User’s Guide

Version 11.0
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 MapInfo Professional® or ArcView (for advanced mapping), Vertical Mapper (for surface modeling), 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.

**MapPoint and MapInfo Mapping Platforms**

Two versions of PCensus are covered by this manual, with mapping capabilities based on Microsoft MapPoint® and MapInfo Professional. The corresponding PCensus versions are:

- **PCensus for MapPoint**: requires an installation of Microsoft MapPoint. MapPoint includes street maps, so this version does not require the installation of any additional mapping data. **PCensus for MapPoint** can be installed without Microsoft MapPoint; in this case, PCensus will be usable, but with reduced functionality, as no mapping or drive time features will be available.

- **PCensus for MapInfo** requires an installation of MapInfo Professional. To use this version, you will need to purchase and install suitable maps (in MapInfo “tab” format).

It is possible to install more than one version of PCensus on the same computer. In this case, each version will be able to access the same PCensus databases, but each will require its own maps and mapping software to be installed.

If your computer has both MapInfo and Microsoft MapPoint installed, PCensus for MapInfo can take advantage of functionality provided by both mapping platforms. The principal benefit of this combined functionality is that it allows PCensus for MapInfo to take advantage of the detailed seamless street map layer provided by MapPoint, both for Map display and for address lookup, while retaining the advanced GIS capabilities of MapInfo for generating thematic maps.
PCensus for MapInfo automatically detects the presence of MapPoint and
displays the additional controls required for combined operation (Appendix 4
- Using MapPoint with PCensus for MapInfo, page 321).
Note that PCensus for MapPoint does not use any MapInfo functionality,
even if MapInfo Professional is installed.

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.
- If you are installing PCensus for MapInfo, you must first install the
  MapInfo Professional program according to the manufacturer’s
  instructions.

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 Search tab lets you find topics 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.
- **MapInfo Tool Bar**: Controls operations in the Map Window. This tool bar is only displayed in the MapInfo version of PCensus, and the tools correspond to those used in MapInfo Professional.
- **MapPoint Tool Bar**: Controls the functions of Microsoft MapPoint when used in conjunction with PCensus for MapInfo (see Appendix 4 - Using MapPoint with PCensus for MapInfo, page 321).

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.

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.
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.

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**PCensus for MapInfo has two additional tabbed pages:** the **Map Layout** tab (see page 111) and the **Map Tables** tab that lets you browse the data tables associated with map layers.
**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 48).

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.
3 Starting a Project

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

Note: The Project Setup procedure does not apply to PCensus for MapPoint.

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.
- Map Layout properties, including header and footer titles (See Chapter 25, Using the MapInfo Layout Tab).

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 Surrey.
- The Canada Tutorial database and template are opened.

*If your PCensus installation includes both MapInfo and MapPoint, the map will include street network layers from both sources, which may result in a “cluttered” appearance. You can turn off the MapPoint layer by clicking the Show/hide MapPoint Layer icon in the MapPoint tool bar.*

**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 MapInfo Workspaces (.wor) or map layers (.tab) by clicking \textit{Open Additional map Layers} in the \textbf{Project Setup} pane, and then use the controls in the MapInfo 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 \textbf{Project Setup} window.

For instructions on how to set up maps and create a Map Set, see Appendix 6 - Creating a Map Set.

\textbf{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 37, 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 38, Customizing the Profile.
5 SmartReports

**Objective**

Create a **SmartReport** with PCensus data using a stock SmartReport template.

**Background**

SmartReports is a report extension for PCensus that combines maps, charts, tables, supporting narrative and, optionally, externally provided data to deliver rich, meaningful reports.

Using the power of Microsoft Office®, SmartReports lets you leverage your existing spreadsheet skills to design custom SmartReports inside Microsoft Excel™.

Depending on your level of comfort with Excel, you may wish to use SmartReports in different ways:

- Basic users can quickly generate SmartReports in PCensus using a number of supplied standard SmartReports templates.
- Advanced Excel users will be able to create SmartReport templates themselves.
This chapter will demonstrate the former task, and describe how to create a SmartReport using an existing SmartReport template.

Steps to Create a SmartReport from an Existing Template

➤ Create a study area of any type (drive-time, circle, etc.) in PCensus.

➤ Click the icon in the PCensus toolbar to open the SmartReports dialog.

From the SmartReports dialog, select one of several included stock report templates.

Review the tabs under Report Options and select the categories, maps and study areas to include in the report. The available options may vary for specific templates.

Select Report Format (Excel, Excel 97-2003, PDF, or HTML).

Click on Create Report.
A Nielsen Demographic Quick Facts SmartReport
6 SmartReport Designer

Background

Stock SmartReport templates are provided with PCensus for use with several standard PCensus databases. However, if you would like to create your own SmartReport template, the SmartReport Designer allows you to create one from scratch by pasting demographic report items such as charts, tables and thematic maps into an Excel template.

Once a SmartReport template is created, it can be applied for any study area. For instance, you can create the same summarized report with demographics for each of your franchise locations.

This chapter will provide an overview on how to create your own SmartReport template in Excel.

Getting Started

The SmartReport Designer is based in Excel, but is first accessed from the SmartReports dialog in PCensus.

Steps to Open a New SmartReports Template

➢ In PCensus, click the icon in the PCensus toolbar.

➢ In the SmartReports Dialog, double-click on Blank Report.
PCensus User’s Guide

Using the SmartReport Designer

When you double-click on Blank Report, Microsoft Excel will open. The SmartReport Designer appears as a ribbon tab in Excel with tools that allow you to add PCensus map, chart and report items.

![SmartReport Designer](image)

Before You Start

➢ In the SmartReport Designer ribbon, select the Database and Report Template to use for your report.

![Excel Database Selector](image)

The Excel Database Selector should match the Database Selector in PCensus.

Adding Report Items

A SmartReport template is created with Report Items that feature PCensus data. Report Items are accessed in the SmartReport Designer ribbon tab, and can be supplemented with any regular Excel content.

![The Report Items toolbar](image)
**SmartReport Report Items**

Here is an overview of the tools in the SmartReport Designer Report Items toolbar:

Add a map with a drivetime, circle, or map extent study area. The Study Area Map tool creates a placeholder image for the map in the worksheet, as well as a Selector Cell that stores the map’s settings. The tool defaults to also include an overview map and scalebar.

Include a thematic map to illustrate relative values of a single variable (for instance, household income). A legend and scalebar will be included as well. The thematically mapped variable can be selected at run-time or in the SmartReport template.

View profile values and text items from a PCensus database. Highlight items and paste them into the worksheet.

Create an Excel Chart based on PCensus data. Like the Study Area Map and Thematic Map tool, a selector cell is added as well and holds all the settings information.

Paste an entire PCensus database report category into the worksheet.

Paste Quick Tag items such as the Study Area name, Study Area description, or Database name into the spreadsheet.

Add SmartReport items such as text expressions (to mix words with numeric values based on PCensus data), new profile values (to create new variables based on PCensus data), and index charts into the spreadsheet. For advanced users.
The following tools can be found in the Advanced Report Items pull-down:

- **Text Expression**: Add a customized text expression with fully-editable text and numeric values.
- **New Profile Value**: Using variables from a PCensus database, create a new profile value (for example, household alcohol expenditures as a percentage of household income).
- **Index Chart**: A horizontal bar chart to display values relative to a benchmark.

**Steps to Add a Report Item**

- Highlight an empty cell.
- In the SmartReport Designer Ribbon, click on the Report Item you would like to add.

**Editing the Appearance of a SmartReport Item**

Once a Report Item is added to the SmartReport, you may modify its settings two different ways:

- Use the mouse cursor to resize and reposition Report Items like maps and charts.
- Adjust Display settings with the Property Grid in the Document Actions Pane.

**Using the Mouse Cursor to Resize and Reposition Report Items**

Charts, thematic maps and study area maps may be resized and repositioned as you would any other Excel shape, by pulling from the corner of the image to resize or from the center to reposition. When resized, the map images may appear distorted in the spreadsheet. However, the maps displayed in the template are only placeholder images and the final image will be generated in the correct resolution.

**Using the Document Actions Pane**

When you insert a Report Item into the SmartReport worksheet, the Document Actions pane displays additional options for that Report Item. Some Report Items that are not contained within a single cell, like the Study Area Map item or Profile Chart item, use colored cells to hold settings for that Report Item. These **Report Item Selector Cells** must be highlighted to select the Report Item for editing.
• The Report Item Selector Cell is displayed as a colored cell with the name of Report Item. For instance, Profile Charts will always have an orange Report Item Selector Cell with Profile Chart written in white.

> The Selector Cell only appears when the SmartReport is in Edit Mode. Report Item Properties are only available when the Selector Cell is highlighted.

• The Selector Cell does not display when the report is generated. You may move the Report Item to completely cover the colored Selector Cell.

• When a Selector Cell is highlighted, the properties in the Document Actions pane will show a unique set of settings for that report item. For instance, the image on the left illustrates settings for the scalebar and overview map, which are unique to the Study Area Map Report Item.
Using the Edit Report Items Toolbar

Limitations with Excel mean that moving and editing Report Items using traditional copy and paste methods may produce different behavior from what you might expect.

For this reason, an Edit Report Items toolbar has been provided to help you edit, cut, copy, paste and delete report items.

Report Items are special features that are not part of Excel and require some special care when deleting or copying.

The following key points should be remembered:

- You should not use the regular copy-paste methods for SmartReport report items. You should use the copy-paste methods that are in the SmartReport Designer ribbon only. Only one item can be copied and pasted at a time.
- Conversely, you should not use the SmartReport copy-paste methods for non-SmartReport items – cells/content that you created without the SmartReport operations. Use the regular Excel Copy/Cut/Delete/Paste operations in this case.
- Each Report Item uses an Excel “named range” (e.g. _ReportItem17) which is automatically generated to be unique and easily retrieved by the code. You must not change the range names of any Report Items.
- You cannot copy an entire sheet containing SmartReport Items. You should consider using the Repeat Sheet and Repeat Section report items if you want repeating content.

Here is an overview of each of the Edit Report Items tools:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit</td>
<td>The Edit tool brings up the dialog for the specific report item with a number of settings you may adjust. When editing a report item that is not confined to a single cell, you must click on the Selector Cell and click Edit.</td>
</tr>
</tbody>
</table>
The **Cut** tool removes the cell value as well as any underlying information stored in the cell.

The **Copy** tool copies the cell value as any underlying information stored in the cell.

The **Paste** tool pastes a Cut or Copied cell into a new location.

The **Delete** tool deletes the underlying information stored in the cell. This tool will not remove plain-text or numeric values.

### Using the Contents and Layout Toolbar

The SmartReport Designer features Content and Layout tools to help you organize your SmartReport and set up recurring report items for different variables or study areas.

The **Repeat Section** tool allows you to repeat a section in the SmartReport. For example, if a project contains multiple study areas, you can design a map and simple report and then repeat that section for each study area.

*The End Repeat Section bar must be below the last item that you want repeated. If you leave the End Repeat Section bar in the middle of a Profile Table, for example, the generated report will not contain all of the Profile Table values.*

The **Repeat Sheet** tool allows you to repeat the contents of the entire worksheet.

You may repeat a section or entire worksheet, for each of the following items:
Repeat…. | Example
---|---
Study Area | If you have multiple restaurant locations, each location could have a map, total population variable and food expenditure. This would be repeated for each restaurant location Study Area profiled in PCensus.

| Report Category | Insert a Study Area Map and Report Category Name Quick Tag for each Report Category. |
| Thematic Value | Repeat a thematic map with a variety of thematic variables (e.g. average household income, average household size, and population growth), selected at run-time. |
| Study Part | Add a Study Area Map for each circle in a Study Area with a 1,3,5 mile radius. |

**Saving the SmartReport**

When the design for your SmartReport template is finished, save the template so it can be used in PCensus. Saved SmartReport templates will appear alongside other stock SmartReports in the PCensus SmartReports dialog.

