tract) for which census variables are totaled.

Summary levels representing large areas like provinces are considered to be at a higher level in the hierarchy than smaller areas such as census tracts or enumeration areas. This section describes the available summary level types.

Provinces



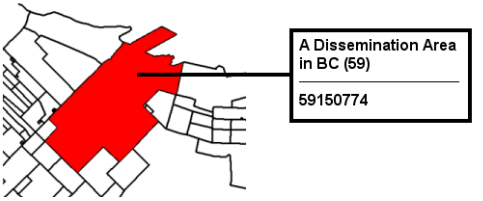
Canada contains **Provinces**.

There are 10 provinces and three territories.

Note: Nunavut, the third territory, was created in 2000, and does not appear in earlier databases.

Each province or territory is assigned a two-digit Province code.

Dissemination Areas



Provinces contain **Dissemination areas (DAs)**.

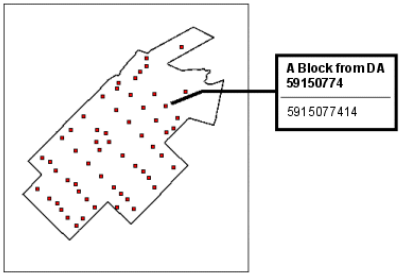
Enumeration Areas were used for all Canadian censuses up to 1996. Starting with the 2001 census, they have been replaced with Dissemination Areas.

There are about 54,000 dissemination areas (DAs) in the 2006 census. Dissemination areas contain between 125 and 375 housing units.

A DA is a subdivision of a Province, and is designed to be relatively homogenous with respect to population characteristics, economic status and living conditions.

Dissemination areas are identified by an eight-digit code consisting of a Province Code plus a six digit DA code

Blocks



Dissemination Areas contain **Blocks**.

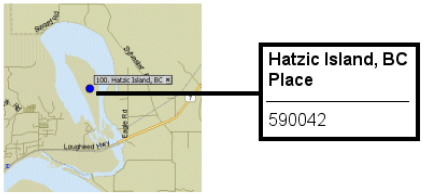
A block is a subdivision of a dissemination area. This is the smallest geographic entity, usually bounded by prominent physical features such as roads, streams, railroad tracks, etc.

There are about 470,000 blocks in the 2006 census. Many blocks are unpopulated.

Blocks are only available for databases using 2001 or later census geography. No detailed demographic information is available at the block level; PCensus uses a method called Block Prorating (see page 267) to compute estimated values

Block numbers are unique within each dissemination area. Blocks are identified by province/DA code plus a two digit block code.

Places



Provinces contain **Places**.

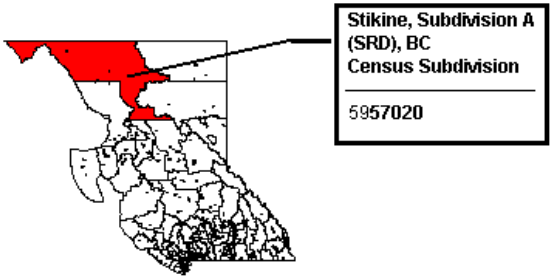
Places are areas that are known locally and may or may not be officially incorporated. Places can cross any other boundary types, but usually respect province boundaries.

When Places are used as a Target type, the resulting profile may contain incomplete totals, as population in rural areas within the study area will not be included.

There are 1289 places in the 2006 census. Each place is assigned a unique seven digit code consisting of the Province code and a four digit place code.

Places are only available for databases using 2001 or later census geography.

Census Subdivisions CSDs)



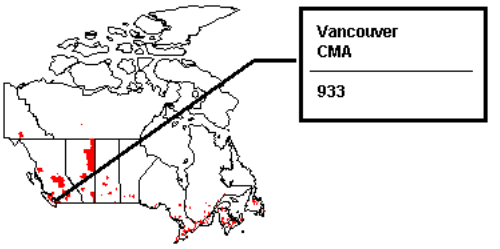
Provinces contain **Census Subdivisions (CSDs)**.

CSDs correspond to various types of named areas, usually familiar to residents of the areas. CSDs are grouped into Census Divisions.

Census subdivisions are distinct areas such as towns, villages or Indian reserves. Population of a CSD ranges from zero (for an undeveloped area) to several hundred thousand for a major city. Small CSDs are commonly surrounded entirely by larger ones.

