

# Using ArcGIS® Business Analyst

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# About ArcGIS Business Analyst

# 1

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Welcome to ESRI® ArcGIS® Business Analyst which helps define your store's trade areas and analyze the corresponding markets through a suite of tools, data, and reports. The results of this analysis provides a foundation for implementing marketing programs, adding a new facility, conducting a performance evaluation of an existing location, identifying where the competition is in comparison to your customers, and more. You can calculate market penetration, locate untapped market areas, and discover store cannibalization within your trade areas.

Analyzing customer demographics and geography enables organizations to locate areas with ideal demographic characteristics for targeting new customers. ArcGIS Business Analyst allows you to create profiles of your most profitable customers and identify untapped areas matching these characteristics.

ArcGIS Business Analyst lets organizations analyze their geographic markets and those of competitors. Through the use of spatial interaction modeling and consumer data, users can calculate how markets will change as competition and consumer spending change. The ability to understand your competition gives you an advantage in strategic planning and winning new customers.

# Introduction to ArcGIS Business Analyst features

With ArcGIS Business Analyst, you can take advantage of the following features:

- All data is available on your map at startup. It is not necessary to extract geography and other data from CDs before beginning your analysis.
- Analysis accuracy has been improved using a method of block point data retrieval.
- A map document is provided on program startup. It can be used to immediately begin your analysis.
- You can begin work on an area of the map with your customers, stores, and various types of analysis, then create a study area as needed. With or without a study area, you can save your work in an ArcGIS map document (.mxd file).
- Map documents are organized and selectable using the ArcCatalog™ toolbar icon. ArcCatalog presents a list of all map documents created with thumbnail views of each.
- Business Analyst supports input from all ArcGIS data sources, such as shapefiles and geodatabases.
- You can create your own datasets or customize the Business Analyst dataset to use your own data rather than using the provided standard demographic data. This could be used to add your local school district boundaries or voting districts with data you have collected that is associated with those geographies.
- ArcGIS Business Analyst includes an extensive data update. Base data includes updated demographic and consumer expenditures data, updated streets, updated business locations, and updated major shopping centers.
- Business Analyst is completely integrated into the ArcGIS 9 Desktop framework. This integration provides a new environment for geoprocessing, modeling, and scripting including a new dockable ArcToolbox™ window with a comprehensive set of tools for all Business Analyst capabilities. The integrated ModelBuilder™ geoprocessing tool allows you to link geoprocessing operations together and build models interactively.
- ArcCatalog is now used extensively to organize Business Analyst data. Stores, customers, trade areas, and other Business Analyst data elements are organized in the ArcCatalog tree. Context menus provide additional data management options.
- Business Analyst still includes the familiar ArcMap™ wizards that lead you through step-by-step procedures for creating and managing stores, customers, trade areas, and analysis. Quality and performance have been improved in a number of key areas.
- Reporting and report speed in Business Analyst have been improved and a number of new reports have been included. An improved custom report wizard is also included that will allow you to build and share custom reports.

- A batch framework has been added, making it easier to work with multiple sites, trade areas, and customer files. This flexible batching capability allows you to create trade areas, reports, and analysis one at a time or batched together as a group of work.
- An optional neighborhood segmentation engine can now be added to Business Analyst. You can use this segmentation module to target customers, examine the merchandizing mix, and find optimal locations for new store sites.
- A number of new trade area techniques have been added to Business Analyst. These new trade area tools allow you to create, manage, and compare trade areas. A new sales forecasting model based on the Huff model has also been included that allows you to evaluate new site locations.
- Routing and drive-time trade areas have been improved and are based on the new routing and service area tools from the ArcGIS Network Analyst extension. A license to the full Network Analyst extension is included with Business Analyst. Additionally, the StreetMap drive time engine has been added to quickly produce drive times.
- The Business Analyst dataset includes a toolbar that allows you to download satellite images and aerial photographs. The toolbar, based on the premium imagery service from GlobeExplorer®, provides a collection of high-quality aerial and satellite imagery that is regularly updated and expanded. These images can be used in reports and projects that require visual details of properties, neighborhoods, and towns.
- A number of other tools and features have been added for performing site location research, customer targeting, and marketing analysis.

ArcGIS Business Analyst is an extension built for use with ArcGIS Desktop. This means it can be used with ArcView®, ArcEditor™, or ArcInfo®. The components included in the Business Analyst package are:

- ArcGIS Business Analyst extension software—provides tools for mapping, analysis, and managing work.
- Data from industry-leading vendors—provides nationwide demographic, business listing, and shopping center data.
- Tele Atlas® Dynamap®/Transportation map data—provides basemaps and U.S. national street network.
- Geocoding Service—takes your customer or store addresses and locates them on a map.
- ArcGIS Network Analyst extension—provides drive time/ drive-distance analysis and routing capability. The full license to this extension is included with Business Analyst.

ArcView, or either of the other alternatives of ArcGIS Desktop you choose to use with Business Analyst, contains Crystal Reports® from Business Objects™. This is the industry-leading tool to present your analysis results in quality reports. Business Analyst makes using Crystal Reports easier through a series of integrated wizards.

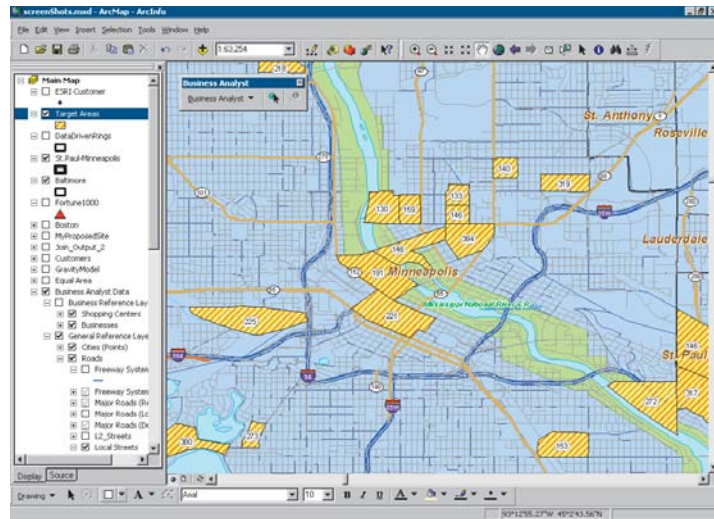


# How Business Analyst helps you make better business decisions

Geographic analysis links locations with the associated information and presents the results in the form of a map. Often, this provides such a new perspective that trends and patterns, previously unseen, become apparent.

Suppose you want to open a women's clothing store and are looking at real estate options. There are several properties available so which is the best location for your business?

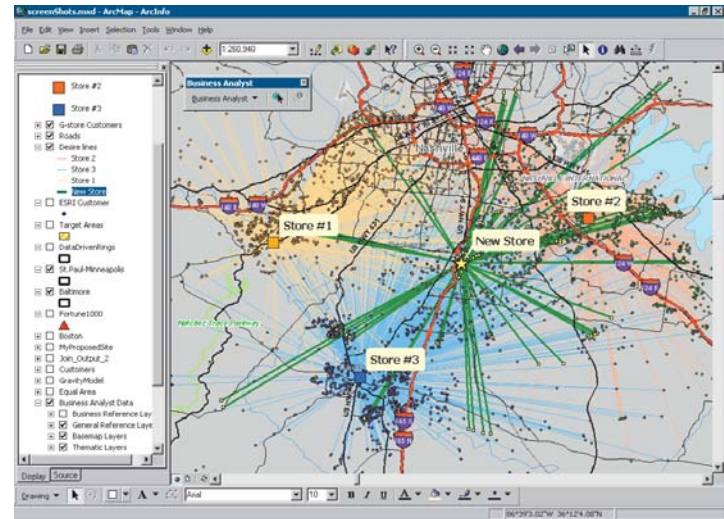
Using Business Analyst, you can look for block groups with a high percentage of women who live in households with an average income greater than \$25,000 and are credit card users. You decide to focus your real estate search on properties near the east end of town because it has more geographic areas that contain the type of customer for which you're looking.



*Block groups with high potential for a women's clothing store*

Or suppose you own a chain of four grocery stores, three located in small towns and a new location near a busy highway. The sales from your new location are not as high as you expected and you want to investigate why.

After using Business Analyst to show the area of influence for each store, you are surprised to see that the customers of your new store live nowhere near the store and many even live near your other stores. You conclude that many customers of the new store are commuters who shop there because it's located conveniently close to the highway. By advertising on billboards along the highway, you see a significant improvement in sales at your new store.

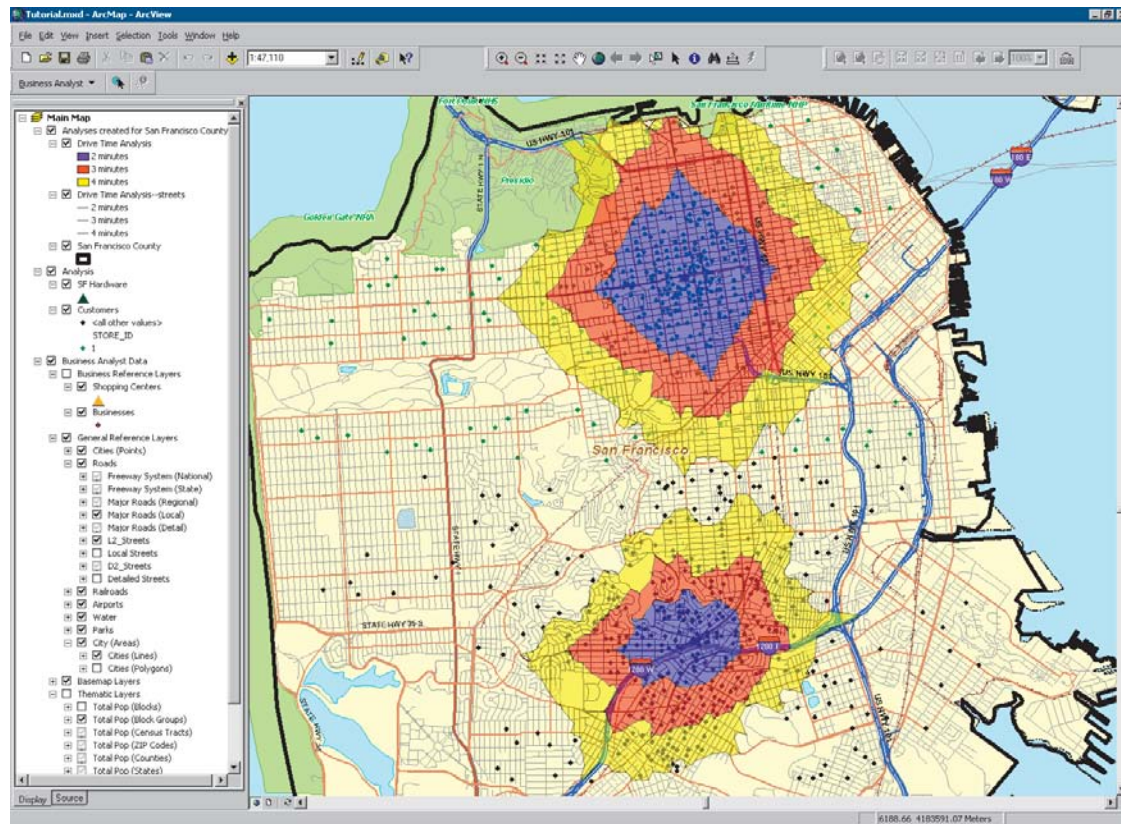


*Desire lines showing each grocery store's area of influence*



Or suppose you are considering offering a money-back guarantee for deliveries to arrive in 30 minutes or less for your chain of pizza delivery restaurants. It takes 20 minutes to prepare a pizza and between two and six minutes to get the delivery vehicle under way, so the customer must live within four minutes of one of your stores.

Using Business Analyst, you create two-, three-, and four-minute drive time rings around each of your stores. By looking at which areas fall inside the drive time rings, you can determine the delivery service area.

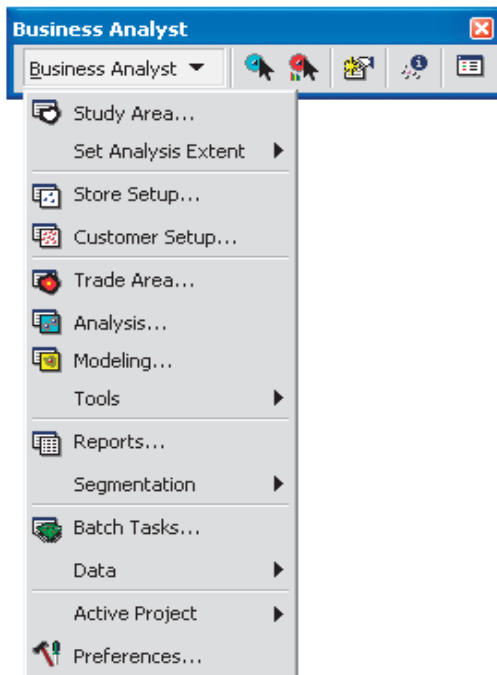


Drive time rings showing two-, three-, and four-minute rings around each pizza restaurant

# Overview of the Business Analyst menu

Business Analyst takes the power of one of the most popular desktop geographic information system (GIS) software products, ArcGIS, and makes it even easier to use. The way to accomplish every task can be found in one place—the Business Analyst menu.

Each task is performed with the help of a wizard. The layout of the Business Analyst main menu is shown below.



Previous Business Analyst users will see that there is a consolidation of groupings in the menu. This was done because the functionality in the product has greatly increased and it was necessary to better organize the menu to make the functions easy to find. A cross-reference is included in this section to help previous Business Analyst users locate commands on the new menu that are not immediately visible.

Some wizards assist you with basic tasks, such as creating a study area or adding your customers and stores. Other wizards guide you through related tasks, such as creating a trade area, performing analysis, creating a report, or changing the appearance of your map. You can also adjust various preferences by clicking Preferences.

Each Business Analyst wizard consists of a series of panels that guide you through selected tasks. Instead of asking the software to do the things you want, you can step through a wizard for the task you want to accomplish.


The 'Tutorial' chapter will walk you through some of the functions you can perform from the Business Analyst menu and will also show you how to use the Site Prospecting tool. The following chapters cover how to perform other tasks in Business Analyst, such as creating study areas, performing analysis, and setting up stores and customers.

## Business Analyst Menu Crosswalk—from older ArcGIS versions to this version

Some items previously shown on the Business Analyst main drop-down menu have been grouped with new functionality to simplify organization of the menu. To assist you in locating these items, the list below includes each of the items on the previous Business Analyst drop-down menu and where they appear on the new menu.

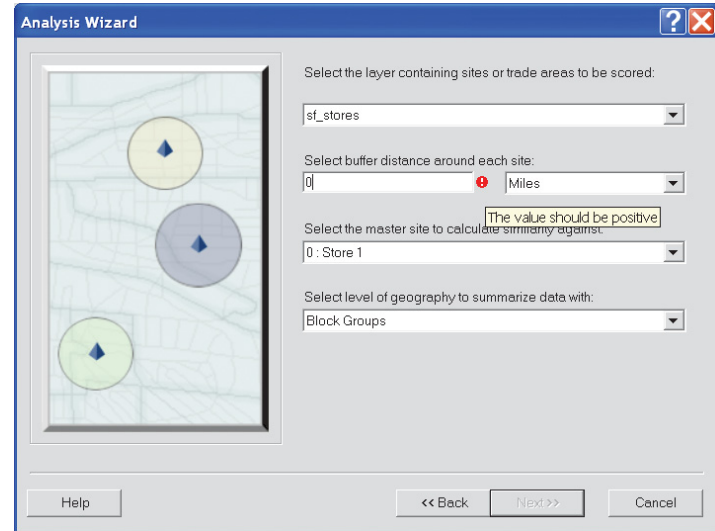
- Add Business Listings: Appears under Data.
- Add Business Data From Internet: Click the ArcMap Add Data button and choose GIS Servers to access the server where your data is located.
- Create Study Area: Appears on the Business Analyst main menu.
- Set Analysis Extent: Appears on the Business Analyst main menu.
- Customer Setup: Appears on the Business Analyst main menu.
- Store Setup: Appears on the Business Analyst main menu.
- Assign Customers to Stores:
  - If you have a store assignment in your customer database, you make this selection during customer setup.
  - If a store is not assigned in your customer database, this function appears during creation of a trade area—customer data required—customer derived areas.
- Analysis Layer Setup: Appears under Data.
- Analysis—Customer Market Analysis:
  - Simple or Complex: Appears under Trade Area—Customer Data Required—Customer Derived Areas. Choose Simple, Amoeba, Detailed (previously Complex), or Detailed With Smoothing.
  - Desire Lines: Appears under Analysis.
  - Market Penetration: Appears under Trade Area—Customer Data Required.
  - New Store: Appears under Analysis as Mean Store Center.
- Analysis—Store Market Analysis: All functions under this section now appear under Trade Area—No Customer Data Required.
- Analysis—Store Prospecting: Appears under Trade Area.
- Spatial Overlay, Find Similar, Site Prospecting, Find Route, Thematic Mapping: Appear under Tools.
- Reports: Appears on the Business Analyst main menu.
- Preferences: Appears on the Business Analyst main menu.

## Here are a couple of general tips that are important to your stress-free use of Business Analyst.

**Tip 1:** ArcGIS occasionally displays a red warning symbol  on the Business Analyst dialog box. This indicates that a change in your dialog box selections must be made to continue. If you place your mouse pointer over the red warning symbol, a message tooltip appears instructing you on what should be changed.

**Tip 2:** Many Business Analyst dialog boxes have drop-down menus that give you access to long lists of the field variables contained in a selected layer. To simplify your navigation of these lists, Business Analyst presents the variables grouped into categories in an expandable tree structure. You can expand or collapse any tree of variables by holding the Ctrl key and clicking '+' or '-' symbols in the tree. This will expand or collapse branches of the tree.

**Tip 3:** The 'What's This' Help button is located on many of the Business Analyst dialog boxes and the Business Analyst toolbar. For more information about a topic, click the question mark on the right corner. A question mark is added to your mouse pointer to show you are in the 'What's This' mode. Click on the item for which you want to learn more and a message tooltip appears with more information.



*Tip 1: Example of warning message*

# A short introduction to ArcGIS

If you've never used ArcGIS before, there are a few basic terms that will help orient you in working with this GIS application.

ArcGIS has two primary components: ArcMap and ArcCatalog. During installation, the ArcGIS Business Analyst extension is added to ArcMap. To work in Business Analyst, launch ArcMap, choose a map, and use the Business Analyst drop-down menu of wizards to guide you through your work. ArcCatalog appears as an icon on the ArcMap toolbar.

It can be selected at any time to locate map lists with thumbnail maps for each of the saved map documents and map templates (.mxt) on your computer.

## Features

In a GIS, every element in a map, except text, is represented as a geographic object. These geographic objects consist of a point, line, or area (polygon). These geographic objects are called *features*. Area features are used to represent entities such as countries, states, counties, and so on. Line features represent the things normally drawn as lines on a map, mainly roads and rivers. Point features represent specific locations which may be cities, houses, business locations, customers and stores, or other locations. Normally, a set of features of the same type is stored together in a single file.

For instance, world cities are stored together in a single layer and U.S. lakes are stored together in another file.

When such a file is brought into ArcGIS, it's called a *layer*. A layer was known as a *theme* in ArcView GIS 3.x.

## Layers and maps

A *map* is an interactive area that allows you to display, explore, query, and analyze geographic data in ArcGIS. A map is made of layers of geographic information for a particular area or place.

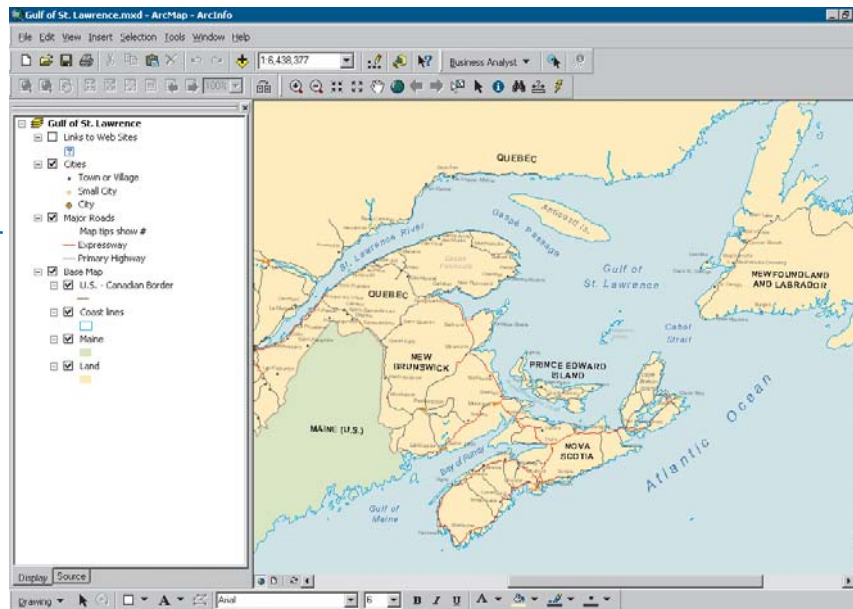
All layers in a map are listed in the map's table of contents. The table of contents lists all the data frames and layers on the map and shows what features the symbols in each layer represent.

Each layer in a map is drawn independently. Layers draw on top of one another according to their order in the map's table of contents. For example, if a layer of cities is above a layer of

counties in the table of contents, the cities will appear on the map with the counties as a background (as you would want). If the counties layer were above the cities layer in the table of contents, the counties would draw on top of the cities in the map and obscure them. Another option available to prevent this obscuring of cities is to make the counties layer transparent. You can do this by editing the layer properties to make it 50 percent transparent. This allows you to see through the counties layer to view the city points. Related layers can be grouped under a group layer.

A *group layer* is made up of several layers that appear and act like a single layer in the table of contents in ArcMap.

Layers in a map's  
table of contents





## Changing the map appearance with the table of contents

When designing the appearance of the Business Analyst map data, every effort was made to have the viewable map layers meet the needs of the majority of users. Business Analyst has the flexibility that allows you to turn on and off layers by checking or unchecking them in the table of contents. To maintain the flexibility in Business Analyst use, there are always two or more geographic layers turned on at any zoom level. The layer that appears above another layer, in the table of contents, will be the layer you see on the map. If you want to see the layer that appears lower in the table of contents, uncheck the geography layers on top of it. The table of contents depicts drawing order on the map from bottom to top. Unchecking visible geography layers that you don't need can improve the map's drawing performance.

The names of some geography layers may be unavailable in the table of contents. Even if the layer is checked on, it may appear unavailable, meaning that you will have to zoom in to make it visible. It is possible to control the zoom level at which every layer becomes visible and invisible; however, this should only be done if you are an advanced user. To do this, double-click the layer to show the Layer Properties dialog box. Click the General tab, and in the area titled Scale Range, you can choose to Show the layer at all scales or to define the zoom range scale when the layer is visible. The higher number value is zoomed farther out. A layer is visible at the continental U.S. level at a value of 25,000,000 (1:25,000,000 scale). A layer is visible at full zoom in when the value is set to 0. In the two text boxes, you will enter a numeric value so the layer will not be shown when zoomed out beyond some value or when zoomed in beyond some smaller value. This will create a viewing range for the layer. In most cases, it's best to control what layer is visible by checking or unchecking it in the table of contents.

## Attributes and the power of a GIS

The information that ArcGIS stores about features is called *attribute* information, or *attributes*. The attributes of a feature that represent a customer might include a name, address, the number of visits per month, and the amount of sales per month. The attributes of a feature that represent a shopping mall might include the name of the mall, type, size, and the number of stores.

ArcGIS formats attributes in rows and columns and stores them as tables. Each column stores a different attribute, and each row relates to a single feature. These attributes are linked to the features on the map. This means you can access all the information about a feature by clicking it using the Identify tool on the Tools toolbar.

The link between features and their attributes is the basic principle behind how a GIS, such as ArcGIS, works and is the source of its power. Once the map features and attributes are linked, you can access the attributes for any feature on the map or locate any feature from its attributes in a table.

Layers in the table of contents can be organized into *data frames*. A data frame groups the layers that you want to display together in a separate frame. Normally, you will do your work within a single data frame and save the results of your work as a map document (.mxd) file. You can then manage your work using your collection of saved .mxd files.

When a map has more than one data frame, the one you are working in is the active data frame. For example, when you add a new layer to a map, it is added to the active data frame. The active data frame is highlighted on the map and its name is in bold text in the table of contents.

For more information about ArcGIS, see *Using ArcMap* and *Using ArcCatalog*.

## ArcGIS versus ArcView GIS 3.x terminology

The terminology presented for ArcGIS Business Analyst serves a similar purpose to that used in ArcView GIS 3.x. In ArcView GIS 3.x Business Analyst, you opened or created a view containing themes for each of your layers of geography, businesses, customers, stores, and so on. A project was then used to store the view, themes, and layouts that were used for a particular application. What was a view is now a map. What was a theme is now a layer. What was a project continues to be a project. If you prefer, you can save each of your projects as a new map document (.mxd). Alternatively, you can create new projects within the same map document. This is provided to give you choices in organizing your work. More information about using projects can be found in the appendix to this user guide.

In ArcGIS Business Analyst, you will work with a map document that already contains the map data that ships with the product (geography, demographics, businesses, shopping centers, and so on). Layers are organized in a table of contents on the left side of your screen and appear graphically on the map.

Study areas were previously required to define an area for data extraction in Business Analyst. Now you have the option of zooming to your area of interest and beginning work or defining a study area boundary for your analysis. If you define one or more study areas on your map document, there is a control in Business Analyst to move and zoom between them by activating the study area of choice using Set Analysis Extent on the main menu. Most users will prefer to save each of their study areas as a separate map document. Map documents are organized and selectable using the toolbar icon for the ArcCatalog tool. As mentioned above, ArcCatalog presents a list of all map documents created with thumbnail views of each, if desired. Double-clicking the Map Document thumbnail or name will launch it in a new session of ArcMap. This overview will help you to understand the basic layout and organization of work as you begin the exercises in the tutorial.

### Terminology changes

ArcView GIS 3.x	ArcGIS
Theme	Layer
View	Map
Project	Project
.apr extension	.mxd extension



# Simple versus detailed map documents

Business Analyst users have a variety of uses for the Business Analyst product, some requiring simple background maps and others requiring more map detail. Two different Business Analyst map documents provide a starting point for your work. Here are the differences between the two.

## **Business Analyst.mxd**

- The simpler of the two is a basic MXD for analysis with simpler cartography.
- State layer with demographic is turned on by default and any other geography that is needed can be checked on.
- Interstates/Major roads are visible; detailed streets are turned off.
- Business reference layers, shopping centers and businesses, are available but are unchecked by default.

## **BA\_detailed.mxd**

- A more detailed MXD for the user interested in more extensive cartographic map presentation.
- Detailed street network is turned on.
- Modeled on the detailed MXD found in Business Analyst 8.3c and 9.
- Many more basemap layers have been added and turned on.

**Note:** Because the datasets are smaller, there is only a detailed map document in Business Analyst for Canada.

# About BDS Layers

## What is a BDS Layer?

A BDS layer is a file extension that stands for Business Analyst data source. BDS layers are used exclusively throughout Business Analyst. BDS layers are custom data sources that provide information about the data that can be aggregated in Business Analyst. BDS layers:

- Allow attribute table field headers to bypass the 10-digit maximum character code names and use a descriptive alias name—for example, each demographic layer contains over 1,500 fields. Each of these fields contains a constant field name that does not change for annual updates. Keeping track of 1,500+ field names would be difficult so the BDS layer displays the long name description instead.

Here are examples of the code name vs. the BDS alias name:

<b>10-digit FieldNames</b>	<b>Alias Names shown within a BDS Layer</b>
TOTPOP_CY	2008 Total Population
FEMU5_CY	2008 Female Population 0–4
POPGRWCYFY	2008–2013 Pop: Annual Grwth Rt
X9001_X	Entertainment/Recreation:Tot

- Allow you to set data aggregation and apportioning methods on your own data—for example, you can bring in your own polygon boundaries and select different ways to apportion your data. You can use a sum of an area or the mean value. You can apportion data based on total households or population, and so on. You can also set weights.
- Allow you to join your data to an existing BDS layer. This is helpful if you have sales figures by ZIP Code. You can join your ZIP Code sales figures by ID to the ZIP Codes provided in Business Analyst. You can also include any other

demographic fields in the layer and maintain the data aggregation settings and descriptive field headings.

- Allow you to create custom calculated fields—for example, you can take the 0–4 Ages Population field plus the 5–9 Ages Population field and combine them to form a 0–9 Ages Population field. Since the demographic layers in Business Analyst are a read-only smart data compression (SDC) format, a BDS layer can perform these custom calculations without modifying the read-only layers.
- Allow you to view and use your BDS layers throughout the Business Analyst wizards. Many of the wizards reference the BDS demographic layers provided to you in the out-of-the-box product. When you create a new BDS layer, it appears in the same list as the others with a .BDS file extension.

# About Data License

## About the Business Analyst Data License

Many datasets in Business Analyst are locked or unlocked by a data license. This data license has a **.sdlic** (smart **data license**) extension and is emailed to you by ESRI Customer Service. The .sdlic file allows ESRI to license Business Analyst by individual state, region, or the entire U.S. coverage (or for Business Analyst for Canada, by province, region, and the entire Canada coverage). The data is locked due to the proprietary usage within the data Business Analyst product and/or because of third party agreements.