**Steps to Save a SmartReport Template**

- Click on ![Save](image) in the upper left corner of Excel

![Save SmartReport Template Dialog](image)
In the Save SmartReport Template dialog, provide a Report Description for the template, if you have not done so already. You may also wish to add information about the Author and Company, if multiple organizations will be using the same template.

The Description field in the SmartReports Template dialog allows you to provide additional information about the template. Provide detailed information about the use and contents of the template for easier future reference.

Steps to Generate a SmartReport from a Saved Template

- Close Excel, if open.
- Open PCensus and create at least one study area.
- Click on the icon in PCensus to open the SmartReport dialog.
- Select the newly saved SmartReport template and click on Create Report.

If you wish to continue editing the SmartReport, you may access the file through PCensus.

Steps to Edit a SmartReport Template After it has been Saved

- Open PCensus
- Click on the icon in PCensus.
From the SmartReport Dialog, right-click on your SmartReport template and select
Edit Report Template...
7 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](image) to display the **Predefined Study Areas** dialog box.

Click **Create a Predefined Study Area**.

---

The **Predefined Study Area** dialog box has many similarities to the **Database Explorer** (page 45).

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 green 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 checkboxes (Create Profile Column for Each CMA/CA and Create Profile Column for CMA/CA totals) are enabled.

Check both boxes and click OK to display the columns.

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 171).
- **Index the Profile Columns** to compare the study areas to a benchmark area (page 174).
- **Add More Study Areas to the Project:** create additional profile columns, either for **Predefined** areas as described above, for **Circular** areas (page 51), for **Drive time** areas (page 61) or for arbitrary **Polygons** (page 69).
- **Print the Profile Report** (page 153).
- **Export the Profile** for use with other software applications (page 157).
- **Customize the profile** with the data template editor (page 177).
8 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.
9 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 194).

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 37), 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 48).
- **Drill Down:** enables the drill-down feature (page 47).
**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 large database, for example 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.

1. Highlight Place in the **Available Geographies** list.
2. Double-click **Bellingham City, WA** in the **Area** list.
3. Click the Drill-down icon to add Bellingham as a new level in the list of available geographies.
4. 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 15), 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.
10 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 61) 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 61

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:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>Circle with 1 mile radius.</td>
</tr>
<tr>
<td>1.0</td>
<td>2.0</td>
<td>Ring – Area between 1 mile and 2 miles radius.</td>
</tr>
<tr>
<td>0.0</td>
<td>2.0</td>
<td>Circle with 2 mile radius.</td>
</tr>
</tbody>
</table>

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 MapInfo

If only MapInfo Professional is available, address searching uses the MapInfo Locate Address dialog box, and requires a suitable street network layer to be open in the map window.

The MapInfo Locate Address Dialog lets us find locations by street address (e.g. 2501 Cornwall Av.) or by street intersection.

- Type “96th Avenue & 128th Street” (&& signifies the intersection of cross-streets).
- Click Find to generate the profile.

Address Searching Using MapPoint

If you are using PCensus for MapPoint or PCensus for MapInfo in conjunction with Microsoft MapPoint, address searching uses the MapPoint Find dialog; no street network layer is required.

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

You can specify street intersections by using the “&” character, for example 96th Avenue & 128th Street

Click OK to generate the profile.
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**.

---

The **Profile** tab contains columns for our three circular areas.
What Can I Do Now?

- **Explore the Profile Browser** to see the various data categories available (page 171).
- **Index the Profile Columns** to compare the study areas to a benchmark area (page 174).
- **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 37), for additional **Circular** areas, for **Drive time** areas (page 61) or for arbitrary **Polygons** (page 69).
- **Print the Profile** (page 153).
- **Export the Profile** for use with other software applications (page 157).
- **Customize the Profile** (page 177).
- **Combine Shapes to Create Complex Study Areas** (page 241).
11 Profile a Circle Quadrant Study Area

Objective

Create a Circle Quadrant Study Area with NW, NE, SW, SE quadrants.

Background

In a typical circle study area, the overall market may be assessed but the location of a retailer’s competitors within that circle will often distort the true picture. If the competitors are clustered in one section of the circle, then the estimated sales from the other sections will be markedly different. Even within a small circle, the population characteristics and consumer spending power attributes are not uniform.

By assigning quadrants to the circle, you can develop preset NW, NE, SW and SE submarkets to locate new stores and gauge their effect on potential sales. Quadrants with no competitors are better candidates for new sites than quadrants with existing competitors.

Steps to Create a Circle Quadrant Study Area

In the PCensus Task Pane, select the Radius Study Areas pane from the drop-down menu.
Click on the Default Settings in the Radius Study Areas Pane.

From the Circle Default Settings dialog, modify the circle ranges, unit of measure, and search level to your desired preferences.

Check Divide circles into quadrants.
Create a study area by pointing with the cursor, entering an address or selecting a predefined area.

The map will display the circle split into four quadrants.

The four quadrants and circle total in the Profile Tab
12 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: 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 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 52.

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.

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.
Profile a Drive Time Area

Click the cursor on your 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 to display the profile.

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 171).
- **Index the Columns** to compare the study areas to a benchmark area (page 174).
- **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 37), for **Circular** areas (page 51), for additional **Drive time** areas or for **Polygons** (page 69).
- **Export the Profile** for use with other software applications (page 157).
- **Customize the profile** with the data template editor (page 177).
- **Combine Shapes to Create Complex Study Areas** (page 241).
13 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.

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

There are two ways to activate the Study Area Manager fly-out pane:

- **Click on the Study Area Manager icon in the PCensus toolbar**
- **Click on the Study Areas tab located on the right-hand side of PCensus.**
- Once open, the Study Area manager may be docked in location by clicking on the button in the fly-out pane.
Steps to Remove a Study Area from the Study Area Manager

Highlight a study area from the list of Open Study Areas.

Click on Delete Study Area.

The Study Area Manager pane contains additional buttons for managing study areas:

- **Save Study Area**: Save Study Area for future re-use
- **New Study Area**: Create a New Study Area
- **Duplicate Study Area**: Duplicate the Selected Study Area.
- **Delete Study Area**: Delete the Selected Study Area.
- **Delete All Study Areas**: Delete all currently open Study Areas.
- **Save Map Extents**: Use the Current Map Extents with the selected study area.
- **Study Area Info**: Show Information on the Selected Study Area.

Steps to Open a Previously Saved Study Area

Open the Study Area Manager. In the Saved Study Areas pane, navigate to the folder where the desired saved study area is stored.
Highlight the study area you would like to restore and click on Open Study Area(s).
14 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.

What Can I Do Now?

- **Explore the Profile Browser** to see the data categories available (page 171).
- **Index Profile Columns** to compare study areas to a benchmark area (page 174).
- **Add More Study Areas to the Project**: create additional profile columns, either for **Predefined** areas (page 37), for **Circular** areas (page 51), for **Drive time** areas (page 61), or for additional **Polygons**.
- **Print the Profile** (page 153).
- **Export the Profile** for use with other applications (page 157).
- **Customize the profile** with the data template editor (page 177).
- **Combine Shapes to Create Complex Study Areas** (page 241).
This chapter applies only to PCensus for MapInfo.

Objective

Create and then edit a polygon study area.

Background

The Shape Editing feature in PCensus for MapInfo allows you to study the impact that changing boundaries has on the demographics of a study area. As you edit the polygon, results from your changes are updated dynamically so you can see exactly how the demographics change as you reposition nodes.

Steps to Create a Polygon Study Area

Select Polygon Study Areas from the PCensus Task Pane.

Click on Trace polygon on map in the Polygon Study Area Pane.
Draw a polygon study area on the map, and when asked, give the study area a name.

View and take notice of the results in the Profile Tab.

Next, we will adjust the application display settings so that we can see both the map and the profile tab at the same time. This will help us view changes to the demographics as we make them.

**Steps to View the Map and Profile Tab Simultaneously**

- Right-click on the Profile tab and click on **New Vertical Tab Group**.

- Ensure the Map tab and Profile tab are both selected. You should be able to view the map and demographic report at the same time.
Steps to Editing a Polygon

1. Click on the center of the polygon. The shape should now be highlighted.

2. In the MapInfo toolbar, click on the Edit Shape tool.
Next, click on the Add Node button.

With your mouse, click on one line segment in the polygon and pull the newly added node away from the polygon.

In the profile tab, watch how moving the node affects variables like Total Population.

In addition to editing the shape by adding a node, you can also move existing nodes.

**Steps to Moving a Node**

- Click on the node, hold down the mouse button and drag the node to the desired location.
16 Profiling Polygons from a Map Layer

This chapter does not apply to PCensus for MapPoint.

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 Bellingham newspaper carriers (Edward, Natalie, John, Samantha, Eric, Frederick and Margaret).

Steps to Profile a Polygon

1. Create a new PCensus project and open the Bellingham Tutorial Maps map set in the Project Setup pane.

2. Click Select a boundary region from map

3. Click in one of the polygons to select it. The selected polygon will be shaded in red.

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 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.
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 249) to define circles or drive time areas of specified size around each location.

- Use selected polygons to create User Defined Target Areas (page 254).
**17 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 **9600 128 St, Surrey, BC** location and advance to the **Mapped Circle** dialog. Do not enter any circle ranges.

- Click **Data Fit...**

- Select the **Canada Tutorial 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 **Canada Tutorial Data**.
- Use the **Find Variable** button (page 173) to find the data item **Before 1946** (in the **2001 Census Dwellings** 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**
Use “Data Fit” to Define a Circle or Drive Time Based on Demographics

The **Searching for Best Fit** dialog monitors the progress of the analysis. In the example, 5 passes (candidate circles) were tried, the final one giving a result of 456 units, which is within the specified tolerance of 10%.

![Searching for Best Fit dialog](image)

**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 **1.553** 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.
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.
18 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.
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 19, 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.

In the illustration, a map boundary contains three block centroids; PCensus must compute an aggregate value from the three block 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 40) 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.
19 Create a Thematic Boundary Map

Note: This Chapter does not apply to PCensus for MapPoint. See Chapter 20, Create a Thematic Boundary Map using PCensus for MapPoint.

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 Census Dissemination Area boundaries are shaded according to median income, you must have installed:

- A PCensus database containing data at the Dissemination Area summary level.
- A map layer (MapInfo “tab”) of Dissemination Area boundaries of similar vintage to the database.

When a suitable correspondence between map and database exists, thematic mapping uses the “Code-Matching” process described in Chapter 18 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 40) 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.
Create a Thematic Boundary Map

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.

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 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.
Create a Thematic Boundary Map

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 the study area “Current Map View”.

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

PCensus automatically assigns colors to each of the possible values of the variable.
20 Create a Thematic Boundary Map using PCensus for MapPoint

Note: This Chapter only applies to PCensus for MapPoint. MapPoint does not provide the flexibility available with fully-featured GIS systems such as MapInfo. If you have an on-going requirement for thematic mapping, it is recommended that you upgrade to PCensus for MapInfo.

Objective

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

Background

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

- Provinces
- Metropolitan Areas
- Census Subdivisions
- Postal Forward Sortation Areas (FSAs)

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

FSA boundaries change over time. New FSAs are created and old ones abandoned according to mail delivery requirements.

The variations in geography dictate that there will rarely 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 97). 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 107). 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 (like dissemination areas) into larger mapped boundaries (like FSAs).

**Steps to Create a Boundary Thematic Map**

- Create a predefined study area for the Vancouver Metropolitan Area.

  ➤ 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.
Create a Thematic Boundary Map using PCensus for MapPoint

- Select Postal FSA in the Search Target Type list to specify the type of records that will be retrieved from the database.

  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 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

- Select Vancouver, BC in the Select a Study Area list.

- Click Create Thematic for the Study Area “Vancouver, BC”.

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In many cases there will be a one-to-one correspondence between map areas and PCensus targets (for example, mapping FSA targets into FSA boundaries), 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 block group) is selected that is not represented by MapPoint; PCensus re-aggregates the data to the most appropriate available boundary type (census tract).

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.
**Objective**

Create a thematic point map for the Vancouver CMA with colored dots representing the median for each state.

