PCensus™

Microsoft® MapPoint®

DLI / ACCOLEDS Training 2007

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Malaspina University-College

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Table of Contents – DLI / ACCOLEDS Reference

The following is a subset of the PCensus reference materials for use at the DLI / ACCOLEDS training conference.

Note: This partial listing does not represent the full suite of features and functionality included in PCensus.

PCensus for MapPoint – Selected Basic Features:

PCensus for MapPoint – Selected Advanced Features:

5 Start a Project

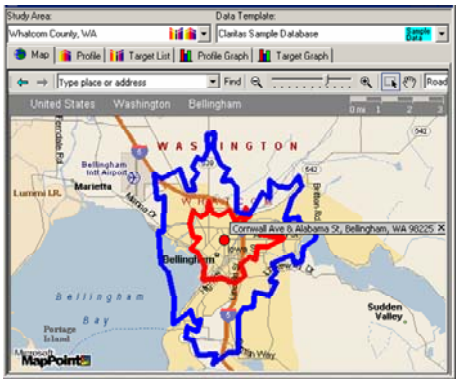
Objective

To start a PCensus session by opening a new project.

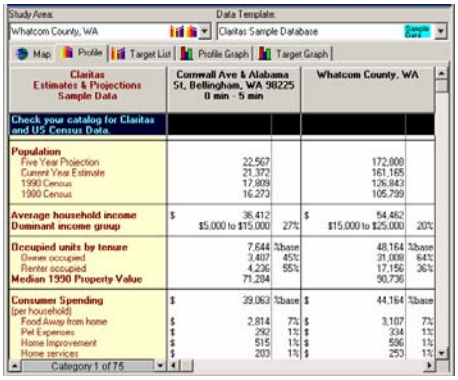
Background

A PCensus project contains all the profiles, reports, graphs, or maps that you create in the course of your work. You must start a PCensus session by creating a new project or opening an existing one. When you have finished, you can save the project so that it can be opened in a future session.

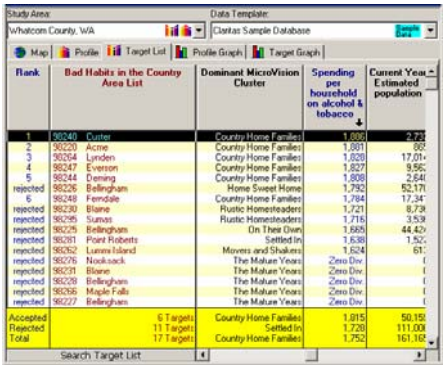
Each project has its own window on the PCensus desktop. The project window contains tabbed pages, each containing a specific component of the project.



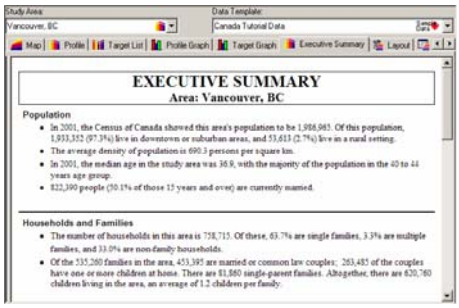
The **Map** tab displays the outlines of study areas (circles, polygons, drive time zones) that you define, as well as colored thematic maps that you create.



The **Profile** tab 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.

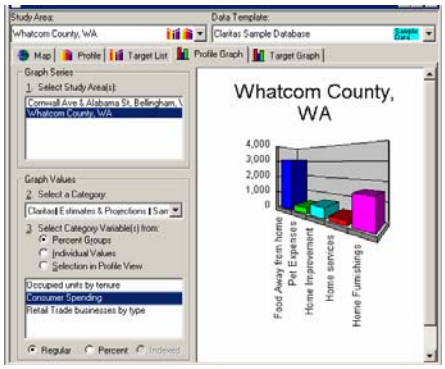


The **Target List** tab displays areas (called target areas) within your study area that match a specific demographic profile; for example, you can list all the ZIP codes where the average income is between $40,000 and $50,000.



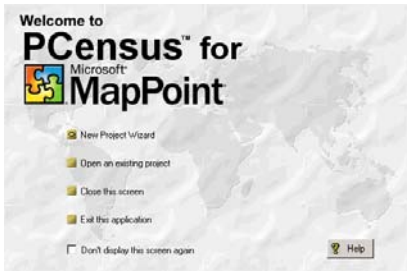
The **Executive Summary** tab displays a narrative summary of the demographics for a selected area.

Note: the executive summary is not available for all data products.



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

Steps to Create a Project



- Start PCensus by double-clicking the  icon on your desktop, and select in the opening dialog box.

*If PCensus is already running, click the **New Project** icon  in the tool bar to start a new project.*

- When the new project is opened, the **Study Area Wizard** starts to guide you through the steps of creating your project.

What Can I Do Now?

- Create **Profile Reports**, **Target Lists**, **Thematic Maps** and **Graphs**.

6 Profiling Predefined Areas

Objective

Create a **Profile Report** comparing the demographics for the Province of British Columbia and a specific city.

Background

PCensus allows you to define two types of areas to create demographic reports:

- **Predefined Study Areas**, such as provinces, cities and three-character postal codes (FSAs).

Predefined areas are defined by the information contained in the database and do not require reference to a map.

- **Mapped Study Areas**, such as circles, polygons, or drive time areas.

Mapped study areas are independent of the geographic structure of the databases.

Prior Steps Required

Create a new PCensus project by clicking  to start the **Study Area Wizard**.

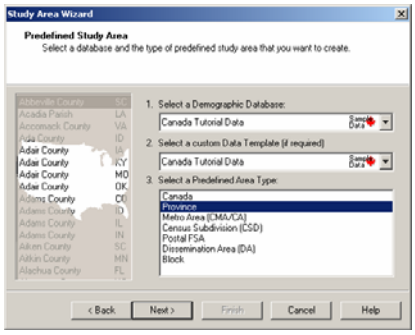
*If you have already opened a project, and want to add new columns for additional study areas, click the **New Predefined Study Area** icon*  .

Steps to Profile Predefined Areas

- Select Select a Predefined Area (state, county, Zip etc.)
- Click Next >.

Select the PCensus Database to Use

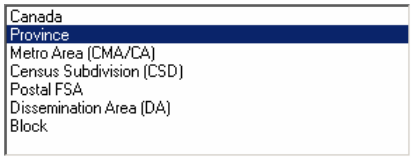
In most installations, there will be a number of installed databases; you must tell PCensus which one you want to use for your project. You must also specify which data templates will be used to define the contents of the profile report.



- Make sure that **Canada Tutorial Data** is selected in both the **Demographic Database** selector and the **Data Template** selector.

In a real project, you would select the specific database and template that you have purchased and installed.

Specify the Type of Area

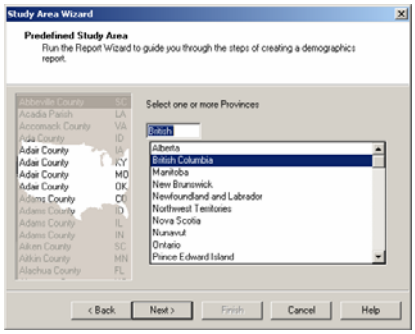


The **Predefined Area Type** list shows the types of standard area available in the selected database.

- We are going to profile the province of British Columbia, so highlight **Province** and click Next >.

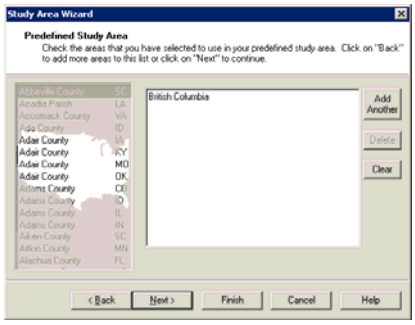
*As a shortcut, we could double-click **Province**.*

Select the Area



The **Predefined Study Area** dialog box is used for selecting geographic areas from a list – in this case a list of provinces. The small text box above the list is used for locating names in a long list.

- Start typing the name **bri…** into this box. The list scrolls to display the first name matching the letters you have typed.
- Highlight **British Columbia** and click Next >.



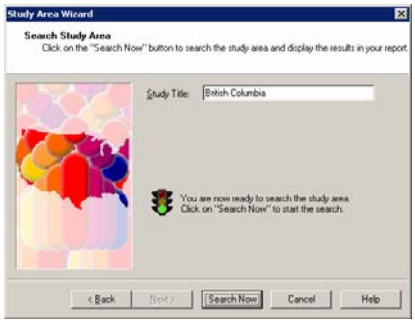
This dialog box summarizes the areas selected for our study.

At this point we could click Add Another to return to the previous dialog box – we might add Alberta to the list to create a profile for the total of both provinces.

We have now specified all the information required to create the profile.

- Click Finish.

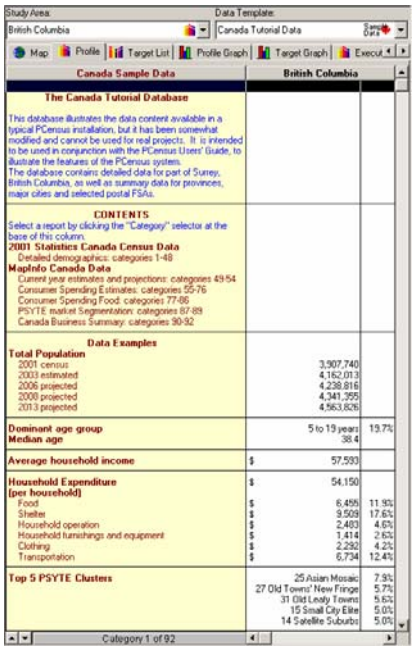
Create the Profile



The **Search Study Area** dialog box is displayed when we are ready to create the profile.

The **Study Title** box can be used to change the name associated with the profile (for example we could change it to **Province of British Columbia**)

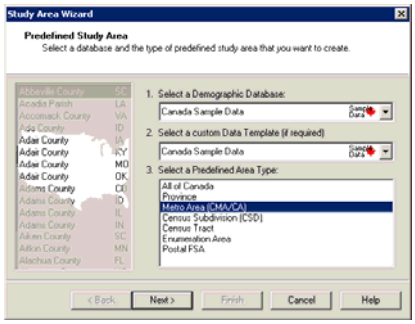
- Click Search Now to display the profile.



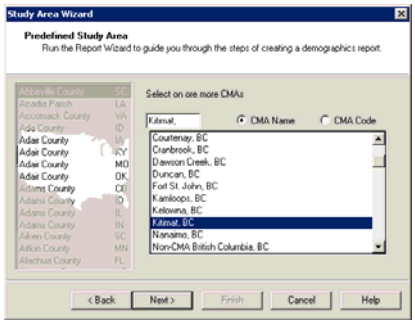
Next, we will add a column to compare the demographics of British Columbia with those of the city of Kitimat.

- Click the **New Predefined Study Area**  icon to start defining another area.

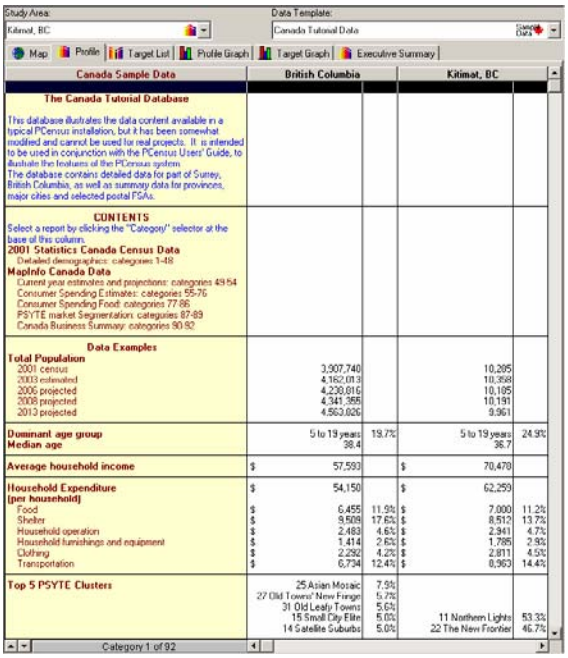
Add Another Column



- Double-click **Metro Area (CMA/CA)** in the **Predefined Area Types** list.