There are 5418 CSDs in the 2006 census. Each is assigned a unique seven-digit code consisting of a four-digit Province/Census Division code and a three-digit CSD code.

Census Metropolitan Areas (CMAs)



Census Metropolitan Areas (CMAs) correspond to major cities.

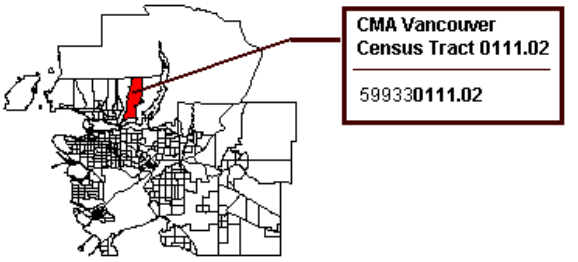
Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs) are large urban areas and their suburbs. A CA has a population of 10,000 to 100,000 and a CMA has a population over 100,000. These types are treated as equivalent for our purposes, and are both referred to as CMAs.

There are 151 CMAs in Canada. Each is assigned a unique five-digit code consisting of a two-digit province code and a three-digit CMA code.

CMAs can overlap province boundaries (e.g. Ottawa-Hull); in this case the parts in each province are treated as separate targets.

Rural areas outside of CMAs are coalesced for each province to create dummy targets (e.g. non-CMA British Columbia), so that when CMA is selected as a target type no population is omitted.

Census Tracts (CTs)



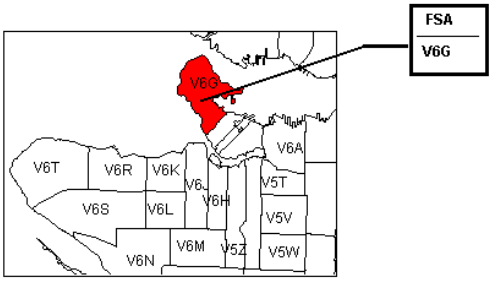
CMAs contain **census tracts (CTs)**

A census tract is a geographical area within a large metropolitan area. Census tracts are designed to be as demographically homogeneous as possible, and their definitions remain unchanged as far as possible between censuses, so they can be used as a basis for studying changing demographic patterns. Census Tracts typically have a population of about 4,000 people.

There are 5076 census tracts (CTs) in the 2006 census. The Census Tract program is only implemented in selected urban areas.

Census tracts are identified by a two-digit province code plus a three-digit CMA code plus a four-digit CT code with a two digit extension. The extension is usually displayed with a "decimal point" (e.g. 599330111.02).

Forward Sortation Areas (FSAs)



Forward Sortation Areas (FSAs) represent postal delivery areas.

Canada Post employs its own geographical methodology for the distribution of mail across Canada.

Forward Sortation Area (FSA) boundaries represent areas sharing the same first three characters of the Canadian Postal Code. Because FSAs are designed for efficient delivery of mail, they generally do not follow political or census area boundaries.

There are approximately 1600 FSAs in Canada. They may contain from zero to 50,000 households.

- *FSA boundaries and populations change constantly and are updated frequently.*
- *FSAs in urban areas usually constitute well-defined areas, while rural FSAs (identified by a "0" in the second character position) may cover very large areas.*

Appendix 3 – Block Prorating

PCensus uses a method called **Block Prorating** to enhance precision when searching circle, polygon or drive time study areas.

In most databases, the smallest geographical unit for which detailed data are available is the Block Group (BG) in the United States or Dissemination Area (DA) in Canada. In both cases, the areas covered by these units may be quite large, especially in relatively sparsely populated regions, and the "edge-effects" resulting when a study area boundary cuts them can cause significant uncertainty in the study area results.

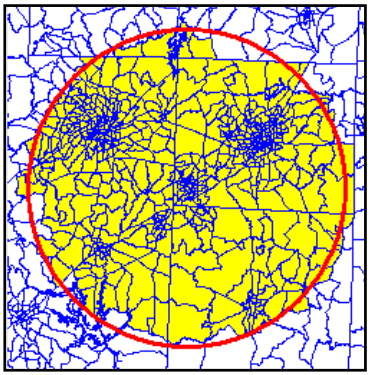
The Block Prorating method distributes the data for each block group or dissemination area between its constituent census blocks on the basis of population, household count or other factors. The smaller size and larger number of blocks allows a substantial improvement in precision.