**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.

1. Define a study area for Vancouver CMA.
2. Open the Point Thematics task pane.
3. Select the Vancouver Study Area.
4. Click Defaults: and set the Target Type to Dissemination Area.
5. Select Median Household Income in the Select A Thematic Variable list.
6. Click Create Thematic for the study area “Vancouver”

PCensus displays the finished thematic map, with a legend identifying the values identified by each color.
PCensus User’s Guide
22 Create a Dot Density Map

Objective

Create a thematic map of Canada in which the density of dots in each province represents the population of the province.

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 Canadian provinces. 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.

Steps to Create a Dot Density Map

1. Click Run Wizards in the Task pane.
2. Select Create Thematic Map from the Wizards page.

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. Note: This Chapter does not apply to PCensus for MapPoint.
Note: If you have already defined a study area (e.g. “Canada”), the wizard will jump directly to the Thematic Map step.

- Select the Predefined Area option.
- Click Next.

- Select Canada as a study area.
- Click Next twice to advance to the Thematic Mapping (Optional) dialog box.

- Check the box to create a Thematic Map.
- Select Dot Density.
- Click Next.

- Select Total Population in the list of variables.
- Click Next.
Create a Dot Density Map

Select .

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 .

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

Click to display the Open Maps dialog box.

Select the Map Set Canada Provinces.

Click to return to the Thematic Map dialog box.

Select the Target Type “Province” and the Map Boundary Layer “CANADA_PROVINCES”.

Click .

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Click .

Select  to indicate that we will be mapping province areas.

Click  

When the search is complete, click  

to close the progress indicator.

PCensus displays the finished thematic map.
23 Create an Advanced Thematic Map Using PCensus for MapInfo

This chapter applies only to PCensus for MapInfo, as it refers to features specific to MapInfo Professional. To create advanced thematic maps using PCensus for MapPoint, refer to Create a Thematic Boundary Map using PCensus for MapPoint, page 93.

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 MapInfo 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 MapInfo system documentation.

Steps to Create an Advanced Thematic Map

1. Click Run Wizards in the Task pane.
2. Start the Create Thematic Map wizard, as described in Chapter 22, 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 115) 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 MapInfo.

3. Check the box to create a Lifestyle Target List.
4. Click New Lifestyle.
Change the Lifestyle Description to Consumer Spending.

Use the button to add variables from the 2003 Consumer Spending Summary category as shown.

Note: for cosmetic reasons, it is a good idea to edit the Description for each item to remove the text “(Total Expenditure)”

Click OK.

Click Next >.

Check the box to create a Thematic Map.

Select Advanced Thematics.

Click to display the Open Maps dialog box.
Create an Advanced Thematic Map Using PCensus for MapInfo

- Select the Map Set *Canada Provinces*.
- Click to return to the **Thematic Map** dialog box.
- 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 made after the study area has been searched.

- Make sure that the category **Consumer Spending** is selected.
- Click to display the **Search Study Area** dialog box.

- Select to indicate that we will be mapping Province areas.
- Click  .
- When the search is complete, click to close the progress indicator.

- Click .
- Select the **Pie Chart Default** template.
- Click .

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We want to create pie charts for each province, comparing spending patterns.

- Select the variables **Food, Shelter, Operation, Furnishing, Clothing and Transport**, etc.

- Use the **Add >>** button to move the variables into the right-hand column.

- Click **Next >**.

We can customize the **Legend Title** and **Legend Labels** to improve the appearance of the finished map.

- Click **Legend...**

- Change the **Title** to **Pie Chart of Household**.

- Edit the **Range Labels** to remove extraneous characters.

- Click **OK** to return to the **Create Thematic Map** wizard.

- Click **OK** again to continue.
Create an Advanced Thematic Map Using PCensus for MapInfo

PCensus displays the finished map and legend.

If the map contains unwanted symbols, you can remove them by right-clicking in the map and selecting Layer Control. Turn off the visibility of the PCTHEMATICPOINT layer.

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

- Select Modify Thematic from the Map menu to display the Modify Thematic dialog.
- Click Styles...
- Experiment with the Diameter or other settings to produce a satisfactory map.

What Can I Do Now?

- Experiment with creating different types of thematic maps by selecting other options
24 Export a Map to MapInfo

**Objective**

Save the map displayed in PCensus so that it can be used in a GIS system.

**Background**

PCensus generates and displays maps using services provided by the underlying GIS system (MapInfo Professional or Microsoft MapPoint), which runs in the background.

If you need to take advantage of the advanced features of the GIS system to enhance or manipulate the map created in PCensus, you can save the map to a file and reopen it in MapInfo or MapPoint.

>This process also saves all the map objects that were created in PCensus, such as study area outlines or thematics.

**Prior Steps Required**

Create a PCensus project (for example, a thematic map).

**Steps to Save the Map**

1. Switch to the **Map** tab.
2. Select **Save Map as MapInfo Workspace** from the **File** menu.

**What Can I Do Now?**

You can use the features of MapInfo to manipulate the map in ways not supported by PCensus.
25 Using the MapInfo Layout Tab

This chapter only applies to PCensus for MapInfo.

Objective

Use the PCensus Layout feature to add frames and annotations to a printed map.

Background

The Layout tab allows the creation of presentation-quality maps by setting up the image of a printed page. You can add frames, titles, annotations and legends to the finished map.

Prior Steps Required

Create a project that includes a map to be printed; this can include a thematic map, or one or more mapped study areas. Display the area of the map that you want to print.

Press the F1 key when the Map tab is displayed for Help on moving around the map.

Experiment with the options in the Layout menu to change the map view; for example, you could add a scale bar to the layout. The Map menu contains an option to define a “clip region” to exclude irrelevant parts of the map (see the MapInfo user documentation for more details).

Working with the Map Layout

Switch to the Map Layout tab.
The layout is displayed with a view of the printed page, including the contents of the Map tab.

**Modifying the Map Layout**

The default map layout contains placeholder text for a header and footer. You can modify the content or appearance of these by double-clicking.

All objects in the layout can be moved or resized using the mouse, or you can select objects and remove them from the layout with the **Delete** key.

- **Choose the Select tool** from the Mapping tool bar (located on the right-hand side of the PCensus Window).
- **Click in the map frame to select it.**

  ![Map Layout Example]

  You can add objects to the layout using the MapInfo drawing tools.

  - **Symbol Tool:** When this tool is active, the cursor changes to †, and clicking on a map or layout draws the current default symbol.
  - **Line Tool:** When this tool is active, the cursor changes to †, and clicking two points on a map or layout draws a line using the current default line style.
  - **Rectangle Tool:** When this tool is active, the cursor changes to †, and dragging on a map or layout draws a rectangle using the current outline and fill styles.
  - **Rounded Rectangle Tool:** When this tool is active, the cursor changes to †, and dragging on a map or layout draws a rounded rectangle using the current outline and fill styles.
Using the MapInfo Layout Tab

**Polygon Tool:** When this tool is active, the cursor changes to +, and clicking on a map or layout draws a polygon using the current outline and fill styles.

**Text Tool:** When this tool is active, the cursor changes to I, and clicking on a map or layout lets you type text at the selected location.

**Frame Tool:** When this tool is active, the cursor changes to +, and dragging on the layout draws an outline frame. When the mouse button is released, the **Frame Object** dialog is displayed to specify the contents of the frame.

**Symbol Style Tool:** This tool displays a dialog to set the size, color and appearance of the current symbol to be used in drawing operations.

**Line Style Tool:** This tool displays a dialog to set the color and appearance of the current line type to be used in drawing operations.

**Region Style Tool:** This tool displays a dialog to set the color and outline type for region objects to be created in drawing operations.

**Text Style Tool:** This tool displays a dialog to set the size, color and font for text to be created in drawing operations.

Select **Layout** from the Main menu to access additional controls for the layout window.

The layout controls are described in detail in the MapInfo User’s Guide, and will not be repeated here.

**Saving the Layout**

You can create a default layout scheme for use in future projects by saving a map set.

Select **Save Map Set...** from the **File** menu.

When you start a new project, select the saved map set in the **Project Setup** task pane. All layout settings, including your edited header and footer, will be preserved.
See Appendix 6 - Creating a Map Set.

**What Can I Do Now?**

- Experiment with the layout controls to create custom map layouts.
- Print the contents of the **Layout** tab by clicking the **Print** icon.
26 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 ZIP 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 221); this provides a flexible method for **Penetration Analysis** (page 269).

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 7, Profile a Predefined Area) or other geographical area such as a circle (Chapter 10) or drive time area (Chapter 12).

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:
Create a Target List

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”.

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 **Lifestyle 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 38); 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.

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.*
Create a Target List

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 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 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 171); 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**.

![](image)

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: \( \frac{IHTAG}{IHT \times 1000} \)

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 and then 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.
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 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 165), 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.

![Edit Lifestyle dialog box](image)

- Check **Cumulative** in the **Display Values** panel and click **OK**.
Create a Target List

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

![Table showing cumulative column](image)

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:

![Menu options](image)

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 193).
- **Export the Target List** for use with other software applications (page 165).

Combine lifestyle targeting with thematic mapping by selecting both options in the Study Area Wizard.
27 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**

Create a profile containing two or more study areas, for example a province and a city (page37).

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 173).
- Select **Household Expenditure**.

### Customize the Graph

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

- **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.

*The tool bar can be hidden or displayed by right-clicking in the graph window.*
**PCensus User’s Guide**

- **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.
Create a Profile Graph

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.
28 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 115)

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.
29 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**

1. Select **New SiteScan Study Area...** from the **Study Area** menu.
2. Select **Draw rectangle on map**.
3. Click **Next >**.
Use the mouse to “drag” a rectangle across the Surrey, BC area.

You may need to adjust the map view to display the desired 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 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 118).

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 Dissemination Area 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.
30 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 26 (Create a Target List) and chapter 39 (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 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\textsuperscript{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.

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 $73 \times 2 + 80 + 91 = 317$ 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: $0 \text{ to } $30,000 might score 50, $30,000 \text{ to } $60,000 might score 100, and $60,000 \text{ 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 121).

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`: 

---

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.
### SiteScore - Scoring and Statistics

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

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 \times \frac{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

\[
100 \times \text{TargetValue (CY_POP)} / \text{Total (CY_POP)}
\]

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.

<table>
<thead>
<tr>
<th>RangeScore (expression, range1:score1; ...; rangeN-1:scoreN-1; *:scoreN)</th>
<th>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:</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 if income is &lt; $40,000</td>
<td></td>
</tr>
<tr>
<td>100 if income is $40,000 to $60,000.</td>
<td></td>
</tr>
<tr>
<td>50 if income is &gt; $60,000</td>
<td></td>
</tr>
</tbody>
</table>

*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 \texttt{Score()} in the formula box, with the cursor placed inside the parentheses.

\begin{itemize}
  \item Note the other available Statistical functions (TargetValue, Percentile etc.). These were described in detail in a previous section (see page 142).
\end{itemize}

Use the \textbf{Copy Formula} button to place the formula for \textbf{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.

\begin{itemize}
  \item 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 186). For more information on macros, search for the word “macros” in the PCensus Help system.
\end{itemize}
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 \( \text{Score}(x, n) \) function.
Scoring with Multiple Variables

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

\[(2\times\text{Percentile (@MEDINC_HH_CY)} + \text{Percentile (@MEDAGECY)})/3\]

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.

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”.
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:

<table>
<thead>
<tr>
<th>Range</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 to $30,000</td>
<td>10</td>
</tr>
<tr>
<td>$30,000 to $40,000</td>
<td>50</td>
</tr>
<tr>
<td>$40,000 to $60,000</td>
<td>100</td>
</tr>
<tr>
<td>$60,000 to $70,000</td>
<td>50</td>
</tr>
<tr>
<td>$70,000 and higher</td>
<td>10</td>
</tr>
</tbody>
</table>
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 User’s Guide

PCensus has updated the dimensions.

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

The middle income targets now receive the highest scores.