- Scroll down to **Kitimat, BC** and double-click its entry in the list.
- Click Finish in the next dialog box, and then click Search Now as before.



The **Profile** tab now contains two columns for our two study 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 145).
- **Add More Study Areas to the Project**: create additional profile columns, either for **Predefined** areas as described above, for **Circular** areas (page 27, depending on the PCensus mapping platform in use), for **Drive time** areas (page 31) or for arbitrary **Polygons** (page 35).
- **Print the Profile Report** (page 121).
- **Create a Profile Graph** to help you analyze items in the profile (page 115).
- **Export the Profile** for use with other software applications (page 131).
- **Customize the profile** with the data template editor (page 149).

7 Profiling Circular Areas (Radius Report)

Objective

Create a Profile for concentric circular areas around a specified location.

Background

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

*The **Drive Time** study area (page 31) may give a more realistic result than a radius. A radius area does not take into account the factors such as bridges or traffic conditions that can affect access to a location, while drive times do address these factors.*

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, for example:

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

Radius ranges can be defined as:

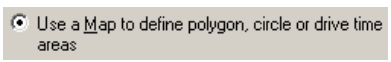
- **Circle**: the entire area within a specified distance of the location.
- **Ring**: the area between two specified distances from the location (for example between one and two miles).

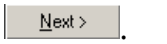
Prior Steps Required

Create a new PCensus project by clicking  to start the **Study Area Wizard**.

*If you have already opened a project and want to add new columns for additional study areas, click the **New Circle** icon*  .

Steps to Profile Circular Areas

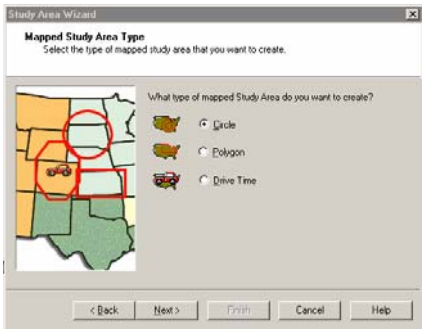
- Select 

- Click  .

Note: This Step does not apply to PCensus for MapPoint.

- Select the Map Set "**Surrey, BC**".
- Click Next >.

PCensus Map Sets provide a convenient way of organizing the maps that you will use in your projects. Once you have installed your maps, you can define map sets that let you quickly display the cities or other areas where you will work, using your preferred colors and symbols for streets, landmarks and census boundaries.

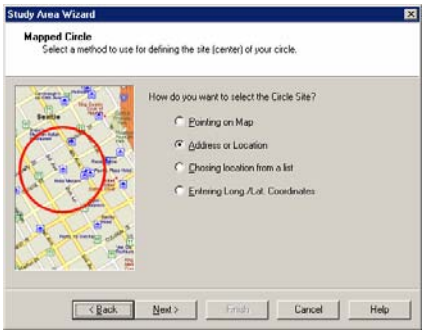


- Select Circle and click Next >.

Specify Circle Location by Address

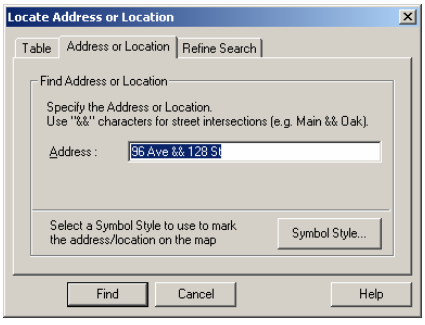
For this example, we will select an address in Surrey, BC for our site location.

*Selection of a location by **Pointing** is described in the **Drive Time** example, page 32*



- Select Address or Location and click Next >.

Note: The following step applies only to PCensus for MapInfo.



The MapInfo Locate Address Dialog lets us find locations by street address (e.g. **9600 128th St**.) or by street intersection.

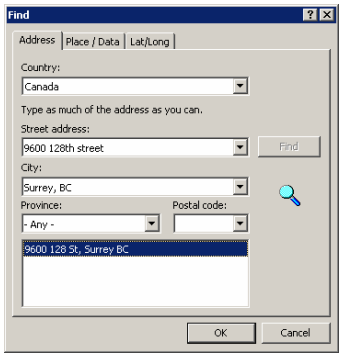
- Type "**96th Avenue && 128th Street**"

***&&** Signifies the intersection of cross-streets.*

- Click Find.

If you enter an address that is incorrect or ambiguous, PCensus will suggest alternative addresses

Note: The following Step applies only to PCensus for MapPoint (or PCensus for MapInfo with MapPoint installed)



*The MapPoint **Find** dialog box is a powerful tool for locating addresses; even incompletely specified addresses can usually be located.*

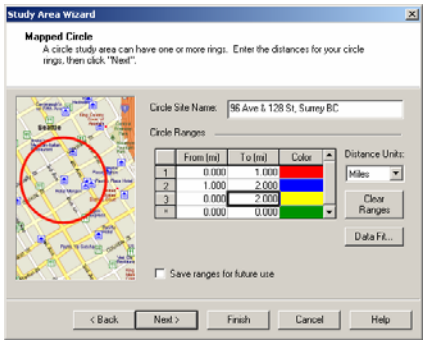
- Enter the address **9600 128th Street, Surrey, BC** in the appropriate boxes as shown (including the country) and click Find.

*You can specify street intersections by using the "**&**" character, for example **96th Ave & 128th St**.*

- Click OK.

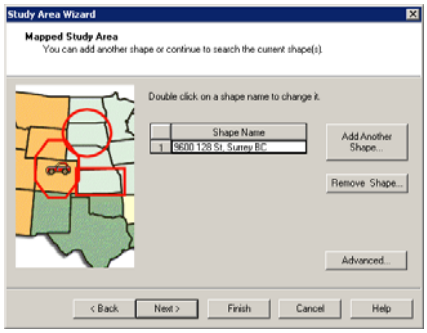
*If you enter an address that is incorrect or ambiguous, PCensus will suggest alternative addresses. The **Find** dialog box is provided by MapPoint. You can view MapPoint Help information by pressing the **F1** key. Remember to set the **Country** to **Canada** or **United States** if necessary.*

Now we can enter the distances in miles to define three circular zones:

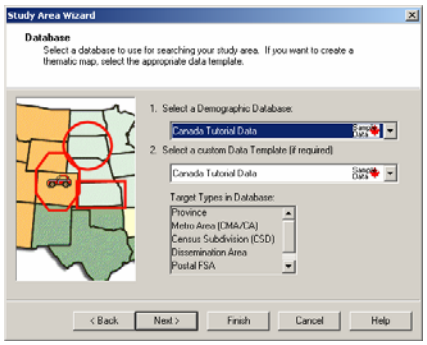


From	To	
0.0	**1.0**	**Circle with 1 mile radius.**
1.0	**2.0**	**Ring – area between 1 mile and two miles radius.**
0.0	**2.0**	**Circle with 2 mile radius.**

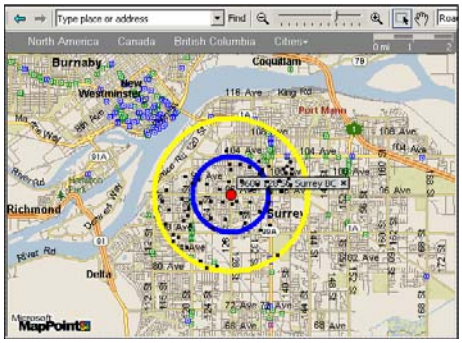
- Click the **To** box.
- Type **1**, then hit the **TAB** key.
- Continue entering numbers and hitting the **tab** key until finished.
- Click Next >.



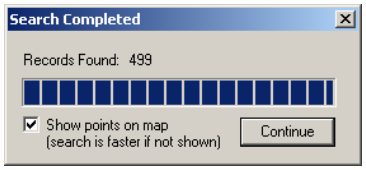
- Click Next >.



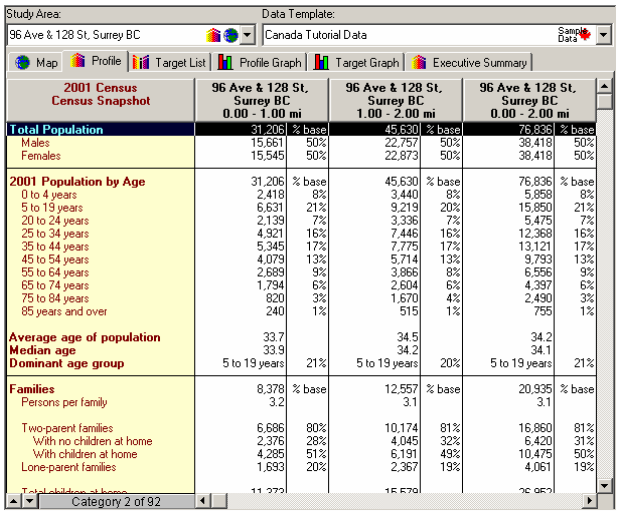
- Check that **Canada Tutorial Data** is selected.
- Click Finish then click Search Now in the **Search Study Area** dialog box.



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



- Click Continue to close the progress indicator when the search is complete.



The **Profile** tab contains three columns for our 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 145).
- **Modify your Study Area** (for example by changing the specified radii): click the **Modify Study Area** icon  .
- **Add More Study Areas to the Project**: create additional profile columns, either for **Predefined** areas (page 23), for additional **Circular** areas, for **Drive time** areas (page 31) or for arbitrary **Polygons** (page 35).
- **Print the Profile** (page 121).
- **Create a Profile Graph** to help you analyze items in the profile (page 115).
- **Print the Map** showing the outline of your study area (page 127).
- **Export the Profile** for use with other software applications (page 131).
- **Customize the Profile** (page 149).
- **Combine Shapes to Create Complex Study Areas** (page 199).

8 Profiling Drive Time Areas

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 freeways or suburban streets.

Note: if you are using PCensus for MapInfo, you must either install Microsoft MapPoint, or the optional PCensus drive time module (Freeway). However, all PCensus installations include sample drive time data for the area around Surrey, BC, so you will always be able to work through the example described in this section.

Prior Steps Required

Create a new PCensus project by clicking  to start the **Study Area Wizard**.

*If you have already opened a project and want to add new columns for additional study areas, click the **New Drive Time** icon*  .

Steps to Profile a Drive Time Area

- Select 

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- Click 

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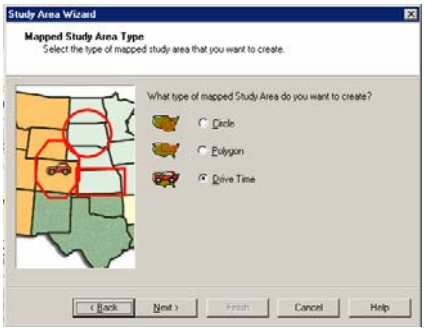
Note: This Step does not apply to PCensus for MapPoint.

- Select the Map Set "**Surrey, BC**".
- Click 

.



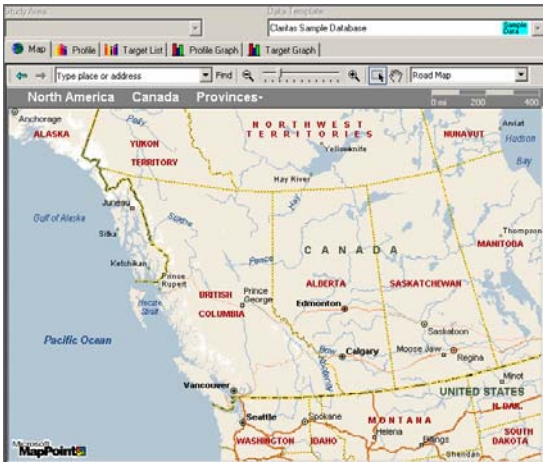
- Select (•) Drive Time and click Next >.

Specify the Drive Time Location 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 28.*

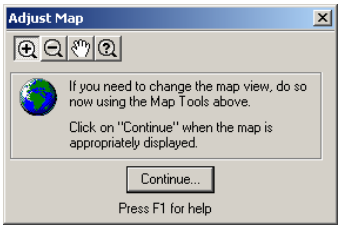
- Select (•) Pointing on Map and click Next >.