**Note:** The Business Analyst data license (.sdlic) is different than the ArcGIS licenses and registrations (UNK). You must apply the appropriate UNK licenses before installing Business Analyst.

The following datasets are controlled by the data license:

### ArcGIS Business Analyst (U.S.)

Directory of Major Malls shopping center points

infoUSA business locations

ESRI Demographic layers

Geocoding data and address locators

ESRI Segmentation data—Tapestry

Tele Atlas Dynamap Transportation streets

### ArcGIS Business Analyst for Canada

Rogers Publishing Canadian Directory of Shopping Centers

infoCanada business locations

Enviroics Analytics Demographic layers

Geocoding data and address locators

Enviroics Analytics Segmentation data—PRIZM

Tele Atlas Dynamap Transportation streets

## How to apply the Business Analyst Data License

After you receive the data license from ESRI Customer Service, save the file locally to the machine on which you will install Business Analyst.

- When the Business Analyst installation is complete, a message appears asking you to apply the data license. Navigate to the location where you saved the \*.sdlic file and select it.
- If you closed the data license dialog prompt and completed the Business Analyst installation or if you received a new license, you can apply the data license by double-clicking the \*.sdlic file you saved locally.

When applied, the data license is assigned an alphanumeric name such as st24344465.sdlic and saved to the following location: C:\Program Files\ESRI\DataLicense.

To remove the data license navigate to C:\Program Files\ESRI\DataLicense and delete the entire \DataLicense folder and its contents.

## How can I tell if my data license is not applied?

The graphic below shows some common occurrences when the data license is not applied or not applied correctly.

The image shows a screenshot of the ArcMap interface with the Business Analyst extension. The left pane shows a table of contents with several layers marked with red exclamation marks. A warning dialog box is open in the foreground, and three callout boxes provide additional information.

**1** If the data license is not applied, you will receive this warning indicating data source paths are broken.

**2** The red exclamation marks indicate that the data license is not applied. The red exclamation marks appear because the data source paths are broken. After you apply the license and restart ArcMap, the red exclamation marks disappear.

**3** If the data license is not applied, you will see a blue background when zooming in. This is because the licensed demographic layers do not appear. The blue color is the data frame background.

**Business Analyst**

Data for one or more layers in the table of contents were not found (indicated by a red "!" ). To use the layers you must reestablish the data source links by:

1. setting the correct Data Component Locations (hard drive or DVD) in the Business Analyst Preferences dialog under the Dataset tab, and/or
2. right clicking on the layer name and selecting Data / Set Data Source.

OK

# About Business Analyst Service Packs

The Business Analyst team is constantly improving and updating the software and provides fixes appear in a service pack. A simple utility is provided to update you to the latest version of Business Analyst, or you can update your service pack manually. Here is more information about each method:

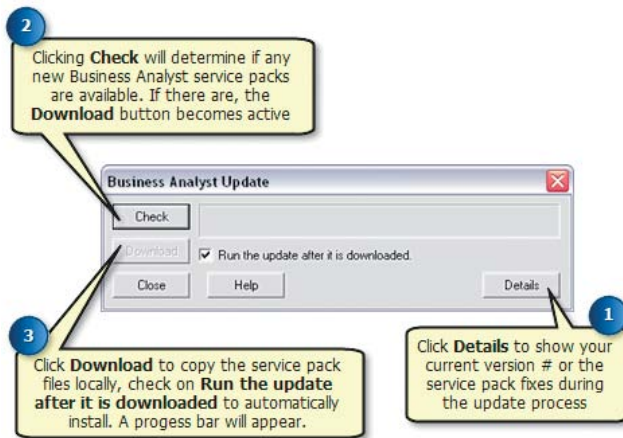
## Updating Business Analyst using Check for BA Updates

If you have access to the Internet, you can check for updates by selecting the following in the Business Analyst program menu: Start > All Programs > ArcGIS > Business Analyst > Check for BA Updates. When the Business Analyst dialog box appears, click Check to see if there are any available updates. If updates are available, you can choose to download them. To run the updates, click Run the updates after it is downloaded. Click Details to verify the current build number.

**Note:** When checking for Business Analyst updates, ArcMap, ArcCatalog, and any other ArcGIS applications must be closed.

## Updating Business Analyst manually from the ESRI Support Site

If you are unable to run the automatic update utility in Business Analyst due to local security protocols, you can download the latest service pack from the ESRI Support Website at <http://support.esri.com> and run the patch locally. Once on the ESRI site, navigate to Downloads > Patches and Service Packs > ArcGIS Business Analyst. Please follow the step-by-step instructions on the Business Analyst Support page containing the service pack download.



# Getting additional help for Business Analyst

## What to read next

A good place to begin learning about Business Analyst is Chapter 2, 'Tutorial'. This allows you to jump right in and start using the software. You'll see how Business Analyst solves a real-life business problem. The tutorial is complete with sample data so you can follow along step-by-step using your computer.

## Getting help using Business Analyst

### ArcGIS Desktop Help

ArcGIS Desktop Help is available for Business Analyst by pressing F1 or clicking the Help menu, then Extensions, then Business Analyst.

### Context Sensitive Help

Context sensitive help shows additional information for buttons, tools, and menu choices. This can be accessed in Business Analyst by clicking the question mark at the top of any wizard then pointing to the area you are looking for more information. A help dialog box appears.

In ArcGIS you can also get help about a button, tool, or menu choice by clicking the What's This? button, then click the button, tool, or menu choice for which you want help.

### Geoprocessing Tools Help

Detailed help for Business Analyst including diagrams, programming syntaxes, and usage tips is found in the geoprocessing tools environment. To access this press F1 or click the Help menu, then click Geoprocessing tool reference, then the Business Analyst toolbox.

## Getting help online

To browse the contents of ArcGIS Help Online, click the Help menu, then click ArcGIS Desktop Help Online. On this page you can access the help by clicking the Extensions drop-down menu, then click Business Analyst, or you can click the Business Analyst link under ArcGIS Extensions.

Visit the online ESRI Knowledge Base for access to Business Analyst related product documentation, white papers, and system requirements at <http://support.esri.com/knowledgebase>.

Visit the online ESRI User Forums to share ideas and findings with other users at <http://support.esri.com/forums>.

## Contacting ESRI

If you need to contact ESRI for technical support, refer to Contacting Technical Support in the Getting more help section of the ArcGIS Desktop Help system or go to <http://support.esri.com>.

In the United States, you can contact ESRI Technical Support from 6:00 a.m. to 5:00 p.m. (Pacific time), Monday through Friday, by calling (888) 377-4575. Please have your customer number ready. You can also visit ESRI on the Web at [www.esri.com/arcgis](http://www.esri.com/arcgis) for more information on Business Analyst and ArcGIS Desktop.

## ESRI Training and Education

ESRI provides educational opportunities related to geographic information science, GIS applications, and technology. You can choose among instructor-led courses, Web-based courses, and self-study workbooks to find education solutions that fit your learning style. For more information, go to [www.esri.com/education](http://www.esri.com/education).



# Tutorial

# 2

## IN THIS CHAPTER

- **Exercise 1: Selecting a geographic area and performing site prospecting**
- **Exercise 2: Locating your stores**
- **Exercise 3: Locating your customers**
- **Exercise 4: Determining trade areas around your stores**
- **Exercise 5: Removing trade area overlap**
- **Exercise 6: Determining market penetration**
- **Exercise 7: Identifying your competitors**

Welcome to the ArcGIS Business Analyst tutorial. This chapter takes you through the process of analyzing your data from creating a study area and adding your customers and stores to performing analysis. Once you install ArcGIS Business Analyst, you will find sample data for this tutorial at `\arcgis\Business Analyst\Datasets\Tutorial\*.dbf`. Depending on the data option you've purchased, the data characteristics and results shown in the exercises may vary.

The tutorial described in this chapter uses the San Francisco data that is installed with Business Analyst. If you are using Business Analyst for Canada, you can use the Winnipeg sample data that is also provided.

In this tutorial, you're the owner of S & F Hardware, a business with two locations in the San Francisco area. Business has been good and you're thinking of opening another store. ArcGIS Business Analyst can help:

- Locate your customers.
- Locate your stores.
- Determine the trade areas around your stores.
- Locate your best customers.
- Identify your competitors.

You've scheduled a meeting with your investors to talk about your ideas for expansion. Here's a chance to use ArcGIS Business Analyst as part of your business solution.

# Exercise 1: Selecting a geographic area and performing site prospecting

The first task in any analysis is to select your geographic area of interest. Previous versions of Business Analyst required creation of a study area and extraction of data for that area to begin work. This is no longer a requirement in ArcGIS Business Analyst. All data provided with the product is already added to your map document and is ready for use when you launch the program.

You have the option of zooming to your area of interest and beginning work or creating a study area boundary. One advantage to the study area approach is that it shows a visible boundary on the map for the extent of your analysis and allows you to restrict analysis to data found in that boundary. If a study area boundary is not present, your analysis boundary is limited to the extent of the current map view.

Because your stores are in the general San Francisco area, you will create a study area for the entire county of San Francisco in this exercise. After creating the study area, you will perform a quick, simple, three-ring site prospecting analysis.

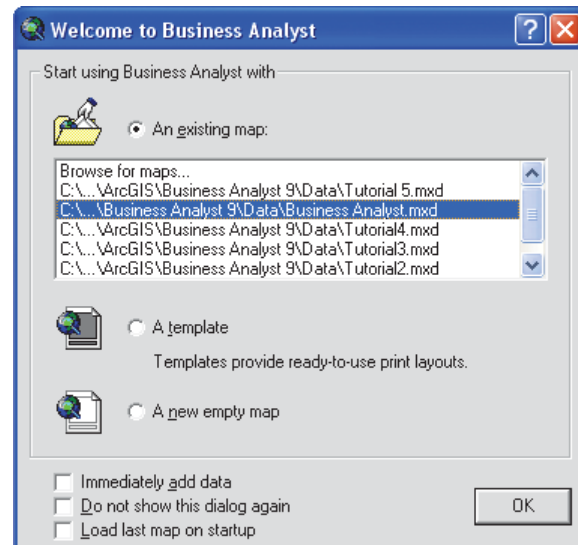
## Getting started

1. Open ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap.
2. ArcMap launches and the Business Analyst dialog box appears. This dialog box allows you to turn off the Update Spatial Reference option. To do this, check the Turn off the Business Analyst Extension box and click OK.

Click OK to leave the extension turned on.

When turned on, this option automatically adjusts the coordinate system of the data frame to a custom Business Analyst projection whenever the map extent changes. If you want to set and maintain a fixed coordinate system, turn off the Business Analyst extension.

3. The Welcome to Business Analyst dialog box appears. Select the map format for which you want to start using Business Analyst: An existing map, a template, or a new empty map. For this exercise select Business Analyst.mxd from the list.



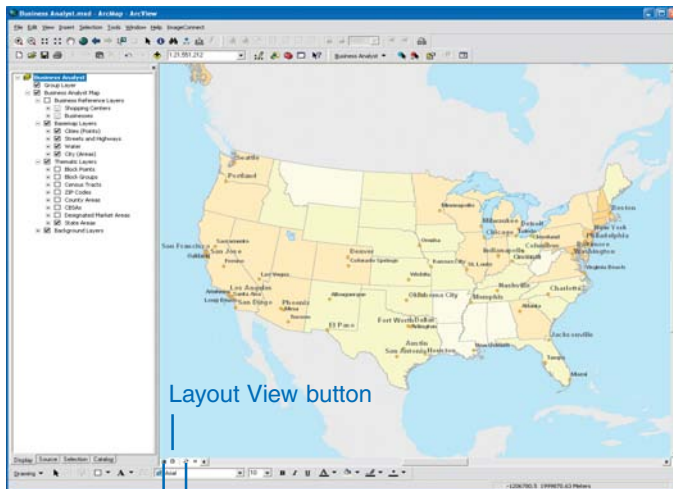


- The Business Analyst Assistant launches. Review this tutorial to become familiar with the different functions of Business Analyst. When you are finished, click Close.

The Business Analyst dialog box mentioned in step 2 appears again. Click OK to close.

Now, you are ready to begin working with the map. You can work in data or layout view and toggle between them using the Data View and Layout View buttons located at the lower left of your map. Data view enlarges your available map views.

- Click the File menu and click Save As to save your map document under a new name. Navigate to the Data folder and save the map document as Tutorial.mxd.



Data View button

Click Refresh to update the drawing of your map. If you click the map while it is drawing, the draw process will stop.

## The Business Analyst toolbar

The Business Analyst toolbar is open by default. To turn it on or off, click the View menu, point to Toolbars, and click Business Analyst. To customize the toolbar, click the left edge and drag it into the map area. Then, click the Tools menu, click Customize, and click the Commands tab. Click the category and command you want to add and drag the command onto the Business Analyst toolbar.

Repeat these steps until you have all the commands you want, then close the Customize dialog box and dock the Business Analyst toolbar.

## Creating a study area

Business Analyst helps you create new study areas and view and manage existing study areas with an easy-to-use wizard. The wizard also provides online Help to reference for more information. To open the online Help, click Help on the bottom left of the wizard.

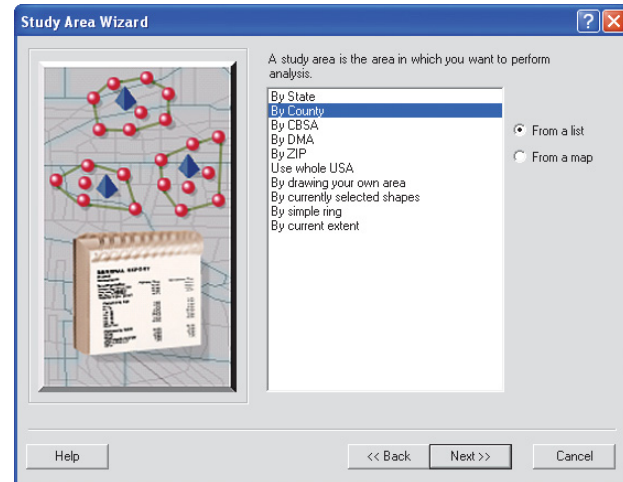
In this exercise, you will create a new study area.

To create a new study area:

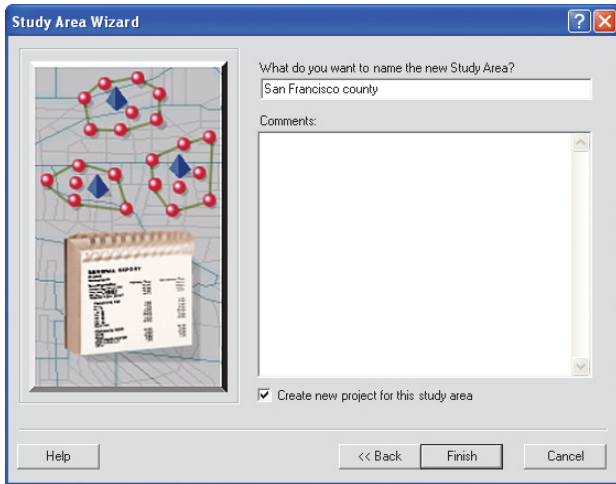
1. Click the Business Analyst drop-down menu and click Study Area. The Study Area wizard appears. Click Create a New Study Area, then click Next.
2. Click By County from the list provided to select the area for which you want to perform the analysis. Click From a list, then click Next.

**Note:** Click From a map to select an area by clicking on a map instead of selecting from a list.

3. In the box on the left, scroll down and select CA, San Francisco to select which counties for which you want to include in your study area. You can also type the name in the text box. Click the single right arrow to move it to the right column and click Next.



4. Type “San Francisco county” in the text box to name your study area. Ensure that the Create new project for this study area check box is checked. Click Finish.



Your study area layer is created, added to the table of contents, and shown on the map. Your study area is outlined on the map with a thick, black line.


**Note:** An Analysis group layer is created, which will contain any customer or store layer created or any analysis performed while the study area is the active analysis extent.

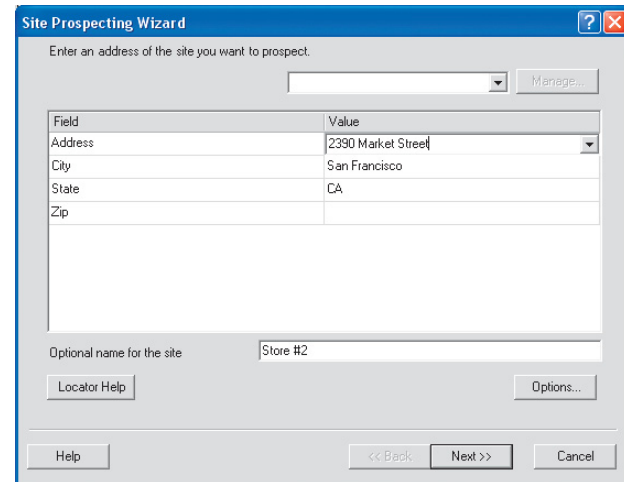
Consider the following scenario:

Before you begin analysis of your customers and stores, you will create a simple three-ring report of the area around your best store location. Your best store is located on Market Street in San Francisco, California. You also want to see a demographic report of the area 0.5, 1.0, and 1.5 miles from that location.

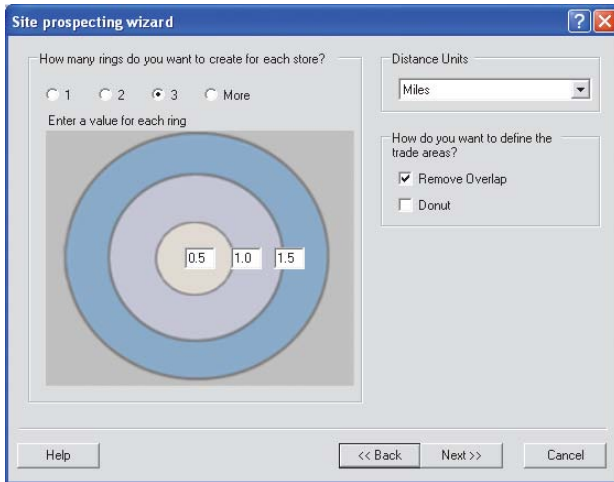
Business Analyst has a Site Prospecting tool that performs simple ring studies and drive time analyses around a single location.

### Using the Site Prospecting tool

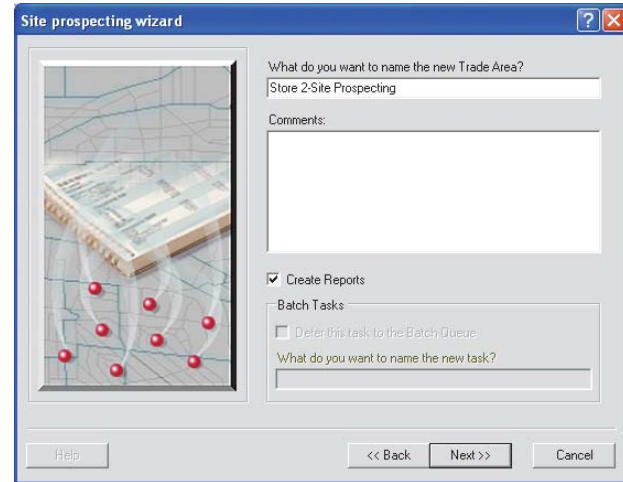
1. Click the Site Prospecting tool  on the Business Analyst toolbar, move the mouse pointer over your map, and right-click. Click Find point by address from the menu, and the Site prospecting wizard appears.
2. Type the address as shown below and type “Store #2” in the Optional name for the site text box. Click Next to continue.



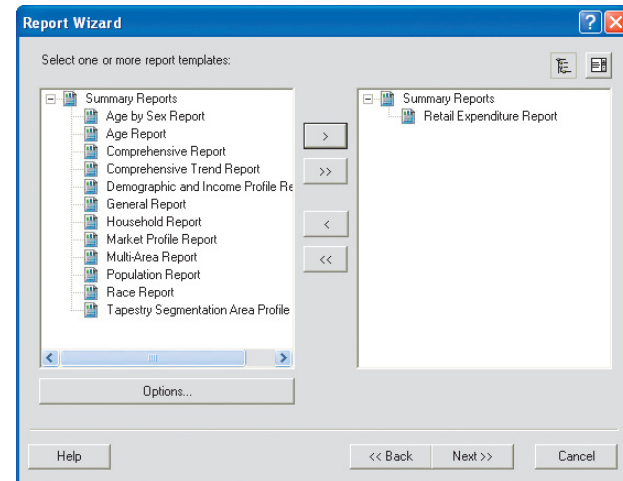
3. Click Simple Ring to choose how you want to define the prospecting area around your site and click Next.
4. Click 3 for the number of rings you want to create for each store, and three text boxes appear. Type “0.5”, “1.0”, and “1.5” in the text boxes. Select Miles for the Distance Units from the drop-down menu, check Remove Overlap to define the trade areas, and click Next.



5. Type “Store 2-Site Prospecting” in the text box, check Create Reports, then click Next.

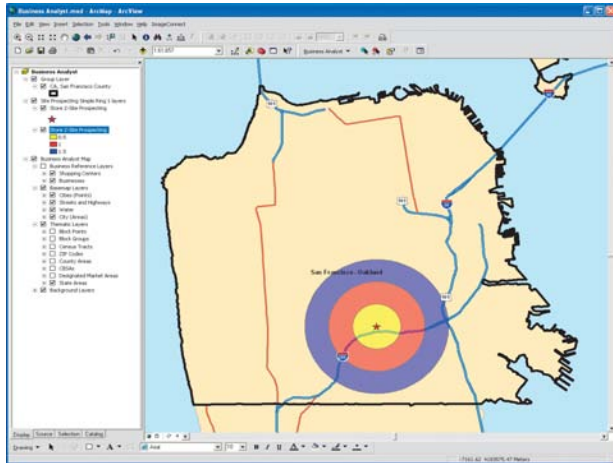


6. In the box on the left, click the Retail Expenditure Report to select the report template. Click the single right arrow to move it to the right column, then click Next.



- Select the output options for your reports. For this exercise, check the View reports on screen check box and click Finish.

Three radius rings appear on the map around the Store #2 location and the report appears ready for printing.



**Retail Goods and Services Expenditures**  
Store-2 Site Prospecting

ID: 0\_1      Name:      Description: 0 - 0.6 Miles

Summary	2008	2013
Population	18,407	18,180
Households	10,413	10,303
Families	1,988	1,945

	Spending	Potential Index	Average Amount Spent	Total
<b>Apparel and Services</b>				
Men's	187	\$5,027.35	\$92,249,370	
Women's	193	\$559.25	\$9,988,810	
Children's	174	\$1,633.02	\$17,004,650	
Footwear	195	\$209.62	\$6,430,616	
Watches & Jewelry	154	\$744.17	\$7,749,016	
Apparel Products and Services	235	\$523.97	\$5,456,055	
Computer	283	\$357.31	\$3,720,625	
Computer and Hardware for Home Use	230	\$493.11	\$5,030,656	
Software and Accessories for Home Use	230	\$66.23	\$689,661	
<b>Entertainment &amp; Recreation</b>	205	\$7,610.19	\$79,244,950	
Fees and Admissions	226	\$1,399.82	\$14,876,337	
Membership Fees for Clubs	218	\$362.57	\$3,775,410	
Fees for Amusement Spots, excl. Tips	210	\$239.24	\$2,194,252	
Admission to Race-Track/Off-Track Betting	245	\$395.04	\$3,801,192	
Admission to Sporting Events, excl. Tips	235	\$143.29	\$1,492,116	
Fees for Recreational Lessons	226	\$287.83	\$2,997,125	
Dating Services	262	\$1.55	\$16,114	
TV/Video/Sound Equipment	212	\$3,651.57	\$1,176,597.5	
Community Access or Cable TV	201	\$1,491.04	\$15,430,359	
Telephones	228	\$671.90	\$6,996,513	
Wireless Telephones and Text Services	260	\$66.76	\$694,436	

Before you continue to Exercise 2, resave your work to the Tutorial.mxd file. Close the report, click File, and click Save in ArcMap. Continue to Exercise 2 to locate your stores.

## Exercise 2: Locating your stores

In this exercise, you'll add your stores to the study area. The information you provide on this wizard is used to geocode your stores. ArcGIS Business Analyst takes the address of each of your stores and matches them with the proper location on the map, then places them as points on your study area. This process is often referred to as "geocoding."

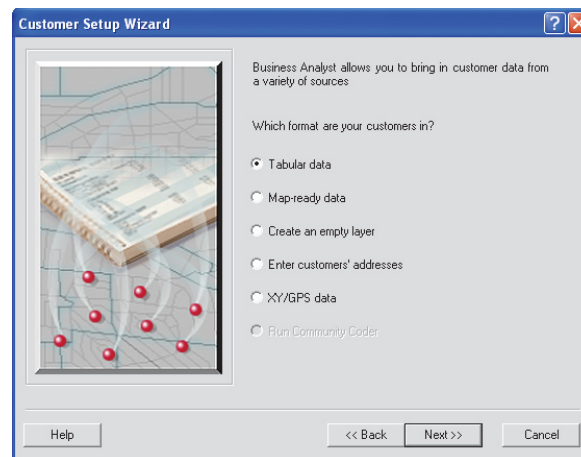
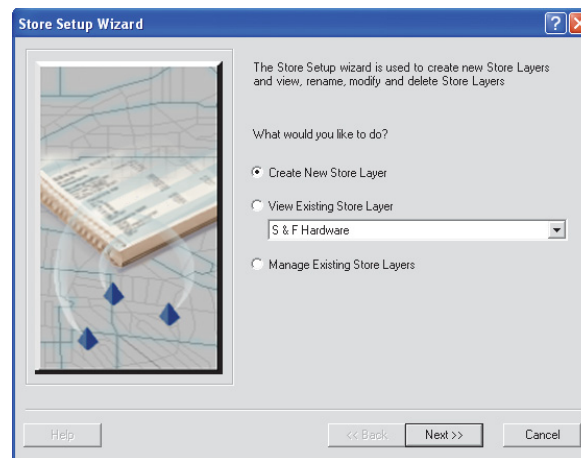
**Note:** The tabular data file of your stores has been placed in the Business Analyst Tutorial folder with the rest of the tutorial data.

### Adding stores to your study area

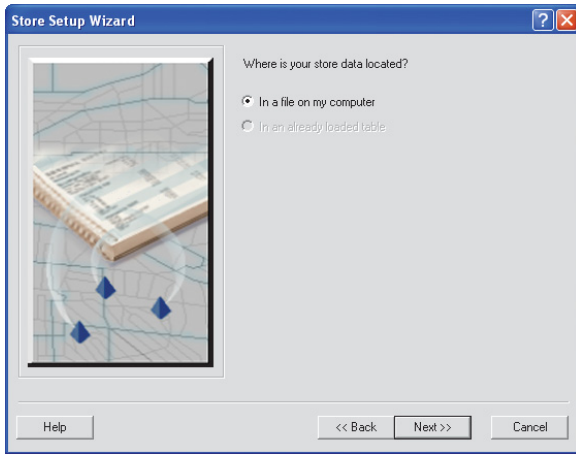
1. If you've exited ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Business Analyst extension dialog box opens. Click OK to close, and the Welcome to Business Analyst dialog box opens. Click An existing map, click the Tutorial.mxd file, and click OK.

The Business Analyst Quick Start Tutorial opens, click Close if you've already reviewed the tutorial. The Business Analyst extension dialog box opens again, click OK to close.

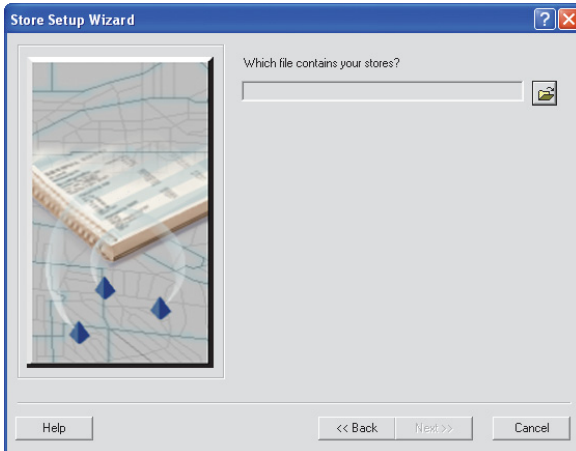
2. Click the Business Analyst drop-down menu and click Store Setup to launch the Store Setup Wizard.
3. Click Create New Store Layer on the Store Setup Wizard, then click Next.
4. Click Tabular data, then click Next.



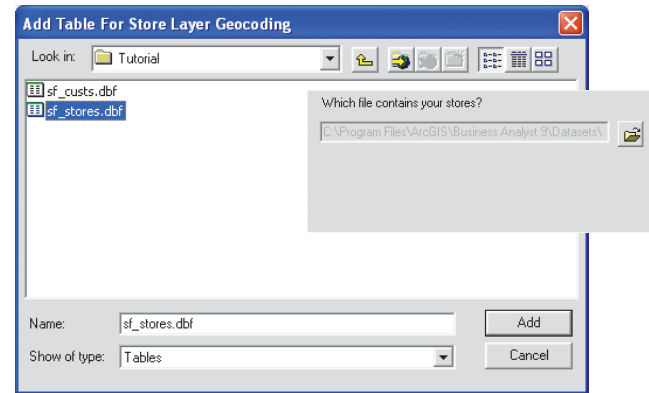
5. Click In a file on my computer and click Next.