The Effect of Study Area Size on Precision

When PCensus searches a polygon or circle, there is inevitably an "edge-effect" where targets may be only partially inside the study area. This effect can be minimized by using a target type that is small compared to the area being searched.

The following discussion describes U.S. block groups, but applies equally to Canadian Dissemination areas. In both cases, the availability of selected variables such as population or household counts at the block level allows the block prorating methodology to be applied.

For example, consider this 25 mile radius circle:



25 Mile radius showing block groups included in study area.

Of the block group target areas shown,

- **566** block groups are fully contained within the circle
- **597** block groups have centroids within the circle
- **633** block groups intersect the circle

From this we can deduce that 67 block groups are cut by the circle boundary. Of these:

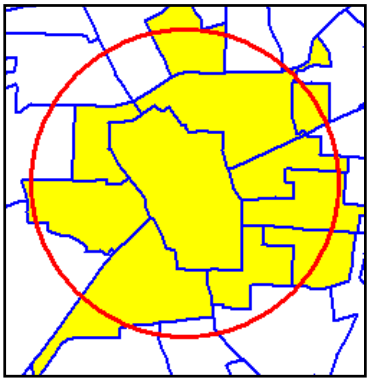
- **31** would be included in the study area.
- **36** would be excluded.

It is not usually possible to apportion the data for a target on the basis of the percentage of its area that falls in the study area; this would require the assumption that its population is evenly distributed, which is rarely the case.

However, we can assume that although data will be erroneously included for some targets and erroneously excluded for other targets, the effects will be random and will tend to balance out.

In the example above, only about 10% of the targets are affected by this uncertainty, so the results for the study area will be quite reliable.

For a one-mile radius, the situation is somewhat different.



One-mile radius showing block groups included in study area

We can see that the edge effects will be much more significant than for the 25 mile circle.

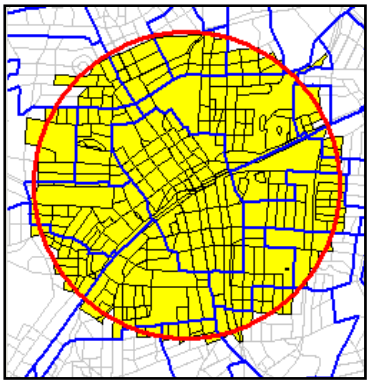
The examples above demonstrate that precision in searching mapped study areas is controlled by the relative sizes of the study area and the target areas stored in the database.

Enhanced Precision Using Blocks

The table below demonstrates the improvement in precision that can be achieved by searching at the block level.

Country	Basic Geographic Unit		Total Number of Blocks	Average improvement in Precision
	Name	Total Number		
United States	Block group	208,648	8,262,363	40 times
Canada	Dissemination Area	52,993	478,707	10 times

The following illustration shows the increased detail available using blocks (lighter outlines) compared to the block group boundaries shown above for the same area.



One-mile radius showing blocks included in study area

Methodology

For most databases, there are practical reasons why it is not feasible to store data at the block level:

- Although the Census data are available for basic demographics (for example, population and household counts) at the block level, most of the information of critical interest (for example, income data and derived products such as consumer spending) is only available at the block group or dissemination area levels.
- The combination of the increased number of targets and the thousands of variables available in most databases would require massive files which could not conveniently be distributed or stored using current personal computer technology.

The **Block Prorating** methodology provides a solution to these problems. It is a reasonable assumption that the demographics of the population in a block group are fairly homogeneous - in fact the block group boundaries were laid out with a conscious objective of ensuring that this is the case.

From the census, we know the population and some other basic information for every block, as well as for its enclosing block group. We can use the ratios of these populations as a basis for distributing most demographic data in a block group to its component blocks.

For an example, consider the following case:

- The population of a block is **50**.
- The population of the enclosing block group is **500**.
- The Asian population of the block group is **40**.