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

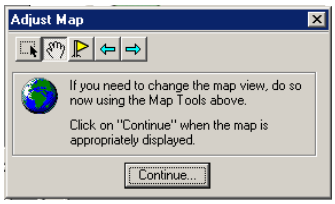
- Click Adjust Map View... to access the map navigation tools.

In PCensus for MapInfo, the Adjust Map dialog appears as follows:



- Click  to select the zoom-in tool.
- Click  to select the zoom-out tool.
- Click  to drag the map within the window.
- Click  to specify the map location and scale explicitly.
- When you can see your location, click Continue.

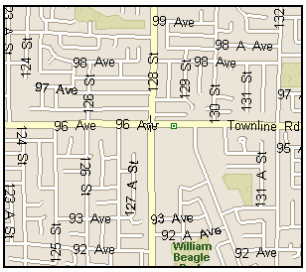
In PCensus for MapPoint, the Adjust Map dialog appears as follows:



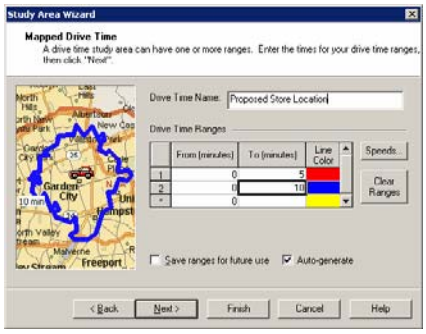
- Click  to zoom to an area by dragging a rectangle.
- Click  to drag the map within the window.
- Click  to open the Find dialog box (page 29).

When you can see your location, click Continue.

*Note: you can also change the map view using the MapPoint tool-bar. If this is not visible, it can be displayed by selecting **Options** from the **Map** menu.*



- Click the cursor on your site location.

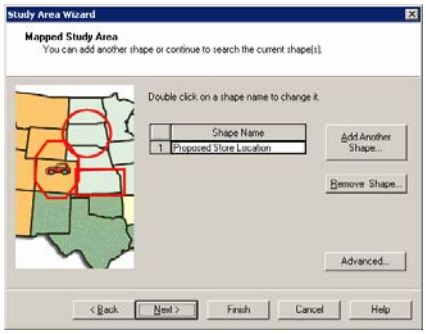


- Enter the drive times as shown to define **5** and **10** minute drive times.

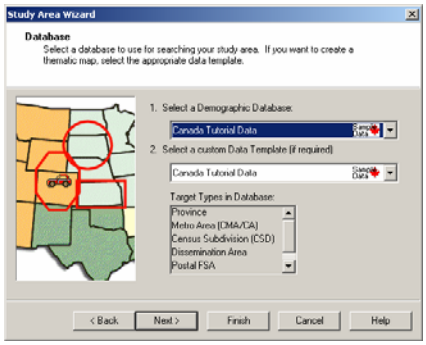
You can click Speeds... to change the expected driving speeds (in miles/hour or km/hour) for each road classification.

*It is a good idea to type an appropriate name for the location in the **Drive Time Name** box.*

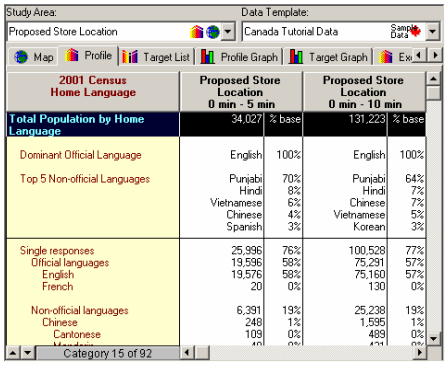
- Click Next >.



- Click Next >.



- Check that **Canada Tutorial Data** is selected.
- Click Finish then click Search Now in the **Search Study Area** dialog box.



- When the search is complete, click Continue to close the progress indicator.

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 145).
- **Modify the Study Area** (for example by changing the specified driving times or speeds): click the **Modify Study Area** icon  .
- **Add More Study Areas to the Project**: create additional profile columns, either for **Predefined** areas (page 23), for **Circular** areas (page 27), for additional **Drive time** areas or for **Polygons** (page 35).
- **Print the Profile** (page 121), or **Print the Map** showing the study area (page 127).
- **Export the Profile** for use with other software applications (page 131).
- **Customize the profile** with the data template editor (page 149).
- **Combine Shapes to Create Complex Study Areas** (page 199).

9 Profiling a Traced Polygon Area

Objective

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

Background

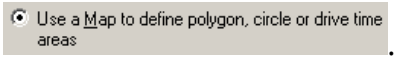
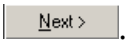
Traced polygons provide a flexible method for defining a study area. You may already have local knowledge of the areas where your customers live or you may want to define an area in the vicinity of an established transportation corridor.

Prior Steps Required

Create a new PCensus project by clicking  to start the **Study Area Wizard.**

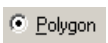
*If you have already opened a project and want to add new columns for additional study areas, click the **New Polygon** icon*  .

Steps to Profile a Polygon

- Select  .
- Click  .

Note: This Step does not apply to PCensus for MapPoint.

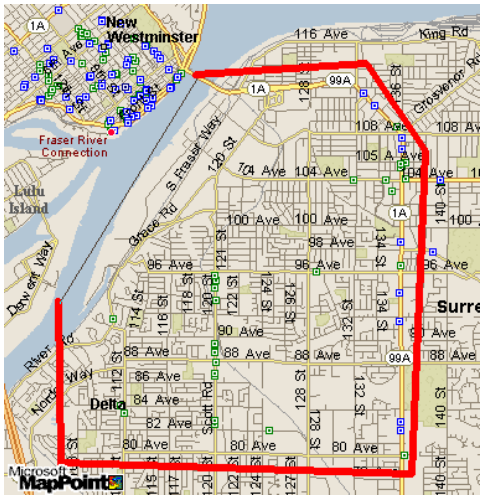
- Select the Map Set "**Surrey, BC**".
- Click  .

- Select  and click  .

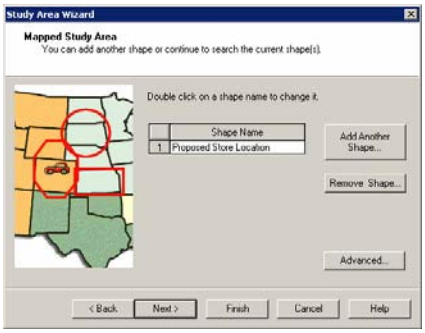
- Select (•) Tracing on Map and click Next >.

Specify the Polygon by Tracing on the Map

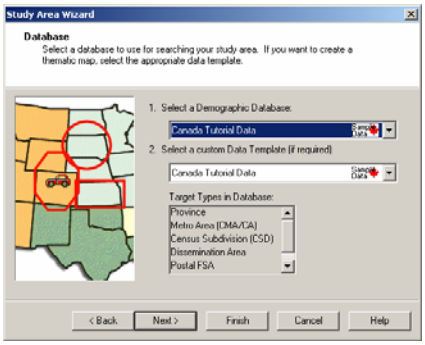
If the map does not show the exact area of your polygon, click Adjust Map View... *and use the map navigation tools (see page 33) to reposition the map.*



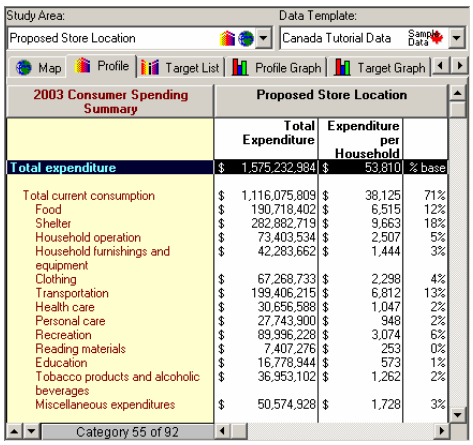
- Use the cross-hair cursor (+) to trace a polygon on the map similar to the one shown.
- Click on each point in order; when you reach the last point, double-click on it to close the polygon.



- Double-click in the **Shape Name** box and enter a suitable name for your polygon area, for example "**Proposed Store Location**".
- Click Next >.



- Check that **Canada Tutorial Data** is selected.
- Click Finish then click Search Now in the **Search Study Area** dialog box.



When the search is complete,

- Click Continue to close the progress indicator.

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

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 145).
- **Add More Study Areas to the Project**: create additional profile columns, either for **Predefined** areas (page 23), for **Circular** areas (page 27), for **Drive time** areas (page 31), or for additional **Polygons**.
- **Create a Profile Graph** to help you analyze items in the profile (page 115).
- **Print the Profile** (page 121).
- **Print the Map** showing the outline of your study area (page 127).
- **Export the Profile** for use with other software applications (page 131).
- **Customize the profile** with the data template editor (page 149).
- **Combine Shapes to Create Complex Study Areas** (page 199).

13 Create a Thematic Boundary Map using PCensus for MapPoint

Note: This Chapter only applies to PCensus for MapPoint.

Objective

Create a thematic map with Postal FSA areas colored according to average income.

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, allowing us to identify easily areas where the value is high or low.

In this example, we will see which Postal FSA areas in Vancouver have high or low incomes.

The first step towards making a thematic map is to identify the data we want to display. To do this, we must make four choices:

- The extent of the area to be mapped (i.e. the Study Area).
- The variable to be mapped.
- The level of geographic detail required, for example FSAs.

Limitations for Boundary Maps

Thematic Boundary maps can only be created using the "built-in" boundaries provided with MapPoint. For Canada, these include:

- Provinces
- Postal FSAs

Note: MapPoint 2004 contains boundaries for Census Subdivisions (CSDs) and Census Metropolitan areas (CMAs). However, these are based on 1996 census geography, and will give incorrect results if used in conjunction with current databases.

Other geographies, such as dissemination areas, are not represented by boundaries in MapPoint.

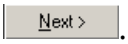
FSA boundaries vary from time to time. New FSAs are created and old ones abandoned according to the mail delivery requirements.

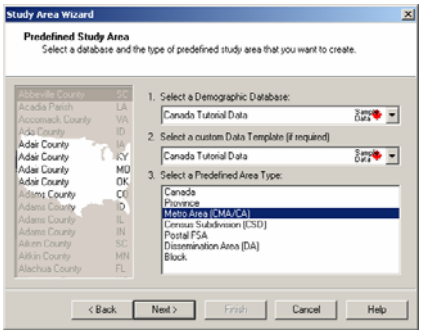
Census boundaries in MapPoint are based on those used for the 1996 census. The variations in geography dictate that there may not be a one-to-one correspondence between areas on the map and targets in a PCensus database, so care should be taken when mapping these types of areas. PCensus will attempt to link data to the most appropriate boundaries, but local errors are likely to occur; these will usually result in blank areas on the map.

The limitations can be minimized in two ways:

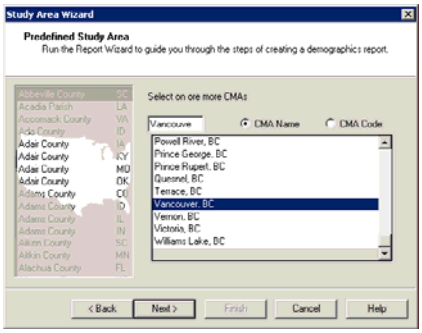
- By displaying data in a Point Thematic Map (page 57). This type of map will produce accurate results for any target type available in a PCensus database, even if MapPoint does not provide corresponding boundaries.
- By using the Advanced Thematic options (page 67). Advanced thematic mapping gives access to the data mapping tools provided by MapPoint, which allow us (among other things) to re-aggregate data for small target types (for example dissemination areas) into the mapped boundaries (for example FSAs) that contain them.

Steps to Create a Boundary Thematic Map

- Create a new PCensus project by clicking  to start the **Study Area Wizard**.
- Select  .
- Click  .

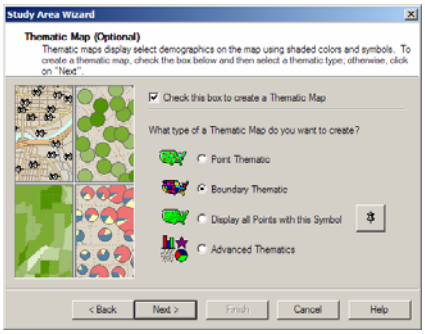


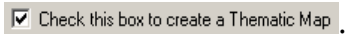
- Make sure that **Canada Tutorial Data** is selected.
- Double-click **Metro Area (CMA/CA)** in the **Area Types** list.