6. Click the folder icon to navigate to C:\Program Files\ArcGIS (this is the default location where ArcGIS is installed) then to the Business Analyst folder at \Business Analyst\Datasets\Tutorial (this is the default location where Business Analyst is installed, but you can change this).

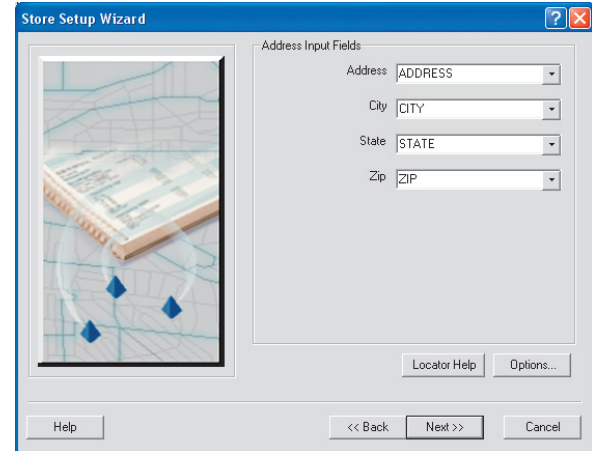


7. Click sf\_stores.dbf and click Add. The file appears in the text box in the wizard. Click Next to continue.



**Note:** For Business Analyst Canada, you should select win\_stores.dbf.

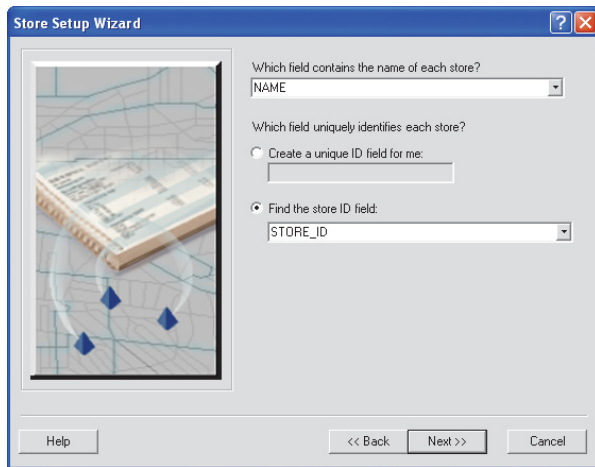
8. Complete the Address Input Fields. In the Address field, click the drop-down menu and click ADDRESS. In the ZIP Code field, click the drop-down menu and select ZIP. Click Next to continue.



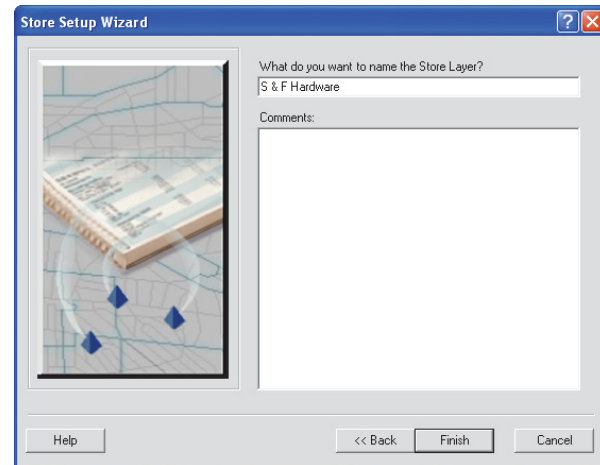


If you're using the USA Geocoding Service that comes with Business Analyst, you can change your geocoding preferences including the fields from the geocoder that you want joined to your database. Click Options and make your selections.

9. Select the field that contains the name of each of your stores. Click the drop-down menu and click NAME. Select the field in the store data that uniquely identifies each of your stores. To do this, click Find the store ID field, click the drop-down menu, and click STORE\_ID. Click Next to continue.



10. Name the Store Layer. Type "S & F Hardware" in the text box.
11. Type any comments in the Comments field.
12. Click Finish to begin geocoding the store addresses.



Your two stores are now visible in your study area. You will add customers to your study area in Exercise 3.

You can change the shape, size, or color. Click the store symbol in the table of contents, and the Symbol Selector dialog box opens. Select the symbol, color, and size you want, then click OK.



For this tutorial, you will not remove any store layers; however, you can remove store layers from the map. To remove a store layer, right-click the store layer and click Remove. Alternatively, you can use the Store Setup Wizard to delete them. If you only remove a store layer from the table of contents, it will no longer appear on the map, but it can be reopened or used in another map document. However, if you delete it through the Store Setup Wizard, you cannot reuse it. Deleting the layer in Business Analyst won't remove your original file from your computer.

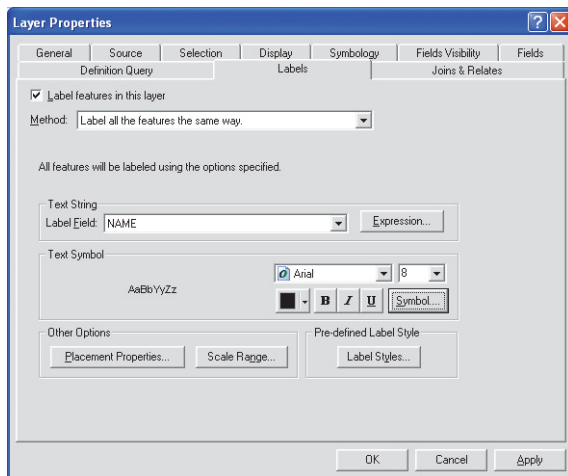
## Labeling your stores

Next, you'll label your stores for easy reference.

1. Right-click the S & F Hardware layer name in the map's table of contents to show the context menu, then click Properties.

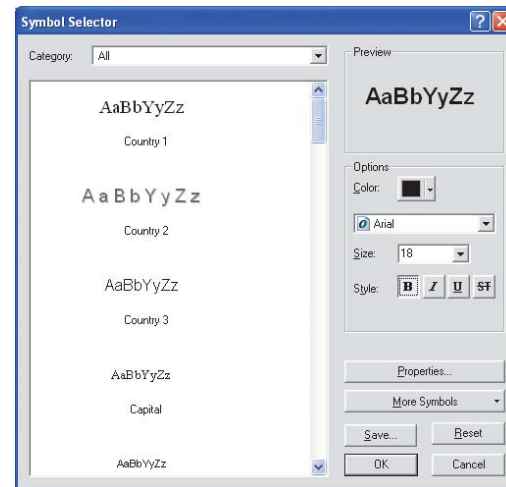
The Layer Properties dialog box opens.

2. Click the Labels tab.



3. Check Label features in this layer. Verify that the Label Field, in the Text String section, is set to NAME.
4. Click Symbol.
5. On the Symbol Selector dialog box, click the Size drop-down menu and click 18. For Style, click B to bold the font, then click OK.
6. Click OK on the Layer Properties dialog box.

The edited fonts for the store names appear on your map.



7. Click File and click Save to save your work.

Continue to Exercise 3 to add your customers to your study area.

## Exercise 3: Locating your customers

By holding weekly drawings for \$100 worth of merchandise, you've collected several hundred customer addresses for each store. In this exercise, you'll add your customers to the San Francisco county study area that you created in exercise 1.

Your customer data has been organized in a table and saved as a dBASE® file. You'll use this file of tabular data to set up your customer locations. The Customer Setup Wizard will place this data as points on a map.

### Adding customers to your study area

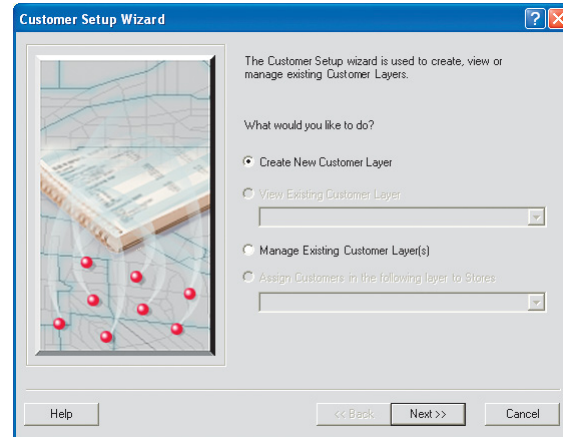
1. If you've exited ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Business Analyst extension dialog box opens. Click OK to close and the Welcome to Business Analyst dialog box opens. Click An existing map, then click the Tutorial.mxd file and click OK.

The Business Analyst Tutorial opens, click Close if you've already reviewed the tutorial. The Business Analyst extension dialog box opens again, click OK to close.

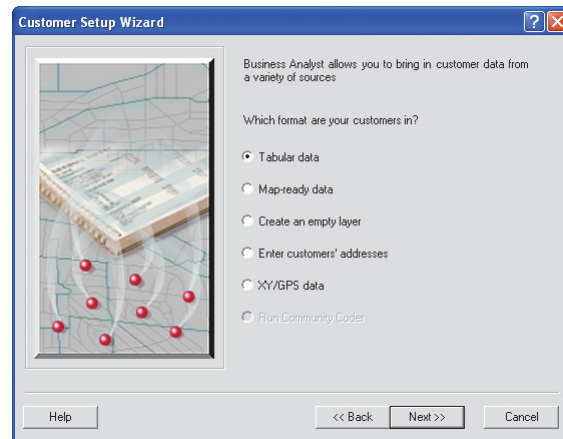
2. Uncheck the Site Prospecting Simple Ring points layer to turn it off.
3. Click the Business Analyst drop-down menu and click Customer Setup.

The Customer Setup Wizard opens.

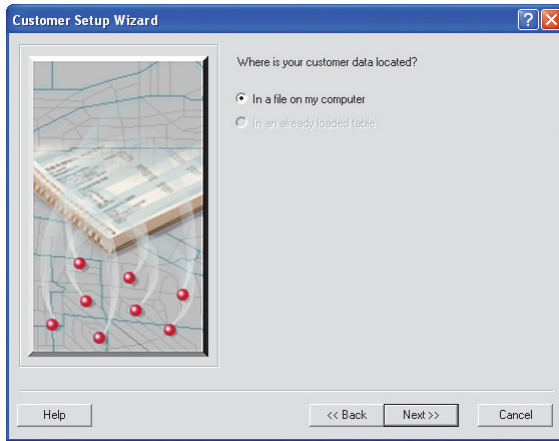
4. Click Create New Customer Layer on the Customer Setup Wizard and click Next.



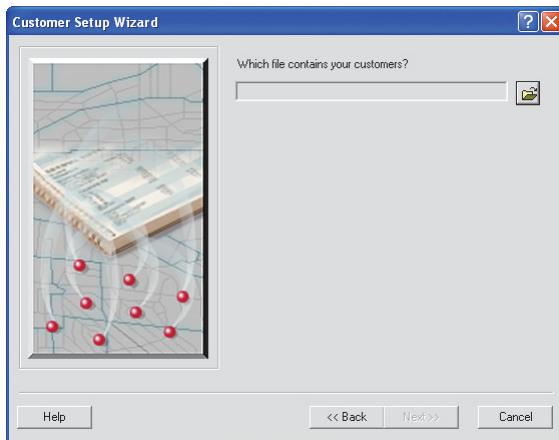
5. Click Tabular data and click Next.



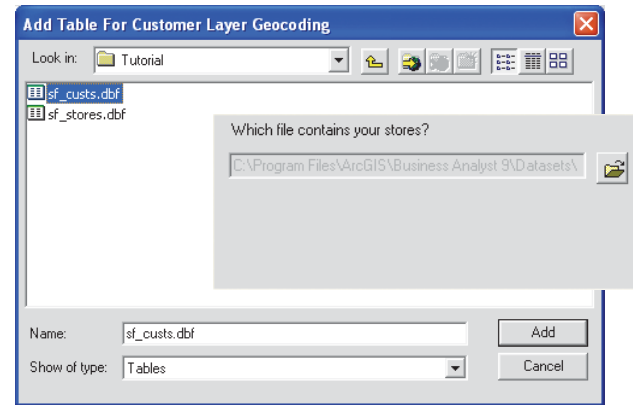
6. Click In a file on my computer, then click Next.



7. Click the folder icon and Navigate to the drive where ArcGIS was installed, then to the Business Analyst folder at arcgis\Business Analyst\Datasets\Tutorial. This folder contains the Business Analyst tutorial data.



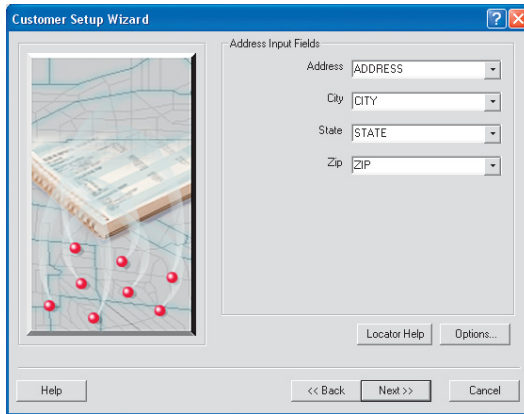
8. Click sf\_custs.dbf and click Add. The file appears in the text box in the wizard. Click Next to continue.



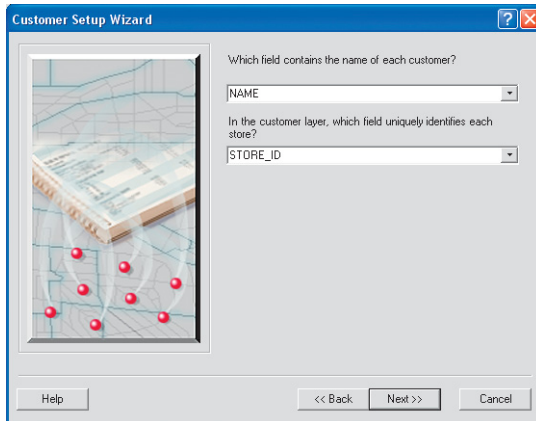
**Note:** For Business Analyst Canada, you should select win\_custs.dbf.

The information you provide on this wizard panel is used to geocode your stores. Business Analyst takes the address and ZIP Code of each of your customers and matches them with the proper location on the map.

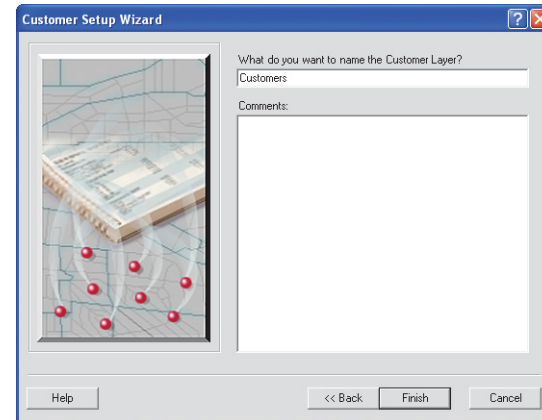
9. Complete the Address Input Fields. In the Address field, click the drop-down menu and click ADDRESS. In the ZIP Code field, click the drop-down menu and select ZIP. Click Next to continue.



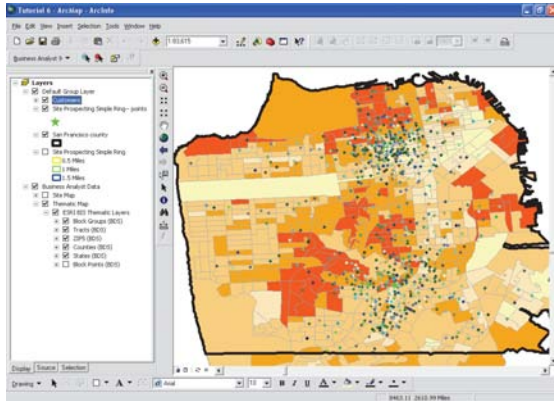
10. Select the field that contains the name of each of your customers. Click the drop-down menu on the Customer Setup Wizard and click NAME.
11. Select the field in the customer layer that uniquely identifies each of your stores. To do this, click the drop-down menu and click STORE\_ID. Click Next to continue.



12. Name your new Customer Layer. Type "Customers" in the text box, type any comments into the comments field, and click Finish to begin geocoding the customer addresses.



Your customers are visible in the San Francisco county study area.



Notice that the color of each customer dot is automatically shaded to indicate the store in which they've shopped.

You can click the customer symbol in the table of contents to change the shape, size, or color of the symbol as described in exercise 2 of this tutorial.

13. If you want to delete a customer layer, you have two options:

- To remove the layer from the map, right-click the layer in the table of contents and click Remove. This removes it from the map; however, the customer layer can be opened at a later time or in another map document.
- To delete the layer, click the Business Analyst menu, click Customer Setup, Manage Existing Customer Layer(s), then click the option to delete a customer layer. This method deletes the layer so it isn't available for future analysis until it's set up again.

However, it doesn't remove your original file from your computer.

14. To save, click the File menu, then click Save.

Continue to Exercise 4 to determine trade areas around your stores.

## Exercise 4: Determining trade areas around your stores

In the previous exercises, you have created a study area, added your customers and stores to the map, and completed all of the setup tasks. Now, you are ready to create a new trade area.

A trade area (or service area) is an area around a facility that represents the primary market area for a location (store). Trade areas are created so you can understand the area around your stores/facilities—for example, you can look at the demographic composition of a trade area to understand the households around your store.

You'll create customer market areas around your stores that show where 50, 75, and 90 percent of your customers are located. Customer market areas are based on the actual locations of your customers, so they are more precise definition of your stores' trade areas than a simple ring. You will compare the simple ring from Exercise 1 and two-, three-, and four-minute drive times in the customer market areas. You'll also create a demographic report for the trade area of each store. You know that Store 2 is doing better, so you'll compare the reports to see if you can determine why. If you're continuing directly from Exercise 3, go to step 2.

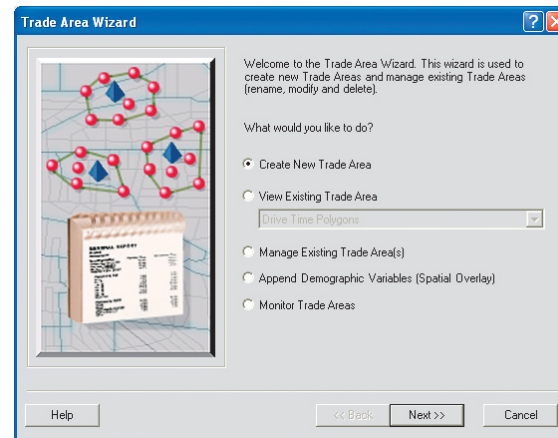
1. If you've exited ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Business Analyst extension dialog box opens, click OK to close, and the Welcome to Business Analyst dialog box opens. Click An existing map, click the Tutorial.mxd file, and click OK.

The Business Analyst Assistant opens, click Close if you've already reviewed the tutorial. The Business Analyst extension dialog box opens again, click OK to close.

2. Click the Business Analyst drop-down menu and click Trade Area.

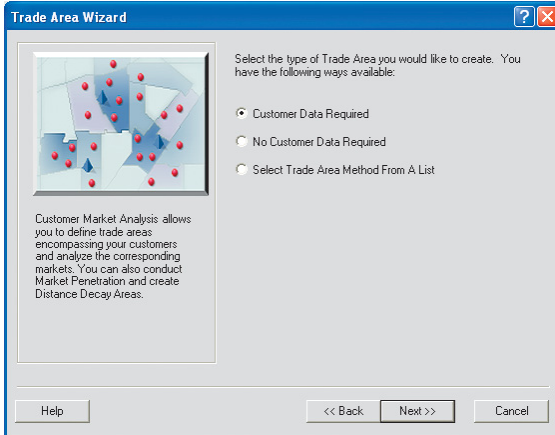
The Trade Area Wizard opens.

3. Click Create New Trade Area, then click Next.

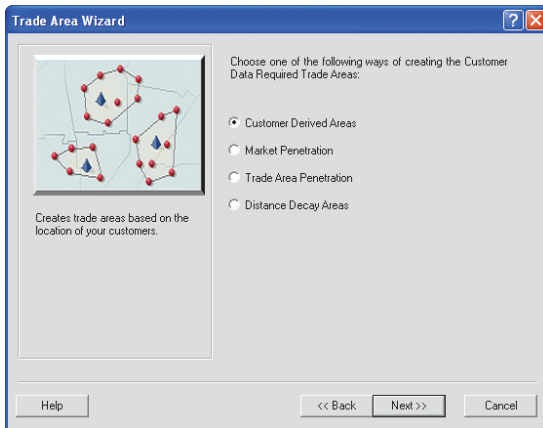




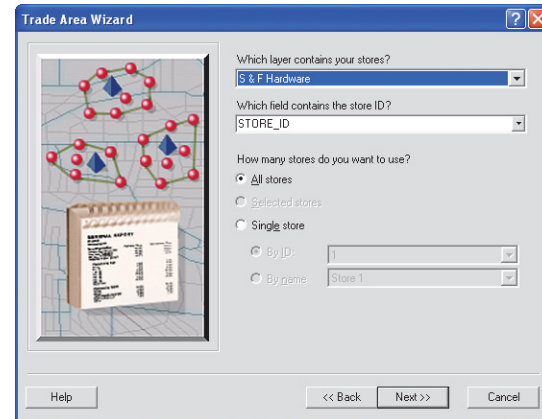
- Click Customer Data Required to select the type of trade area you want to create, then click Next.



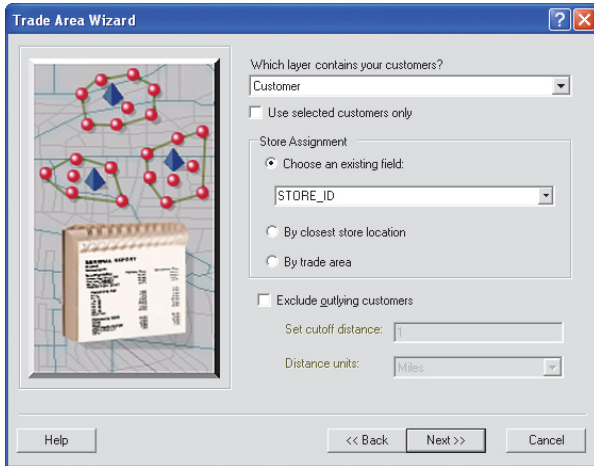
- Click Customer Derived Areas to determine how to create the Customer Data Required trade areas, then click Next.



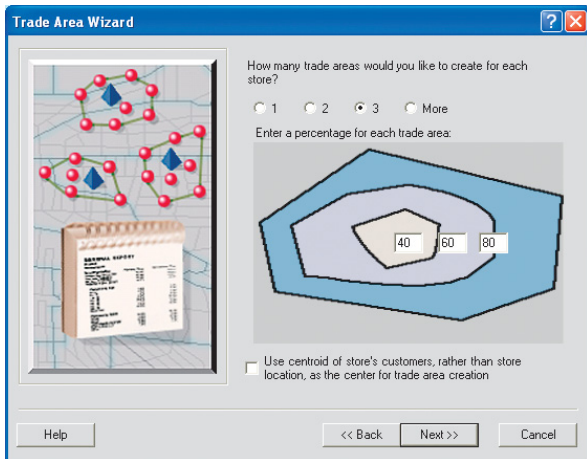
- Click the drop-down menu and select S & F Hardware.
- Click the second drop-down menu and select STORE\_ID to choose the field that contains the store ID.
- Click All stores and click Next.
- Click the drop-down menu and select Customer to choose which layer contains your customers. For Store Assignment, click the drop-down menu, select STORE\_ID, then click Next.



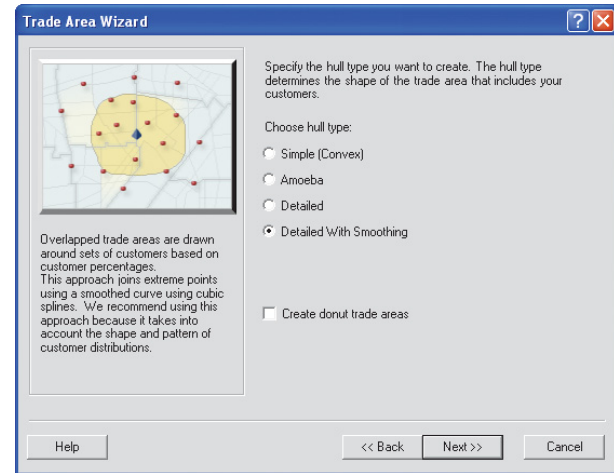
- Trade areas are created using the percentages you enter. Click By the number of customers and click Next.



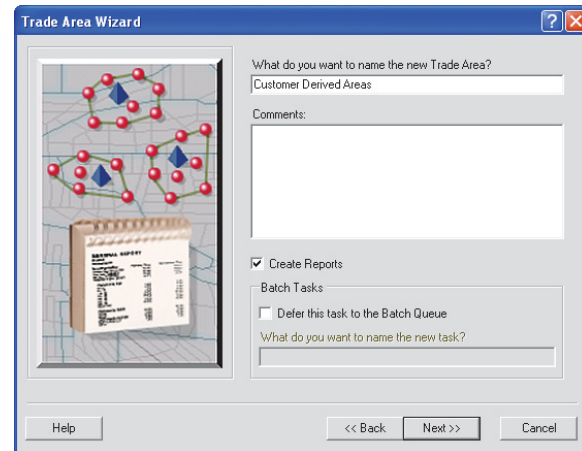
11. You can choose how many trade areas you want to create for each store. Click 3, and type “50”, “75”, and “90” in the text boxes as the percentages for each trade area, then click Next.



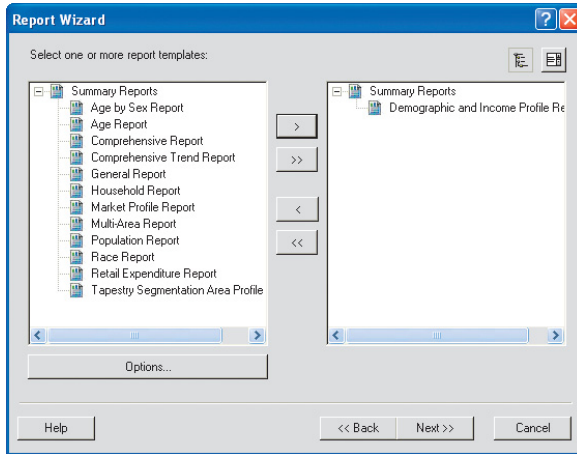
12. Click Detailed With Smoothing to specify the hull type you want to create, then click Next.



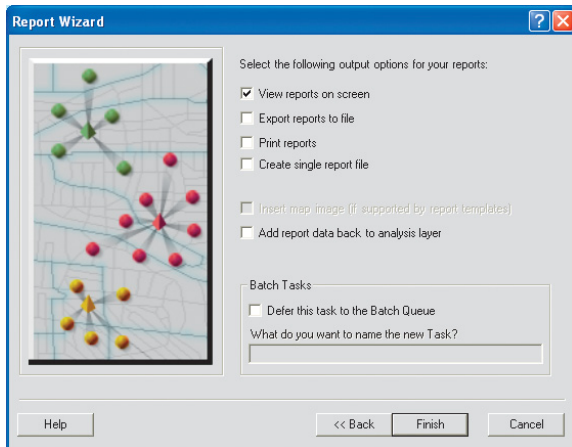
13. Customer Derived Areas is the default name for the trade area. Do not change this name. Check Create Reports, then click Next.



14. Click the Summary Reports plus sign to expand the list of templates, then click Demographic and Income Profile Report. Click the single right arrow to move the template to the box on the right, then click Next.



15. Click View reports on screen to select an output option for your reports, then click Finish.



A report appears showing the demographics for each of your stores' trade areas. You must have a printer installed for the Crystal Reports report writer to display your report.

16. Under the Preview tab, compare the demographics of each store's trade area. Each ring shows a data view and a graph view. Take note of the 90 percent trade areas for both stores, with these values in particular:

2000                  2006                  2011

**Households**

Store 1 = \_\_\_\_\_

Store 2 = \_\_\_\_\_

**Owner-occupied HUs**

Store 1 = \_\_\_\_\_

Store 2 = \_\_\_\_\_

**Average Household Income**

Store 1 = \_\_\_\_\_

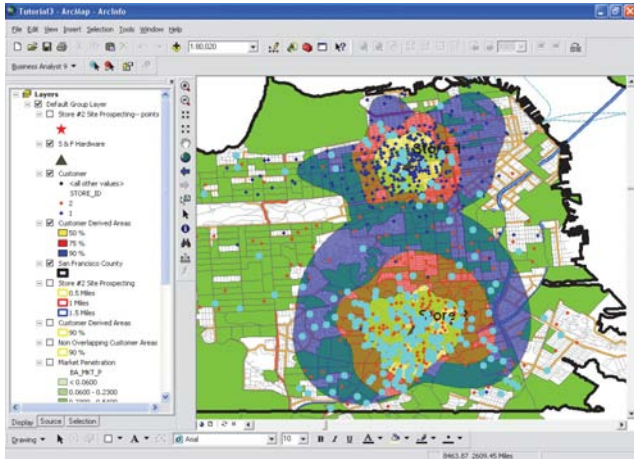
Store 2 = \_\_\_\_\_

Perhaps Store 2 is doing better not because the higher average income of its customers but because people in that area own their homes and are more likely to make larger purchases at hardware stores than people who rent.