**What Can I Do Now?**

- Experiment with using SiteScore dimensions in conjunction with SiteScan (page 135). 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.
31 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.
32 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

1. Create a profile containing two or more study areas.

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

2. Click the Export icon to display the Export Profile Totals dialog box.

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

4. Select one or more categories for export.

5. For HTML or Spreadsheet output, edit the required Report Header fields.
PCensus User’s Guide

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 , the default application for viewing the file type will start automatically (for example Microsoft Excel).

Click to create the file.
33 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 checkboxes for unwanted variables in the Structure dialog (see page 162).

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.
Create a Pointfile

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

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 [ ] 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 checkboxes 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.
Create a Pointfile

- Select **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.
34 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 159). 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 115).

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...](image) 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.

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

- Click ![OK](image) 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
35 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.*
36 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

1. Create and save a project containing study areas of various types using an obsolete database.
2. Open the saved project.
3. 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 231), 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 191).
37 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.

![Profile Browser Screenshot](image)

- Data Template Selector
- Column Header Button
- Category Selector
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 177).

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.

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

Select the saved reference area as a benchmark.

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 177).
38 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 171). 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 Example](image)

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 171).
- 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:

<table>
<thead>
<tr>
<th>Tab</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category Lines</td>
<td>Control contents and appearance of individual lines (text and numerical content, font, indentation, etc.)</td>
</tr>
<tr>
<td>Category</td>
<td>Control contents and appearance of entire category (Category title, columns and sub-columns).</td>
</tr>
<tr>
<td>Template</td>
<td>Control properties of the entire template (title, links to database)</td>
</tr>
<tr>
<td>Macros</td>
<td>Define macros for shorthand representation of complex formulae.</td>
</tr>
<tr>
<td>Report theme</td>
<td>Control the overall appearance of reports (default fonts, shading, etc.)</td>
</tr>
</tbody>
</table>
Customizing the Profile

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 171).

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.
Customizing the Profile

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:

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

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**.

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 194).

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### 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.
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.

![Image of a table showing 2005 Estimated Median Household Income and other data]

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.

![Image of a table showing Top 10 PRIZM Segments]

Select Top 10 PRIZM Segments in the profile.

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 174). 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 175).

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:

\[
\frac{(CBP_{C001}/CY_{HH})}{(Universe.CBP_{C001}/Universe.CY_{HH})}*100
\]
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.

![Multi-Column Report Example](image)

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.

![Template Editor Screenshot](image)
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.

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

![Template Editor](image)

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

![Transform Template](image)

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

4. Click **Transform**.

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.
39 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 115. 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.

➢ 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 119).

Select the Profile tab to view these columns.

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 174) 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 221), it provides a flexible method for Penetration Analysis (page 269).
**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.*

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 249) 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 211).

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).
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 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.*
40 Create Custom Geographies

Background

Each PCensus database contains a number of predefined geographical summary levels such as State, county, place, ZIP code or block. The summary levels present in a database define the “Target Types” that can be used for creating target lists (Chapter 26), point files (Chapter 33) or for matching with mapped boundaries to create thematic maps (Chapter 19).

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 16). 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 counties or ZIP codes, 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 18, 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 Bellingham Tutorial Maps.

- Start a new PCensus Project, selecting the **Bellingham Tutorial Maps** 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.

In PCensus for MapInfo, you can view the data content of a map layer by selecting the **Map Tables** tab.

> If no unique code field is available, you must create one by editing the file in MapInfo.
Select **Custom Geography Wizard** from the PCensus **Tools** menu and advance to the Step 1 wizard page.

Select the **Carrier Routes** Map Layer.

Click **Next**.

Select **Carrier** as the **Name** field.

Select **Code** as the **Code** field.

Click **Next**.

Select the **Claritas 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, Zip codes, MCDs or even counties, 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.*

- **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 Claritas Sample Data by Carrier_Routes database.
- Open the Predefined Study Area dialog.

![Predefined Study Areas dialog]

Note the two new entries in the Geographies column, Total Carrier Routes and Carrier_Routes. When you select the latter entry, the names of the areas appear in the Area List column.

- Create a profile column for Frederick.

![Profile column for Frederick]

As a further example, we will use the custom geography to create a thematic map.
Create Custom Geographies

- Click 📌 **Defaults**: in the **Boundary Thematics** Task pane.

- Set the **Search Target Type** to **Carrier_Routes** to select our custom geography.

- Set the **Map Boundary Layer** to **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**.
41 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 FSA codes or DA 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 FSA or Dissemination Area code). Combining the methods allows us to access individual records and also to summarize to higher geographical levels 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

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database (page 221). 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 269). 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 three chapters that follow with a typical file (in xls format) containing records representing restaurants in Surrey, BC. The file is installed with PCensus in this folder:

C:\Program files\PCensus\Tutorial Files

The data fields (columns) in this file can be classified as follows:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Type</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification Fields</td>
<td>Text</td>
<td>Restaurant Name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>City</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Postal code</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Province</td>
</tr>
<tr>
<td>Location Fields</td>
<td>Numeric</td>
<td>Latitude</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Longitude</td>
</tr>
<tr>
<td>Key Fields (Suitable for linking to</td>
<td>Text</td>
<td>Postal Code</td>
</tr>
<tr>
<td>records in a PCensus database)</td>
<td></td>
<td>Dissemination Area</td>
</tr>
<tr>
<td>Data Fields</td>
<td>Numeric Data</td>
<td>Cups of Coffee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pots of tea</td>
</tr>
<tr>
<td></td>
<td>Numeric Data (non-</td>
<td>Years at location</td>
</tr>
<tr>
<td></td>
<td>additive)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Text Data or Unique</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value Data</td>
<td></td>
</tr>
</tbody>
</table>
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. “Type” may contain “Family”, “Ethnic” or other values. Because text information cannot be directly represented in a PCensus database, 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 49, 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 42, Importing Point Data.
- Chapter 43, Appending Your Data to a PCensus Database.

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.
42 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 61)
- Create a Target List (page 115).

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 the 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.

The contents of the file are displayed in a new window for verification.

- Click **Next >**.

- Check **Import records as Point Data**.
- Click **Next >**.
Importing Point Data

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 “Restaurant Name” field will be sufficient, but if necessary we can build complex names of the form <city><comma><space><province>.

Select Restaurant Name in the User Table Text Fields list and click to transfer it to the Name Fields box.

Add any other fields or punctuation required to specify unique names as shown.

Click to advance to the Geocode Method dialog.

Select Use Geographic Coordinates from fields in table.

Click.

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 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 **OK**
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 Type, separate fields have been generated for each of the represented values (TYPE_CAF, TYPE_ETHNIC etc.) For the “Numeric Split” variable Total Deposit, CUPS_OFCOFFEE_CAF 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.
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 Restaurants and click OK to generate the profile.

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 187), 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 231) to refresh your database or add new data columns.
43 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:

<table>
<thead>
<tr>
<th>Attach by FSA Code</th>
<th>Attach by DA code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantage</strong></td>
<td>Most address-based data already contains postal codes, so the file can be attached to PCensus without the requirement of geocoding.</td>
</tr>
<tr>
<td><strong>Disadvantage</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>

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 231). 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 211).

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.
Appending Your Data to a PCensus Database

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.
The contents of the file are displayed in a new window for verification.

Click three times to advance to the Extend Database page.

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.

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 to continue.
Appendng Your Data to a PCensus Database

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 be used to link to FSAs. PCensus will ignore the last three characters when matching keys.

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 button.
- If a large number of mismatches occur, you may want to cancel the operation and check your data for validity.

- Click 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 **Next**.

Build the PCensus Database

- Click **Begin Import** 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 **Next** 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 to continue.

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.
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 Postal codes that contain at least one bank. This study area is automatically saved as a Reference Area (see page 175).

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.

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 223), except that in Step 4, we select matching fields corresponding to dissemination areas instead of FSA codes. In the illustration on page 229, 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 230).

> 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 269) to see how an extended database can be used for Penetration Analysis.

Use the Refresh feature (page 231) to refresh your database or add new data columns.
44 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 43, 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 169).
Add New Data Fields to an Extended Database

To illustrate this process, we will add a new data item to the Surrey Restaurants 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 Next. The list only includes databases that contain imported data.

- Select Add Data Columns

- Click Next.
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.

 tackled

Click 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.
45 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.

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 button.

Select and click

The Exclusion area process also allows us to combine polygons, circles and drive times interchangeably.

Select and click

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.

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**.
The profile contains a column for our donut study area.
**46 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 249) 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 237.
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 244.

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 `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 button.

*If the circle is an intersector, only that part that is intersected by another shape will be searched.*

Select the Polygon.

Clear the box.

*The polygon is of no interest by itself.*

Clear the box.

Clear the box.

Click Close to return to the Study Area Wizard.

Click Finish.

Edit the Study Title to Modified circles.

Click Search Now.

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 249). In this case, the shapes are usually used to create separate profile columns; and it is seldom necessary to define complex relationships between them.
47 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 0, page 254). 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
PCensus User’s Guide

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 213).

- 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 the drive time regions.
- Click Next to continue.

We could also define drive times or circles based on demographics, using the “Data Fit” feature (page 79).

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 the option to 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 44, , page 254); for now we will just create profile reports.

- Clear the box.
- Click 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 .

- Select the Canada Tutorial Data.
- Click Finish.
- Click Search Now in the Search Study Area dialog box.

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

Claritas’ “MyBestProfiles” Web site allows you to download the results of thousands of consumer behavior surveys compiled by Simmons and MRI (Mediamark Research Inc.).

PCensus lets you combine the results of these surveys with PRIZM consumer segmentation data or P$YCLE_{NE} financial segmentation data to predict consumer behavior for products, services or activities in any geographical area.

For example, you can create a PCensus profile report for any area showing market penetration estimates for a restaurant chain (such as Wendy’s) or a beverage (such as Coca-Cola). Additionally, you can use PCensus ‘targeting’ to identify areas of high market potential.

To find out how you can download profile data for use with PCensus, contact your PCensus product specialist.

The Profile Import Utility that is included with PCensus converts profiles you have downloaded and saved in comma-delimited text (.csv) file format into PCensus report templates. These templates can be used to predict usage, expenditure, and market penetration for profiled items in any geographical area defined in PCensus.

Before using profiles, make sure that you have installed a suitable PCensus database that includes PRIZM or P$YCLE_{NE} segmentation.

Using the Profile Import Wizard

**Note:** PCensus must not be running while you are using the Profile Import Wizard. If PCensus is running, the template and lifestyle files that are created will not be properly registered.

Before using the Profile Import Wizard, you must have already downloaded the required profiles from www.mybestprofiles.com. After retrieving your files, save all downloaded profiles to a suitable folder in .csv format.

**Hint:** It is recommended that you rename downloaded profiles. Renamed profiles are easier to locate. For example, rename the file **fb99999.csv** to **OK Soda.csv**, to reflect the contents of a profile that you have downloaded.
To demonstrate the use of downloaded profiles, we have provided a fictitious example for a product called **OK Soda** to show how profile data in a downloaded csv file can be attached to the PRIZM population data in our sample database.

Click the Windows **Start** button.  
Select **Programs**.  
Select **PCensus Demographics**.  
Select **Profile Wizard** to display the Profile Import Wizard dialog box.

Click the button and open **OK Soda.csv** in the Program Files\PCensus\Tutorial Files folder.

For most profiles, PCensus can automatically determine the best way to connect the profile to your installed database, but for some segmentation systems you may need to select a demographic base (i.e., Total Households or Total Population). In this case, the following warning is displayed:

If the selected profile uses another demographic base, for example, Total Adults, you must decide which of the bases (Total Households or Total Population) will be most appropriate.

If you are unsure which base is required, click View File to examine the contents of the csv file; the text in the first line of the file will provide the required information.
Using Segmentation Data for Market Analysis

➤ Select **Total Population**.

➤ Click **Next**.

➤ Check that the indicated location for the PCensus program is correct.

 Otherwise, click the [ ] button and select the correct location.

➤ Click **Next**.