We can estimate the Asian population of the block by prorating on the basis of total population:

$$\frac{\text{Block Population}}{\text{BG Population}} \times \text{Asian BG Population} = \text{Asian Block Population}$$

$$\frac{50}{500} \times 40 = 4$$

This means that we need only to know the block-to-block group population ratio (in this case **50/ 500 = 0.1**) to estimate the value of any variable for a block.

Although we cannot be absolutely sure that the assumption of homogeneity is valid (all 40 Asians could live in the same block), for the most part we can assume that our estimate will be reliable. Furthermore, in the circular study area example above, most of the blocks will be re-aggregated into block groups, so our assumption will only need to be true for block groups that are split by the circle boundary.

We can therefore achieve block level precision by storing only the block/block group population ratio for each block in our database, instead of the full set of variables, allowing a huge reduction in the amount of storage space required. We can also create block level estimates for variables that are not normally available below the block group level.

In practice, the block prorating method has been refined by providing several block/block group factors, for example for number of housing units or for land area. For variables related to households (such as household income

statistics) the ratio of households is used instead of the population ratio. The most appropriate factor is automatically used to prorate each variable in the database.

Appendix 4 - Creating a Map Set

Creating a Map Set

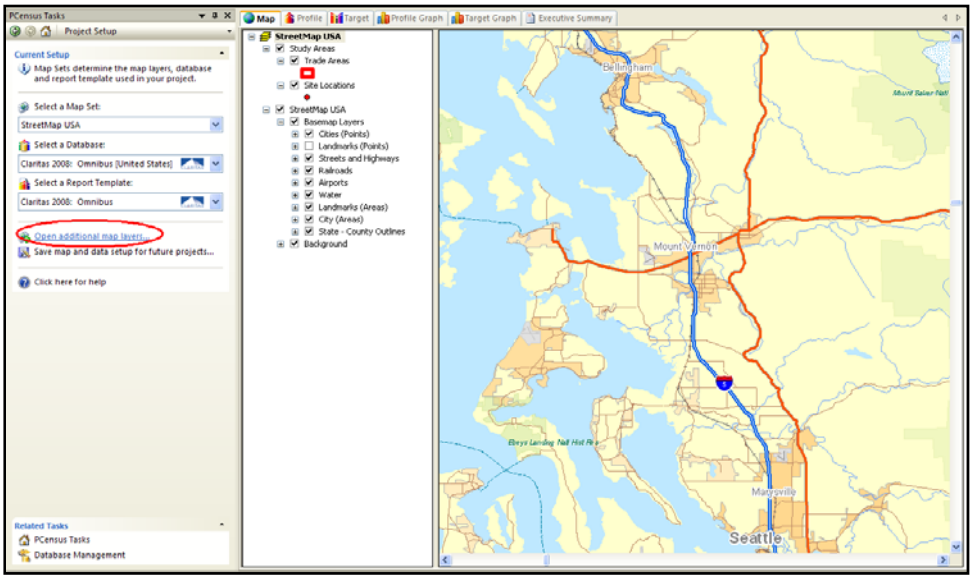
The following is a typical set of steps to create a Map Set that will define the environment for starting new projects.

Create a new Map View

- Display the **Project Setup** task pane.

  If the currently displayed map does not contain the map layers you wish to use, select the entry "**-- No Map Set Selected --**" in the **Select a Map Set** list.

  This will have the effect of removing any currently open map layers.



- Click **Open Additional Map Layers** to add content to the map.

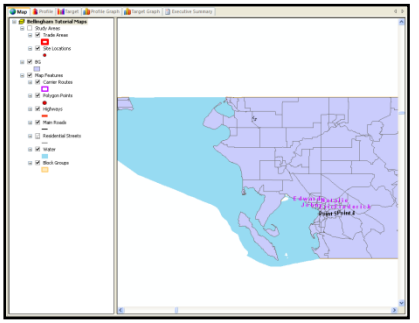
  The **Open Map Layers** dialog allows you to open map files from:

  - Individual layers (ArcView .shp, or .lyr files).
  - ArcMap Documents (.mxd).
  - Other PCensus map sets.

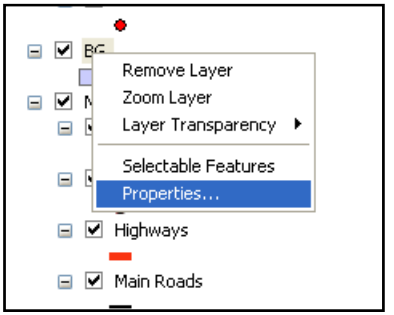
  As an example, add the **BG.shp** layer located in the **Tutorial Files\Map Files\Bellingham** folder.