17. Click Print to print the report. If not, close the report.

The map of your study area with the Customer Derived Areas layer appears.

18. To save your work, click the File menu and click Save.

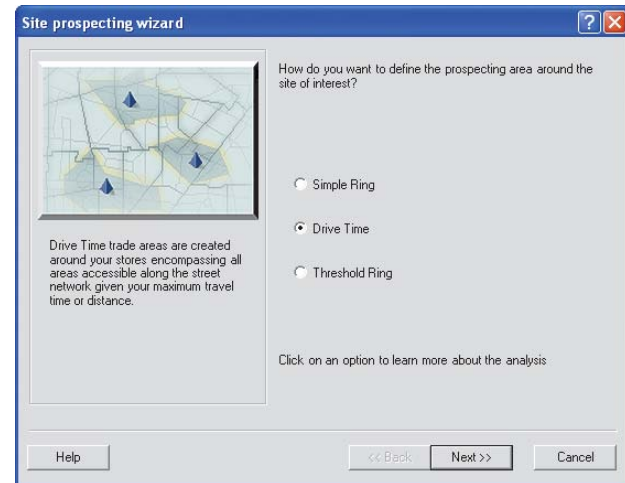


You now have Customer Derived Areas and simple ring analyses on your map for Store 2.

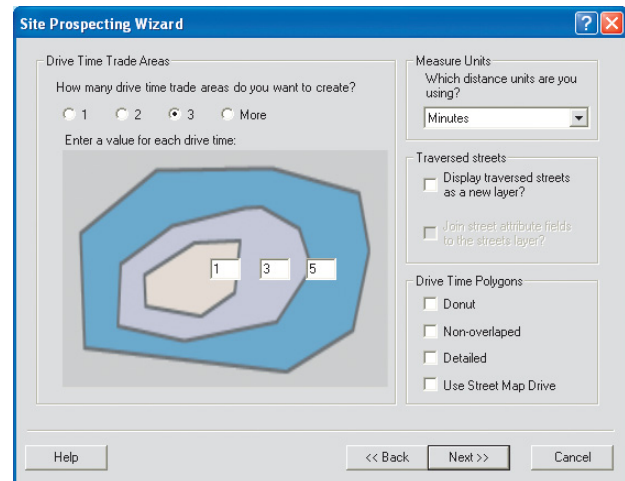
With both layers on, you can see the comparison. You can turn both layers off by unchecking them in the table of contents.

19. Add a third analysis based on drive times of two, three, and four minutes from Store 2. You will use an alternative method of clicking the location to start the analysis. First, zoom to the Store 2 location using the Zoom In tool on the ArcMap toolbar.
20. Click the Site Prospecting tool on the Business Analyst toolbar, then click the symbol marking the Store 2 location on the map.

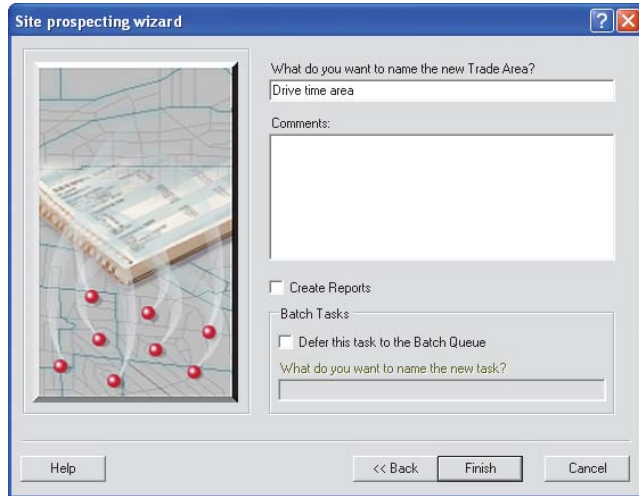
21. Click Drive Time on the Site prospecting wizard to define the prospecting area, then click Next.



22. Click 3 for the number of Drive Time Trade Areas and type “2”, “3”, and “4” in the text boxes.



23. Select Minutes for Measure Units, then click Next.



24. Type “Drive time area” in the text box and enter any comments in the Comments field. Ensure the Create Reports check box is unchecked. Click Finish.

Drive times of two, three, and four minutes are displayed on the map.

25. Visually compare the three analyses around the Store 2 location. When finished, turn them off by unchecking them.

26. To save your work, click File and click Save.

Continue to Exercise 5 to remove trade area overlap.

## Exercise 5: Removing trade area overlap

In this exercise, you will remove overlap between two trade areas. You may want to remove overlap between trade areas so that you do not double count characteristics for the trade areas.

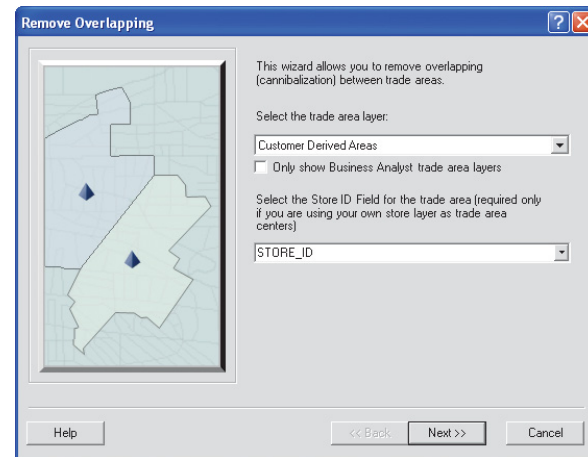
1. If you've exited ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Business Analyst extension dialog box opens. Click OK to close, and the Welcome to Business Analyst dialog box opens. Click An existing map, then click the Tutorial.mxd file and click OK.

The Business Analyst Tutorial opens, click Close if you've already reviewed the tutorial. The Business Analyst extension dialog box opens again, click OK to close.

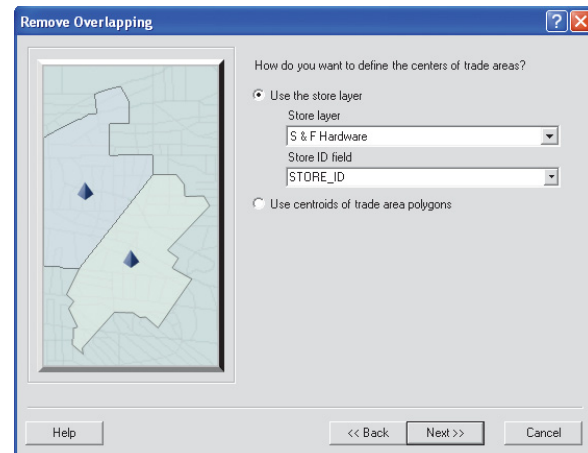
2. Click the Business Analyst drop-down menu and highlight Tools, then click Remove Overlapping.

The Remove Overlapping dialog box opens.

3. Click the first drop-down menu and select the Customer Derived Areas. Click the second drop-down menu and select STORE\_ID, then click Next.

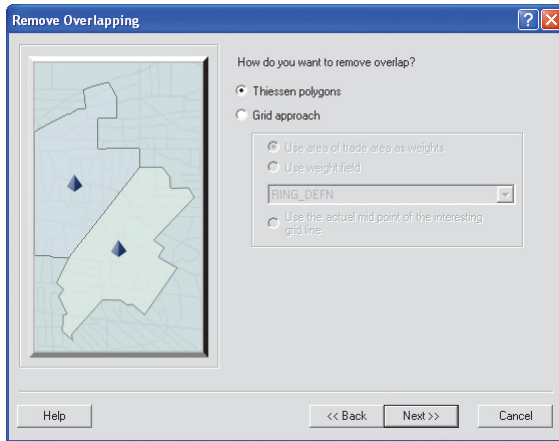


4. To define the centers of the trade areas, click Use the store layer. Click the first drop-down menu and select S & F Hardware, then click the second drop-down menu and select STORE\_ID. Click Next to continue.

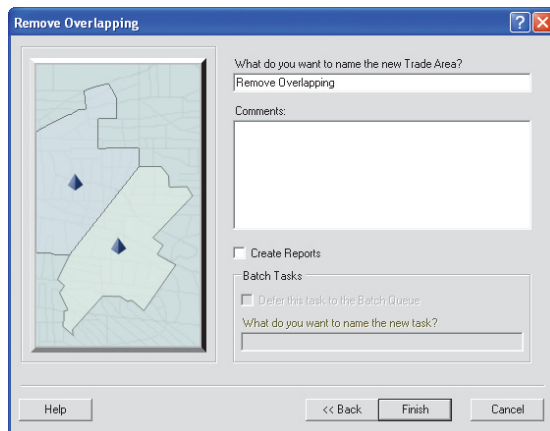




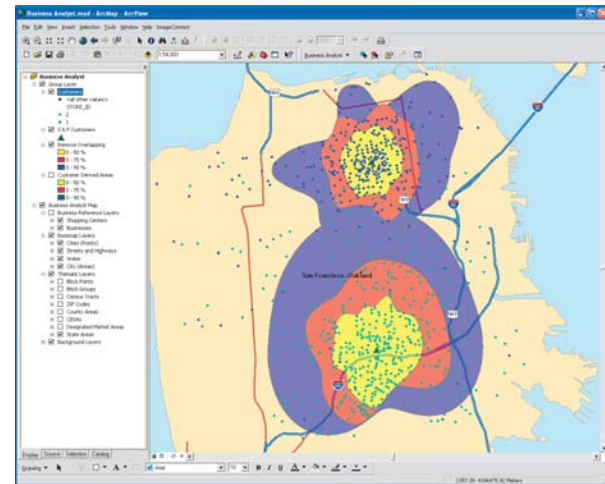
5. Click Thiessen polygons, then click Next.



6. Type “Remove Overlapping” in the text box to name your new trade area, enter any comments in the Comments field, then click Finish.



The results appear on the map.



Continue to Exercise 6: Determining market penetration.

## Exercise 6: Determining market penetration

In this exercise, you will calculate market penetration by comparing the number of customers in each of the rings you created in exercise 4 with the total population in each ring.

Market penetration allows you to define trade areas encompassing your customers and analyzes the corresponding markets.

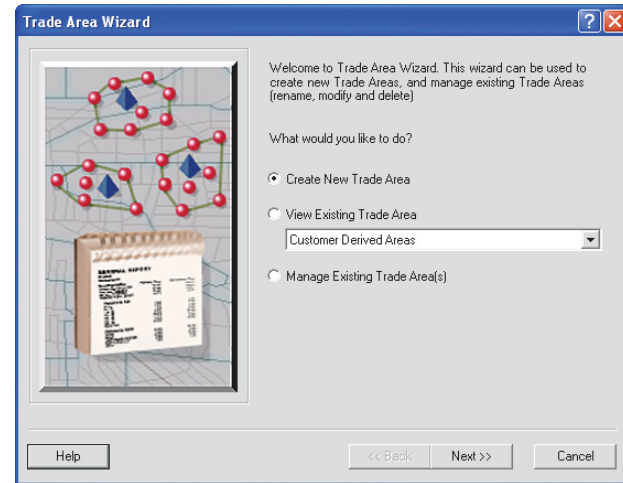
If you're continuing directly from exercise 5, go to step 2.

1. If you've exited ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Business Analyst extension dialog box opens. Click OK to close and the Welcome to Business Analyst dialog box opens. Click An existing map, then click the Tutorial.mxd file and click OK.

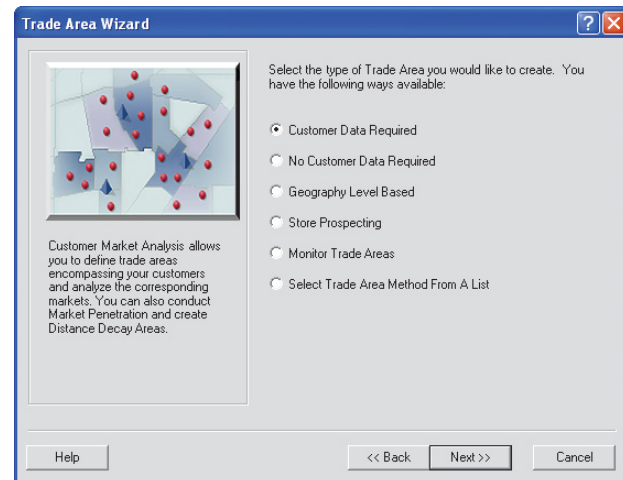
The Business Analyst Tutorial opens, click Close if you've already reviewed the tutorial. The Business Analyst extension dialog box opens again; click OK to close.

2. In the table of contents, click the layer for Customer Derived Areas to make it visible. Verify that the layers for Drive time area and Store #2 Site Prospecting are turned off by unchecking them.
3. Click the Business Analyst drop-down menu and click Trade Area.

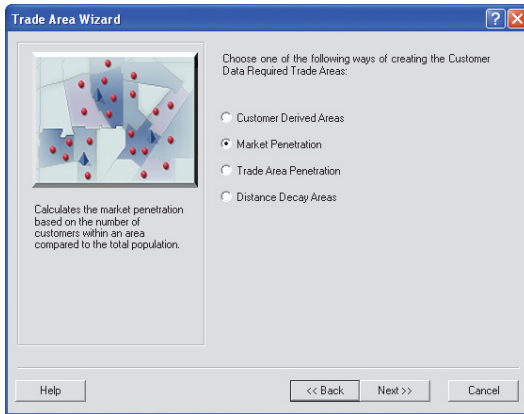
4. Click Create New Trade Area, then click Next.



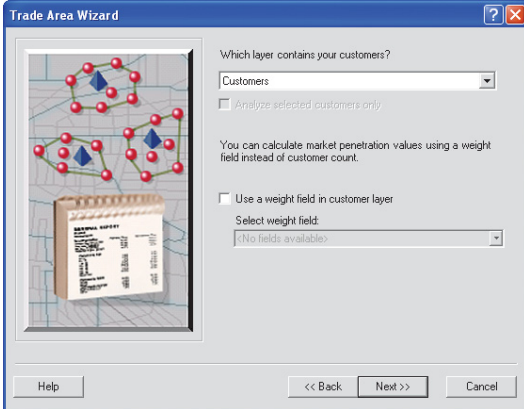
5. Click Customer Data Required, then click Next.



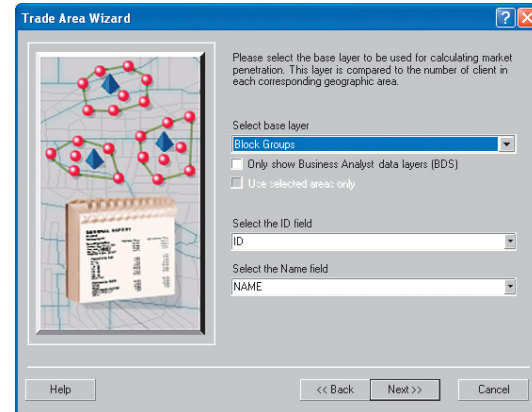
6. Click Market Penetration, then click Next.



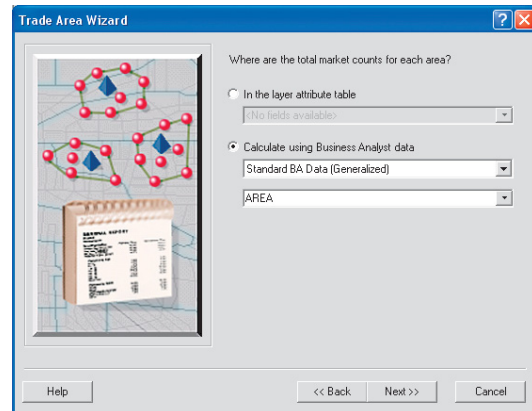
7. Click the drop-down menu and select Customers to select the layers that contain your customers, then click Next.



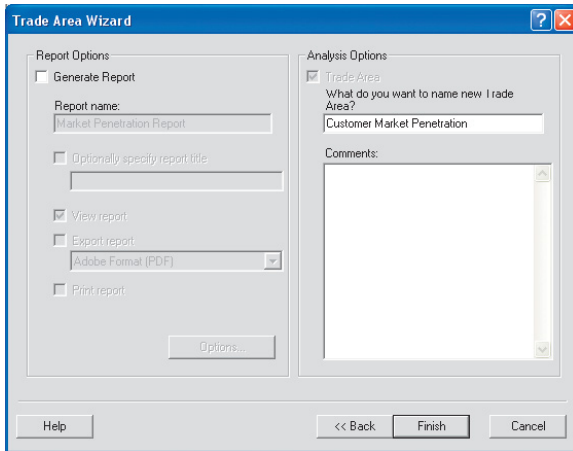
8. Select the base layer to use for calculating market penetration. Click the first drop-down menu and select Block Groups. Then, click the second drop-down menu and click ID, and click the third drop-down menu and click NAME. Click Next.



9. On the next screen, you will identify where to locate the total market counts for each area. Click Calculate using Business Analyst data, choose Standard BA Data (Generalized) and Area using the drop-down menus, then click Next.

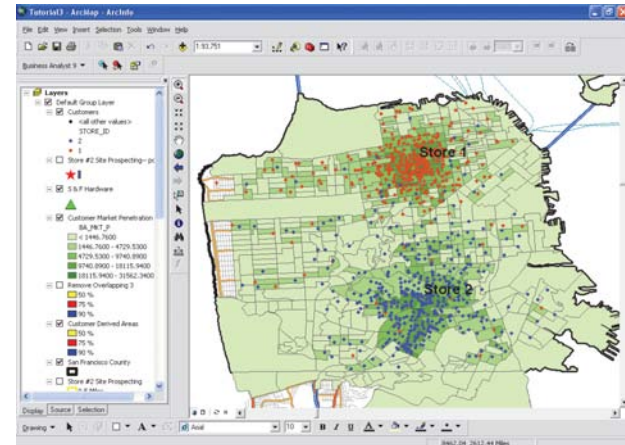


10. The next screen is divided into two sections: Report Options and Analysis Options. Under Report Options, ensure that the Generate Report check box is unchecked. Under Analysis Options, type “Customer Market Penetration” for the name of the new trade area, then click Finish.



11. The same shape in your Customer Market Penetration layer is colored to reflect customer market penetration. The layer legend displays the market penetration percentage. You can click and drag this layer to move it above or below any other layer for different display effects. You can also use the Transparency tool to make this layer transparent, then graphically overlay it with another layer.

12. Click File and click Save to save your work.



In the map above, areas shaded in darker green have higher market penetration. The lighter shaded areas represent areas where you are poorly penetrating the market. Continue to Exercise 7 to identify your competitors.

## Exercise 7: Identifying your competitors

In this last exercise, you will identify the locations of your competitors.

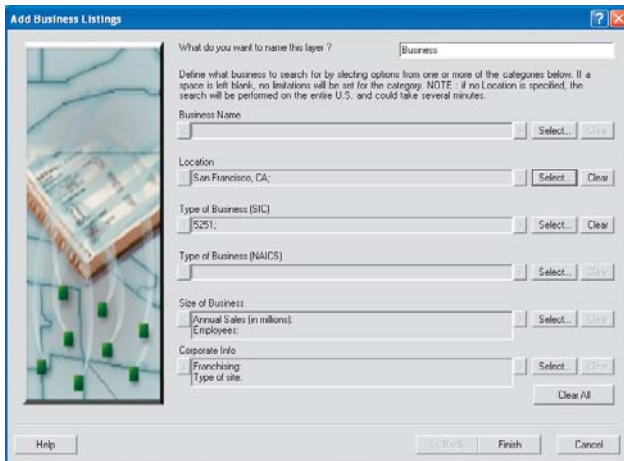
If you're continuing directly from exercise 6, go to step 2.

1. If you've exited ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Business Analyst extension dialog box opens. Click OK to close and the Welcome to Business Analyst dialog box opens. Click An existing map, then click the Tutorial.mxd file and click OK.

The Business Analyst Tutorial opens, click Close if you've already reviewed the tutorial. The Business Analyst extension dialog box opens again, click OK to close.

2. Click the Business Analyst drop-down menu, highlight Data, then click Add Business Listings.

The Add Business Listings dialog box opens.

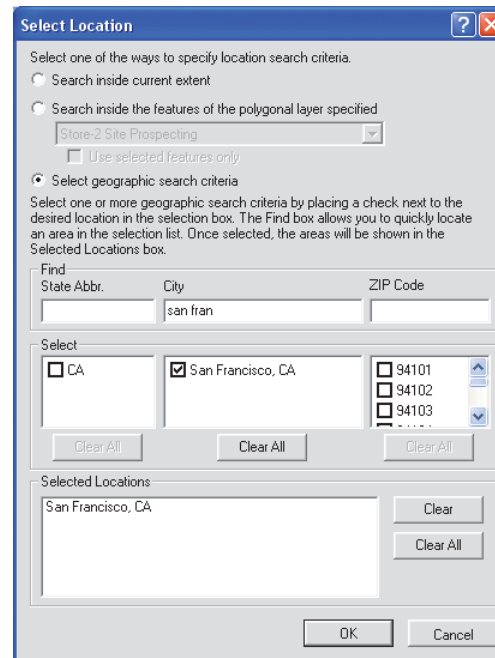


3. To set the Location, click Select next to the Location box.

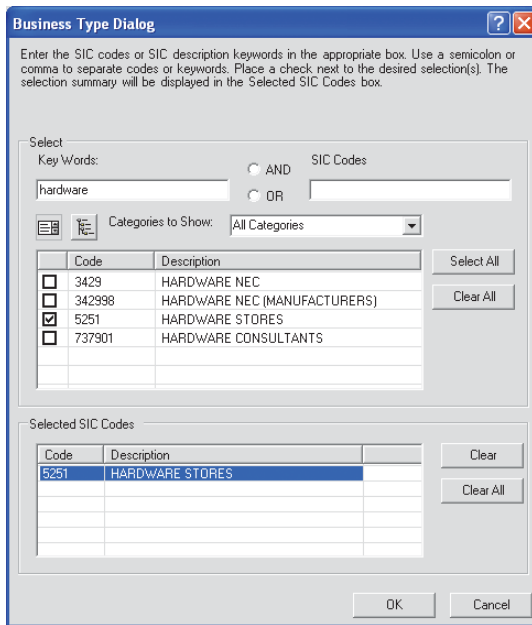
The Select Location dialog box opens.

4. Click the Select geographic search criteria button, then enter "San Fran" in the City text fields then check the selection box for the desired location as shown.

When you type the first letters of the city in the text boxes, the lists jump to the letters you entered.



- Click OK and you are returned to the main Add Business Listings dialog box.
- To select the Type of Business (SIC), click Select next to the Type of Business (SIC) box and the Business Type Dialog box opens.
- In the Key Words text box, type “hardware”. The Code and Description lists jump to the code and descriptions that match your entry. Click 5251 HARDWARE STORES and click OK.



- Click Finish and your selections appear on the map and are added to your TOC as the Business layer.

Now that you’ve completed all the tasks in the tutorial, you have a good idea of what’s involved with using Business Analyst. You can enter the addresses of possible new store locations by using the steps in exercise 1 to analyze them and compare with the Store 2 report to find the best site for your new store. You can also use the Add Business Listings wizard to add all retail hardware stores in San Francisco to the map. You’ll be able to see your competitors and assess their proximity to your proposed store locations. Continue reading through the book to learn more of what you can do with Business Analyst or use this book as a reference by reading the specific sections you need to complete your task.



# 3

## Business Analyst toolbar

### IN THIS CHAPTER

- **Using the Business Analyst toolbar**
- **Site prospecting on the map using the Site Prospecting tool**
- **Site prospecting using the Site Prospecting tool context menu**
- **Site prospecting using the ArcMap Find tool**
- **Dynamic Ring Analysis tool**
- **Using the Business Analyst Assistant**
- **Identify Business tool**
- **Using the Project Explorer**

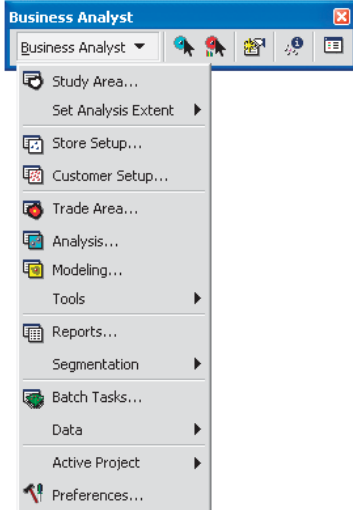
In this chapter, you will learn about the Business Analyst menu commands and toolbars and how to perform site prospecting on the map or by using the context menu.

You can perform site prospecting using either the Site Prospecting tool or the ArcMap Find tool. When you click the Site Prospecting tool from the Business Analyst toolbar, you have the option of clicking directly on the map to launch the Site Prospecting Wizard or right-clicking anywhere on the map to open the context menu and find a point by address, selected point, or by defining coordinates.

# Using the Business Analyst toolbar

## Business Analyst toolbar drop-down menu

If the Business Analyst toolbar is not visible, click the View menu, click Toolbars, then click Business Analyst. The dockable toolbar opens.



**Study Area**—Launches the Study Area Wizard to create new study areas or view and manage existing study areas.

**Set Analysis Extent**—Allows you to set the analysis extent to the current map view or to jump to a different location.

**Store Setup**—Launches the Store Setup Wizard to create new store layers or view and manage existing store layers.

**Customer Setup**—Launches the Customer Setup Wizard to create new customer layers or view and manage existing customer layers.

**Trade Area**—Launches the Trade Area Wizard to create new trade areas or view and manage existing trade areas.

**Analysis**—Launches the Analysis Wizard to create new analysis or view and manage existing analyses.

**Modeling**—Launches the Modeling Wizard to create modeling analysis, view and manage existing modeling analyses, or manage model calibration parameters.

**Tools**—Provides tools that allow you to:

- Perform thematic mapping
- Remove overlapping
- Create grids
- Find routes
- Dissolve by attribute
- Perform spatial overlay
- Find similar
- View and produce market ranking reports
- Perform site prospecting

**Reports**—Launches the Report Wizard to run, open, and manage existing reports or create and manage custom report templates.

**Segmentation**—Allows you to create profiles, target groups, segmentation charts, maps, and reports and manage existing analysis and segmentation studies. **Note:** A separate software is needed for these add-on capabilities.

**Batch Tasks**—Allows you to create batch tasks.

**Data**—Allows you to add a business listing, Excel® table, and analysis layer, and import an add-on data pack.

**Active Project**—Allows you to change the active project, and to create and manage projects.

**Preferences**—Launches the Preferences dialog box to view or make changes to a variety of settings.

# Site prospecting on the map using the Site Prospecting tool

ArcGIS Business Analyst provides a quick tool on the Business Analyst toolbar to perform site prospecting by simple ring, drive time, or threshold ring analysis.

## Tip

By default the site prospecting tool is available from the Business Analyst toolbar by clicking a point on the map. You can access other site prospecting options by clicking the down arrow next to the site prospecting button and choosing one of the following:

- Find point by address
- Use selected point on the map
- Input coordinates
- Address Inspector

## Getting started

1. Open the study area for which you want to perform site prospecting.
2. Click the Site Prospecting tool on the Business Analyst toolbar.
3. Click an area on the map where you want to perform site prospecting.

The Site Prospecting Wizard opens.

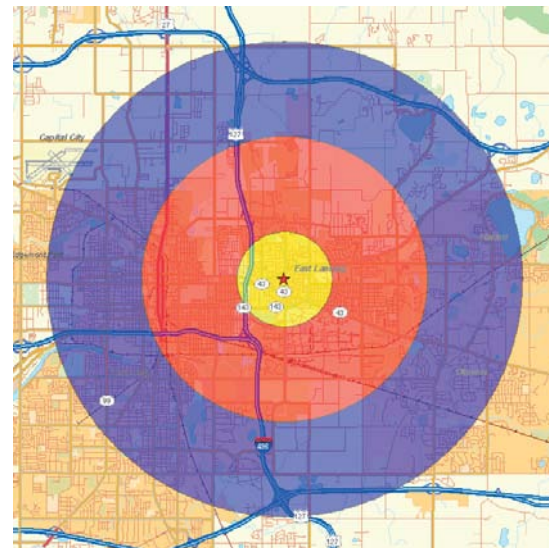
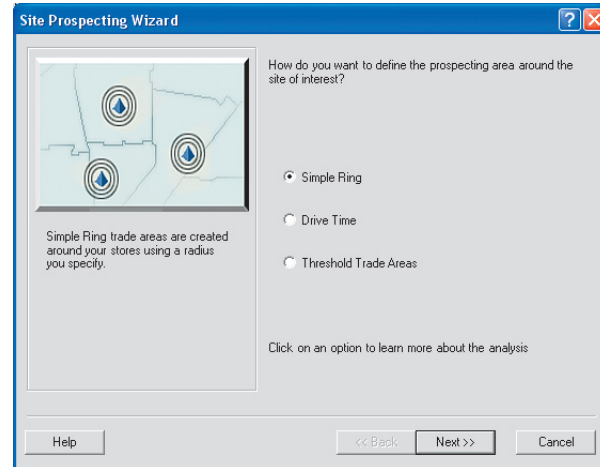
4. Click Simple Ring, Drive Time, or Threshold Trade Area, then click Next.

Each of these analyses is described in detail in Chapter 8.

The next steps depend on which Site Prospecting option you selected in step 4 above. The following sections provide instructions for each option.

### Simple Ring

- a. If you selected Simple Ring, choose the number of rings you want to create for each store, then type a value for each ring in the text boxes. Click the distance units from the drop-down menu, click Remove Overlap or Donut to define the trade areas, then click Next.