The selection box displays a list of the installed PCensus databases available with the segmentation system specified by the .csv file.

➤ Select the **Claritas Sample Data**.

➤ Click **Next**.

You can optionally specify paths and filenames for the template and lifestyle files. By default, they are given the same name as the .csv file.

➤ Click **Finish** to create the template and lifestyle.
Creating a PCensus Project Using an Imported Profile

Start PCensus and follow the steps to create a predefined Study Area.

In the Predefined Study Area dialog, select the Claritas Sample Data.

Select the OK Soda template that was created by the Profile Import Wizard.

Complete the steps to create a profile, for example for Whatcom County.

The data template contains three categories:

- **Summary**
- **Analysis Population**
- **Base Population**

**Category 1: Summary**
Displays the Analysis totals, Penetration index, and Market Potential index for the profiled commodity in the study area.

**Category 2: Analysis**
Displays the number of people or households using the commodity by market segment.
Category 3: **Base Population**
Displays the total population or household count in each segment.

We have now created a profile that can be used to evaluate a particular market in terms of its socio-demographic characteristics.

**Creating a Target Report**

The Profile Import Wizard creates a lifestyle definition suitable for generating target reports. This provides an effective method for identifying areas with a high market potential index or penetration. For example, we can compare the ZIP codes in Whatcom County.

![Image of a table showing ZIP codes and market data]

**Note:** You can easily summarize data. For example, to compute overall statistics for the top five markets, use the mouse to select the targets, then right click to “Profile total of selected targets”. 
49 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.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Customer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Customer1</td>
<td>09</td>
<td>72241</td>
<td>40</td>
<td>F</td>
<td>1</td>
<td>-122.476502</td>
<td>48.965368</td>
</tr>
<tr>
<td>3</td>
<td>Customer10</td>
<td>09</td>
<td>42261</td>
<td>29</td>
<td>M</td>
<td>1</td>
<td>-122.789158</td>
<td>48.980347</td>
</tr>
<tr>
<td>4</td>
<td>Customer100</td>
<td>01</td>
<td>77271</td>
<td>63</td>
<td>F</td>
<td>1</td>
<td>-122.502477</td>
<td>48.719684</td>
</tr>
<tr>
<td>5</td>
<td>Customer101</td>
<td>06</td>
<td>49091</td>
<td>48</td>
<td>M</td>
<td>1</td>
<td>-123.04958</td>
<td>49.001734</td>
</tr>
<tr>
<td>6</td>
<td>Customer102</td>
<td>09</td>
<td>136795</td>
<td>38</td>
<td>F</td>
<td>1</td>
<td>-122.350491</td>
<td>48.753727</td>
</tr>
<tr>
<td>7</td>
<td>Customer103</td>
<td>10</td>
<td>74573</td>
<td>69</td>
<td>F</td>
<td>1</td>
<td>-122.490456</td>
<td>48.739675</td>
</tr>
<tr>
<td>8</td>
<td>Customer104</td>
<td>09</td>
<td>118699</td>
<td>62</td>
<td>F</td>
<td>1</td>
<td>-123.087046</td>
<td>48.996858</td>
</tr>
<tr>
<td>9</td>
<td>Customer105</td>
<td>23</td>
<td>88400</td>
<td>29</td>
<td>F</td>
<td>1</td>
<td>-122.578277</td>
<td>48.997813</td>
</tr>
<tr>
<td>10</td>
<td>Customer106</td>
<td>23</td>
<td>56913</td>
<td>43</td>
<td>M</td>
<td>1</td>
<td>-122.376967</td>
<td>48.683085</td>
</tr>
<tr>
<td>11</td>
<td>Customer107</td>
<td>28</td>
<td>55444</td>
<td>36</td>
<td>M</td>
<td>1</td>
<td>-122.734904</td>
<td>48.928321</td>
</tr>
<tr>
<td>12</td>
<td>Customer108</td>
<td>09</td>
<td>90329</td>
<td>66</td>
<td>F</td>
<td>1</td>
<td>-122.79158</td>
<td>48.980347</td>
</tr>
<tr>
<td>13</td>
<td>Customer109</td>
<td>23</td>
<td>75941</td>
<td>28</td>
<td>F</td>
<td>1</td>
<td>-122.400856</td>
<td>48.857652</td>
</tr>
<tr>
<td>14</td>
<td>Customer11</td>
<td>23</td>
<td>42449</td>
<td>29</td>
<td>M</td>
<td>1</td>
<td>-122.400856</td>
<td>48.857652</td>
</tr>
<tr>
<td>15</td>
<td>Customer110</td>
<td>03</td>
<td>91821</td>
<td>46</td>
<td>F</td>
<td>1</td>
<td>-122.414722</td>
<td>48.788564</td>
</tr>
<tr>
<td>16</td>
<td>Customer111</td>
<td>33</td>
<td>62766</td>
<td>29</td>
<td>F</td>
<td>1</td>
<td>-122.350495</td>
<td>48.918312</td>
</tr>
<tr>
<td>17</td>
<td>Customer112</td>
<td>53</td>
<td>49595</td>
<td>32</td>
<td>M</td>
<td>1</td>
<td>-122.490651</td>
<td>48.727749</td>
</tr>
<tr>
<td>18</td>
<td>Customer113</td>
<td>11</td>
<td>47206</td>
<td>53</td>
<td>M</td>
<td>1</td>
<td>-122.396317</td>
<td>48.748032</td>
</tr>
</tbody>
</table>

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**

1. Start the **Import Data Wizard** from the task pane (or click the **Import** icon) to display the **Import Choices** dialog box.
2. Click **Import Data** to start the **Create Database Wizard**.
3. Advance to the **Select Import Data** step.
4. Click the **Browse** button in the **Import Database** panel.
5. Select **Files of Type: Excel (*.xls)**.
6. Open **Import Sample.xls** in the **Program Files\PCensus\Tutorial Files** folder.
7. The contents of the file are displayed in a new window for verification.
8. Click **Next** to advance to the **Main Options** page.
9. Check **Extend an installed Database**.
10. Check **Create Segmentation Profiles**.
11. 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 Next 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 175).

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.

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):

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Count</td>
<td>Total number of actual customers for this segment in the <strong>study area</strong></td>
<td>IMPORT_PRIZMNE_HH_CY_03</td>
</tr>
<tr>
<td>Client Composition</td>
<td>Percentage of actual customers in the <strong>study area</strong> that are in this segment</td>
<td>IMPORT_PRIZMNE_HH_CY_03/IMPCOUNT*100</td>
</tr>
<tr>
<td>Base Count</td>
<td>Total number of actual customers for this segment in the <strong>base area</strong> (currently selected benchmark area)</td>
<td>Benchmark.PRIZMNE_HH_CY_03</td>
</tr>
<tr>
<td>Base Composition</td>
<td>Percentage of actual customers in the <strong>base area</strong> that are in this segment</td>
<td>Benchmark.PRIZMNE_HH_CY_03/Benchmark.CY_HH*100</td>
</tr>
<tr>
<td>Study Area Count</td>
<td>Total number of households for this segment in the <strong>study area</strong></td>
<td>PRIZMNE_HH_CY_03</td>
</tr>
<tr>
<td>Study Area Composition</td>
<td>Percentage of total households in the <strong>study area</strong> that are in this segment</td>
<td>PRIZMNE_HH_CY_03/CY_HH*100</td>
</tr>
<tr>
<td>Base Penetration</td>
<td>Ratio of actual customers to total households in the <strong>base area</strong> that are in this segment</td>
<td>Benchmark.IMPORT_PRIZMNE_HH_CY_03/Benchmark.PRIZMNE_HH_CY_03*100</td>
</tr>
<tr>
<td>Segment Index for Base Area</td>
<td>Ratio of Sample composition to Household composition for the <strong>base area</strong> for this segment</td>
<td>Benchmark.IMPORT_PRIZMNE_HH_CY_03/Benchmark.PRIZMNE_HH_CY_03/ Benchmark.IMPCOUNT/Benchmark.CY_HH*100</td>
</tr>
<tr>
<td>Contribution to MPI</td>
<td>Percentage of households for segment in <strong>study area</strong> multiplied by segment index for <strong>base area</strong></td>
<td>PRIZMNE_HH_CY_03/CY_HH* Benchmark.IMPORT_PRIZMNE_HH_CY_03/Benchmark.PRIZMNE_HH_CY_03/ Benchmark.IMPCOUNT/Benchmark.CY_HH*100</td>
</tr>
</tbody>
</table>

*Note the extensive use of the “benchmark operator” in the formulae (See page 188.)*
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):

![Market Potential Index Table][1]

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.

![Market Potential Index Graph][2]
50 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 115)
- Combining your data with PCensus Data (page 221)
- Editing a report Template (page 177)
- Indexing Profile Columns (page 174)

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 Claritas Sample 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 221).

The resulting “**Widget Survey**” category contains two variables:

- Total Households surveyed
- Surveyed Households owning Widgets

The data template was then edited (page 177) to create some additional data items in the same category:

- **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.
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.

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 194 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.
Penetration Analysis – a CRM Tool

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.

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 254). In this case, we could compare the penetration ratios in the trading areas of any numbers of business locations.
Working with Custom Point Data

Background

The **My Data Manager** can help you display and analyze your own geographic location data. We will refer to this kind of location data as **point data** or **point tables**. Point tables must contain longitude and latitude values for each record before they can be used by PCensus.

Point tables added to the **My Data Manager** can be searched and aggregated when creating circle, drive-time or polygon based study areas, just like demographic values. Point data can be critical in building analytical models that help you evaluate sites and market potential.

Example of point data that you may want to use in PCensus include:

- Store locations (Site Table), both existing and potential
- Competitor locations
- Customers
- Other businesses of interest
- Traffic counts
- Shopping Centers

Once your point data has been added to the **My Data Manager**, you can display point values along with the usual demographic data. The screen shot below shows counts for each of the point tables, while displaying the points from each point table in a different color in the Map tab.
Working with Custom Point Data

Any location-based data that is stored in a file-based database (Access, Excel, dBASE, or text based files) can be used with My Data.

In addition to the point counts, the profile tab can display other fields that are in your point table. For instance, the profile view may display (average or aggregated) sales values and floor space as possible values from a potential location point table.

Any point data that you add to the My Data pane will appear each time you start PCensus. If a point table is updated, those changes will be reflected in PCensus the next time it is started.

When to Use My Data Layers versus Import Wizard

Prior to PCensus 11, custom point data needed to be imported using the Import Wizard which aggregated your point data to predefined geographies like Block Groups or ZIPS. Using My Data Layers provides the following advantages over the old Import Wizard:

- Point data can change without having to be re-imported.
- Point data is searched as individual points rather than pre-aggregated Block Groups or ZIPS.
- A study area search will retrieve only those points that are inside your circle, drive-time or polygon.
- Point data can be used in SmartReports to create detailed lists combining your point data with demographics.
- Point data can be pushed automatically into SmartReports as input to your models.

Perhaps the only reason to use the Import Wizard rather than My Data Layers is if you need to have your point data aggregated to geographies like ZIP, County, CMA, State, etc. Point data that has been created from the Import Wizard can also be used with PCensus Target Lists.

Setting up My Data Layers

This section describes how to add your point tables to My Data Manager.
Open the **My Data** pane by clicking on the **My Data** tab (if it is not already open).

If you do not see the **My Data** tab, right-mouse click on the background of the main application toolbar to bring up the context menu displaying a list of panes and toolbars, then select the **My Data** option to make it visible.

Pin the **My Data** pane open by clicking on the pushpin icon (if it has not already been pinned). When you are done organizing **My Data** layers, you may want to unpin this pane so that it doesn’t take up space in the application.

**To Add a Point Table to My Data Manager**

Click on the Add Data Layer icon in the My Data toolbar, bringing up the Select a Database File dialog where you can select a file containing point table(s).

Select the File Type and browse to the database file (Excel .xls and .xlsx, Access .mdb and .accdb, MapInfo .tab, dBASE .dbf or text .csv) and then select the database file.
If your database contains multiple tables, select one or more tables from the Select Point Table(s) dialog shown here.