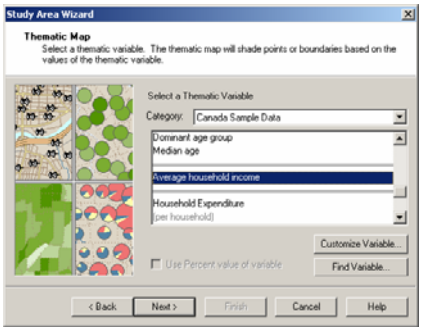


- Double-click **Vancouver, BC**.
- Click  in each of the succeeding dialog boxes to advance to the **Thematic Map (Optional)** dialog box.

Specify the Type of Thematic Map



- Check the box  .
- Select  .
- Click  .

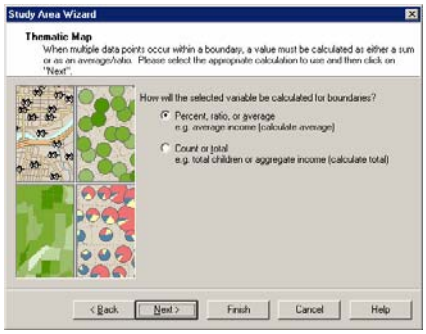


- Select **Average Household Income** in the list of variables.
- Click  .

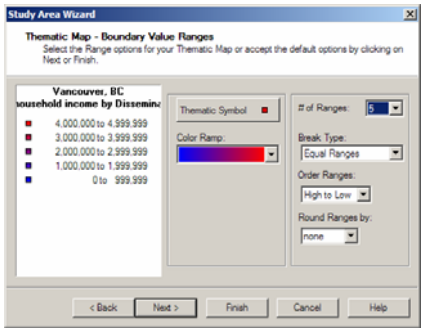
In many cases there will be a one-to-one correspondence between map areas and PCensus targets, so the target value can be applied unchanged to the boundary.

However, in some cases, data from more than one target may be applied to a boundary. This will be the case when a target type (for example dissemination area) is selected that is not represented by MapPoint; PCensus re-aggregates the data to the most appropriate available boundary type (FSA).

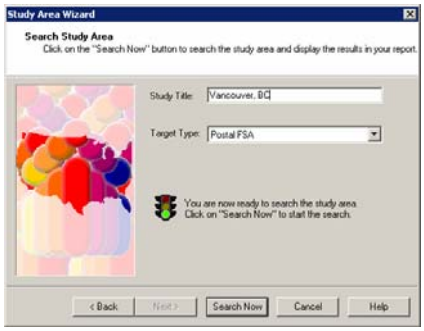
When this occurs PCensus needs to know what type of data the selected variable represents. If the variable is a ratio, percentage or average (for example *average household income*), then PCensus must calculate an *average* value for each region. However, if it is "count" data like *total population*, a *total* must be calculated for each region.



- Select Percent, ratio, or average.
- Click Finish to display the **Search Study Area** dialog box.



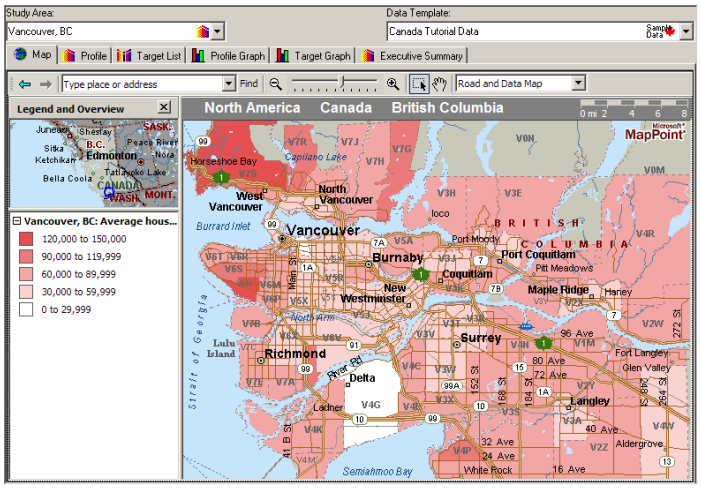
- This dialog presents options for selection of colors and mapped ranges.
- Click Finish to display the **Search Study Area** dialog box.



- Select Target Type: Postal FSA to indicate that we will be mapping Postal FSA areas.
- Click Search Now.

When the search is complete,

- Click Continue to close the progress indicator.



PCensus displays the finished thematic map, with a legend identifying the values identified by each color.

Note: You can change data ranges, color assignments and other map properties by double-clicking in the map legend.

Thematic Mapping can be used in conjunction with Lifestyle Targeting (page 81). In this case, the variables available for mapping will be the dimensions defined in the lifestyle. Only areas passing the defined filters will be mapped, so the thematic map will help you identify areas of interest.

What Can I Do Now?

- **Print the Map** (page 127).
- Click the **Export** icon  to export the map to a standard graphical file format, or copy the map to the clipboard by selecting **Copy Map to Clipboard** from the **Export** menu.
- Combine thematic mapping with lifestyle targeting by selecting both options in the **Study Area Wizard**.

17 Create an Advanced Thematic Map Using PCensus for MapPoint

Note: This chapter only applies to PCensus for Microsoft MapPoint, as it refers to features specific to MapPoint.

Objective

Use the Advanced Thematic Mapping feature to create a "pie chart thematic map" showing the proportions of rented and owned residences.

Background

The thematic mapping examples illustrated in the preceding two sections (Boundary thematic and Point thematic) provide quick methods to create the most commonly needed thematic maps.

The **Advanced Thematic** feature provides full access to the MapPoint **Data Mapping Wizard**, which provides several complex thematic types, and allows comprehensive control over the methods used to apply data to the map.

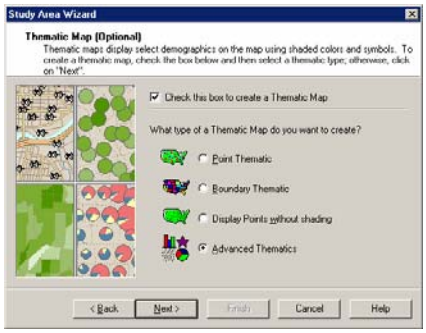
For complete information on using the Data Mapping Wizard, please refer to the MapPoint Help system.

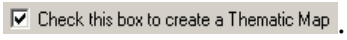
The book "MapPoint for Dummies" (available from Amazon.com) provides a useful reference to the features of MapPoint.

Prior Steps Required

Create a new project and follow the same wizard steps as for the Thematic boundary map (page 43) until the step to **Specify the Type of Thematic Map** (page 54).

Steps to Create an Advanced Thematic Map



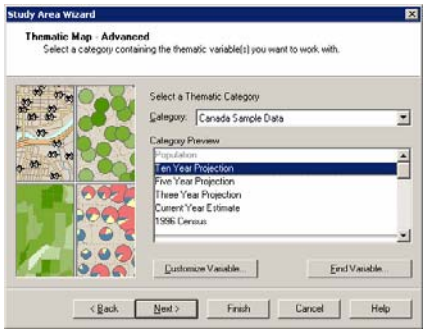
- Check the box 

.
- Select 

.
- Click 

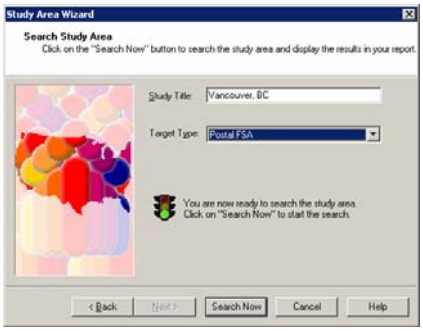
.

*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 deferred to the MapPoint **Data Wizard** stage.*



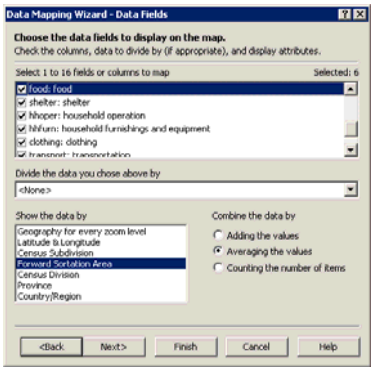
- Make sure that the first Category (**Canada Sample Data**) is selected.
- Click 

to display the **Search Study Area** dialog box.



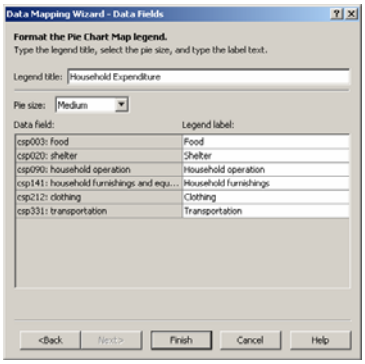
- Select Target Type: Postal FSA to indicate that we will be mapping FSA areas.
- Click Search Now.
- When the search is complete, click Continue to close the progress indicator and open the **Map Type** dialog of the **Data Mapping Wizard**.

- Click Pie Chart.
- Click Next > to display the **Data Fields** dialog box.

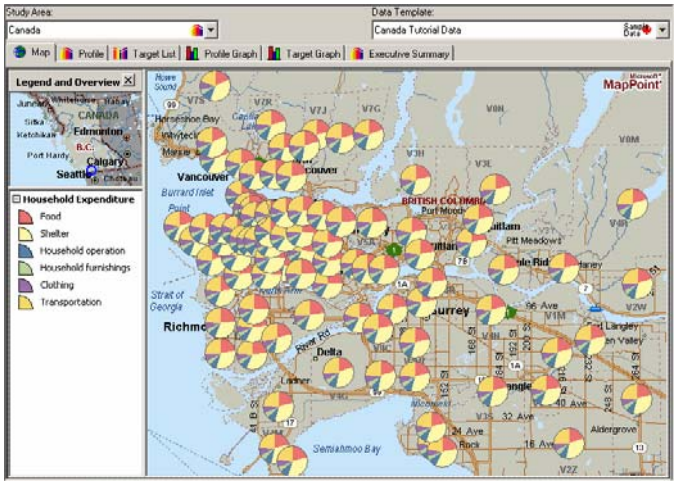


We want to create pie charts for each FSA, comparing expenditure on major categories.

- Check the variables for **Food**, **Shelter**, **Household operation**, **Household furnishings**, **Clothing** and **Transportation**.
- In the **Show the data by:** panel, check **Forward Sortation Area**.
- Click Next > to display the **Data Fields** dialog box.



- Edit the **Legend Title** and **Legend Labels** to improve the appearance of the finished map.
- Click Finish to display the map.



PCensus displays the finished map and legend.

What Can I Do Now?

- Experiment with creating different types of thematic maps by selecting options in the **Data Mapping Wizard**.

22 Create a Lifestyle 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 all the cities 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 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 179), as this provides a flexible method for **Penetration Analysis** (page 219).

In most cases, Lifestyle targeting uses predefined area types (FSA postal codes, Cities, etc.). However, when targeting is used in conjunction with **Batch Site Processing** (page 205), you can use **User Defined Targets** such as trading areas defined by drive times (page 211).

Prior Steps Required

Create a new PCensus project by clicking  to start the **Study Area Wizard**.

*If you have already defined a study area and want to create a target list for the targets that it contains, click the **Edit/Search Study Area** icon*  *to reactivate the Study Area Wizard.*

Steps to Create a Target List

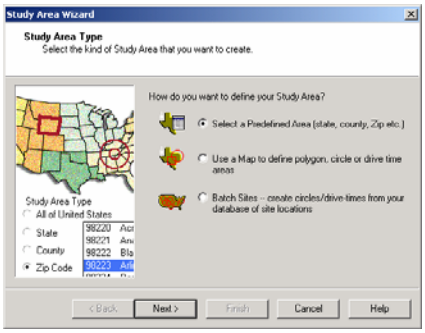
We will use a simple (and fictitious) example to see how Lifestyle targeting could be used to solve a marketing problem.