Adjust the Content and Appearance of the Map

The steps that follow illustrate the use of the ArcView **Layer Control** to change the content and appearance of the map window.

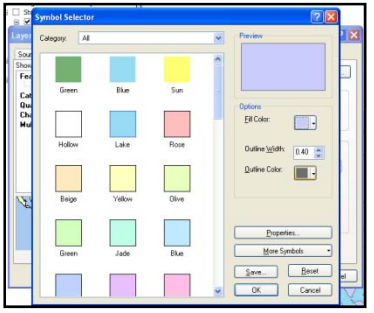


The block code boundaries are initially represented by filled, thin, black boundaries that cover the background of the base map. We may wish to change the appearance of these boundaries to make them and the other layers more visible

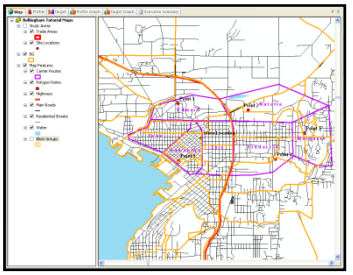


- To change the color and thickness of the lines, right-click on **BG** in the **Layer Control** Window and select **Properties**.

- Select the **Symbology** tab and click on the boundary representation



- Change the **Outline Width** to 2, **Outline Color** to orange and set the **Fill Color** to hollow (or no color).
- Select OK to see the resulting map.



- Exit the layer control system by clicking OK in successive dialog boxes to view the result.

Set the Default Map Location

Use the Map Navigation controls  to set the map window to the location of your area of interest. This could be a regional view encompassing several states, or a localized view of the city where a single operation is located.

If your business operates in several cities, you can create separate map sets for each of them.

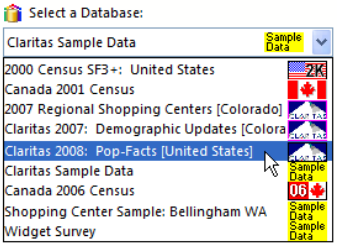
Set the Default Database and Template

Most PCensus installations will include more than one installed database (See next Chapter), one of which will be the Sample Database provided to illustrate the tutorials in this manual.

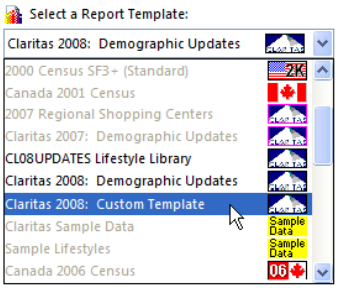
In addition, you may have retained databases from previous years for reference purposes, or you may have installed separate databases for the U.S. and Canada.

If you have several databases installed, it is probable that you will want to use the same one for most of your projects. To ensure that PCensus always starts new projects with the required database, select a default database and template.

- Select the required database from the pull-down list.



If you wish to use a customized data template for your reports, select it from the Report Template list.

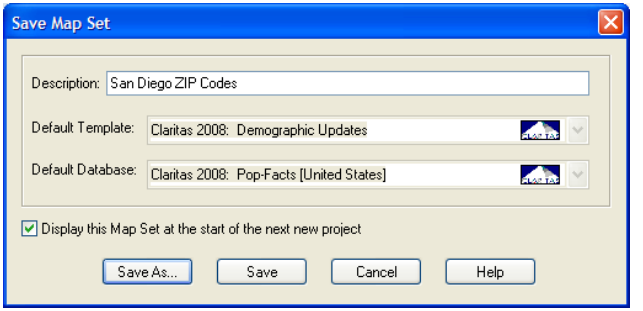


Notice that templates that are not compatible with the current database cannot be selected.

Save the Map Set

When you have made the necessary selections,

- Select **Save map and data setup for future projects…**



- Type a description to appear in the list of defined map sets.

  If required, check the box to **Display this map set at the start of the next new project**.

- Click the Save As button to save the map set.

You can delete map sets by selecting Database Management from the Tools menu. Deleting a map set does not remove any of the map or database files to which it refers.