Excel workbooks may contain multiple sheets, including empty ones, as well as named ranges. Excel tables should always have a row with column headings and be anchored in cell A1.

Give the layer a descriptive name (e.g. “Current Stores”) by clicking in the Description column. Give the layer a short name (e.g. “Stores”) which will be used in formulas to display values.

If using PCensus for MapInfo, you may change the map symbol by double clicking on the displayed symbol (the red circle in above diagram) and select a standard MapInfo symbol from the dialog.

It may take MapInfo several minutes or more to generate the point map if there are more than 50,000 points. For larger tables, see the recommendations in the Working with Large Point Tables section below.

PCensus will try to automatically determine the Longitude and Latitude columns in your table. Check the Layer Properties to ensure that the Longitude and Latitude values are not blank. If they are blank, look in the drop-down box for a suitable columns. If there are no suitable columns, you will have to geo code your data first.

Repeat the above steps for other point layers.

Your point data is now ready to be searched and used in reports.
Some point tables may contain a mix of point types or more points than you wish to display and search. For example, the AggData product contains points for a broad range of businesses in the US. You may only care about certain competitors, let’s say Walmart and Target stores. You could extract these records from the AggData table and then import them as distinct point layers into PCensus. But a simpler and more flexible approach is to use the SQL Filter property in the Layer Properties grid. With this approach, you would import the AggData table as described in the above section, then you would set the SQL Filter property to $STORE\_NAME='Walmart'$. This results in a layer that will only have Walmart stores. To add the Target stores, click on the duplicate button in the My Data context menu (right-mouse click on a layer) and modify the SQL Filter and other layer properties.

The SQL Filter property specifies the WHERE clause of a SQL Select statement to select a subset of records from a table. You can enter any text into the SQL Filter property that is consistent with the SQL Select … Where … syntax.
**Displaying Point Data in PCensus for MapPoint**

If you are using PCensus for MapPoint and want to have your point data displayed on the map, some additional steps are required.

> Note that MapPoint may have problems with larger data sets causing it to slow down significantly.

The following steps show how to create a MapPoint .pcm file that can then be displayed in PCensus.

1. Start MapPoint and click on one of the three toolbar icons circled:
   - Link Data Wizard
   - Import Data Wizard
   - Data Mapping Wizard

   The wizards are straight-forward to use, but please consult your MapPoint documentation for details if you need additional information.

2. Follow the Wizard you selected in the step above to bring your data into MapPoint and display it. The points will be displayed as in this example, depending on the display options you selected in the MapPoint wizard.
After your data has been displayed in MapPoint to your satisfaction, select **File -> Save** and save the map as a .pcm file.

Now return to PCensus for MapPoint, select **Map -> Options** from the main menu to bring up the MapPoint Options.

Select **Custom Map Template**, as shown.

Click on the … button and select the MapPoint .pcm file from the previous steps.

Click on OK and your data points should now be displayed in PCensus every time you start it.

Add the same database that was referenced in MapPoint to **My Data Manager** (as described in **Setting up My Data Layers** above) so that PCensus will search your points every time a shape based Study Area is searched.

---

**Searching and Displaying My Data**

Once you have set up your point layers with the My Data manager, you can start searching and displaying data in the Profile tab:

- Create a circle, drive-time or polygon study area.
- Display the Profile tab in PCensus.
- Right-click on the Profile display area to bring up the context menu.
- Select **Insert Values from My Data Tables**.

Upon completing the last step, you will see the aggregated numeric values for your data displayed in the template along with the usual demographic variables. You can select and cut these lines and then paste them anywhere you want in the profile categories.
If at any time you do not want to search the points in My Data Manager, you can uncheck point tables in the Search column of My Data pane. This can help speed up searches if your data contains a lot of points. The Search checkbox can be re-checked later.

See Advanced My Data Features section below for information on modifying the point table values that are displayed.

Working with Large Point Tables

The My Data Manager works well with all of the supported file formats (Access, Excel, dBASE and CSV text) when you are using less than about 50,000 points. Over that number, it is best to use the Access format to store your data since Access greatly increases the speed of data retrieval.

To Convert an Existing File to an Access File

- Start Microsoft Access.
- In the File menu, select New -> Blank Database.
- Give the database a name, e.g. My Point Tables, and then double-click on the Create icon on the right side.
- Select the External Data tab on the top ribbon.
- If your data is in an Excel file, click on the Excel icon in the External Data ribbon toolbar.
- If the data is a CSV or text file, click on the Text button.
- If the data is in dBase format, click on the More drop-down tool button.
Follow the steps in the Access Get External Data import wizard. The defaults should be acceptable and you can click on the Next buttons repeatedly and the Finish button at the end.

When the wizard is complete, you will have an Access table. Right click on a table listed on the left side (JCXLSX in the example) and select Design View from the context menu. Access will display the table fields on the right side.

Select the field that has the longitude values (Longitude in this example) and select **Yes (Duplicates OK)** for the **Indexed** property. Repeat for the Latitude field.

If you will be using SQL Filters (described further down in this chapter) to refine the records that will be retrieved from the table, be sure to index every field that will be part of the filter.

Save the Access database and repeat the steps from the Setting up My Data Layers section above to add the Access point table(s) to PCensus My Data Manager.
If you have millions of points of data, it may not be possible to get MapInfo to create the point map while in PCensus. If this is the case, it is best to first create the MapInfo .tab file from within MapInfo using the **Table -> Create Points** menu command. If you do this, it is important that the generated MapInfo .tab file is named FileName_TableName.tab so that PCensus will use it when you add the Access database table. For example, if your Access database is called MyDatabase.accdb and the table name is Stores, then the tab file should be named MyDatabase_Stores.tab in order for PCensus to locate it when you select the Access database. Note that you could just select the MapInfo .tab file when adding tables to My Data, but if your points are very dense (hundreds or more per Study Area, as might be the case with a customers' table), the search performance of the MapInfo tab file will be much slower than using an Access accdb file. Please contact your application provider for assistance with this process.

### Displaying My Data Values in the Profile Browser

Once point data has been added to the **My Data Manager**, you will need to update the Report Template to display your point data. Before updating the Report Template, it helps to have created a Study Area so that you can see numeric data values displayed in the Profile View.

- If you do not already have a Study Area, create a Circle, Drive-time or Polygon Study Area. In the Profile View, select the Report Category where you would like to display your point data. You may also use the Template Editor if you want to create a new Report Category to display the point data. See Chapter 4 – Databases and Templates.

- Highlight the row after which the new point data values should be displayed by left-mouse clicking on a row.

- Right-mouse click on the selected row to bring up the context menu. Select **Insert Values from My Data tables** to insert the aggregated numeric values from your point tables.

PCensus will create two counts for each point table. The Total Count is the number of points within each ring (from the site location to the outer edge of the circle radius or drive-time). The Exclusive Points count is the number of points that are exclusively in a ring. For example, if you have a circle with 1, 2 and 3 mile rings, the Total Points line gives counts for 0-1 mile, 0-2 miles and 0-3 miles. The Exclusive Points line gives counts for 0-1 mile, 1-2 miles, 2-3 miles. Both types of counts can be useful.

In addition to the Total and Exclusive Points counts, a report line will be created for each numeric field in your table. If you need to display more advanced data involving point data, please read the next two sections.
Combining Point Data with Demographic Data

Some of the more interesting usages of custom point data involve combining your point data with demographic data. For example, if you have customer point data where each point represents a household shopping at one of your stores, you can calculate the Penetration Ratio for a Study Area using the Report Template Editor. (The same can be done in a SmartReport using the same formula.)

The general formula for a My Data point table value is:

\[ UserTable[tableName].FieldName \]

So if you have a table called \textit{Sites} and the site table has a field called \textit{Sales}, you can use the formula \textit{UserTable[Sites].Sales} to display the aggregated sales value. You can also use the \textit{Count()} and \textit{ExclusiveCount()} functions as in \textit{UserTable[Sites].Sales/UserTable[Sites].Count()} to get the average sales per customer value. The penetration ratio mentioned above would be \textit{UserTable[Customers].Count()/CY\_HH} where CY\_HH is the demographic variable for current year households. (The actual variable name will depend on which demographic database you are using.)

To edit My Data point data formula

- Create a circle or drive-time or polygon Study Area so that you can view a numeric value for each variable.
- Select the Profile View and select the Report Category you wish to place the custom value.
- If you have not already added the automatic point data variables, select a row by left-mouse clicking on it, then right-mouse click to bring up the context menu and select Insert Values from My Data Table from the menu.
- Double-click the numeric data value for the line that you want to modify. This will bring up the Formula Editor.
- Modify the formula. For example, if you want to display the penetration ratio, you might enter \textit{UserTable[Customers].Count()/CY\_HH}, where CY\_HH would represent the variable for the total Current Year Households.
- Click OK on the Formula Editor and the value should now be displayed.
Including My Data in SmartReports

My Data values can be included in several ways from simple aggregated point values to detailed point lists.

Note that designing SmartReports is an advanced topic and requires a solid understanding of Excel and PCensus. We suggest that you contact your application vendor for support and possibly custom services so that you get the desired results.

If you decide to design your own SmartReports, this section will outline how to use the SmartReport Designer to reference point data. The following steps will start the SmartReport Designer:

- Click on the SmartReport icon on the main toolbar.
- Double-click on the Blank Report icon to start the SmartReport Designer in Excel with a New SmartReport. Alternatively, right click on an existing SmartReport’s icon and select **Edit Report Template** from the context menu to modify an existing report.
- Wait for Excel to start. Note that there is a SmartReport Designer tab in the ribbon toolbar that contains special functionality for working with SmartReports.
Steps to Display a My Data Value in a SmartReport

In the SmartReport Designer ribbon tab, click on the Advanced -> New Profile Value report item.

Customize the formula to include a UserTable[] expression. (See Combining Point Data with Demographic Data above.) If you have already added expressions to the PCensus Report Template, then you can just copy them directly into the SmartReport using the Profile Values report item.

The cell in the above example will show *** for now, but this cell will be populated by an actual numeric value that comes from a Study Area when the final report is generated. The cell can be referenced by other cells that use that value as a component in a formula.
Steps to Create a Detailed Point List in a SmartReport

A detailed point list can be useful if you want to list the competitors or other businesses that are within your Study Area. An example is provided below.