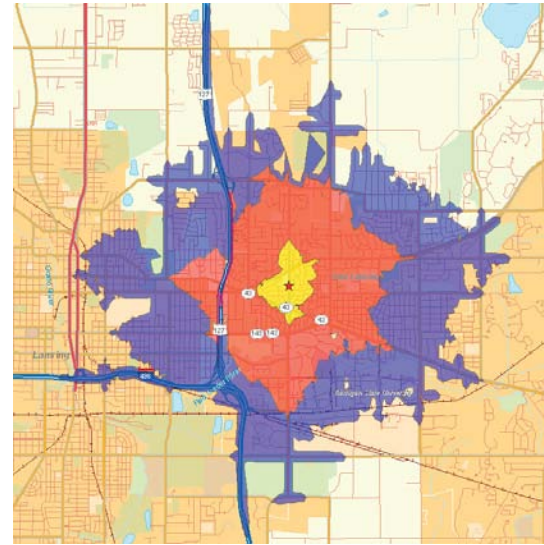
## Tip

For more information on Threshold Trade Areas, see Chapter 8.

- b. Type a name for the new trade area, type any comments, then click Finish. The results are displayed on the map.

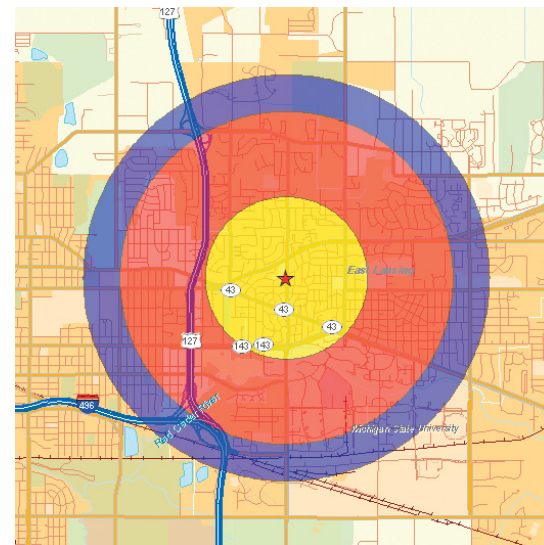
### Drive Time


- a. If you selected Drive Time, choose how many drive time trade areas you want to create, then type a value for each drive time in the text boxes. Click the Measure Units drop-down menu and click the distance units you want to use. Optionally, complete the Traversed streets and Drive Time Type sections, then click Next.
- b. Type a name for the new trade area, type any comments, then click Finish. The results are displayed on the map.



### Threshold Trade Area

- a. If you selected Threshold Ring, click the threshold layer from the drop-down menu, click the field to aggregate from the second drop-down menu, then click Next. Choose how many rings you want to create, then type a value for each ring. Click Donut to define the trade areas, then click Next. ►



- 
- b. Type a name for the new trade area, type any comments, then click Finish. The results are displayed on the map.

## Site prospecting using the Site Prospecting tool context menu

The Business Analyst Site Prospecting tool has a context menu to provide alternatives for setting the center point of the analysis. This context menu allows you to choose the center point by entering an address, a geographic coordinate or by using a selected point on the map.

### Tip

You can click the drop-down menu next to the Site Prospecting button to access the other site prospecting methods, such as Find point by address, Use selected point on the map, and Input coordinates. The icon for the option you choose will remain active on the BA toolbar. Right-click the Site Prospecting tool while hovering over the map for more options.

1. Click the Site Prospecting tool on the Business Analyst drop-down menu. You can choose from:

**Site Prospecting:** Use to click anywhere on the map. A basic form of prospecting when you don't know an address. This resembles throwing a dart at a map.

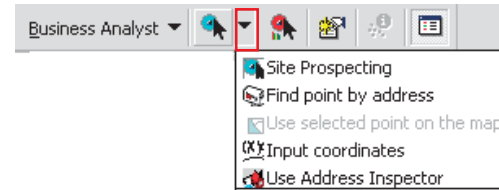
**Find point by address:** Use to enter a single address. The address will geocode and the location is placed on the map.

**Use selected point on the map:** Use to select any point on a map.

**Input coordinates:** Use to enter longitude and latitude coordinates. Used when a highly precise location is required or a postal address doesn't apply in the case of a cell phone tower or weather station.

**Use Address Inspector:** Use if you know the area you want to prospect but are looking to verify an exact address. This allows you to move the cursor around the map and receive information about the nearest address.

2. Click on an area on the map where you want to perform site prospecting.
3. The Analysis Wizard opens. ►



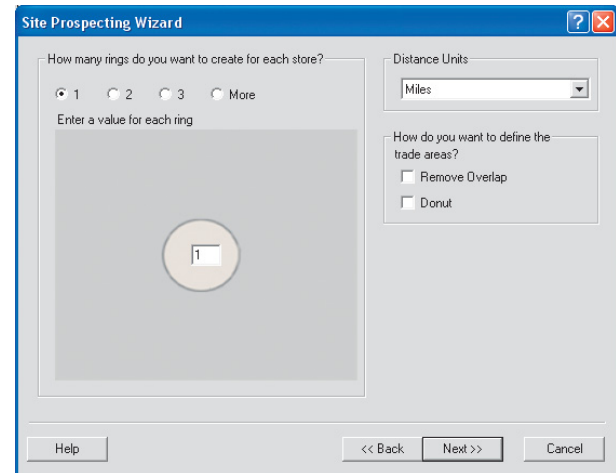


You can choose from Simple Ring, Drive Time, or Threshold Trade Area, then click Next.

If you choose Simple Ring:

Choose the number of rings you want to create for each store, then type a value for each ring in the text boxes. Click the distance units from the drop-down menu, click Remove Overlap or Donut to define the trade areas, then click Next.

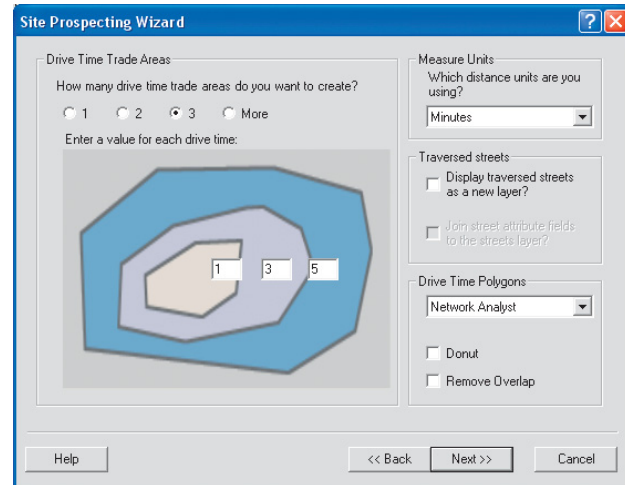
Type a name for the new trade area, type any comments, then click Finish. ►



If you choose Drive Time:

Choose the number of drive time trade areas you want to create, then type a value for each drive time in the text boxes. Click the Measure Units drop-down menu and click the distance units you want to use, then click Next.

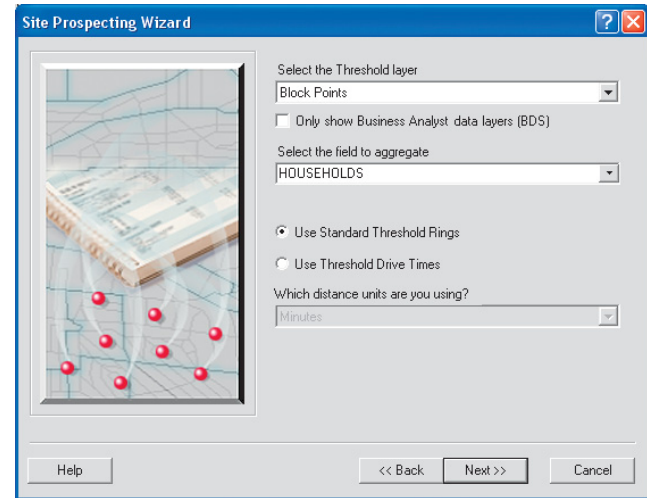
Type a name for the new trade area, type any comments, then click Finish. ►



If you choose Threshold Trade Areas:

Click the threshold layer from the drop-down menu, click the field to aggregate from the second drop-down menu, then click Next. Choose how many rings you want to create, then type a value for each ring. Click Donut to define the trade areas, then click Next.

Type the trade area name, type any comments, then click Finish.

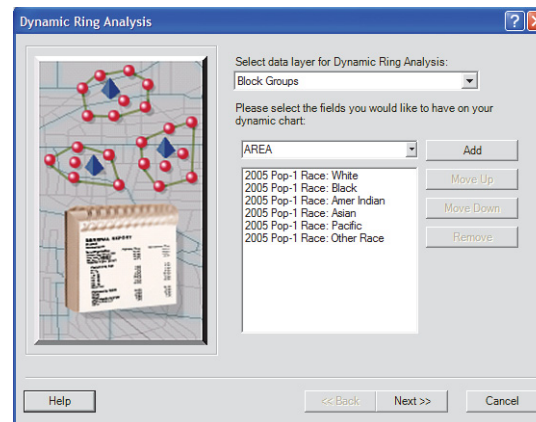
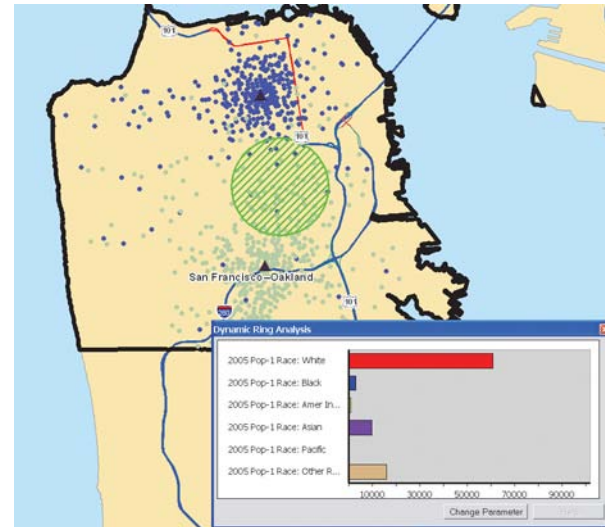


# Dynamic Ring Analysis tool

The Dynamic Ring Analysis tool allows you to pan over the map and evaluate site locations using a value you set as a threshold. You can also choose to view a chart with a number of variables that are summarized within the area of the dynamic ring. The chart is dynamically updated as you move the mouse pointer around the map.

You have the option of defining a Threshold field and Threshold value. If you do, the dynamic ring will be red in the areas where the threshold value is not exceeded and will be green when you find an area where the threshold value is met. This feature will allow quick and obvious screening of possible site locations that meet your target criteria.

1. Open the study area for which you want to use the Dynamic Ring Analysis tool.
2. Click the Dynamic Ring Analysis tool and the Dynamic Ring Analysis bar chart appears. It shows the variables selected during its previous use.
3. Click an area on the map and the Dynamic Ring Analysis bar chart will update for the new ring area shown on the map. If you click and hold as you move the mouse pointer around the map, the Dynamic Ring Analysis bar chart will dynamically update.
4. You can change the selected variables by clicking the Change Parameter button at the bottom of the Dynamic Ring Analysis window.
5. Add, remove, or reorder variables to reflect those you want displayed. ►



## Tip

You can change the threshold without going through the wizard again. If you want to change the variables, it is necessary to click the Change Parameters button again. If you find a desirable site, you can use the right-click context menu to activate the Business Analyst Site Prospecting Wizard on the site.

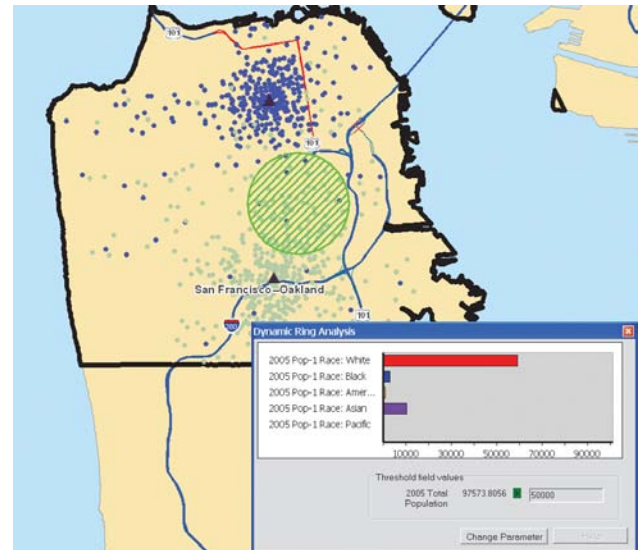
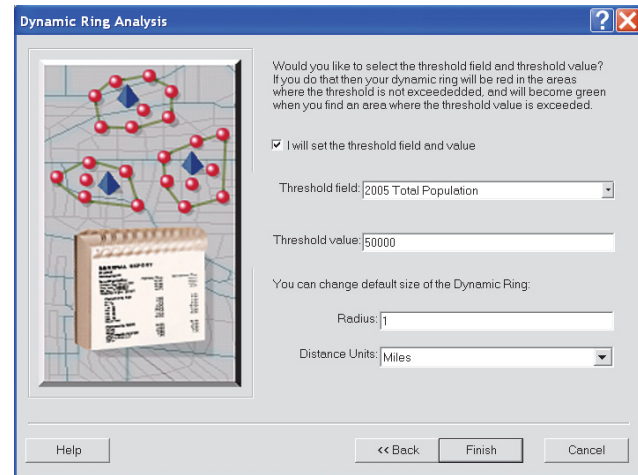
You can dock and undock the chart window from within ArcMap.

- Click the field to be used for a quick threshold analysis, and type the threshold value. This parameter is optional. If used, the ring color will be green or red to reflect whether or not the threshold value was met.
- Type a radius for the dynamic ring analysis and choose the distance units. Click Finish.

The dockable window will appear containing the Dynamic Ring Analysis bar chart and threshold field values, if any, that you have selected.

- When you move the mouse pointer over the map, the ring moves with it, and the values in the Dynamic Ring Analysis bar chart are updated in real time.

If the trade area circle is green then the threshold value you have entered has been exceeded. Conversely, if the ring is red then the threshold value has not been exceeded.



# Using the Business Analyst Assistant

The Business Analyst Assistant is a dockable window that provides a gateway to some of the more common tasks in Business Analyst. If you know what you want to accomplish, but are not sure where to begin, this dialog box can be helpful by directing you to the appropriate wizard. This is especially helpful for new users.

You can also customize the Business Analyst Assistant to meet your needs. For example, you can add shortcut links to your most frequent analysis tools or create a custom start page for your company to reference.

## Accessing the Business Analyst Assistant

The Business Analyst Assistant, by default, is docked beside the ArcMap interface. This allows you to read and interact with the Assistant while working.

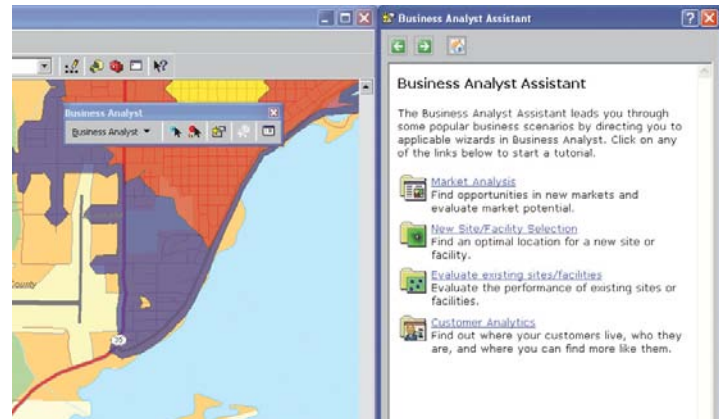
1. To launch the Business Analyst Assistant, click the Business Analyst Assistant tool on the BA toolbar.

The Business Analyst Assistant dialog box opens.

2. Click the hyperlinks to learn more about a popular business scenario, such as Market Analysis or Customer Analytics.

## Customizing the Business Analyst Assistant

1. If you installed your data to the default paths, navigate to C:\Program Files\ArcGIS\Business Analyst\Datasets\Quick Start Tutorial.
2. Modify the .html document files in an editing environment to create a custom Business Analyst Assistant page. The all\_wizards.html file shows a page of URL links to all wizards accessible through the Business Analyst drop-down menu. The index.html file controls the main page of the Business Analyst Assistant.



## Identify Business tool

The Identify Business tool allows you to click on the map to view information, such as the address, telephone number, sales volume, and employee range for an individual business. The Identify Business tool is inactive until you add a business layer to your map. See Chapter 6 to learn more about adding business listing layers.

### Tip

*Once your business layer is added to the map, the Identify Business tool becomes active.*

## Using the Identify Business tool

1. Click the Identify Business tool on the Business Analyst toolbar.

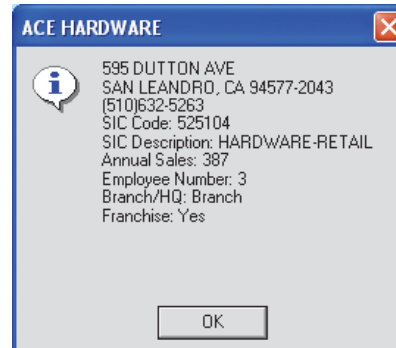
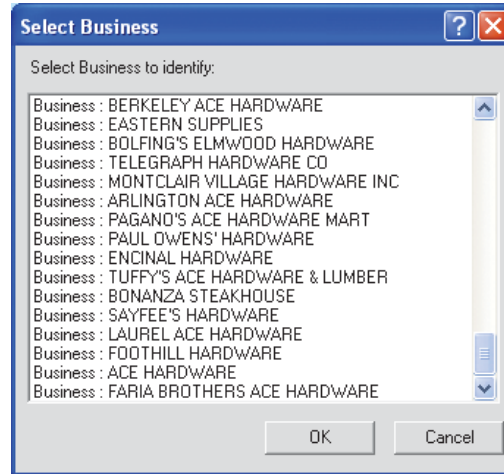


2. Move your mouse pointer over the map and double-click in the area the business is located.

The Select Business dialog box opens.

3. Select a business from the list and click OK.

A new dialog box opens to display the business information.





## Using the Project Explorer

The Project Explorer is a dockable window to help manage and associate multiple layers and projects in ArcMap and ArcCatalog.

### Tip

*Right-click on a Project layer to access context-sensitive menus for further data management options including:*

- Zoom To
- Create Report
- Copy To
- Move To
- Delete
- Properties

### Tip

*By selecting the View Manager icon from within the Project Explorer Window, you can further organize your analyses and data. To use this dialog window, first check the analyses and data items, from within your project window, that you want to save. Select New and then name your subset. The name of your subset appears in the dialog box. Now your selections have been saved. You can automatically select these items in the future by activating the View Manager, highlighting the subset you want to load, and click Select.*

## Using the Project Explorer window

1. Click the Project Explorer tool on the Business Analyst toolbar.

The Project Explorer window opens.

2. Select the Project you wish to work with from the drop-down menu.
3. Check on or off the different layers you wish to view.
4. Click Update Map to add your Project layers to the map and table of contents.



## The Project Explorer:

- Provides an organized tree view of all items in the Business Analyst Repository—for example, stores, customers, and so on.
- Allows easy retrieval of all layers associated with a particular project.
- Allows a shortcut to the Active Project in the Business Analyst menu.
- Utilizes right-click context sensitive menus to manage layers, export/backup projects, and downloading and uploading Projects to Business Analyst Server.

The screenshot shows the 'Project Explorer' window for a 'Financial Services Project'. The window title is 'Select Business Analyst Project'. Below the title bar, there is a dropdown menu showing 'Financial Services Project' and a button to 'Select items to add/remove from the map'. The main area is a tree view of the project's contents:

- Financial Services Project
  - Analyses (2)
    - Spatial Overlay
    - Desire Lines
  - Customer Layers (3)
    - Customer Addresses
    - Potential Sites
    - Approved Locations
  - Store Layers (1)
    - Franchise Locations
  - Study Areas
    - Southland Study Area
  - Trade Areas (3)
    - Simple Ring
    - 10 min Drive Time
    - Threshold Rings (100k Pop)
    - California ZIP Codes
  - Custom Data
    - Competitors.shp
    - Competitors.dbf
  - Territories (1)
    - Holmstrom lp territories

At the bottom of the window are buttons for 'Help', 'Refresh', and 'Update Map'.

Callouts provide the following information:

- View and toggle between different Projects**: Points to the project selection dropdown.
- Close the Project Explorer, dock it, or resize it**: Points to the window title bar.
- Create subsets of Projects to add or view selected layers only**: Points to the 'Select items to add/remove from the map' button.
- All Business Analyst Project contents are automatically added to the Project Explorer**: Points to the tree view.
- Right-click any layer for data management options such as:**
  - **Copy To...** (copies a layer a layer for a move)
  - **Move To...** (moves a layer to another Project)
  - **Zoom To...** (zooms to layer on map)
  - **Delete** (deletes a layer from the map and hard drive)
  - **Properties** (check key info and alter layer names)
- Right-click the top level Project layer to Export/Backup or Import your Projects**: Points to the 'Financial Services Project' folder.
- Right-click a Trade Area layer and select Create Demographic Report to instantly create a demographic report. Set your default report in the BA Preferences.**: Points to the 'Trade Areas (3)' folder.
- Click Update Map to make changes to the Project Explorer in the TOC and map. For example, you might check on a few layers and click Update Map to add them to the TOC.**: Points to the 'Update Map' button.
- Click Refresh to update the Project Explorer. For example, you may have added custom data through to the folder repository, but it will not be recognized in the Project Explorer until it is manually refreshed.**: Points to the 'Refresh' button.



# Projects and data organization

# 4

## IN THIS CHAPTER

- **Managing Projects**
- **My Output Data folder structure**
- **Using Projects from a previous Business Analyst version**
- **Creating My Output Data folder in a different location**
- **Using ArcCatalog with Business Analyst**
- **Using custom variable lists**

This chapter describes the different ways to organize your work within Business Analyst. Business Analyst uses the concept of Projects to save analyses and layers for easy retrieval and archiving. Each Project contains the same directory structure and can be accessed in a variety of ways, including the Project Explorer window and through special Business Analyst view in ArcCatalog. The default directory structure is called My Output Data. Different My Output Data directory management options as well as other important organizational methods are discussed in detail throughout the chapter.

The My Output Data folder contains:

- Study areas created using the Study Area Wizard
- Customer data setup using the Customer Setup wizard
- Store data setup using the Store Setup wizard
- Analyses created using the Analysis wizard

For more detailed information about the My Output Data folder structure, see Chapter 4.

## Using map documents to manage your work

Even though Business Analyst automatically saves all of your work to the My Output Data folder, you must still save your work as a *map document*. A map document is an ArcGIS file that contains all the maps, tables, charts, layouts, and reports that you use for a particular application or set of related applications. All of your work is stored in one convenient map document that is defined with a .mxd extension.

There are two default Business Analyst map documents prepared for your use called Business Analyst.mxd and BA\_Detailed.mxd. You should use these .mxd files as master documents to save as your own .mxd files with which you'll do your work. The master documents, Business Analyst.mxd and BA\_Detailed.mxd, are read-only files. This ensures that they are preserved for you to have available as a master for future use. If you have a small number of study areas, you can save them all in one map document; however, if you have many study areas, it might be easier to save separate .mxd files for your study areas. You can save your study areas to one .mxd file or several, depending on your preference.

**Note:** If you are using Business Analyst for Canada, there is only one map document, Business Analyst\_CAN.mxd.

## Saving your work as a map document

1. Double-click the ArcMap icon on your desktop, or click Start, point to Programs, point to ArcGIS, click Business Analyst, and click Business Analyst.mxd (you can also click BA\_Detailed.mxd). If you're using the ArcMap icon, click the option for an existing map, select the path for Business Analyst.mxd, then click OK. Business Analyst.mxd is opened automatically, and the first panel of the Create Study Area wizard appears.
2. The Business Analyst.mxd map will appear. Before beginning your work, save the map under your own map document name by clicking the File menu, clicking Save As, and entering a name for your map document.
3. Your work will be saved to your map document. The next time you start Business Analyst, it will appear as one of the existing map documents available on the Welcome screen.

**Note:** If you are using Business Analyst for Canada, there is only one map document, Business Analyst\_CAN.mxd.

# Using projects to separate work within map documents

Use the Active Project wizard on the Business Analyst drop-down menu to change which project is active, create new projects, and manage projects.

## Tip

*By default, all of your work is saved under <Default Project>. You only have to create a new project if you need to organize your Business Analyst output in another project.*

## Making a project active

To make a project active, click the Business Analyst drop-down menu, click Active Project, and click a project name from the list.

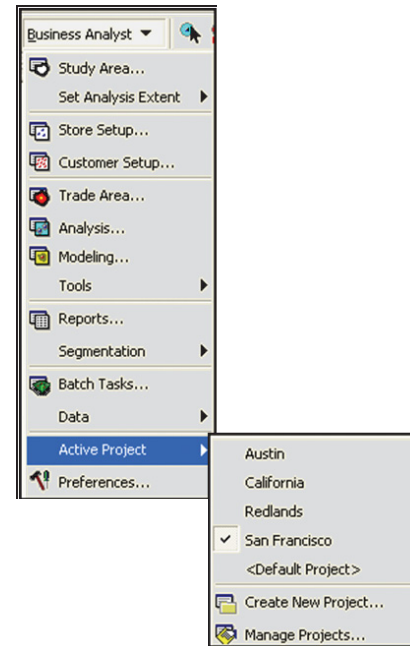
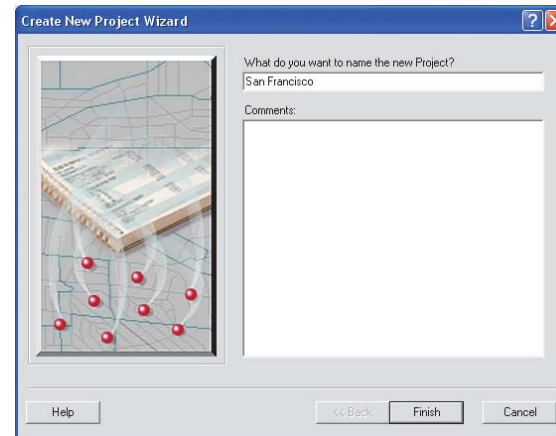
## Creating a new project

1. Click the Business Analyst drop-down menu, click Active Project, and click Create New Project.

The Create New Project Wizard opens.

2. Type a name for your new project in the text box and add any comments, then click Finish.

Your new project is now the active project. To see this, click the Business Analyst drop-down menu, click Active Project, and your new project name appears in the list with a check mark next to it indicating that it is the active project.





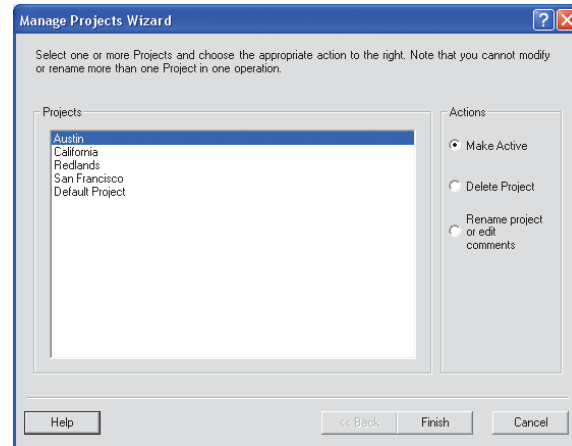
# Managing projects

You can activate, delete, and rename a project and edit comments.

1. Click the Business Analyst drop-down menu, click Active Project, and click Manage Projects.

The Manage Projects Wizard opens.

2. From the Projects list, click the project you want to manage.
3. From the Actions section, click one of the following:
  - Make Active
  - Delete Project
  - Rename project or edit comments
4. Click Finish.





## Backing up projects

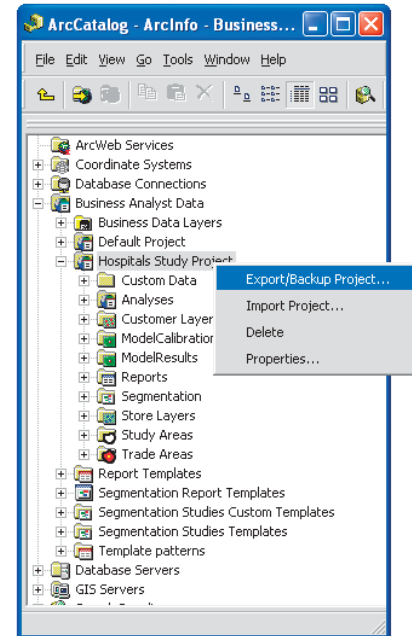
You can take advantage of context sensitive menus in ArcCatalog to back up, export, and import Business Analyst Projects. This is helpful when sharing Projects with other users.

### Tip

*You can export/back up a project on one machine and then import the project on another machine.*

1. Open ArcCatalog and navigate to your Business Analyst Data folder.
2. Right-click on the Project you want to export/back up.
3. Select Export/Backup Project.
4. Choose the location where you want to export and the name of the Project, click OK.

All files associated with the Project are grouped and extracted into a .zip file that can be imported back into Business Analyst.