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.

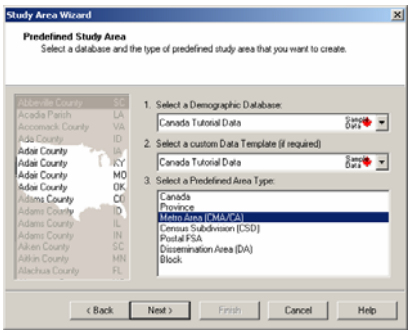
Using Targeting, it is easy to identify the FSAs in Vancouver that meet these criteria. FSAs are the first three characters of a postal code, so Gary can use them to select prospects from his mailing list.

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

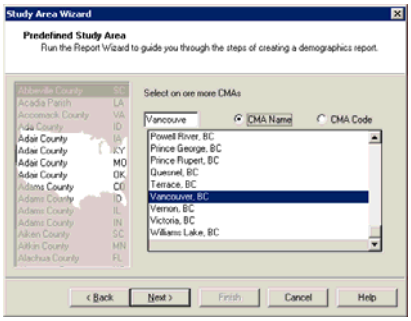


- Select Select a Predefined Area (state, county, Zip etc.).
- Click Next >.

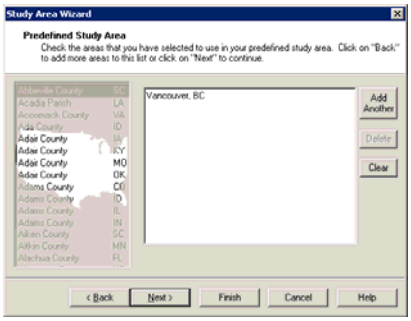
Specify the Study Area



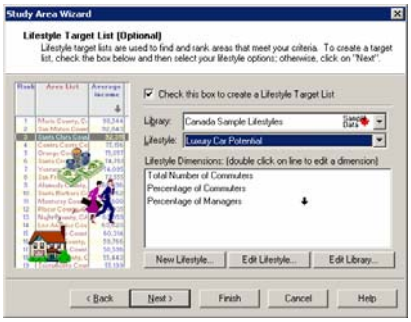
- Make sure that **Canada Tutorial Data** is selected in both the **Demographic Database** selector and the **Data Template** selector.
- Double-click **Metro Area (CMA/CA)**in the **Area Types** list.



- Scroll through the list of displayed cities, and double-click **Vancouver, BC**.



- Verify that Vancouver was selected and click Next >.



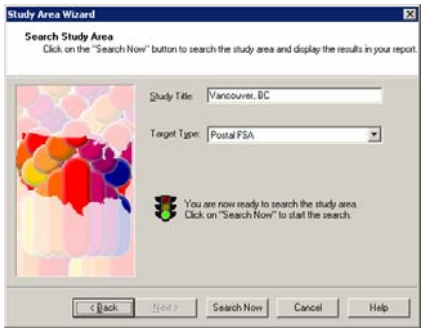
- Check Check this box to create a Lifestyle Target List to display the details of the **Lifestyle Target List** dialog box.

Select a Lifestyle

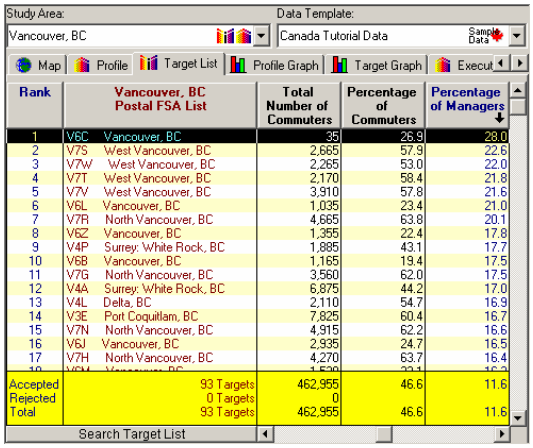
To create a target report, we must use a **lifestyle** definition; we can either create a new lifestyle or re-use one that was used in a previous project.

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

- Select **Luxury Car Potential** in the **Lifestyle** List
- Click Finish to display the **Search Study Area** dialog box.



- Select Target Type: Postal FSA to indicate that we are searching for Postal FSA areas.
- Click Search Now.



Rank	Vancouver, BC Postal FSA List	Total Number of Commuters	Percentage of Commuters	Percentage of Managers
1	V6C Vancouver, BC	35	25.9	28.0
2	V7S West Vancouver, BC	2,685	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	4,685	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
Accepted	93 Targets	462,955	46.6	11.6
Rejected	0 Targets	0		
Total	93 Targets	462,955	46.6	11.6

The **Target** browser lists the FSAs in Vancouver, with columns representing the 3 dimensions:

- **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.

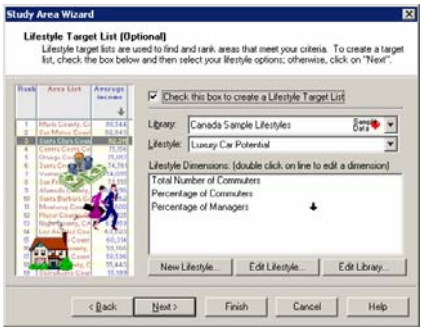
The FSAs are listed in decreasing order of the "**Percentage of Managers**" dimension.

*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**.*

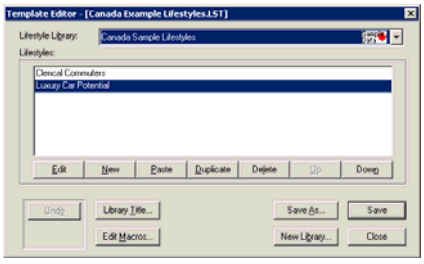
Refine the Lifestyle

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

Click the **Edit/Search Study Area** icon  to redisplay the **Lifestyle Target List** dialog box.



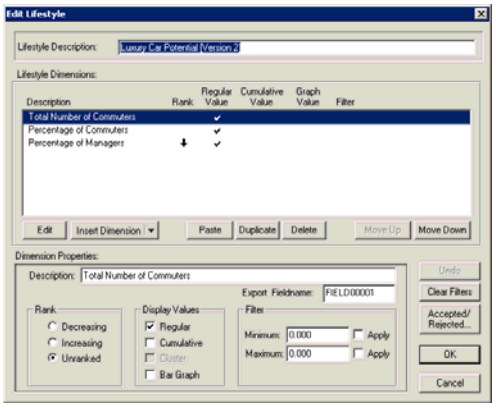
- Click the Edit Library... button to display the Lifestyle **Template Editor** dialog box.



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

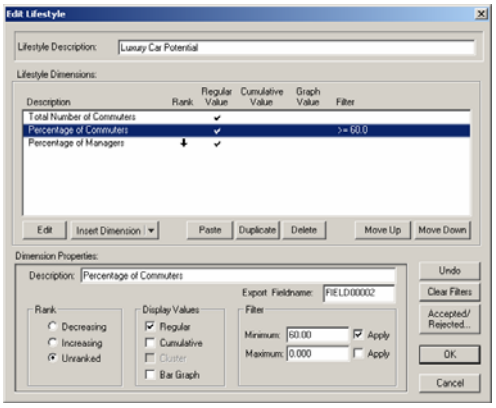
- Click Duplicate to create a new version [version 2].
- Click Edit to display the lifestyle's definition.

*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.*

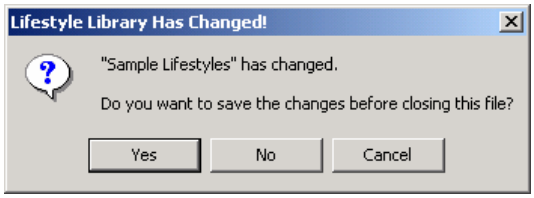


Notice that the **Percentage of Managers** dimension is marked with a ⬇ in the **Rank** column to signify that the dimension will be used to rank targets in descending order.

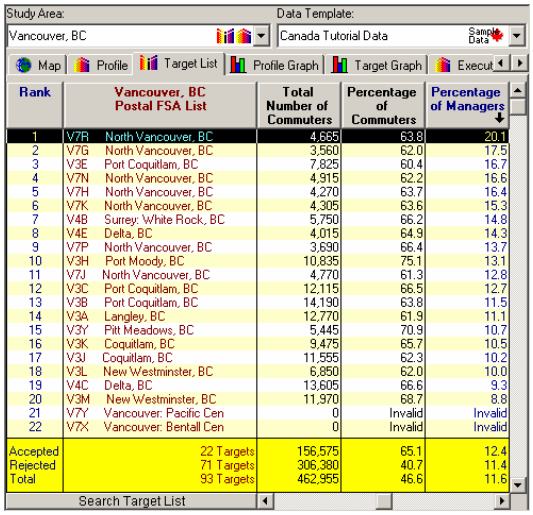
We will now apply a **filter** to display only target areas where 60 percent or more of workers commute.



- Highlight the **Percentage of Commuters** dimension
- Type **60.00** in the **Filter Minimum** box.
- Click OK.
- Click Close to close the editor.



- Click Yes to confirm that you want to save the changed library and return to the Study Area Wizard.
- Click Finish to display the **Search Study Area** dialog box
- Select "**Postal FSA**" **as** the **Target Type** and click Search Now to redisplay the target list.



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
20	V3M New Westminster, BC	11,970	68.7	8.8
21	V7Y Vancouver: Pacific Cen	0	Invalid	Invalid
22	V7X Vancouver: Bentall Cen	0	Invalid	Invalid
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

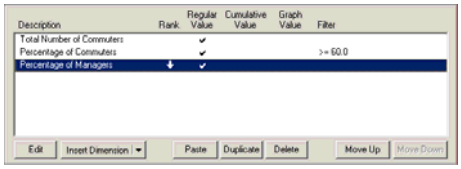
PCensus displays the 22 FSAs that passed our filter. 71 FSAs were rejected, as indicated in the bottom yellow line.

Note the two "invalid" FSAs; both of 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.

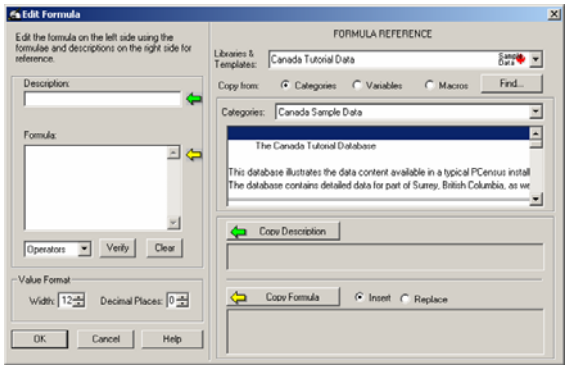
Add a New Dimension to the Lifestyle

Gary would also like to know the average incomes in the selected areas, so we will add a new dimension to the lifestyle:

Click the column header button Percentage of Managers to display the column properties menu, and select **Modify Lifestyle** to display the **Edit Lifestyle** dialog box again.



- Highlight the last dimension.
- Click Insert Dimension.
- Select **Formula** from the drop-down list.



The **[Insert Dimension] Formula** button creates a new dimension entry and opens the **Edit Dimension Formula** dialog box.

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

We must supply a formula to define the new dimension. A formula is a

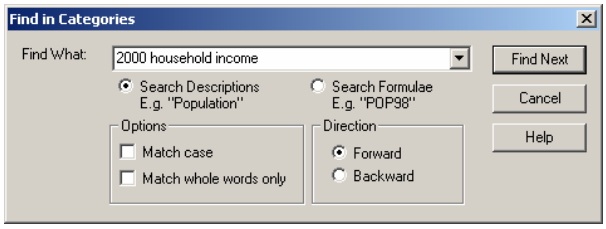
mathematical expression consisting of one or more variables or constants and the signs for addition, subtraction, multiplication, and division **(+ - * /).**

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 **Edit Dimension Formula** dialog window is divided into two "panes":

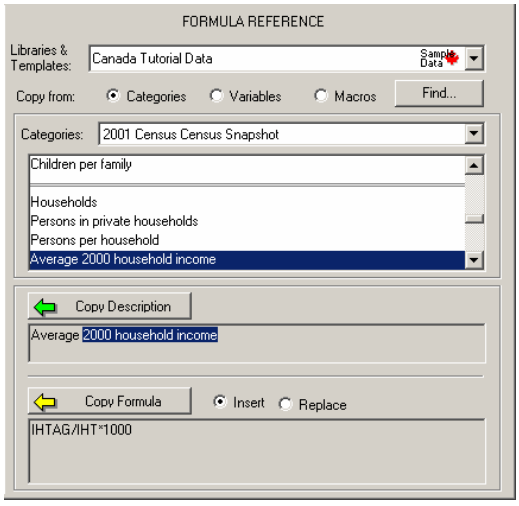
- The right pane, called the **FORMULA REFERENCE** area, provides a source from which we can "paste" pre-defined descriptions and formulas into the appropriate areas in the left-hand pane.
- The left pane is where we enter formulas and descriptions to define our dimensions.