Business Points By Store

<table>
<thead>
<tr>
<th>Name</th>
<th>Distance</th>
<th>City</th>
<th>NAICS</th>
<th>NAICS Description</th>
<th>Sales</th>
<th>Employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>KAL TIRE</td>
<td>0.000</td>
<td>WILLIAMS</td>
<td>44132001</td>
<td>TIRE DEALERS</td>
<td>$2.5 - $4.9 million</td>
<td>10-19</td>
</tr>
<tr>
<td>EMCO CORP</td>
<td>0.031</td>
<td>WILLIAMS</td>
<td>38222002</td>
<td>PLUMBING HTG &amp; AIR</td>
<td>$1.0 - $2.4 million</td>
<td>5-9</td>
</tr>
<tr>
<td>MARKEY MECHANICAL LTD</td>
<td>0.146</td>
<td>WILLIAMS</td>
<td>38222002</td>
<td>PLUMBING HTG &amp; AIR</td>
<td>$1.0 - $2.4 million</td>
<td>5-9</td>
</tr>
<tr>
<td>WALLY NOHR TRUCKING</td>
<td>0.215</td>
<td>WILLIAMS</td>
<td>38422013</td>
<td>SPECIALIZED FREIGHT</td>
<td>under $500,000</td>
<td>1-4</td>
</tr>
<tr>
<td>BEE-LINE COURIERS</td>
<td>0.263</td>
<td>WILLIAMS</td>
<td>49211002</td>
<td>COURIERS &amp; EXPRESS</td>
<td>$500,000 - $999,999</td>
<td>5-9</td>
</tr>
<tr>
<td>ACE COURIER SVC</td>
<td>0.263</td>
<td>WILLIAMS</td>
<td>49211002</td>
<td>COURIERS &amp; EXPRESS</td>
<td>under $500,000</td>
<td>1-4</td>
</tr>
<tr>
<td>WESTERN WOOD HEAT INC</td>
<td>0.277</td>
<td>WILLIAMS</td>
<td>35320200</td>
<td>HEATING &amp; AIR CONDITION</td>
<td>$1.0 - $2.4 million</td>
<td>1-4</td>
</tr>
<tr>
<td>KIISA BOMSTAD PAINTING</td>
<td>0.277</td>
<td>WILLIAMS</td>
<td>35322003</td>
<td>PAINTING &amp; WALL CO</td>
<td>under $500,000</td>
<td>1-4</td>
</tr>
<tr>
<td>NATIONAL CAR RENTAL</td>
<td>0.422</td>
<td>WILLIAMS</td>
<td>35322001</td>
<td>PASSENGER CAR RENT</td>
<td>$500,000 - $999,999</td>
<td>1-4</td>
</tr>
<tr>
<td>NATIONAL CAR &amp; TRUCK RENTAL</td>
<td>0.422</td>
<td>WILLIAMS</td>
<td>35321101</td>
<td>PASSENGER CAR RENT</td>
<td>$500,000 - $999,999</td>
<td>1-4</td>
</tr>
<tr>
<td>KLEEN AIRE SVC</td>
<td>0.448</td>
<td>WILLIAMS</td>
<td>35322014</td>
<td>PLUMBING HTG &amp; AIR</td>
<td>$1.0 - $2.4 million</td>
<td>5-9</td>
</tr>
<tr>
<td>BURGESS PLUMBING HEATING CO</td>
<td>0.578</td>
<td>WILLIAMS</td>
<td>35322025</td>
<td>PLUMBING HTG &amp; AIR</td>
<td>$5.0 - $9.9 million</td>
<td>20-49</td>
</tr>
<tr>
<td>DEREK BERRY CONTRACTING</td>
<td>0.752</td>
<td>WILLIAMS</td>
<td>353289901</td>
<td>ALL OTHER SPECIALTY</td>
<td>under $500,000</td>
<td>1-4</td>
</tr>
<tr>
<td>ADVENTURE CHARTER &amp; RENTALS</td>
<td>0.788</td>
<td>WILLIAMS</td>
<td>35321100</td>
<td>PASSENGER CAR RENT</td>
<td>under $500,000</td>
<td>1-4</td>
</tr>
</tbody>
</table>

The following steps describe the process for creating a Point List SmartReport:

1. Select the cell where you want to begin the list. Leave an extra row above if you want headers. In the SmartReport Designer ribbon tab, select the Repeat Section report item. A pair of blue bars starting at the currently selected cell. The properties that apply to this report item are displayed in the Document Actions pane to the side.
From the Document Actions - Report Item - Properties grid, set the Repeat Type property to ForEachTablePoint.

Click on the Edit Repeat Section… button in the Document Actions pane. (If the button is not enabled, make sure you click on the blue bar of the Repeat Section placeholder on the sheet.) The Insert Point Table Values dialog will be displayed.

This dialog lets you select which fields from your point table to display on the current line of the Excel sheet. Select the fields to display from the list on the left (by double clicking on any items, or by making a multiple selection and clicking on the > button).

Order the items in the right list the way you want them to appear from left to right in the sheet.
Working with Custom Point Data

- Enter a cell address into the **Insert values beginning in cell** setting to ensure that is the correct cell to begin the point table values. The values can be drag-moved later if necessary.

- Column headers can be generated automatically if you leave a blank row above the blue bars. The headings will be the field names, but this can help you to keep track of which values are going to appear in a column. Enter the row number in the **Insert column headings on row** text box if headings are desired.

- The end result after you have drag-moved the lower blue bar and applied your formatting should be a report row as shown left. The row shown with *** values will be evaluated and listed for each point of the point table that is in the Study Area. Note that non-point based cells can also be inserted into this row.

- Save the SmartReport template and return to PCensus. In PCensus, generate a Study Area, and then select the SmartReport icon and generate the new report.

- When the report is generated from PCensus, the result will look something like the one at left. The rows that are listed in the sheet are the competitor points located within the Study Area.

Some other ideas to consider for this kind of report:
A field like ZIP_CODE in the above example can be cross-linked to another sheet that lists ZIPS along with some other relevant values (e.g. Population, Average Household Income, Diabetes Rate, etc.) using Excel’s LOOKUP() function. The referenced sheet can be your own lookup table or a table that was generated by PCensus.

Any formatting that you apply to the template row will be applied to each generated row. In the above example, the LIST_NAME column values are bolded. More elaborate formatting is possible.

If you have columns that have numeric values, you can use Excel’s SUM() function to get column totals.

**Steps to Create a List of Trade Areas in a SmartReport**

If one of the point tables in My Data Manager represents your stores or sites that you want to analyze, you can use that table in a SmartReport to list site-specific information (total revenue or parking spots, for example) as well as demographics based on circle and/or drive-time areas.

The Excel sheet shown below typifies this kind of a report. Note that each data row in the sheet represents a site, and the columns show data from 1- and 3-mile trade areas. The column data show demographics data from a PCensus database, as well as information about competitors retrieved from My Data tables. You can add extra logic in your SmartReport to provide some kind of scoring for the sites.

<table>
<thead>
<tr>
<th>Store ID</th>
<th>Address</th>
<th>State</th>
<th>1 Mile Radius</th>
<th>3 Mile Radius</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Growth 2012</td>
<td>2012</td>
</tr>
<tr>
<td>4</td>
<td>550 E Madison St</td>
<td>WA</td>
<td>53,835</td>
<td>3.20%</td>
</tr>
<tr>
<td>248</td>
<td>4300 19th St. SW</td>
<td>WA</td>
<td>13,735</td>
<td>4.47%</td>
</tr>
<tr>
<td>247</td>
<td>44747 N.W. 20th St</td>
<td>WA</td>
<td>17,691</td>
<td>0.87%</td>
</tr>
<tr>
<td>6</td>
<td>125 E. Valley Mall</td>
<td>WA</td>
<td>1,046</td>
<td>9.11%</td>
</tr>
<tr>
<td>644</td>
<td>420 N. Division St</td>
<td>WA</td>
<td>19,221</td>
<td>0.17%</td>
</tr>
<tr>
<td>662</td>
<td>10005 Lakewood Dr,</td>
<td>WA</td>
<td>10,002</td>
<td>0.16%</td>
</tr>
<tr>
<td>682</td>
<td>1430 NW Sammamish</td>
<td>WA</td>
<td>2,147</td>
<td>16.55%</td>
</tr>
<tr>
<td>665</td>
<td>60 Rainier Ave.</td>
<td>WA</td>
<td>11,810</td>
<td>0.83%</td>
</tr>
<tr>
<td>667</td>
<td>3155 Martin Way E</td>
<td>WA</td>
<td>7,681</td>
<td>4.31%</td>
</tr>
<tr>
<td>668</td>
<td>7445 S. Hosmer</td>
<td>WA</td>
<td>13,408</td>
<td>0.63%</td>
</tr>
<tr>
<td>670</td>
<td>4800 Whaineon Way</td>
<td>WA</td>
<td>8,954</td>
<td>6.98%</td>
</tr>
<tr>
<td>506</td>
<td>1601 Evergreen Way</td>
<td>WA</td>
<td>21,941</td>
<td>9.71%</td>
</tr>
<tr>
<td>1723</td>
<td>1044 Supermall Way</td>
<td>WA</td>
<td>3,004</td>
<td>4.00%</td>
</tr>
<tr>
<td>1723</td>
<td>7551 NE Vancouver</td>
<td>WA</td>
<td>13,735</td>
<td>7.89%</td>
</tr>
<tr>
<td>1722</td>
<td>1520 Cooper Point Pk</td>
<td>WA</td>
<td>8,599</td>
<td>7.18%</td>
</tr>
<tr>
<td>1722</td>
<td>20602 International</td>
<td>WA</td>
<td>19,221</td>
<td>0.89%</td>
</tr>
<tr>
<td>1722</td>
<td>178 SW Campus Drive</td>
<td>WA</td>
<td>10,049</td>
<td>1.27%</td>
</tr>
<tr>
<td>Total</td>
<td>228,286</td>
<td></td>
<td>8.03%</td>
<td>1,228,417</td>
</tr>
<tr>
<td>Average</td>
<td>13,429</td>
<td></td>
<td>0.09%</td>
<td>72,200</td>
</tr>
</tbody>
</table>
The following steps provide an outline of how to create a Site List SmartReport:

Select the cell where you would like to begin the list. Leave an extra row above if you want headers. In the SmartReport Designer ribbon tab, select the Repeat Section report item. A pair of blue bars starting at the currently selected cell. The properties that apply to this selected cell. The properties that apply to this report item are displayed in the Document Actions pane to the side.

From the Document Actions - Report Item - Properties grid, set the Repeat Type property to ForEachSitePoint.
Expand the Site properties in the Properties grid and enter the trade areas you want to create around each site point. Note that you can have both Circles and Drive Time trade areas. Study Areas will be created dynamically for each site point and values from these site areas can be accessed by Profile Values report items using the **Study Area Part Index property**. If you have 1- and 3-mile rings, the 1-mile ring will have a Study Area Part Index of 0. The 3-mile ring will have a Study Area Part Index of 1. If you also had 5- and 10-minute drive times, the 5-minute drive area would have a Study Area Part Index of 2, and 3 for the 10-minute area.

Click on the **Edit Repeat Section…** button in the **Document Actions** pane. (If the button is not enabled, make sure you click on the blue bar of the Repeat Section placeholder on the sheet.) The **Insert Site Values** dialog will be displayed.
Working with Custom Point Data

This dialog lets you select which fields from your site table to display on the current line of the Excel sheet. Select the fields to display from the list on the left (by double clicking on any items, or by making a multiple selection and clicking on the > button).

- Order the items in the right list the way you want them to appear from left to right in the sheet.

- Enter a cell address into the Insert values beginning in cell setting to ensure that is the correct cell to begin the point table values. The values can be drag-moved later if necessary.

- You can have automatically generated column headers if you have a blank row above the blue bars. The headings will be the field names, but this can help you to keep track of which values will appear in a column. Enter the row number in the Insert column headings on row text box if headings are desired.

- Add demographic data values from a PCensus database by clicking on the Profile Value toolbar icon. This will bring up the Paste Profile Values dialog that lets you select the data values of interest. Please refer to the notes about the Study Area Part Index properties above to determine which areas (circles or drive times) to reference for the profile values.
To add point data from My Data point tables, such as competitor counts, click on the Advanced -> New Profile Value report item.

Customize the formula to include a UserTable[] expression. (See Combining Point Data with Demographic Data above.) If you have already added expressions to the PCensus Report Template, then you can just copy them directly into the SmartReport using the Profile Values report item.

After entering your profile values and point values and performing some formatting, your SmartReport sheet might look something like below.

Save the SmartReport template and return to PCensus. Unlike most other SmartReport types, you do not need to create a Study Area in PCensus, since the Study Areas will be created dynamically in the SmartReport using the Site table.
points as centroids for circles and/or drive-times with the radius/time values specified in the SmartReport.

Select the SmartReport icon, select your Site List SmartReport and click on Create Report. A report listing all of the sites in your Site table will be generated.
Steps to Create a Report for Each Site in a Site Table

The previous section showed how to list all of your sites within one SmartReport. This section demonstrates how to create one SmartReport per site for all your sites in one go. The former can be thought of as a **summary site report** and the latter as a **detailed site report**.

The figure below shows a sample detailed site report. The actual contents of a detailed site report are entirely up to you when you design the SmartReport. The main thing to note is that a detail report focuses on one Study Area, although benchmarks can also be used as shown. Tetrad, the makers of PCensus, can provide services to help you in the development of your reports.
The remainder of this section will provide steps to design a simple SmartReport template like the one above, and then generate a batch of reports using a site table and the SmartReport template.