# Managing Projects using the Project Explorer window

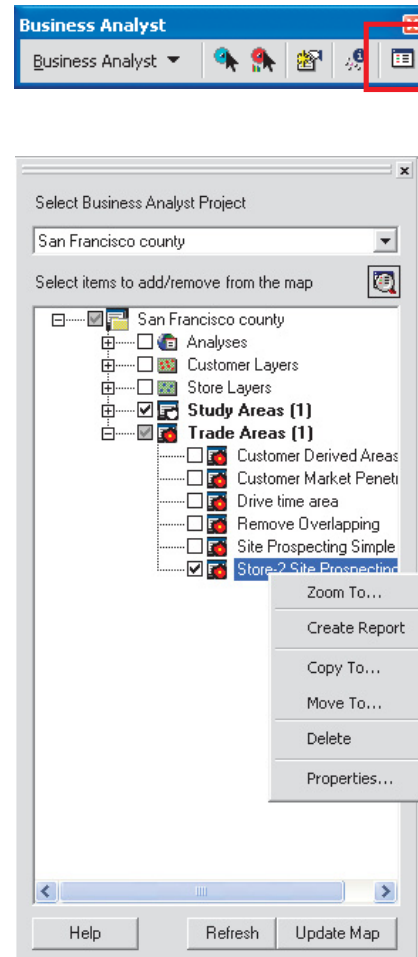
The Project Explorer is a dockable window in Business Analyst that helps manage and associate multiple layers and Projects in ArcMap. From the window you can perform various data management activities, such as copy layers from one project to another and export layers to feature class without having to access the map's table of contents. If you forget to save the .mxd you are working on before closing you can quickly load all Project layers at once instead of adding them through Business Analyst wizards individually.

## Tip

### Adding layers using the Project Explorer

Using the Project Explorer you can quickly add several Business Analyst layers (customers, stores, trade areas, analyses, and so on) in your ArcMap table of contents. To do so, select the Project from the drop-down menu, then choose the relevant layers and click Update Map.

1. Click the Project Explorer button on the Business Analyst toolbar.  
The Project Explorer window opens.
2. From the drop-down menu, click the Project for which you want to work.
3. Click Update Map.  
Your Project and all associated files are now added to the map's table of contents.
4. To further manage your Projects, right-click the layers in the Project Explorer for context sensitive menus.
5. You can right-click on an item in the Project Explorer tree to move, edit, and copy a report.



## My Output Data folder structure

The default location of the My Output Data folder is the same drive where Business Analyst is installed; however, if you want the My Output Data folder somewhere else, you can change the location using the Preferences dialog box. By default, this is located at C:\My Output Data.

The structure of the My Output Data folder is organized with folders for Projects, Report Templates, and Segmentation Studies Custom Template (if you have the optional segmentation module). Any Projects you create will have their own folder. All Projects contain the folders shown.

- **Analyses:** Contains information about the analyses you have done. Included in each folder are .shp, .lyr, .dbf, and .shx files.
- **BusinessAnalystTemp:** Contains all the temporary .dbf, .shp, .lyr, and .shx files.
- **CustLayers:** Contains all the geocoded customer files.
- **Custom Data:** Contains any of your own layers set up with the Analysis Layer Setup wizard. You can also save any non-Business Analyst project related files here, such as client Word documents, custom parcel boundaries, aerial images, and so on. Each of these documents are capable of being backed up with the rest of your Project folders.
- **Modeling:** Contains any model calibration data and model calculation results.
- **Reports:** Contains any Crystal Reports reports you've run.
- **Segmentation:** Contains all segmentation profiles, analyses, studies, and target groups you've created.
- **StoreLayers:** Contains all the geocoded store files.

- StudyAreas: Contains the .dbf, .lyr, .prj, .sbn, .sbx, .shp, .shp.xml, and .shx files that comprise your study areas.
- Territories: Contains layer files and file geodatabases of each each territory solution created in Territory Design.
- Toolbox: Contains files for any models created using geoprocessing tools.
- TradeAreas: Contains the .dbf, .lyr, .prj, .sbn, .sbx, .shp, .shp.xml, and .shx files that comprise your trade areas.

## Using Projects from a previous Business Analyst version

When you uninstall Business Analyst, a backup copy of your My Output Data folder is created. The My Output Data folder becomes My Output Data\_backup. When you open Business Analyst from your new installation, a new My Output Data structure is automatically created.

You can access your previous work in the following ways:

- Individual Analyses: Use this option if you only want to view individual analysis such as trade areas, but do not want to associate them with a project that you have created.

Copy your individual Trade Area folders from My Output Data\_backup to My Output Data\Projects\Default Project\Trade Areas.

- Projects: Use this option if you want to view whole projects that you have created.

Copy your Project folders from My Output Data\_backup to My Output Data\Projects\.

- Entire My Output Data directory: Use this option if you only want to use your entire My Output Data folder from a previous installation.

Delete the newly created My Output Data. Rename your My Output Data\_backup folder to My Output Data.

This graphic shows an example in Windows Explorer where Business Analyst has been installed/uninstalled multiple times, causing the My Output Data to be backed up for each instance.

This is the active My Output Data folder.

Name	Date modified	Type
My Output Data	7/24/2008 1:19 PM	File Folder
My Output Data_backup	1/9/2008 11:01 AM	File Folder
My Output Data_backup1	1/18/2008 11:01 AM	File Folder
My Output Data_backup2	2/20/2008 11:01 AM	File Folder

You can copy contents of any backed up folder into the active My Output Data to view your analyses in Business Analyst.

This is the most recently backed up My Output Data folder. A new number is added to each backed up folder.

## Creating My Output Data folder in a different location

All Business Analyst information, such as study areas you create and analysis results, is stored in the My Output Data folder.

By default, the My Output Data folder is on the same drive where you installed ArcGIS. You can create another My Output Data folder on a different drive using the Preferences wizard.

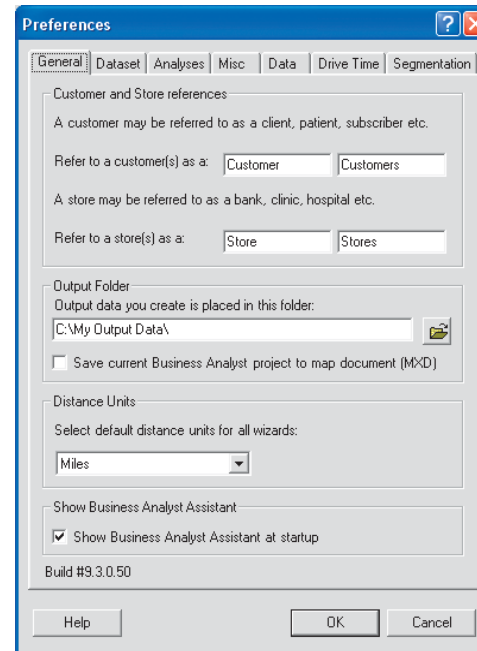
Determine where you want your My Output Data folder to be located before you begin creating study areas. If you change the location of your My Output Data folder after creating a study area, any new layers added or analysis results will be stored in that location. All existing study areas will remain in the My Output Data folder on the drive where they were created.

### Tip

#### Changing the My Output folder name

*You can change the folder name from My Output Data to any name you choose.*

1. Click the Business Analyst drop-down menu and click Preferences.  
The Preferences dialog box opens.
2. Under the Output Folder section, click the folder icon to browse to the location where you want the My Output Data folder stored, or type the path name in the text box.
3. Click OK.  
Your new My Output Data folder is created in the location you selected.



# Using ArcCatalog with Business Analyst

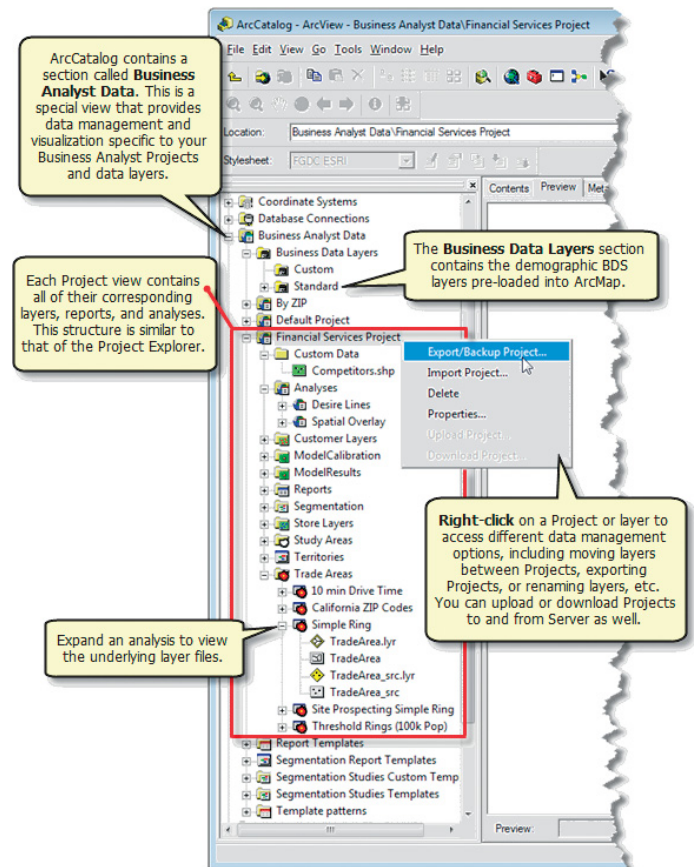
Business Analyst provides a special view in ArcCatalog to help organize your work and manage your Business Analyst data and analyses. The section, called Business Analyst Data, contains all of your Projects as well as any other Business Analyst specific contents, such as Report Templates and BDS layers.

## How to use the Business Analyst section in ArcCatalog

1. Open ArcCatalog. You can do this from the Start menu or by clicking the ArcCatalog button in a Map Document (.mxd).

The ArcCatalog window opens.

2. Navigate to the Business Analyst Data section.
3. Expand your Projects and view your analyses.
4. Utilize the management features as needed.



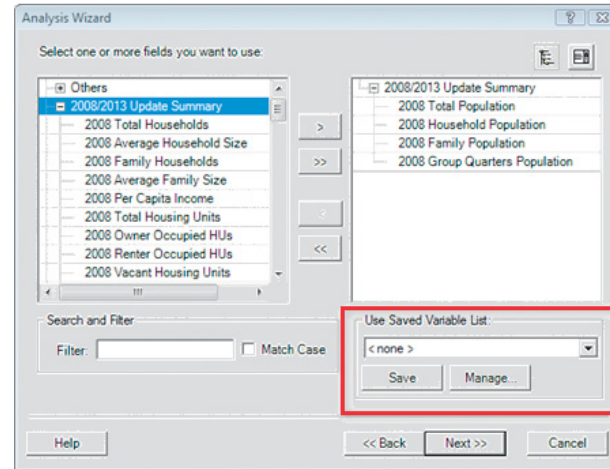


## About custom variable lists

In various dialog boxes, you can create and save custom variable lists for use in reports, analyses, trade areas, and tools. This is helpful when you are repeating tasks with the same demographic variable outputs. In addition to creating customized lists, the variables are provided in each standard Summary Report—for example, you can run a Spatial Overlay for a trade area and use every variable included in the Demographic and Income Report. The variables will appear as fields in the attribute table so you don't have to manually load each variable individually.

The Used Saved Variable List feature is available within the following dialog boxes:

- Trade Area > Grids
- Analysis > Customer Prospecting
- Analysis > Find Similar
- Analysis > Spatial Overlay
- Analysis > Thematic Mapping
- Point and Ranking based Reports > Market Ranking Report
- Point and Ranking based Reports > Summarize Points Report
- Point and Ranking based Reports > Customer Demographic Comparison Report
- Point and Ranking based Reports > Business Report
- Reports > Benchmark Report
- Reports > Custom Report Templates
- Data > Analysis Layer Setup
- ArcGIS Layer Properties > Fields Visibility tab

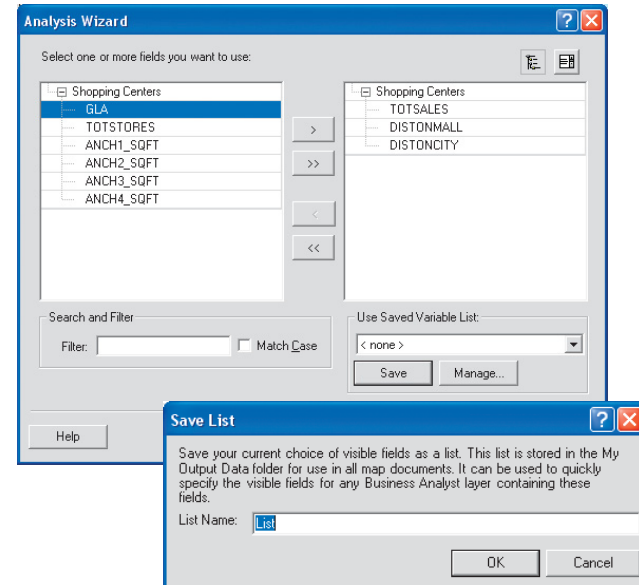


## Saving your custom list

You can save your custom list while working in the dialog boxes that contain Use Saved Variable List as described on the previous page.

1. Choose the fields that you want to work with from the Available variables window.
2. Click Save.
3. Type a name for the list and Click OK.

The new list is available from the Use Saved Variable List drop-down menu.



## Using existing summary report lists

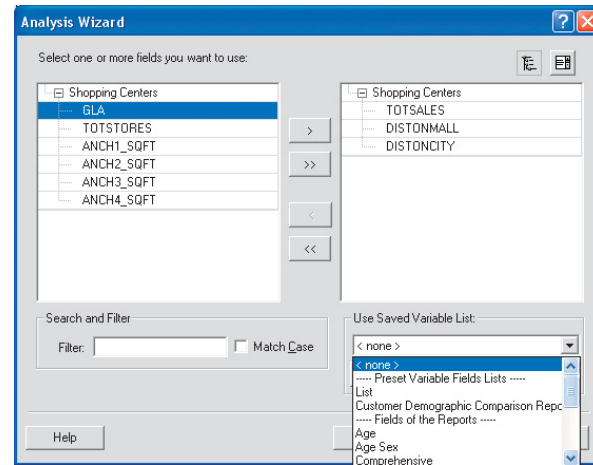
You can access all Summary Report variable lists from the Use Saved Variable List.

1. Click the Use Saved Variable List drop-down menu.

A complete Summary Reports listing appears as well as any custom report templates you have created. Select the report that contains the variables for which you want to work.

The variables from the selected report load into the Selected variables window.

2. Click Next.



## Study areas

### IN THIS CHAPTER

- **Virtual versus defined study areas**
- **Using ZIP Codes**
- **Creating a study area from a map and a list**
- **Using the entire United States**
- **Clipping your data to only include the study area**
- **Using a currently selected shape on the map**
- **Selecting subgeographies inside an existing study area**
- **Using a simple ring**
- **Managing existing study areas**

In Chapter 2, ‘Tutorial’, you learned that performing geographic analysis can begin with creating a study area, which you did by choosing a study area from a list. This chapter shows you other ways to create a study area as well as other tasks you can complete using the Study Area Wizard.

A *study area* is defined as the geographic area in which you perform analysis. Analysis, reports, and any other output from Business Analyst will be limited by the extent of your study area. Customer points, store points, and analysis results that are added to the map, while a study area is the active extent, will be added to both the map and the table of contents as layers in the Study Area group layer.

You can choose from a map or a list to select the geographic area and level of geography, or you can make your own shape if the study area you want isn’t available. For instance, you might want the lower right corner of Dallas County or perhaps an area that includes sections of two states. You can also choose ZIP Codes, counties, Core-Based Statistical Areas (CBSAs), Designated Market Areas (DMAs), states, or the entire United States.

When you create a study area, it is automatically saved to your hard drive in the My Output Data folder. This folder was placed on the C: drive of your computer when ArcGIS Business Analyst was installed. You can create another My Output Data folder on another drive using the Business Analyst Preferences dialog box.

# Virtual versus defined study areas

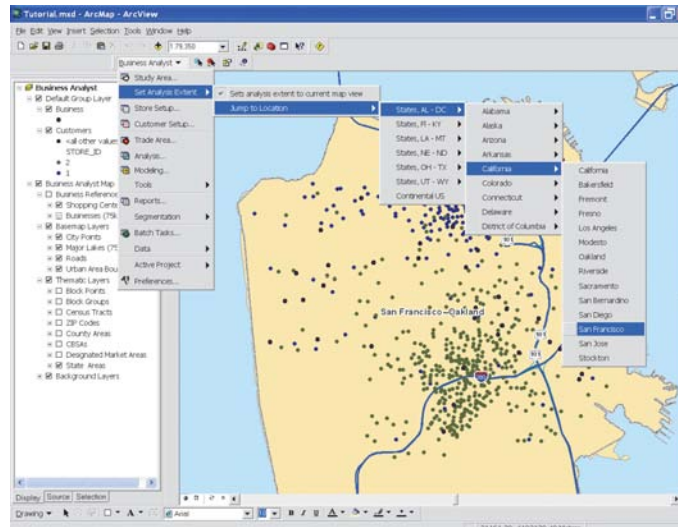
ArcGIS Business Analyst contains two different kinds of study areas: virtual study areas and defined study areas. A virtual study area is simply the current extent of your map document; it never has a defined boundary. A defined study area has a boundary.

You can use Set Analysis Extent as an alternative to bookmarks. Any preset choices in the Bookmark menu would leave the current map view of the map checked, and all analyses would only work on the visible extent. For example, if you were working on a defined study area in the Atlanta, Georgia area and used an ArcMap bookmark you had created to move your map view to Detroit, Michigan, the analysis extent would still be set for Atlanta. The disadvantage of using bookmarks to navigate the map is that they don't change the active extent for analysis purposes.

The benefit to the virtual study area is that it allows you to set the current extent efficiently rather than scrolling through a long list of bookmarks while also updating your analysis extent.

The virtual study area is created using Set Analysis Extent in the Business Analyst menu. Use the Jump to Location option, which can be used to quickly navigate the map to a particular state or major CBSA location and, at the same time, change the analysis extent to the area to which you are jumping.

It is important to note that a study area boundary limits the results of any analysis, reports, or any other form of output from Business Analyst and, therefore, will only include data that intersects the study area. If you were creating a customer-derived trade area, it would not be included in the final output of this tool. If you create your study area to encompass all of your customers then this defined extent will ensure that your entire customer base is used in the analysis.





# Using ZIP Codes

If you know the ZIP Codes where most of your customers and stores are located, you have an easy, accurate way to create a study area. For instance, if you send bulk mailings of advertising to a group of ZIP Codes, you might want to create a study area of those ZIP Codes.

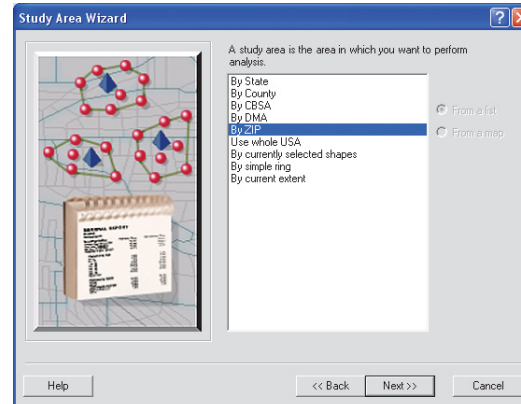
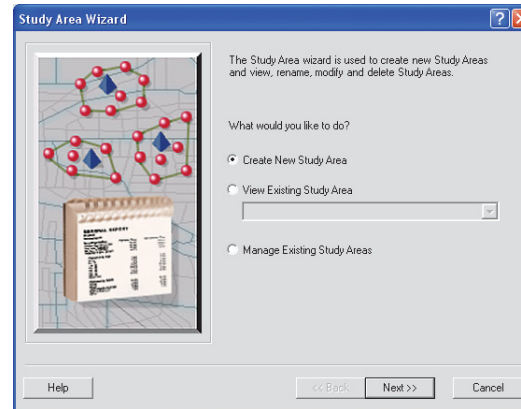
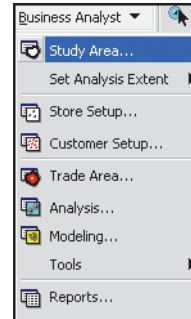
Using the Study Area Wizard, define the ZIP Codes you want to include in your study area or use a wildcard (\*) after two, three, or four numbers to include all ZIP Codes with a certain number sequence.

The ZIP Code equivalent in Canada is a Forward Sortation Area (FSA). These FSA boundaries contain 3-digit codes to help organize and standardize mail delivery.

1. Click the Business Analyst drop-down menu and click Study Area.

The Study Area Wizard opens.

2. Click Create New Study Area, then click Next.
3. From the list of study area options, click By ZIP, then click Next. ▶



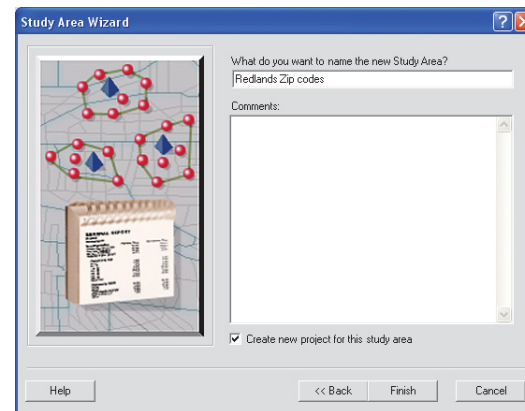
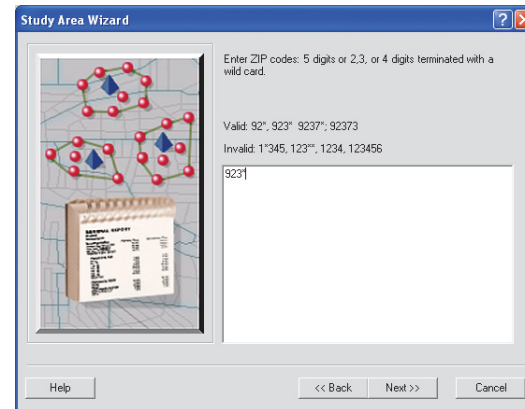


## Tip

### Using wildcards

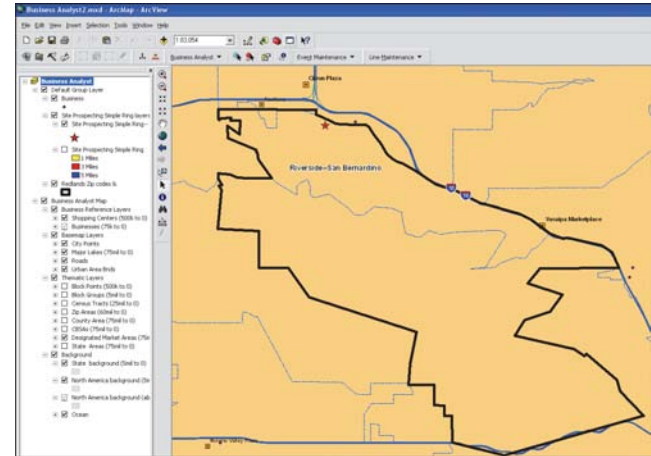
To include all ZIP Codes with a certain number sequence, use a wildcard (\*) after two, three, or four numbers.

4. Enter the ZIP Codes you want to include in your study area in the text field, then click Next.
5. Type a unique name for the study area. Note that you can use spaces or special characters. ►



6. Click Finish.

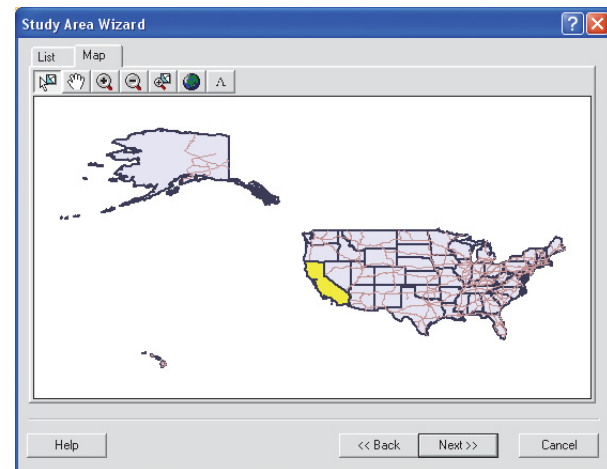
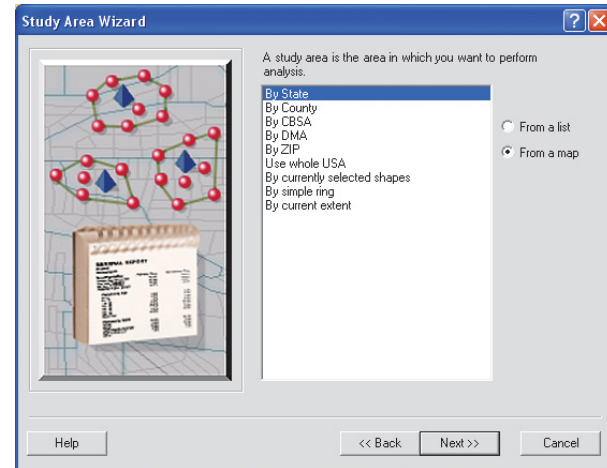
The study area you defined by the ZIP Codes you entered appears on the map in black.










## Creating a study area from a map

To create a study area from a map, define what you want the map to show, then point and click or drag a box to select the study area.

1. Click the Business Analyst drop-down menu and click Study Area.
2. From the list of options, click one of the following:
  - By State
  - By County
  - By CBSA
  - By DMA
  - By ZIP
  - Use whole USA
  - By currently selected shapes
  - By simple ring
  - By current extent
3. Click From a map, then click Next.
4. Click the Select Features tool, then click an area on the map.  
The selected features are highlighted in yellow. ►



-  Select Features
-  Pan
-  Zoom In
-  Zoom Out
-  Zoom to Selected Features
-  Full Extent
-  Annotation

### Tips

To select more than one option, click and drag a box around the areas on the map or hold Shift down and click each area to select it.

Features remain highlighted until you make a different selection or deselect them.

To deselect a feature, click the Select Features tool, then hold Shift down and click the areas on the map you want to deselect.

Use the Zoom In tool to see the area you want more clearly.

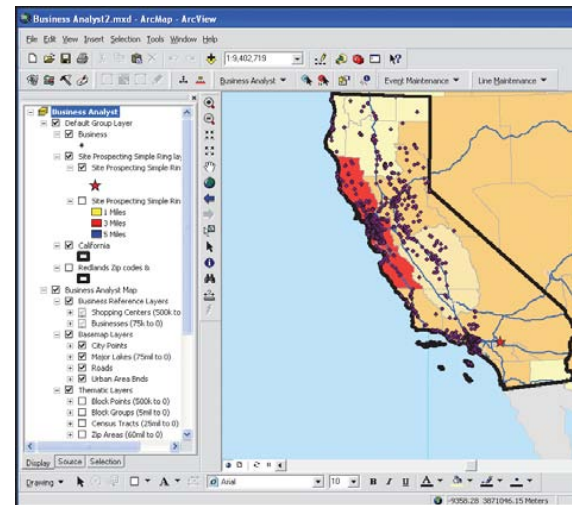
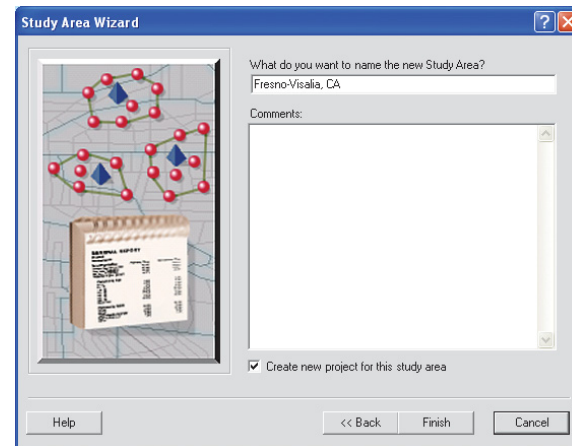
Click the Annotation tool to display names on the map.

5. Click Next.
6. Type a unique name for your study area. You can use spaces and special characters. Enter any comments in the Comments text box, then click Finish.

The study area you defined appears on the map.

Business Analyst for Canada contains the following Study Area geography options:

- By Province
- By Federal Electoral District
- By Census Division
- By CMACA
- By FSA
- Use whole Canada
- By currently selected shapes
- By simple ring
- By current extent



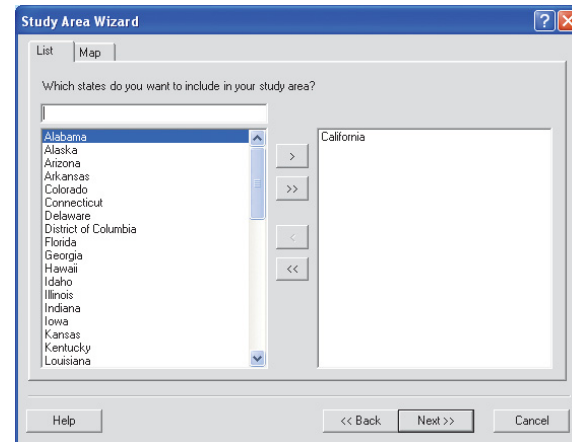
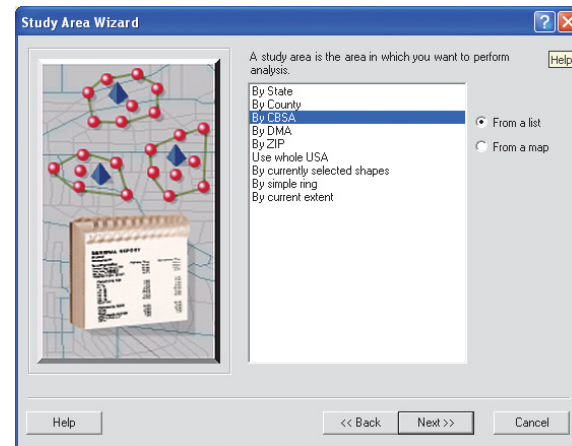
## Choosing a study area from a list

To create a study area from a list, define what you want the list to show, then select what you want to include in your study area.