*The **Formula Reference** dialog box allows you 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*



To find the **Average Income** variable that Gary wants:

- Click Find... in the **FORMULA REFERENCE** panel.
- Type **2000 household income.**
- Click Find Next.



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

- Click Cancel to close the **Find in Categories** dialog box.

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

The formula for average household incomes is:

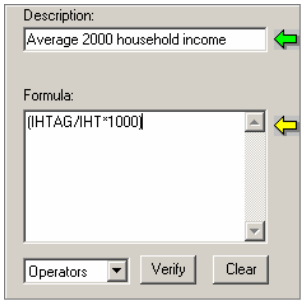
(IHTAG/IHT*1000)

This is based on the following Census variables:

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

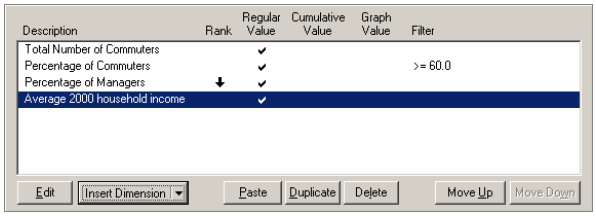
IHT: Total Number of Households reporting income

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

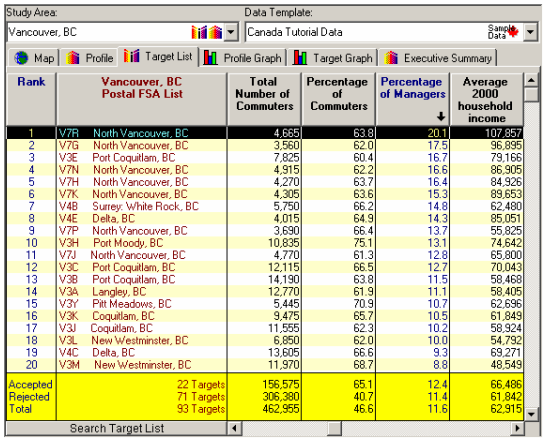


- Click Copy Description and then Copy Formula to transfer the entries into the **Description** and **Formula** boxes in the left-hand pane.

*As a shortcut, you can double-click **Average 2000 Household Income** in the **FORMULA REFERENCE**.*



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



Rank	Vancouver, BC Postal FSA List	Total Number of Commuters	Percentage of Commuters	Percentage of Managers	Average 2000 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
9	V7P North Vancouver, BC	3,690	66.4	13.7	55,825
10	V3H Port Moody, BC	10,835	75.1	13.1	74,642
11	V7J North Vancouver, BC	4,770	61.3	12.8	65,800
12	V3C Port Coquitlam, BC	12,115	66.5	12.7	70,043
13	V3B Port Coquitlam, BC	14,190	63.8	11.5	58,468
14	V3A Langley, BC	12,770	61.9	11.1	58,405
15	V3Y Pitt Meadows, BC	5,445	70.9	10.7	62,636
16	V3K Coquitlam, BC	9,475	65.7	10.5	61,849
17	V3J Coquitlam, BC	11,555	62.3	10.2	58,924
18	V3L New Westminster, BC	6,850	62.0	10.0	54,792
19	V4C Delta, BC	13,605	66.6	9.3	69,271
20	V3M New Westminster, BC	11,970	68.7	8.8	48,549
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

PCensus lists the FSA codes with a new column for average income.

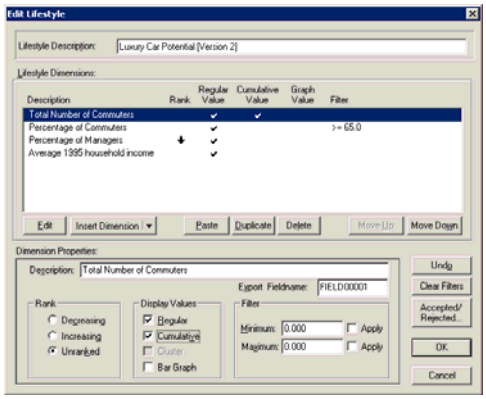
The FSA areas are listed in descending order of **Percentage of Managers**.

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.

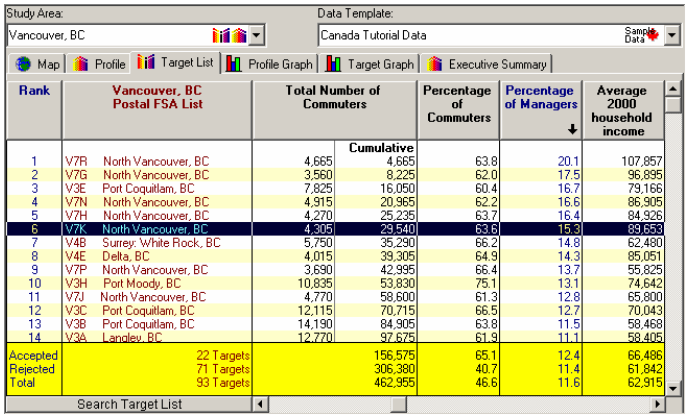
Gary can use the FSA codes highest in the list to select entries from his mailing list. In a real project, where there may be hundreds of qualifying target areas, he would probably export the targets to a computer file (page 137), which could be processed by a list broker.

Cumulative Display

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



- Click the column header button Total Number of Commuters.
- Select **Modify Lifestyle** from the column properties menu.
- Highlight the **Total Number of Commuters** dimension.
- Check the Cumulative box in the **Display Values** panel.
- Click OK.



Study Area: Vancouver, BC — Data Template: Canada Tutorial Data

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

Rank	Vancouver, BC Postal FSA List	Total Number of Commuters	Cumulative	Percentage of Commuters	Percentage of Managers	Average 2000 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
8	V4E Delta, BC	4,015	39,305	64.9	14.3	85,051
9	V7P North Vancouver, BC	3,690	42,995	66.4	13.7	55,825
10	V3H Port Moody, BC	10,835	53,830	75.1	13.1	74,642
11	V7J North Vancouver, BC	4,770	58,600	61.3	12.8	65,800
12	V3C Port Coquitlam, BC	12,115	70,715	66.5	12.7	70,043
13	V3B Port Coquitlam, BC	14,190	84,905	63.8	11.5	58,468
14	V3A Langley, BC	12,770	97,675	61.9	11.1	58,405
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

Search Target List

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

Each row in the cumulative column shows the total of all commuters in areas ranking equal or higher. The numbers displayed get progressively larger down the column.

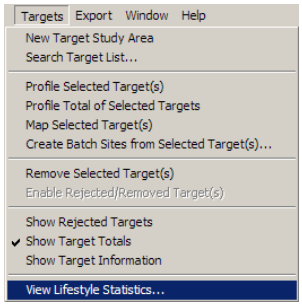
When Gary selects his FSA codes, he will give priority to the highest-ranking ones. The cumulative value shows the size of the potential market, so if he selects the first six areas, he can expect to find 29,540 commuters.

In a real situation, we would probably add a "cumulative household" column to give a more realistic estimate of the number of flyers needed.

Lifestyle Targeting can be used in conjunction with Thematic Mapping. In this case, the variables available for mapping will be the dimensions defined in the lifestyle. Only areas passing the defined filters will be mapped, so the thematic map will help you identify areas of interest.

Lifestyle Statistics

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



Targets | Export | Window | Help

New Target Study Area
Search Target List...

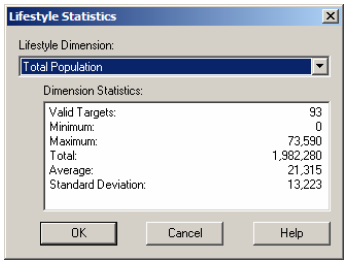
Profile Selected Target(s)
Profile Total of Selected Targets
Map Selected Target(s)
Create Batch Sites from Selected Target(s)...

Remove Selected Target(s)
Enable Rejected/Removed Target(s)

Show Rejected Targets
✔ Show Target Totals
Show Target Information

View Lifestyle Statistics...

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



Lifestyle Statistics

Lifestyle Dimension:
Total Population

Dimension Statistics:

Valid Targets:	93
Minimum:	0
Maximum:	73,590
Total:	1,982,280
Average:	21,315
Standard Deviation:	13,223

OK | Cancel | Help

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 of workers using public transit" for each target is of limited use.*

What Can I Do Now?

- **Explore the Target List** to see ways to interpret the data (page 161).
- **Create a Target Graph** to help you analyze items in the Target List (page 119).
- **Print the Target List** (page 125).
- **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.

*In a real application of this methodology, you could export a pointfile of favorable DAs, and use the **PCode** program (available from Tetrad Computer Applications Inc.) to generate postal codes for a direct mail campaign.*

24 SiteScan - Scan an Area for Potential Sites

Objective

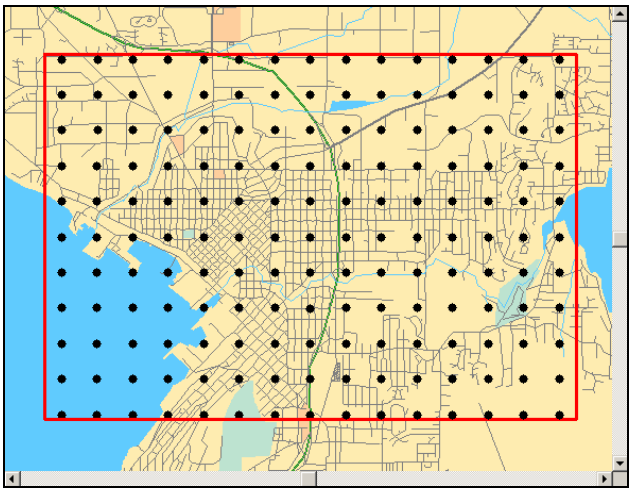
Use SiteScan to identify potentially favorable site locations for providing commercial or public services.

Background

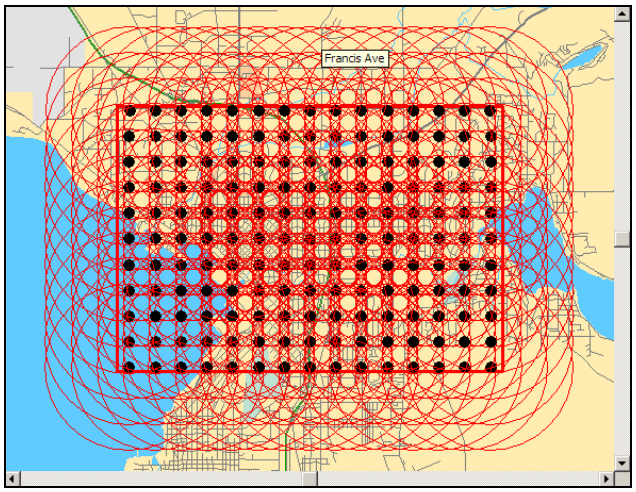
We have seen in the preceding sections how it is possible to characterize the trading area for a potential business location by creating a demographic profile for a circular area or drivetime polygon centered on the location.

In the case where we do not have a specific candidate location, it is desirable to be able to create profiles for a large number of locations, which we can rank according to demographic criteria and display in a "hot spot" map that will indicate the areas where we should look for potential locations.