1. Click on the SmartReport icon on the main toolbar.


3. Wait for Excel to start. Note that there is a SmartReport Designer tab in the ribbon toolbar that contains special functionality for working with SmartReports.

4. Insert the text as shown into the cells and then select cell B1.

5. From the Quick Tags gallery, select Study Area Name. This will insert a dynamic tag that will evaluate to the name of the site when the report is generated.

6. Do the same thing with cell B2, except select Benchmark Name from the Quick Tags gallery.
To insert a map showing a single site trade area, select cell A3 and then click on the Study Area Map icon.

To add some profile values (demographics), select cell A24 and then click on Profile Values. The Paste Profile Values window will be displayed.

Select the profile values that are of interest to you. Note that in this illustration we have selected the Study Area and the Benchmark columns. We have also checked the options for applying the formatting shown in the Paste Profile Values window to the SmartReport. Click on the Paste Selected Items button when your selection is complete.

Because the report is intended to display a particular site trade area as a benchmark to compare with other sites, we first create the benchmark site in PCensus as shown above. Ignore this step if you do not need a benchmark. Note that the SmartReport could have been designed to instead use the site’s county, state or some other geography as a benchmark or comparison.
Apply any desired formatting to the top rows and the map’s shape object (using standard Excel formatting options). The resulting SmartReport may appear as shown left. You can now save the report and begin accessing it from PCensus.

We can now begin generating the batch sites. Click on the SmartReport icon on the main toolbar.
To open a SmartReport from PCensus

Make your selections from the SmartReports dialog. The main thing to realize when creating a batch of reports is that the Create report for each Site in My Data Site Table must be selected (step 2 in the above figure). You can specify either circle or drive time values, and for advanced cases you can have both. If you need multiple rings, enter “1, 2, 3” in the Circle Radii text box to create 1, 2 and 3 mile rings. Note that the Benchmark was set to the reference area (“Benchmark Store 5 mile ring”) that was created in the previous (optional) step.

Click on Create Report when you are ready to generate the site detail reports. Windows Explorer will open to display the batch folder in which the reports will be created, as shown below. The folder name will be based on the SmartReport template file name. One excel file will be created for each site in the site table, and you will see these files being added to the folder as the batch generation proceeds. The Name Column that was selected in the previous step is used to generate the report names.
Working with Custom Point Data

It may take a while for the batch reports to complete, especially if the reports display maps which can be slow to generate.

You should inspect one of the files in the batch folder as soon as possible to ensure that the reports are generating correctly. If you should need to cancel the batch reports, find the SmartReport Log status window and click on the Cancel SmartReport button, as shown below.
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 OK 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:

1. Select Database Management from the Tools menu.
2. Click in the Database Management dialog box.
3. Specify the database to be registered. This will be a file with the extension ".hdr".
4. Click to locate the required file and click .

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”.

1. Click in the Database Management dialog box.
2. Select the template file to be registered. Template files have the extension ".tpl".
3. 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.
Appendix 1 – Database Management

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,

1. Click the icon in the Database Management dialog box.
   PCensus displays the **Delete Files** dialog box.
2. Select the type of file to delete (Database, Template or Lifestyle Library).
3. Select the correct file from the pull-down list.
4. Click the button.
5. 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 315) 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) 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)**

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.
Appendix 2 – Census Geography

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)

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.](image)

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](image)

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.

<table>
<thead>
<tr>
<th>Country</th>
<th>Basic Geographic Unit</th>
<th>Total Number of Blocks</th>
<th>Average improvement in Precision</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>Block group</td>
<td>208,648</td>
<td>8,262,363</td>
</tr>
<tr>
<td>Canada</td>
<td>Dissemination Area</td>
<td>52,993</td>
<td>478,707</td>
</tr>
</tbody>
</table>

The following illustration shows the increased detail available using blocks (lighter outlines) compared to the block group boundaries shown above for the same 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 \(\frac{50}{500} = 0.1\)) 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 - Using MapPoint with PCensus for MapInfo

Background

This chapter describes how PCensus for MapInfo can combine GIS capabilities from both the MapInfo and MapPoint platforms to provide an additional level of performance and convenience.

PCensus for MapInfo normally uses MapInfo Professional to provide mapping functionality, including:

- Display of street maps.
- Address searching.
- Thematic mapping.

MapInfo Professional is a fully functional GIS that allows you to create and customize maps using your own data, as well as providing access to a huge selection of commercially produced map products. Most maps created for use with MapInfo are “vector-based”, which means that you can edit individual objects such as boundaries or street segments, add new objects or change the styles or colors used to display them.

MapInfo Professional does not include the detailed street maps or census boundaries that you will need for use with PCensus - these must be purchased separately according to your requirements.

Microsoft MapPoint provides a lower level of GIS functionality than MapInfo; its maps are “read-only” and cannot be modified. The MapPoint product, however, includes a detailed street map of the United States and Canada, as well as an accurate address-searching capability that is adequate for locating PCensus study areas, so this platform does not require you to purchase or install additional digital maps.

Although Microsoft MapPoint does provide some thematic mapping capabilities, this is limited in comparison to that provided by MapInfo, as data can only be mapped into the built-in boundaries provided by MapPoint (census tracts, ZIP code, counties and states). MapPoint cannot create boundary thematics for block groups, CBSAs or places, or for Canadian census areas.
**The MapInfo/MapPoint Combination**

PCensus for MapInfo detects whether MapPoint has been installed on your computer. If MapPoint is present, PCensus can use the capabilities of MapPoint in addition to those provided by MapInfo. In particular, the MapPoint street map is interleaved with the map view provided by MapInfo, and you can optionally use the MapPoint address searching tool and drive time generator instead of their equivalents from MapInfo. At the same time, you can still use the full functionality of MapInfo thematic mapping to display thematics in the context of the MapPoint street layer.

> The following examples can only be used if you have both MapInfo and MapPoint installed on your computer.

If PCensus for MapInfo detects the presence of MapPoint, two special icons are added to the bottom of the MapInfo tool-bar.

The MapPoint Tool-bar icon displays the MapPoint Extender tool bar at the bottom of the map window.

The MapPoint Layer Icon displays the MapPoint street map layer.

The MapPoint Extender tool bar contains controls that let you specify how MapPoint and MapInfo will interact.
MapPoint Layer on Bottom places the MapPoint layer below all open MapInfo layers, for example to display a boundary layer in the context of the street map. In this mode, a thematic map will obscure the underlying street map.

MapPoint Layer on Top places the MapPoint layer above all open MapInfo Layers. In this mode, a thematic map will be obscured by the opaque MapPoint layer (unless translucency is specified (see next paragraph)).
The **Translucency** slider control makes the MapPoint layer progressively more transparent, so that underlying thematics or other map layers become visible.

The **Transparent Color** control lets you select a color from the MapPoint layer and make it invisible. For example, you can make the Street Background invisible, which has the effect of making the underlying thematic visible, while the streets are still opaque.
The MapPoint Legend button toggles the display of the MapPoint legend pane.

The Use MapPoint for Searching button determines whether address-searching requests will use the MapPoint or MapInfo search engines.

Note that the MapInfo search utility requires suitable street maps to be open.

The Use MapPoint Drivetimes button uses MapPoint to create drive time study areas.

Note that MapPoint drive times can be used even if the PCensus for MapInfo Drive time option (Freeway) is not installed.
Note that the results for the two drive time methods can be significantly different. This is due to differences in methodology: Freeway uses a grid connectivity calculation, whereas MapPoint dynamically computes optimum routes based on the street network.

MapInfo Thematic

MapPoint Thematic

The Use MapPoint Thematics button determines whether MapPoint or MapInfo will be used to generate thematic maps.

In general, the thematic mapping methodology provided by MapPoint is less flexible than that provided by MapInfo. MapPoint is limited to mapping against built-in boundaries (States, Metropolitan Areas, Counties, Census Tracts, ZIP codes), which may not correspond exactly to the areas represented in your PCensus databases. MapInfo lets you map against any type of boundary contained in your MapInfo tables.

The MapPoint Options button opens the MapPoint Options dialog.

This dialog gives access to advanced features of Microsoft MapPoint, including the ability to specify a Map Template.

The other options should be used with care, as it is possible to access MapPoint features that are not relevant to PCensus for MapInfo.
Appendix 5 – Using Bing Maps for PCensus

Background

Bing Maps for PCensus lets you display Satellite/Aerial imagery as a base map in the MapInfo map window. One year of licensed access to Bing Maps is included for all users of PCensus for MapInfo with MapPoint also installed.

This chapter will describe how to install and make use of Bing Maps for PCensus. It will be assumed that you have previously installed a version of MapPoint (version 2006 or later) as well as MapInfo.

Installing the Component

Before installing Bing Maps for PCensus, make sure that PCensus is not running. Insert the Bing Maps for PCensus CD, and follow the installation instructions.

After the setup is complete, please contact Tetrad (1-800-663-1334) to receive a pass key by email. When you run PCensus after installation of Bing Maps for PCensus, you will be prompted to enter the key:

Enter the key provided by email and click Continue.

When Bing Maps for PCensus is enabled, an additional tool-bar is displayed in the PCensus Window.
Note: the tool-bar is “dockable,” so you can drag it to other locations in the PCensus window to save space.

Removing the Component

If you need to disable the Bing Maps for PCensus component, follow these steps:

► Shut down PCensus if it is running.
► Select Control Panel from the Windows Start menu.
► Double-click Add or Remove Programs (Windows XP) or Programs and Features (Windows Vista or Windows 7).

► Highlight Bing Maps for PCensus and click Remove.

When the removal is complete, Bing Maps for PCensus will be disabled.
Using Bing Maps for PCensus

With Bing Maps for PCensus installed, four types of images are available:

- Microsoft MapPoint™ layer (available even when the component is not installed).
- Bing Maps Aerial Image
- Bing Maps Aerial image with Roads.
- Bing Maps Roads (Similar to MapPoint, but probably more current).

All types of images can be combined with PCensus for MapInfo layers. The **Base Map** selector lets you pick the image style to use:
The Live Search Maps view button displays the current map view in Bing Maps in your web browser, allowing detailed three-dimensional oblique views (otherwise known as Bird’s Eye) and other effects.
Appendix 6 - 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.

For the purpose of this discussion, it is assumed that you have installed Microsoft MapPoint (see Appendix 4 - Using MapPoint with PCensus for MapInfo, page 321). If this is not the case, you will need to open the MapInfo “tab” files representing street layers and other landmarks.

Map Sets are similar in many ways to MapInfo “Workspaces”, enhanced to include settings specific to PCensus.

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 to display the MapPoint base map (or a blank map if MapPoint is not installed).
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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 (MapInfo “tab” files).
- MapInfo workspaces.
- Other PCensus map sets.

As an example, add the BlockGroup.tab 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 MapInfo Layer Control to change the content and appearance of the map window.

The block group boundaries are initially represented by thin, light grey lines that are difficult to see against the background of the base map. We may wish to change the appearance of these boundaries to make them more visible.

Turn the base map visibility off and on using the Show/hide MapPoint Layer icon in the MapPoint Extender tool-bar (see Appendix 4 - Using MapPoint with PCensus for MapInfo).

To change the color and thickness of the lines, right-click in the map window or click the Layer Control icon in the MapInfo tool bar.
Appendix 6 - Creating a Map Set

Highlight the **BlockGroup** Layer and click the **Display** button.

Click the Style Override button to adjust the Fill Pattern, Border Color and Width as required.

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.*
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Set Up the Map Layout (optional)

Map Layouts are a feature of MapInfo Professional. The Map Layout window allows you to prepare a presentation-quality map for printing or publication, complete with legends, titles and other components.

When you create a PCensus Map Set, the current Map Layout, including page settings, titles and graphics such as company logos will be recorded for future use.

See Chapter 25, Using the MapInfo Layout Tab, for more information on this topic.

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.
Save the Map Set

When you have made the necessary selections,

- Select **Save map and data setup for future projects**…

![Save Map Set dialog box]

- 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.

---

*Notice that templates that are not compatible with the current database cannot be selected.*

*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.*