### Tips

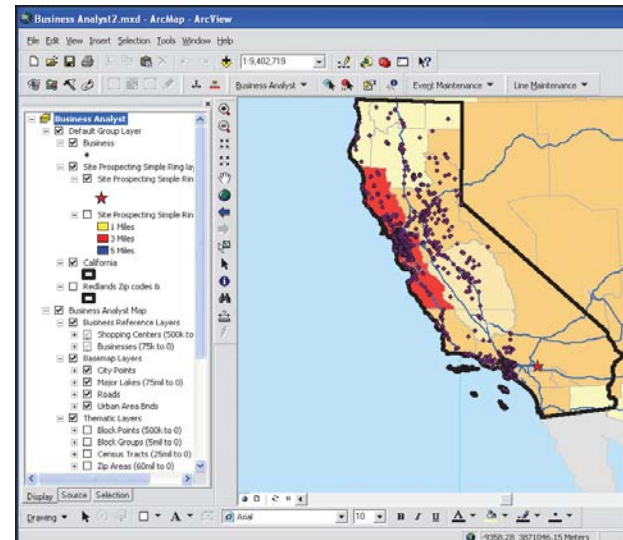
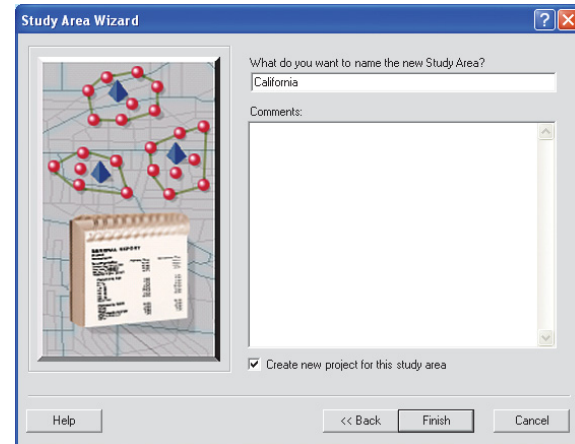
*You will only see the option for Currently selected shapes if you have features selected within ArcMap.*

1. Click the Business Analyst drop-down menu and click Study Area.
2. From the list of options, click one of the following:
  - By State
  - By County
  - By CBSA
  - By DMA
  - By ZIP
  - Use whole USA
  - By currently selected shapes
  - By simple ring
  - By current extent
3. Click From a list, then click Next.
4. Scroll to or type the name of the state you want to define in the text box, then click the right arrow button to move it to the right column. ►



5. Click Next.
6. Type a unique name for your study area. You can use spaces and special characters. Enter any comments in the Comments text box, then click Finish.

The study area you defined appears on the map.



## Using the entire United States

Creating a study area of the United States allows you to look at the overall distribution of your data before deciding on which areas to focus.

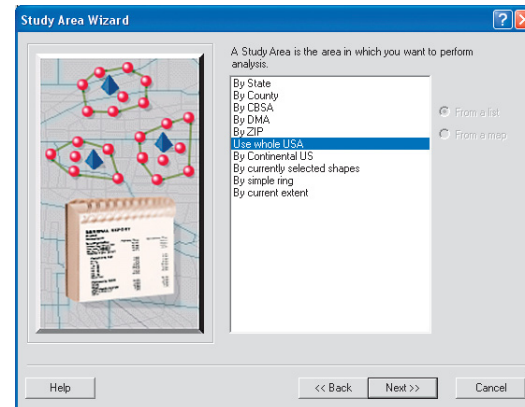
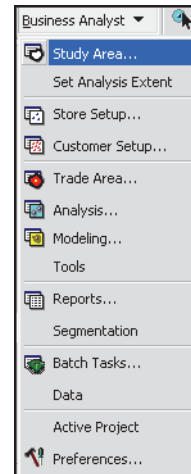
If you know that your customer base is nationwide, using the entire United States is a good way to create a study area. You can also use this option if you don't know exactly where your customers are located. After you geocode them and can see their location, you can create a more specific study area by drawing a shape or selecting a trade area you've created.

When you create a study area using the entire United States, drive time will be calculated from the compressed data, even for multiple store locations across the United States.

### Tips

*Selecting By Continental US to create a Study Area will produce a Study Area without Alaska and Hawaii.*

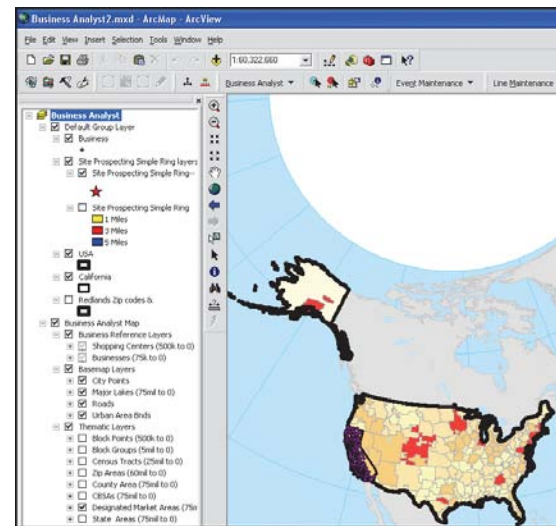
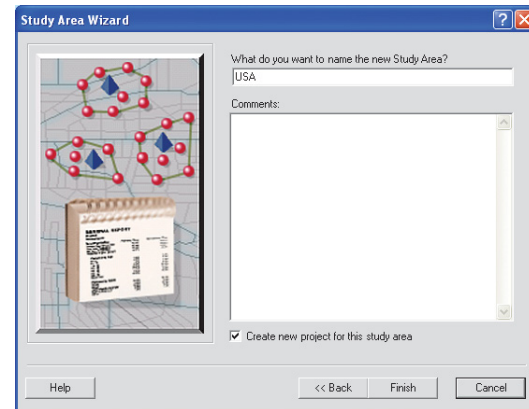
1. Click the Business Analyst drop-down menu and click Study Area.
2. From the list of options, click Use whole USA, then click Next. ▶





3. Type a unique name for your study area. You can use spaces and special characters. Enter any comments in the Comments text box, then click Finish.

The study area of the United States opens on the map. You can use the Zoom In tool to draw a box around the continental United States, if that's your area of interest, to zoom to it.



## Clipping your data to only include the study area

When you create a study area, you can set the properties in the layer's data frame to clip all data to only include the study area shape.

1. Right-click the map area and click Properties.

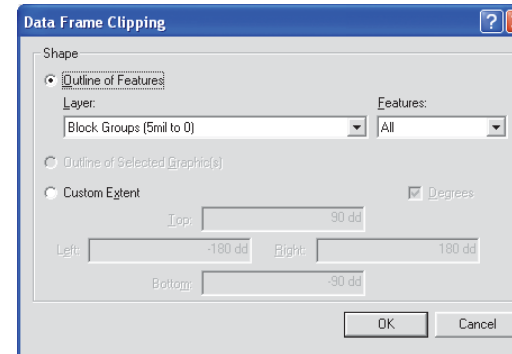
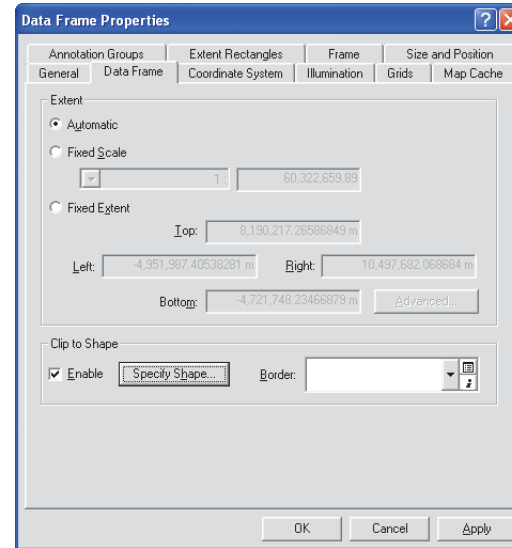
The Data Frame Properties dialog box opens.

2. Click the Data Frame tab.
3. Check the Enable check box.
4. Optionally, click the Specify Shape button to specify the shape you want.

The Data Frame Clipping dialog box opens.

- a. To outline the features, click Outline of Features, click the Layer drop-down menu and specify the layer you want to use, then click the Features drop-down menu and specify the features you want to use.
  - b. To set a custom extent, click Custom Extent and type the information in the text boxes.
  - c. Click OK.
5. Optionally, you can change the background color by clicking the Frame tab, then clicking the Background drop-down menu and selecting a color.
  6. Click Apply in the Data Frame Properties dialog box.
  7. Click OK.

The data clipping process may take several minutes.



## Using a currently selected shape on the map

You can create a study area by drawing a shape manually using the drawing toolbar or by selecting features of an existing shape file. For instance, as in the example shown here, you may find that the study area you first created is larger than the actual area of your customers and stores. Use the drawing tools to draw a shape around the area you want your new study area to include.

You can also use this option to expand your study area if your customer set extends beyond the outline of your study area.

1. On the Drawing toolbar, click the Shape drop-down menu and click the shape you want to draw.

To draw a rectangle, click and drag a box over the area that you want to include in your study area.

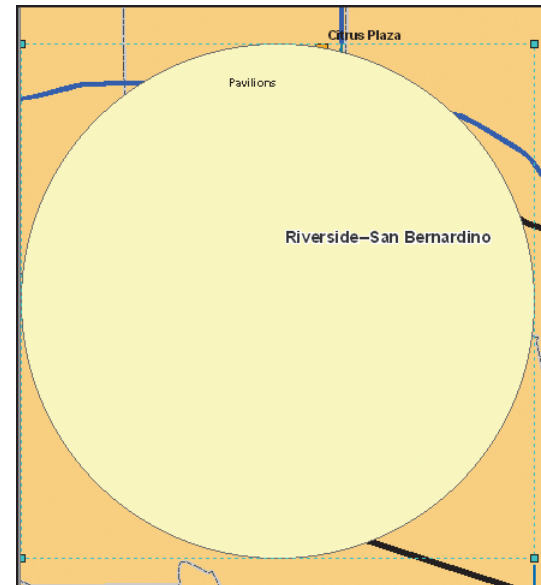
To draw a circle, click and drag a circle over the desired area. The crosshairs indicate the center of the circle.

To draw a polygon, click once on each vertex of the shape you want to draw and double-click to finish.

2. If you need to adjust the size of your shape, click the Select Elements tool, then click any of the graphic handles and drag.  
Make sure that the graphic remains selected (the graphic handles should be visible).
3. Click the Business Analyst drop-down menu and click Study Area. ▶



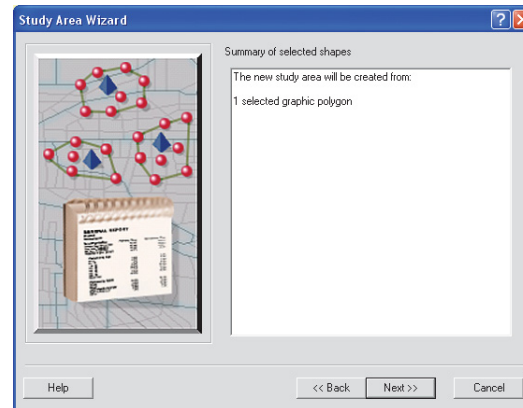
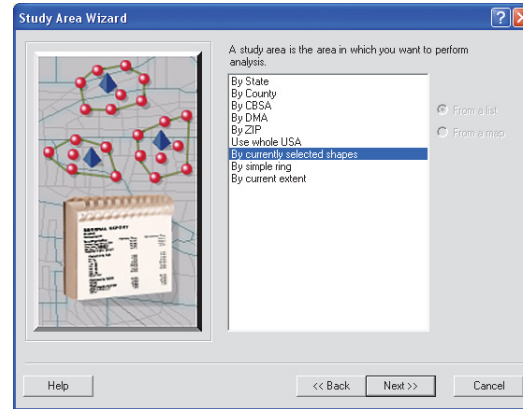
Select Elements tool



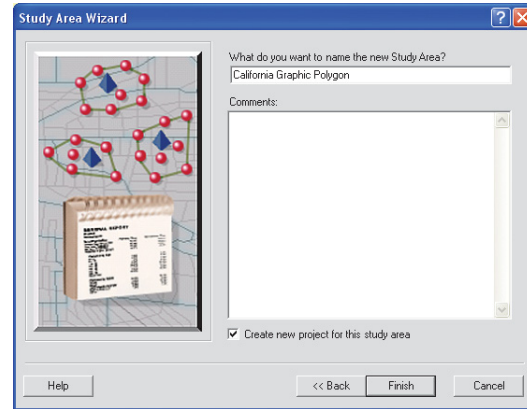
Handles for resizing

4. Click Create New Study Area, then click Next.
5. Click By currently selected shapes, then click Next.

The wizard displays a summary of the selected shapes. ►



6. Type a unique name for your study area. Note that you can use spaces or special characters. ►

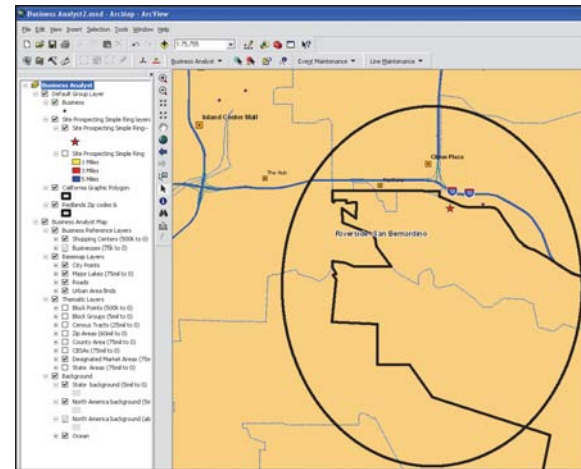
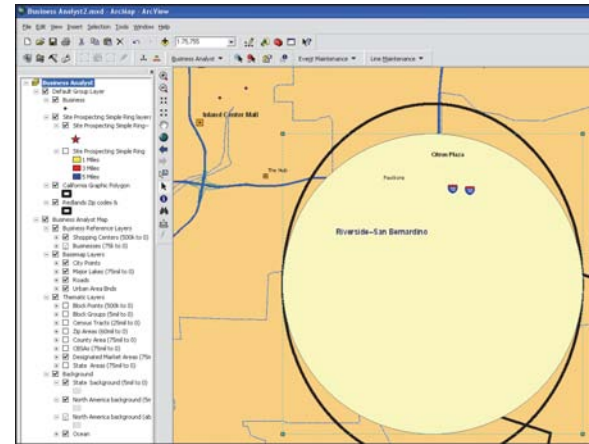


7. Click Finish.

The study area you defined opens.

You can now remove the shape by clicking its center to select it (the graphic handles should be visible) and click Delete.

The new study area is visible on the map.

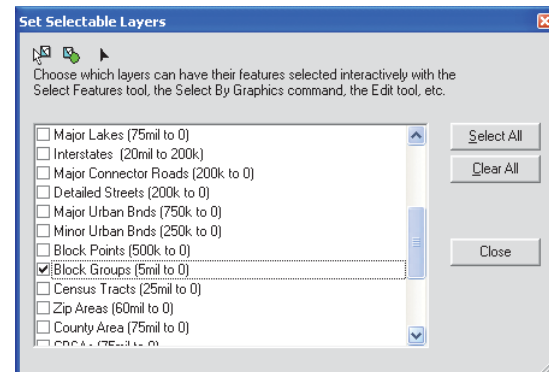
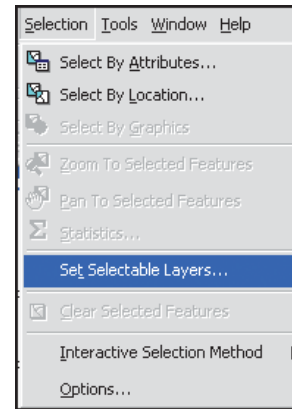


## Selecting subgeographies inside an existing study area

You can create a study area by selecting shapes from an existing study area—for example, suppose you've created a study area of 100 block groups where you send bulk mailings. After adding customers to your study area and performing analysis, you find that the majority of your sales come from 16 of those block groups. You can select those shapes on your study area and create a new one from those 16 block groups.

You can also use a trade area or any other shape in a layer to create a study area.

1. From the ArcMap toolbar, click Selection and click Set Selectable Layers.
2. Click the Clear All button, then scroll down to Block Groups and check the check box.
3. Click Close.
4. In the table of contents, check Thematic Layers and uncheck the Site Map layer as well as any other layers that may obscure your selection of block group shapes. ▶

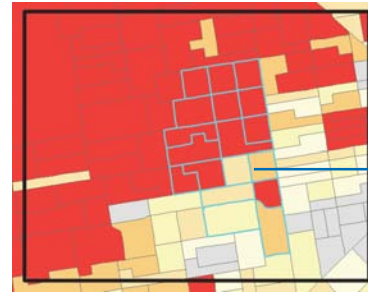




5. Click the Select Features tool on the Tools toolbar and click the block groups you want.

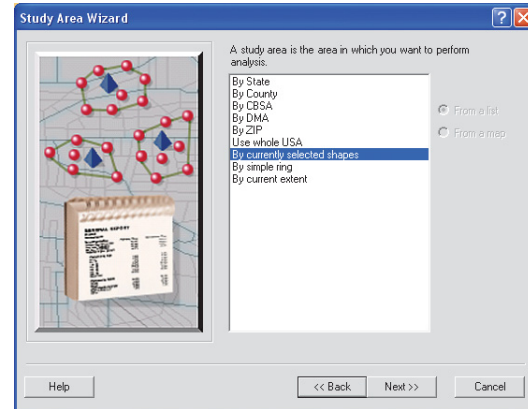
To select more than one shape, hold down Shift as you click.

To deselect a shape, hold down Shift and click the selected feature with the Select Feature tool. ►



Selected block groups are outlined in blue.

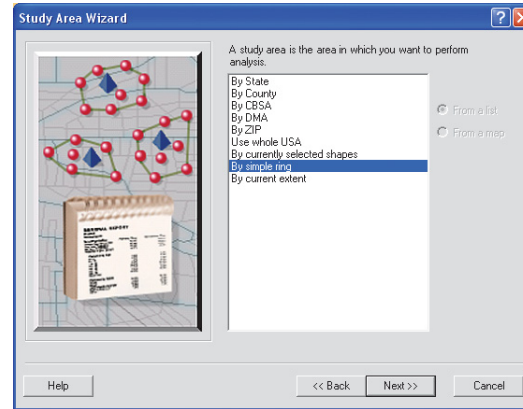
6. Leaving the features selected, click the Business Analyst drop-down menu and click Study Area.
7. Click Create New Study Area, then click Next.
8. Click By currently selected shapes. The wizard panel displays a summary of the shapes that you've selected to define your study area.
9. Click Next.
10. Type a name for your study area.  
You must provide a unique name; you can use spaces or special characters.
11. Click Finish.
12. Deselect the block group shapes by going to the Selection menu and clicking Clear Selected Features.  
The new study area will then be visible.



## Using a simple ring

You can create a study area around a point by specifying the location and entering the radius of the desired ring. The location can be entered using latitude–longitude coordinates or by entering an address.

1. Click the Business Analyst drop-down menu, click Study Area, then click Create New Study Area.
2. From the list of options, click By simple ring.
3. Click Next. ►



## Tip

*When entering the longitude, keep in mind that it must be a negative number.*

4. Enter the longitude and latitude of the site location or click I have an address for the site. The Geocode one address dialog box opens. Enter the address and click OK. Enter the radius of the ring in the Ring Radius text box, click the drop-down menu and select a distance unit from the list, then click Next. ►

**Study Area Wizard**

Site Location

I have coordinates for the site  
Enter the Longitude (X) and Latitude (Y) coordinates in decimal degrees (i.e. Longitude: -96.72766, Latitude: 32.96563) for the site to study.

Longitude:

Latitude:

I have an address for the site

Ring Radius

Select radius for the ring:  Specify distance units:

Help << Back Next >> Cancel

**Geocode one address**

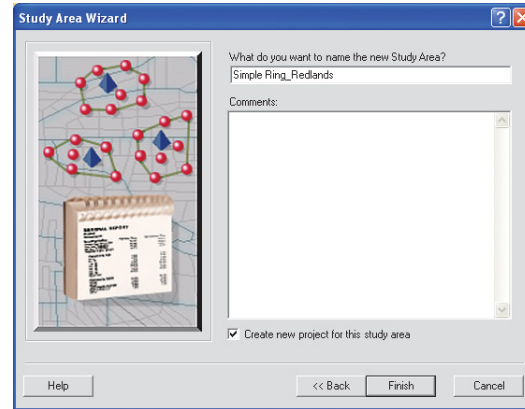
Field	Value
Address	380 New York
Address 2	
City	Redlands
State	ca
ZIP code	92373
ZIP extension	
Firm	

Optional name for the site

Locator Help Options... OK Cancel

5. Type a unique name for your study area; you can use spaces and special characters. Enter any comments in the Comments text box, then click Finish.

The study area you defined appears on the map.

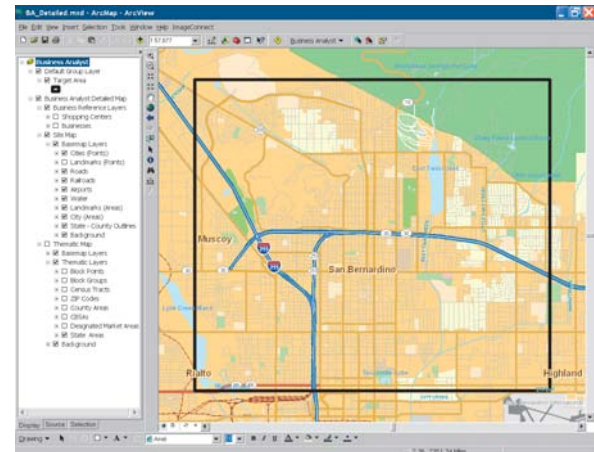
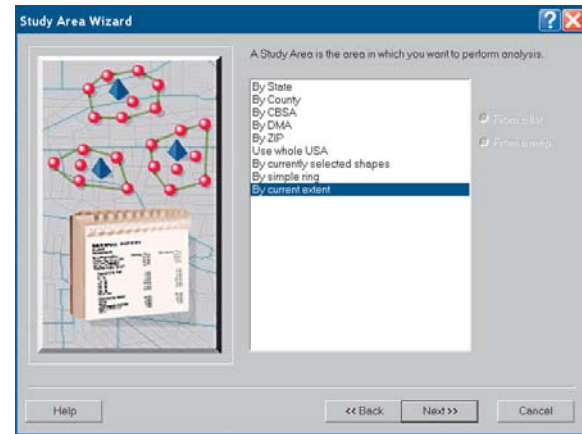


## Using the current map extent

You can create a study area using the current map view area (current map extent) by selecting the Study Area Wizard and choosing By current extent. A study area boundary will be created around the current map view area.

1. Click the Business Analyst drop-down menu, click Study Area, and click Create New Study Area.
2. From the list of options, click By current extent.
3. Click Next.
4. Type a unique name for your study area; you can use spaces and special characters. Enter any comments in the Comments text box, then click Finish.

The study area you defined displays on the map.



# Managing existing study areas

You can use the Study Area Wizard to open a study area you've already created. If you saved the map document that the study area is in before exiting ArcGIS, the study area map will be exactly as you left it.

If you didn't, any customer, store, or analysis layers in your study area won't be visible. You can add them to the map by opening them from their respective wizards. If you made any changes using the Preferences or Thematic Mapping wizards, you'll also need to reset those if you didn't save the map document.

## Tip

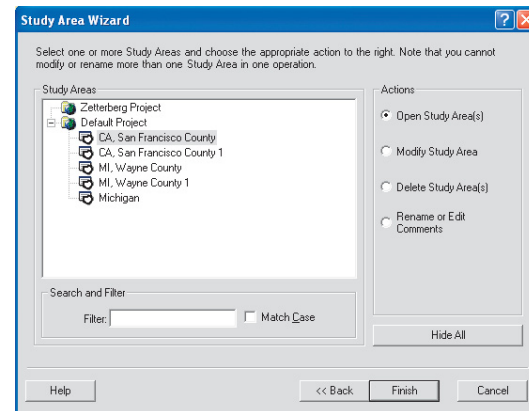
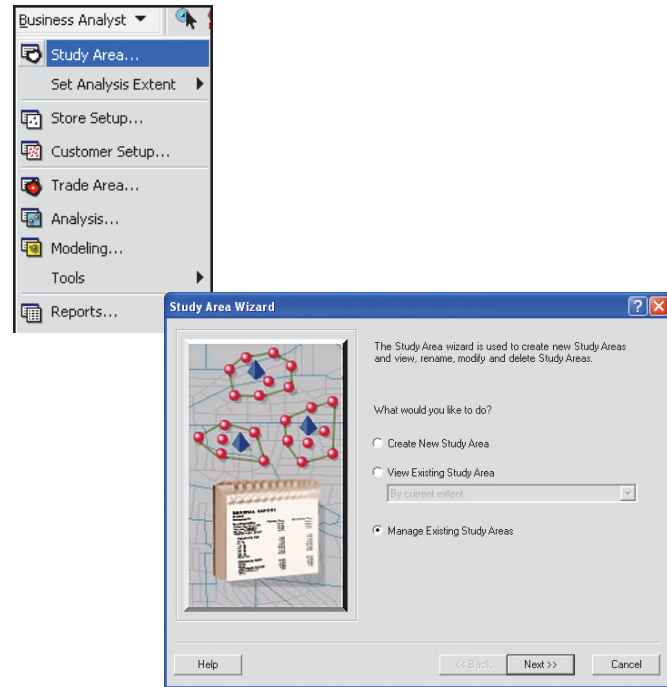
### Using the different managing views

You can view the study areas you are managing in two different ways, Show All and Hide All.

Clicking Show All will display study areas grouped by individual Projects in a tree view.

Clicking Hide All will display all study areas for the active Project only.

1. Click the Business Analyst drop-down menu and click Study Area.
2. Click Manage Existing Study Areas and click Next.
3. Select one or more study areas from the Study Areas section, then select one of the following actions: Open Study Area(s), Modify Study Area, Delete Study Area(s), or Rename or Edit Comments.
4. Click Finish.





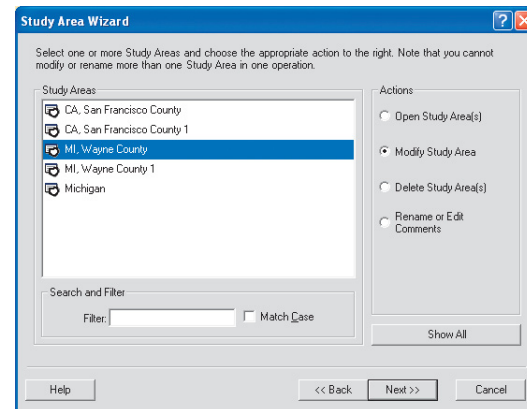
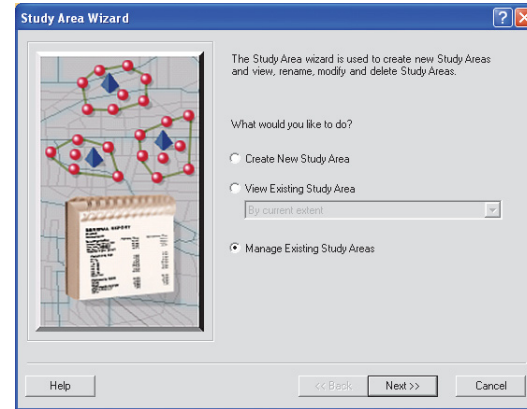
# Renaming or modifying a study area

To rename or modify an existing study area, use the Manage Existing Study Areas option on the Study Area Wizard. When finished with your changes, you can open the study area or cancel the wizard.

1. Click the Business Analyst drop-down menu and click Study Area.
2. Click Manage Existing Study Areas and click Next.
3. Click the study area you want to edit, then click Rename or Edit Comments or Modify Study Area, then click Next.
4. If you chose Rename or Edit Comments, enter the new name in the text field, enter any comments, and click Finish.

If you chose to modify the study area, follow the Study Area Wizard to make your changes to the study area.

Click Finish when you're finished modifying the study area.



## Deleting a study area

You can delete a study area by using the Study Area Wizard. Deleting a study area removes it permanently from the My Output Data folder. If you've saved the study area to a map document and that map document is open when you delete the study area, it will also be removed from the map document. Deleting a study area permanently removes any layers or analysis results associated with the study area from Business Analyst. The original files you used aren't removed from your hard drive.