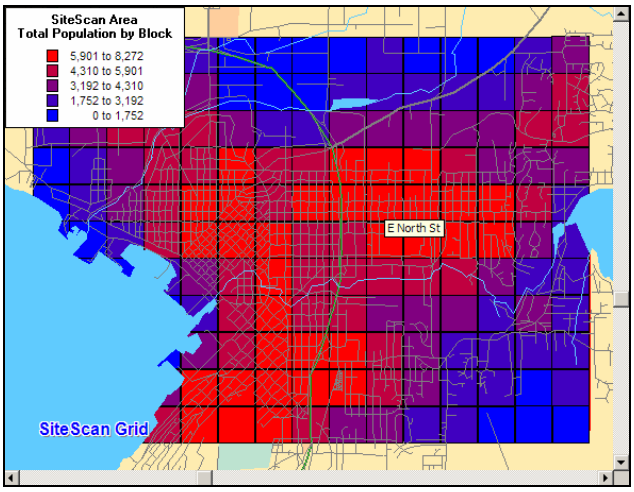
SiteScan allows us to define a "Market Area" as a rectangle of any size. Within this area, a regular grid of points is established, using a spacing specified by the user, for example 0.5 mile.



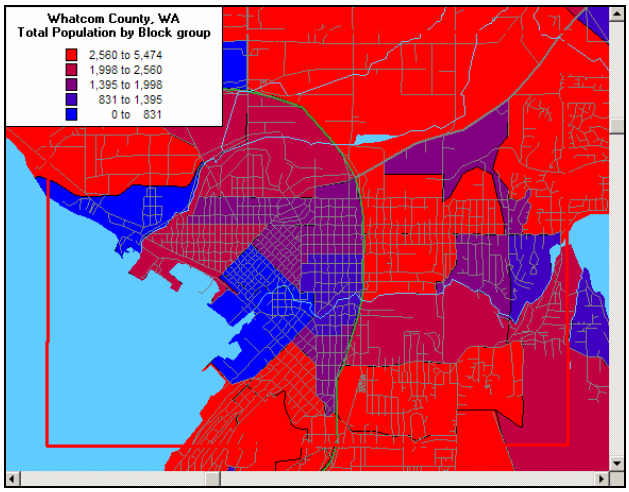
Each point is used to generate a circle or drive time of specified size (representing a potential Trade Area), for example 1 mile radius.



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.

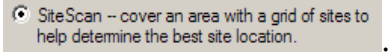


Note that this thematic map is very different than a standard "boundary thematic" map (e.g. using census boundaries). In the SiteScan hotspot map, each grid square is colored according to a demographic characteristic (in this case population within one mile of the cell's center), whereas in a conventional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



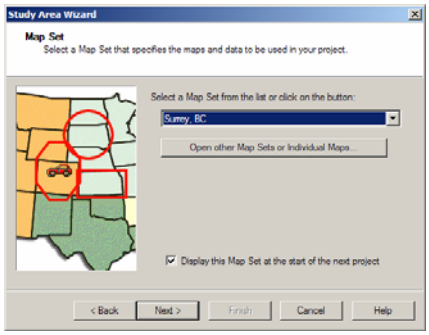
It is quite possible for a grid cell to have a large accessible population even though the cell itself is situated in vacant land (which could make it an ideal site for a new business location!)

Steps to Create a SiteScan Project

- Create a new PCensus project by clicking  to start the **Study Area Wizard**.
- Select 

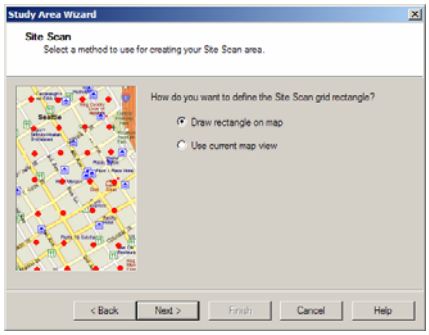
.
- Click 

.

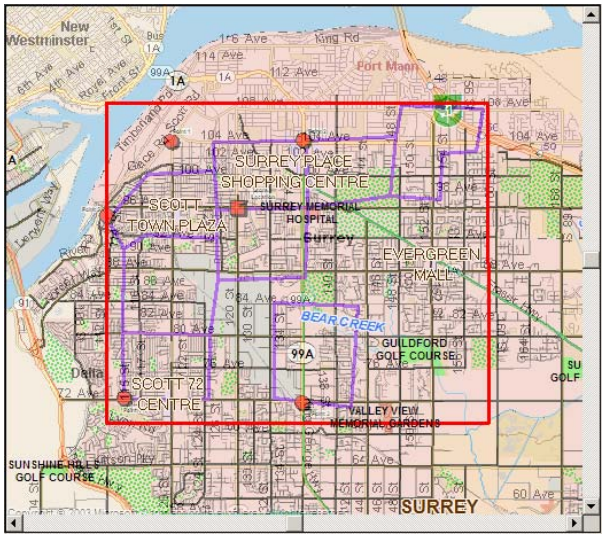


- Select the Map Set "**Surrey, BC**".
  - Click Next >.

Note: This step does not apply to PCensus for MapPoint.

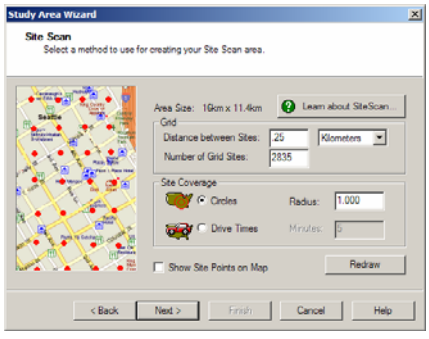


- Select Draw rectangle on map.
  - Click Next >.



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

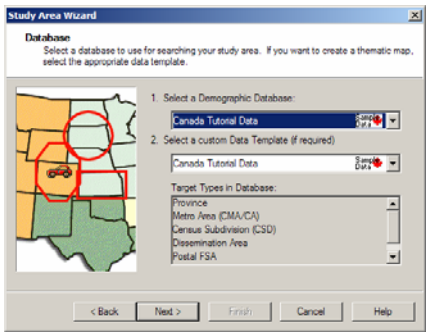
You may need to adjust the map view to display the Surrey area.



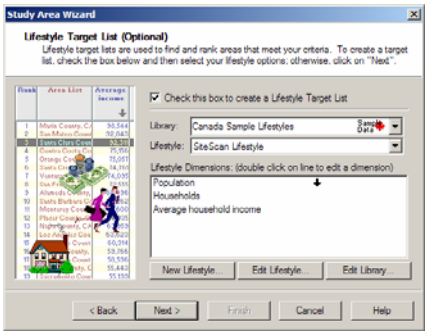
- Specify a grid spacing of **.25 km**, and a Circle Radius of **1 km**.

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 Next >.



- Check that the **Canada Tutorial Data** is selected.
- Click Next >.

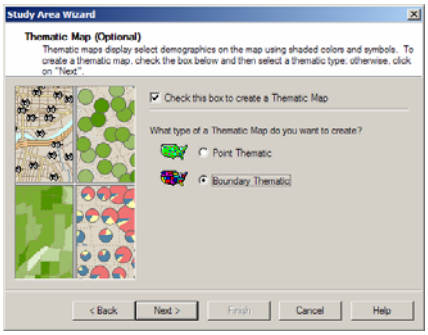


In SiteScan projects, the Lifestyle Targeting option is selected by default. You can edit the lifestyle definition to specify the variables that interest you (see page 83).

- Select the Lifestyle **SiteScan Lifestyle**.

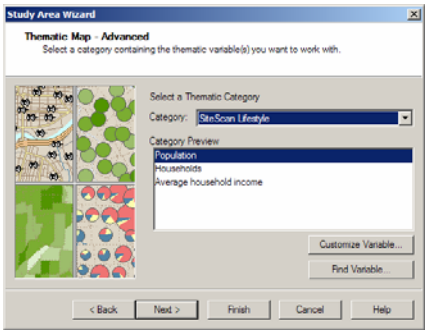
*This lifestyle is provided for the purposes of illustration. It includes **Population**, **Households** and **Average Household Income**.*

- Click Next >.

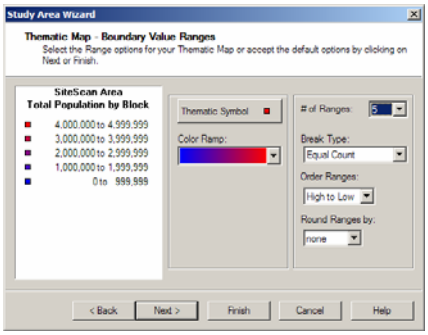


*The thematic Mapping option is checked by default, to create a SiteScan "hotspot" map. Note that in PCensus for MapPoint, only the **Point Thematic** option is available.*

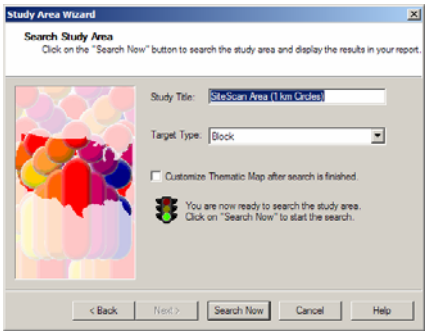
- Click Next >.



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

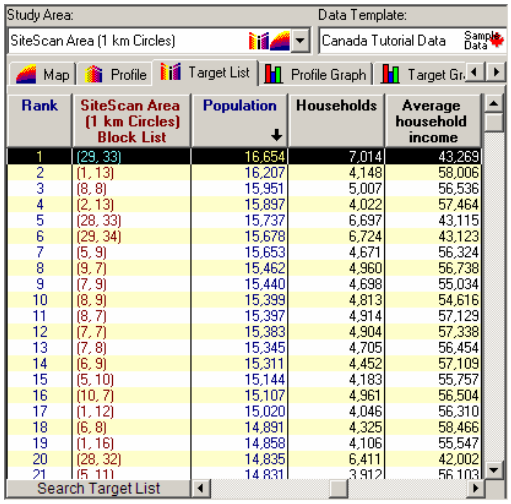


- Select the ranges and associated colors for the thematic map and click Next >.



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 DA 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.

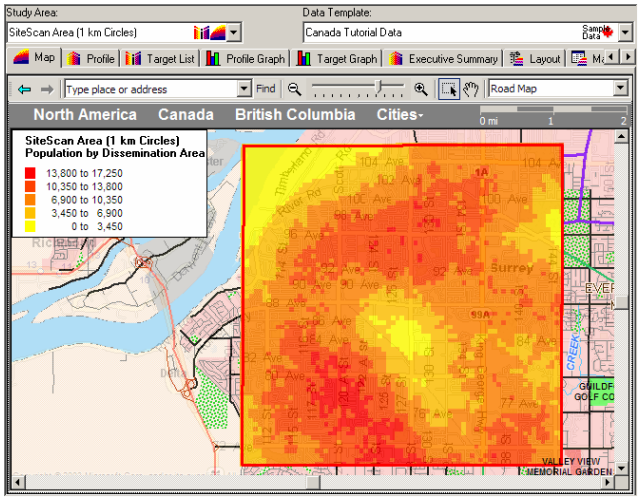


After the search has been completed, PCensus generates the hotspot thematic map, and then displays the Target List tab. Each grid point is identified by its row and column position in the grid.

Note that you can right-click on a target to find it on the map or generate a profile column.

The Totals in the Accepted and Rejected lines should be ignored, as they contain duplicated values due to multiple overlap.

- Select the **Map** Tab.



- The finished map shows the locations with the highest accessible population.

What Can I Do Now?

- Experiment with SiteScan using different lifestyle dimensions, filters and thematic variables.
- Try using drive times instead of circles to create SiteScan trade areas.

25 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 some familiarity with statistical concepts such as "median" and "percentile" and with the principles of PCensus lifestyle targeting. Before using SiteScore, you are recommended to read the following chapters: chapter 22 (Create a Lifestyle Target List) and chapter 41 (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, for example "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, but 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.

For 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 dissemination area (DA) is very high compared to other DAs in the study area, the DA 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 90^{th} 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 DA 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**.

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.

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 DA would be **73x2+80+91 = 317** out of a possible **400** (normalized to **79** out of a possible **100**).

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, for example: **$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 85).

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)	Evaluate 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_POP / 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.

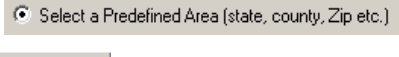
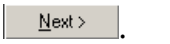
The function **RangeScore ()** is used by SiteScore to calculate custom ranges. However, it is worth noting that this is not a "statistical" function, as the value of its result is not dependent on its comparison with other areas. For this reason, **RangeScore()** can be used in template formulae as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

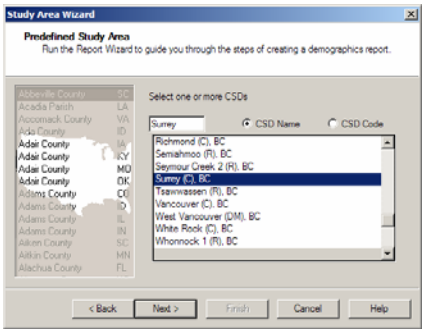
RangeScore **(expression, range1:score1; …; rangeN-1:scoreN-1; *:scoreN)**	If **expression** evaluates to the range defined by **rangeN**, the function evaluates to **scoreN**. For example: **RangeScore (@MEDINC_HH_CY,[40000: 50; 60000:100;*:50])** Evaluates to: **50** if income is **< $40,000** **100**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

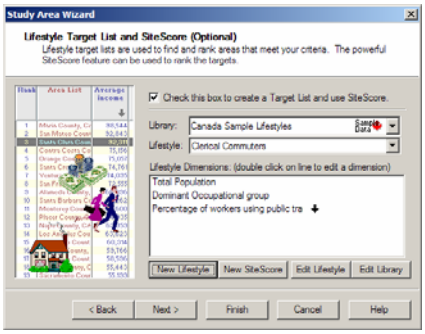
Simple Scoring

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

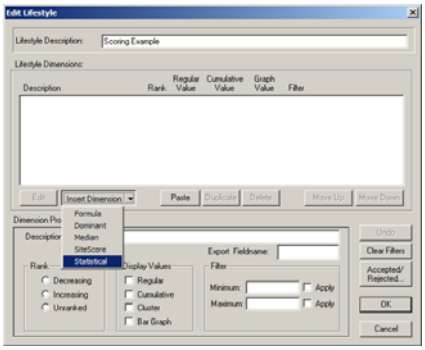
- Create a new PCensus project by clicking  to start the **Study Area Wizard**.
- Select  .
- Click  .



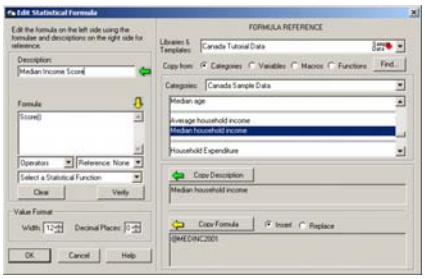
- Create a Study Area for the Surrey census subdivision using the Canada Tutorial Data.
- Advance through the Wizard steps to the **Lifestyle Target List** dialog box.



- Click New Lifestyle.



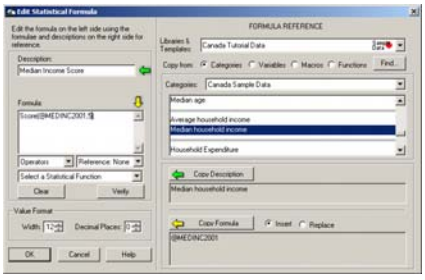
- Click Insert Dimension and select **Statistical** from the drop-down list.



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

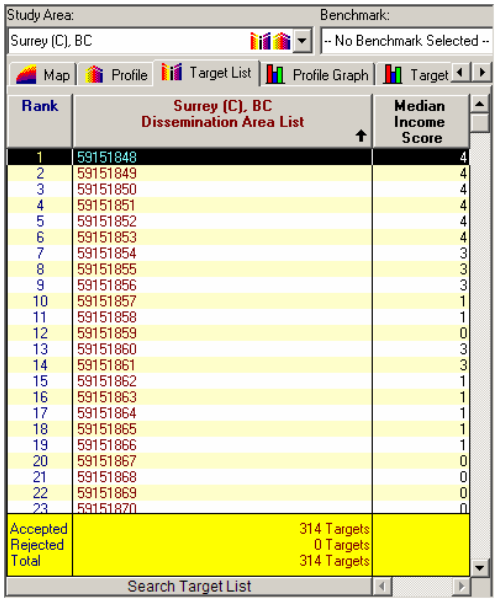
This will insert the term **Score()** in the formula box, with the cursor placed inside the parentheses.

Note the other available Statistical functions (TargetValue, Percentile etc.) These were described in detail in a previous section (see page 102).



- 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").

*Note that the formula for median income in this template is a "macro" **@MEDINC2001**. 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 155). For more information on macros, search for the word "macros" in the PCensus help system.*



- Close the lifestyle editor dialogs and proceed to search the study area at the dissemination area level.

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.*

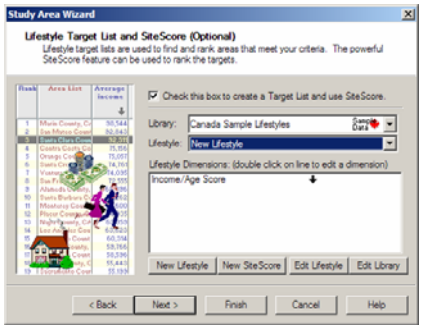
Scoring with Multiple Variables

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

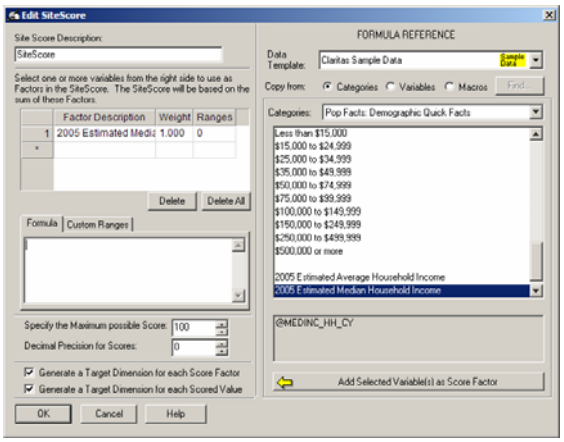
(2*Percentile(@MEDINC2001)+Percentile(@MEDAGE2001))/3

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. Using the project from the preceding section, click the **Edit/Search Study Area** icon  .

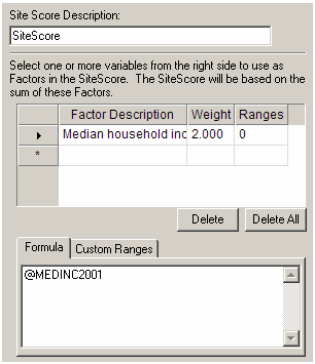


- Click  .



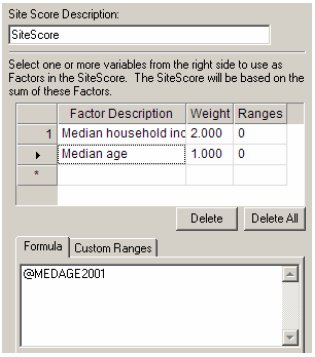
- In the **FORMULA REFERENCE** panel, select **Median Household income** and click 
.

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

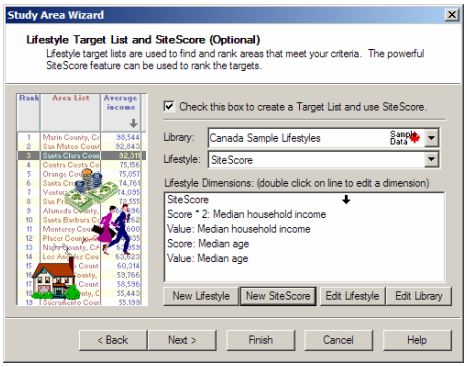


- Double-click on the **Weight** entry and change the specified weighting for this factor from **1** to **2**.

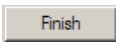
This setting causes the score computed for Median income to be multiplied by 2; median income will thus influence the overall score more significantly than factors with a weight of 1.

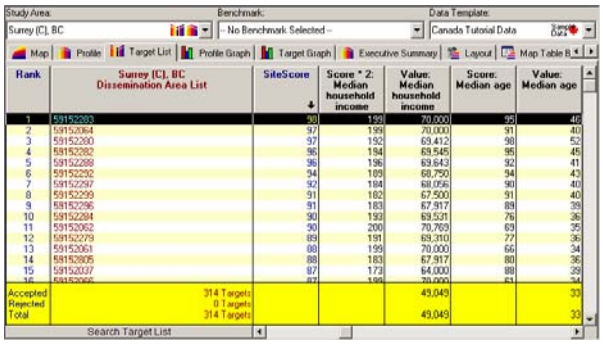


- Click in the first empty factor line, then transfer the variable **Median Age**.
- Click 



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 
 and search the study area at the dissemination area level.



The target list displays dissemination areas in site score order.

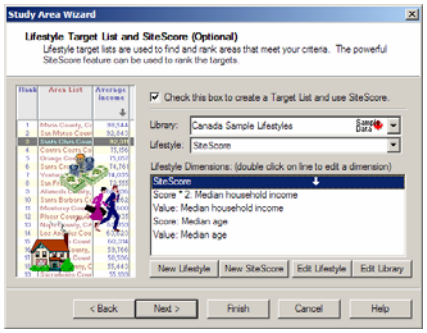
The first target in the list has a combined score of 98, representing scores of 199 for income (percentile weighted by 2) and 95 for age. Notice that among the highest ranked targets, some score relatively high for income and low for age, while in other cases the reverse is true.

Scoring with Custom Ranges

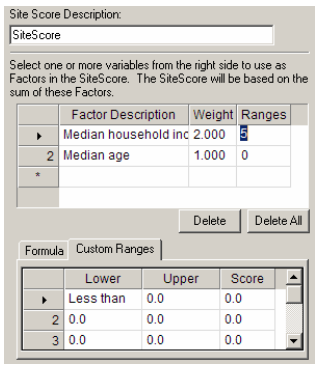
In the preceding example, we might wish to assign a high score to a specified range of incomes; for example we may only be interested in areas where the median income is between $40,000 and $60,000. In this case, instead of scoring by percentile value, we will assign scores as follows:

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

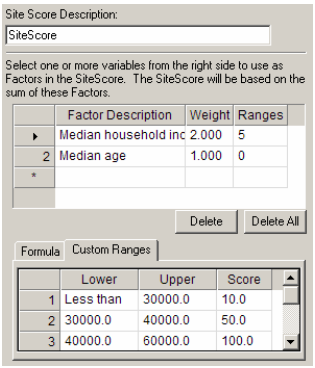
Using the project from the preceding section, click the **Edit/Search Study Area** icon  .



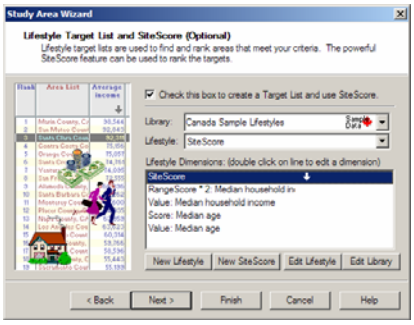
Double-click the SiteScore dimension to edit its definition.



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

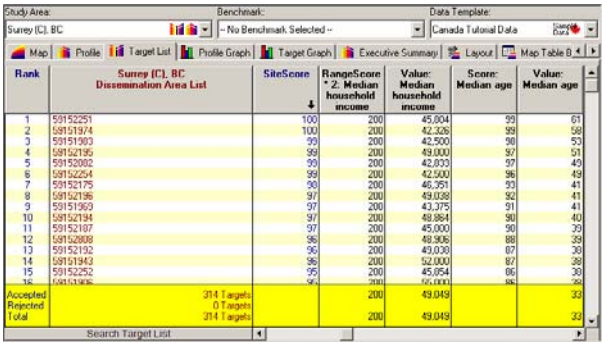


- Enter the custom ranges as shown.
- Click OK.



PCensus has updated the dimensions.

- Click Finish and search the study area at the dissemination area level.



The middle income targets now receive the highest scores.

What Can I Do Now?

Experiment with using SiteScore dimensions in conjunction with SiteScan (page 95). 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