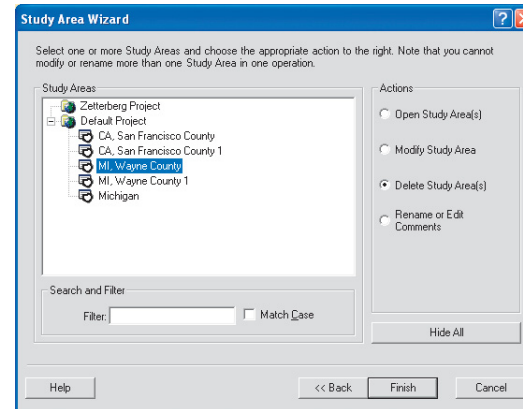
### Tip

#### Removing a study area from the visible legend

*To remove a study area from the visible legend, right-click the layer and click Remove. Your study area remains in your .mxd file for future use but is no longer in your table of contents or visible on your map. If you go to the Study Area Wizard dialog box and choose Manage Existing Study Areas, the study area will be available to reopen.*

1. Click the Business Analyst drop-down menu and click Study Area.
2. Click Manage Existing Study Areas and click Next.
3. Click the study area you want to delete, then click Delete Study Area(s).
4. Click Finish. A dialog box opens asking if you want to proceed. Click Yes to delete the study area.

The selected study areas are permanently deleted from Business Analyst.

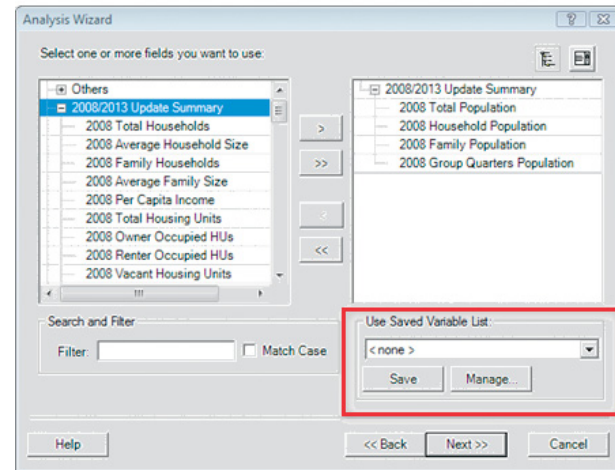


## About custom variable lists

In various dialog boxes, you can create and save custom variable lists for use in reports, analyses, trade areas, and tools. This is helpful when you are repeating tasks with the same demographic variable outputs. In addition to creating customized lists, the variables are provided in each standard Summary Report—for example, you can run a Spatial Overlay for a trade area and use every variable included in the Demographic and Income Report. The variables will appear as fields in the attribute table so you don't have to manually load each variable individually.

The Used Saved Variable List feature is available within the following dialog boxes:

- Trade Area > Grids
- Analysis > Customer Prospecting
- Analysis > Find Similar
- Analysis > Spatial Overlay
- Analysis > Thematic Mapping
- Point and Ranking based Reports > Market Ranking Report
- Point and Ranking based Reports > Summarize Points Report
- Point and Ranking based Reports > Customer Demographic Comparison Report
- Point and Ranking based Reports > Business Report
- Reports > Benchmark Report
- Reports > Custom Report Templates
- Data > Analysis Layer Setup
- ArcGIS Layer Properties > Fields Visibility tab

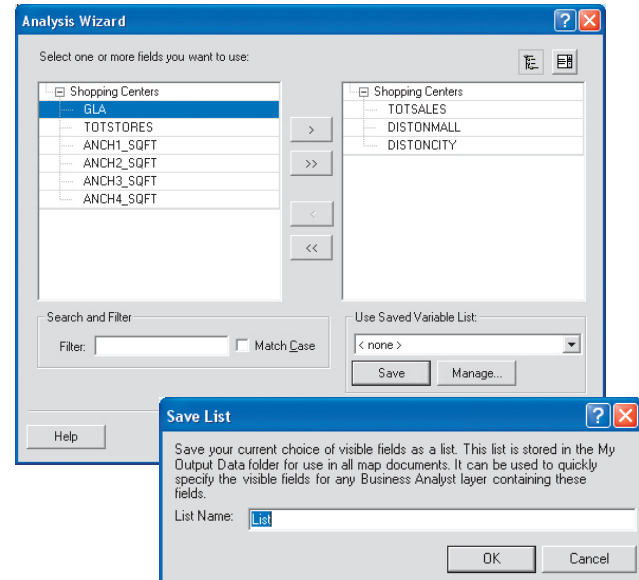


## Saving your custom list

You can save your custom list while working in the dialog boxes that contain Use Saved Variable List as described on the previous page.

1. Choose the fields that you want to work with from the Available variables window.
2. Click Save.
3. Type a name for the list and Click OK.

The new list is available from the Use Saved Variable List drop-down menu.



## Using existing summary report lists

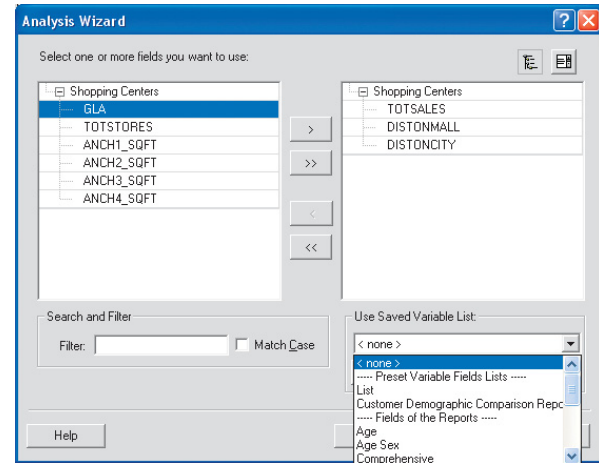
You can access all Summary Report variable lists from the Use Saved Variable List.

1. Click the Use Saved Variable List drop-down menu.

A complete Summary Reports listing appears as well as any custom report templates you have created. Select the report that contains the variables for which you want to work.

The variables from the selected report load into the Selected variables window.

2. Click Next.





# Adding data to Business Analyst

# 6

## IN THIS CHAPTER

- Adding data to your map
- Add customers/stores—tabular data
- Add customers/stores—map ready
- Create empty customer/store layer
- Enter addresses manually
- Add customers/stores—x,y data
- Analysis layer setup
- Adding business listings
- Import Business Analyst datapack
- Setting field visibility
- Manage existing customers/stores
- Substitute your own terms for customers and stores

In the previous chapters, you learned how to create a study area. This chapter shows you how to add your own data such as customers, stores, other points, image files, and street files to your study area using the Customer Setup and Store Setup wizards.

The Customer Setup and Store Setup wizards have two purposes—the first is to allow you to convert *tabular data* (.dbf, .txt, .xls, or relational database management system [RDBMS] format) to points on a map or geocode them using a geocoding engine by ESRI. If you've already been working in ArcGIS and have a shapefile of your points, you can use the wizard to add the shapefile to the map. The second purpose is to identify the layer as a customer or store layer. Any wizards that need customer or store information for analysis will look first at the layers you've identified as your customer or store layers.

You don't have to use the words customers and stores to describe your data. You can set Business Analyst to use the terms that best fit your business on all the wizards. Some terms could be representatives and contacts, clubs and members, agents and prospects, or doctors and patients.



## Adding data to your map

You can add the tabular data of your customers and stores to your map. The Customer Setup and Store Setup wizards geocode your data and place it as points on your map. Whenever data is added to your map, it will be associated with the analysis extent that is active at the time. If the active analysis extent is a study area, the layer will be added to the group layer of that study area. You can change the analysis extent at any time using Set Analysis Extent on the Business Analyst menu. Additionally, any data associated with your store or customer file will be appended to the shape file through the store or customer setup tool.

Your tabular data can be in the form of a .dbf file, a comma- or tab-delimited .txt file, .xls file, or an RDBMS. If it's an RDBMS, you must first bring the data into ArcGIS before you can set it up with a wizard.

Both the Customer Setup and Store Setup wizards contain the same geocoding dialog box that will geocode points on the map by Address/City/State/ZIP Code (optional), Address/ZIP, ZIP, or ZIP+4. The more information you can provide, the better your geocoding results will be. If you don't have addresses in your database and will be geocoding by ZIP or ZIP+4, click ZIP or some other database field in the Address drop-down menu and the ZIP drop-down menu on the geocoding dialog box. If your database contains latitude–longitude coordinates—this means the data has already been geocoded or the coordinates have been obtained using a global positioning system (GPS)—click the Business Analyst drop-down menu, click Store Setup, click Create New Store Layer and click XY/GPS data to add the database to the map by latitude–longitude.

Geocoding by ZIP Code places the customer or store point at the center point (centroid) of the ZIP Code. Because of this, the point locations are less accurate than geocoding by address, city, and state, which give an address range. However, using address, city, and state can still result in multiple points getting geocoded at one location because the customer file might contain names of all the people in a household.

### **Adding data using the Add Data button on the ArcMap toolbar**

You can use the Add Data button on the ArcMap toolbar to add data to your map. Click the Add Data button, browse to the data you want to add, then click Add. This will add the data to the map on the Source tab of the table of contents, but you'll still have to geocode the data's attribute table on the map to make it available for customer or store setup. This is done using the ArcMap menu by clicking Tools, pointing to Geocoding, then clicking Geocode Addresses. After geocoding the database, you'll be able to use it in either the Customer Setup or Store Setup wizard.

## Adding customers from tabular data to your study area

The following task shows you how to add customers or stores to your study areas using the Customer Setup Wizard. In this task, you'll add the customers to your study area as tabular data.

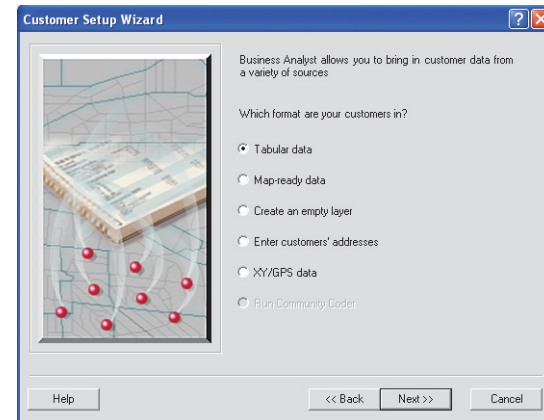
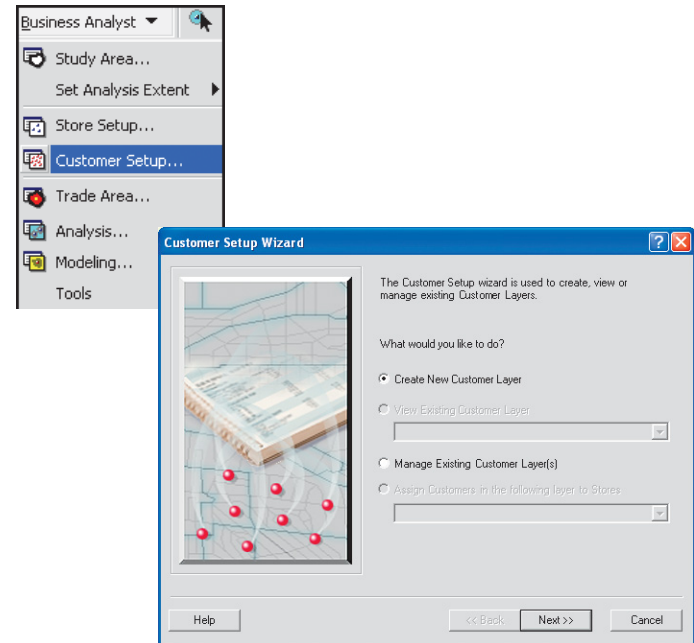
### Tip

#### Analysis extent

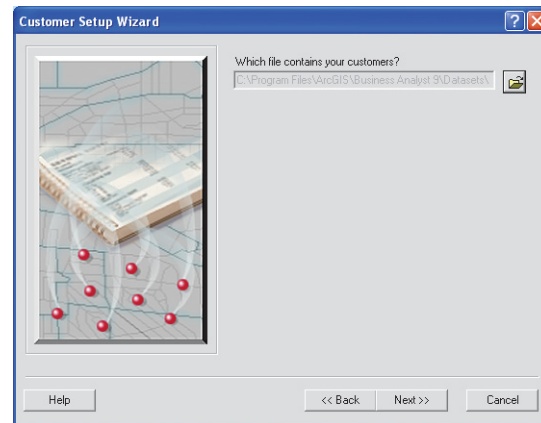
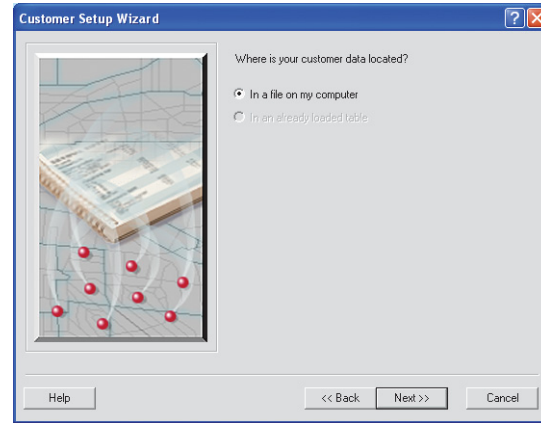
*Confirm that the analysis extent is set as you want. Any layer added to the map while an extent is active will be associated with that analysis extent.*

## Adding customers to your study area using tabular data

1. In ArcMap, open the map for which you want to add a customer layer. For example, start with Business Analyst.mxd and save it to a new map document with a name of your choice.
2. Click the Business Analyst drop-down menu and click Customer Setup. The Customer Setup Wizard opens. Click Create New Customer Layer, then click Next.
3. Click Tabular data, then click Next.



4. Click In a file on my computer, then click Next.
5. Click the browse button and navigate to the file on your computer that contains your customer data. ►

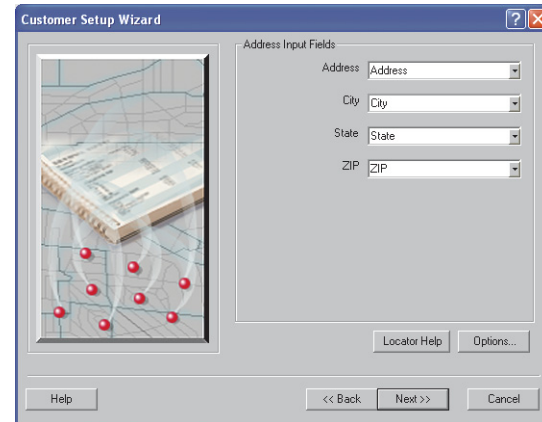
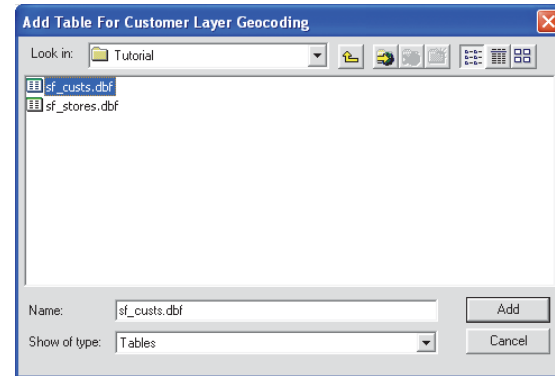


## Tip

*If you are using the ZIP+4 database and locator, ZIP4 will appear as an additional drop-down menu from this dialog box.*

- Click the file that contains the customer data you want to use and click Add, then click Next.
- In the Address Input Fields area, click the drop-down menus to define your customers' locations, then click Next.

If you don't have the information for a specific field, click the drop-down menu for that field and click <none>. ►



## Tip

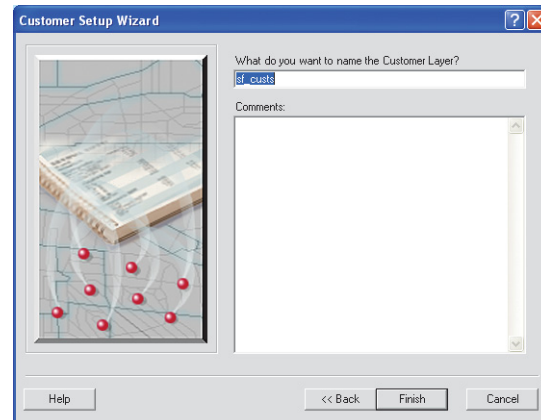
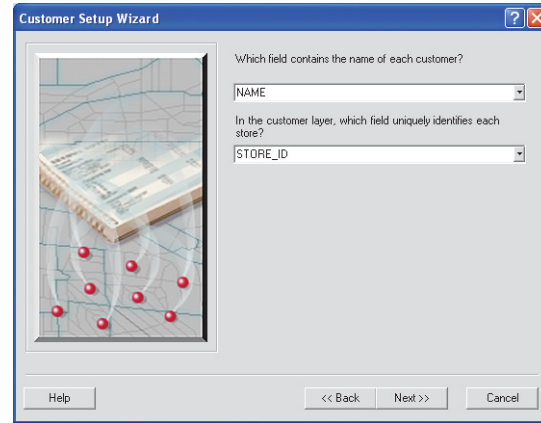
### Analyzing customers


*It is important to note that for Business Analyst to analyze your customers, each one must be uniquely identified. You need to have a field in your customer database that has a unique name or number for each customer.*

8. Click the first drop-down menu and click the field that contains the name of each customer. Click the second drop-down menu to choose the field that uniquely identifies each store, then click Next.

The second drop-down menu is required if you are using the analysis and trade area tools that require association with the store and customer such as Customer Derived Trade Areas.

9. Type the name of the customer layer in the text box, type any comments, then click Finish. ►



- 
10. If you're using the Business Analyst USA Geocoding Service, all records will be geocoded.

Your customer points appear as a layer in your map. A shapefile (map-ready) version of your data is created and stored in the My Output Data\Projects\Your Project\CustLayers folder.

## Adding stores from tabular data to your study area

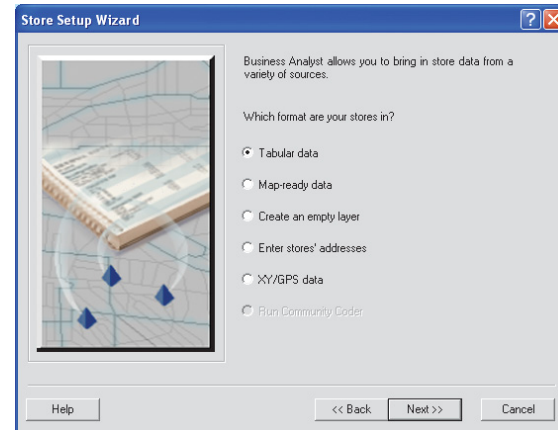
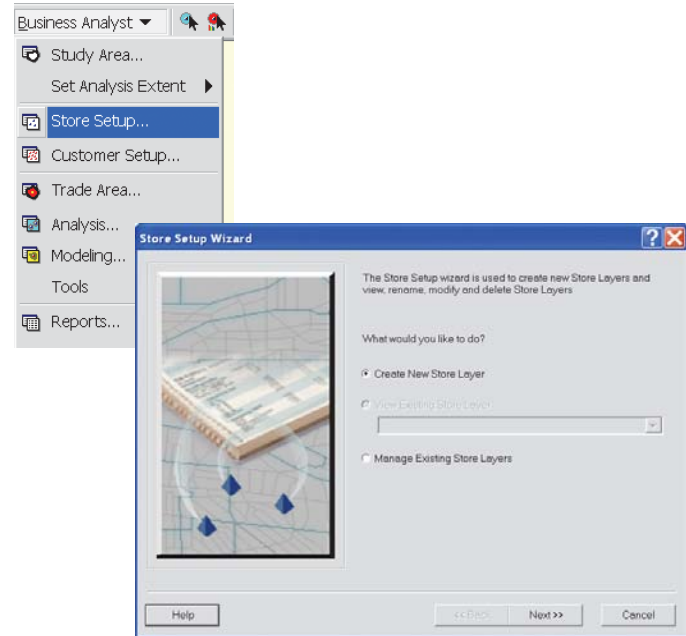
The following task shows you how to add stores to your study area using the Store Setup Wizard. In this task, you'll add the stores to your study area as tabular data.

### Tip

#### Adding Excel tables

You can add Microsoft Excel data into Business Analyst using the Store or Customer Setup wizards. When you locate the .xls file, you need to add each worksheet tab individually. After the desired worksheet is added, the wizard will walk you through the remaining setup process.

1. In ArcMap, open the map to which you want to add a store layer (for example, Business Analyst.mxd).
2. Click the Business Analyst drop-down menu and click Store Setup.
3. Click Create New Store Layer, then click Next.
4. Click Tabular data, then click Next.



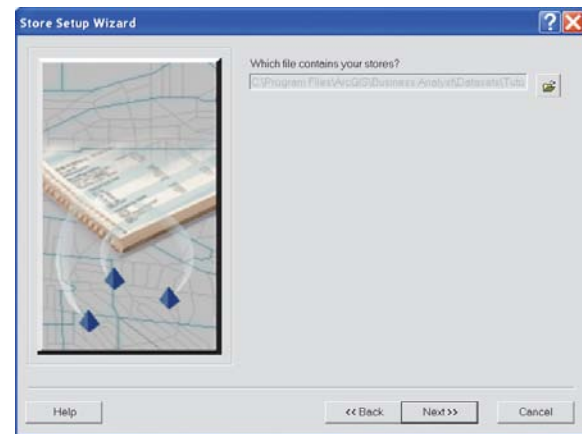
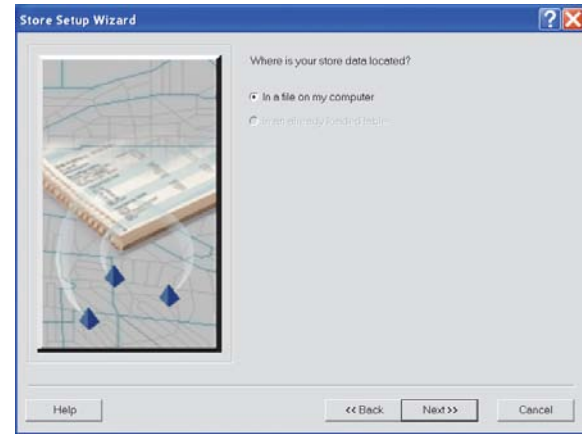


## Tip

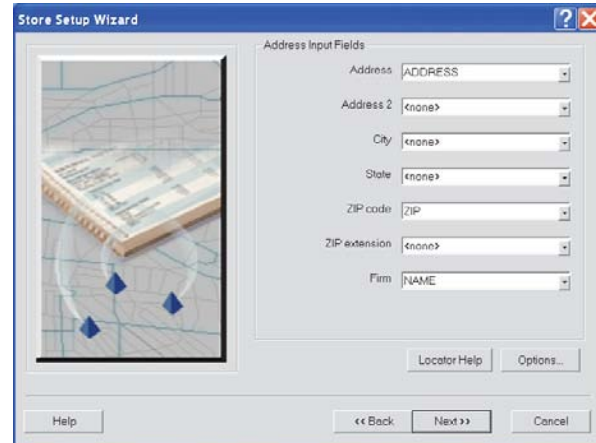
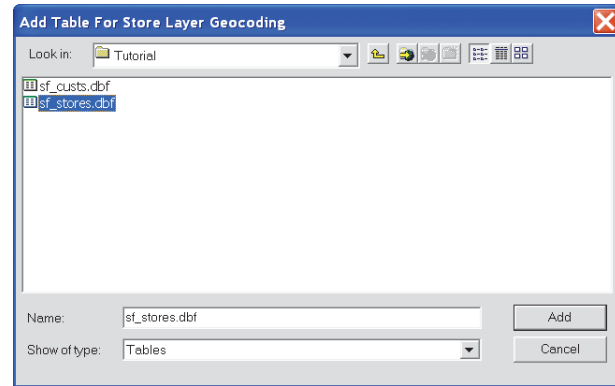
### Analyzing stores

*It is important to note that for Business Analyst to analyze your stores, each one must be uniquely identified. If you don't have a field in your database that has a unique name or number for each store, Business Analyst can create it for you.*

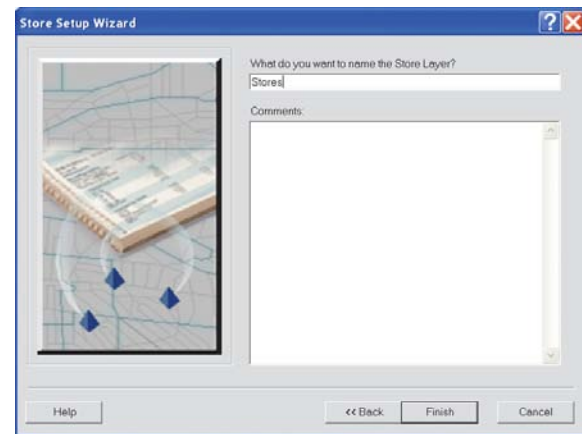
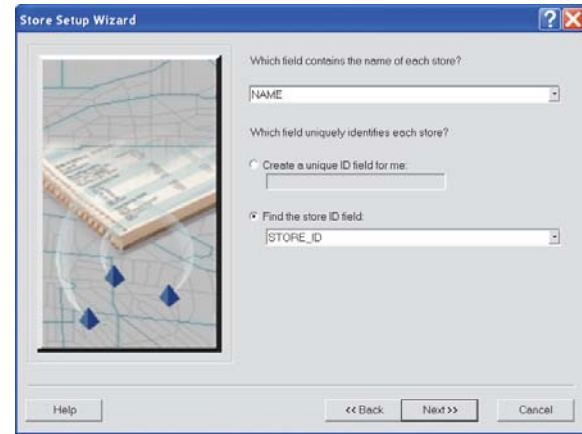
5. Click In a file on my computer, then click Next.
6. Click the browse button to navigate to the file that contains your store data. ►



- In the Add Table For Store Layer Geocoding dialog box, click the file that contains your store data, then click Add. The file path is entered in the text box. Click Next to continue.
- In the Address Input Fields dialog box, click the drop-down menus to define your store location, then click Next. If you don't have the information for a specific field, click the drop-down menu for that field and click <none>. ►



9. Click the first drop-down menu and click the field that contains the name of each store. If you don't have one, click <none>.
10. If you don't have a store ID field, click Create a unique ID field for me. Business Analyst automatically names the field BA\_New\_ID, but you can specify another name. For Business Analyst to analyze each of your stores, each one must be uniquely identified.
11. If you have a store ID field, click Find the store ID field, then click the drop-down menu to choose it.
12. Type the name of the store layer in the text box, type any comments, then click Finish. Your store points appear as a layer in your map. A shapefile (map-ready) version of your data is created and stored in the My OutputData\Projects\Your Project\StoreLayers folder.



## Adding customers or stores from map-ready data

A *shapefile* is a type of file created in ArcGIS that contains the geographic location of your customers or stores and the attributes behind them. In other words, a shapefile contains the information needed to place your points on the map as well as the data associated with each point.

If your customers or stores are in a shapefile, this means they have already been geocoded—the shapefile just needs to be added to the study area and identified as a customer or store layer. Shapefiles have a .shp extension.

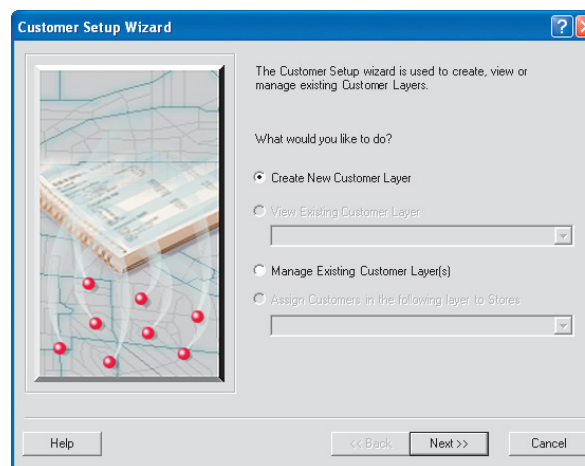
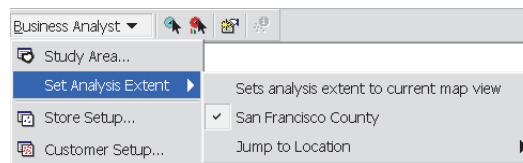
### Tip

#### Using the Store and Customer Setup wizards for this task

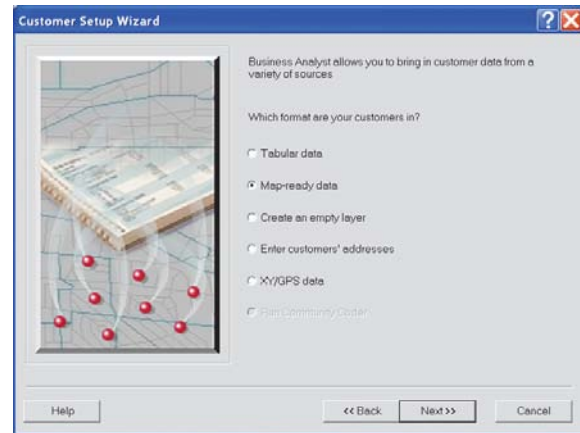
*The Customer Setup and Store Setup wizards are identical for this task. You can follow the same steps using the Store Setup Wizard to accomplish this with a store layer. This example uses the Customer Setup Wizard for a customer layer.*

## Adding customers from map ready data

1. In ArcMap, open the map document for which you want to add customers.
2. Click the Business Analyst drop-down menu and point to Set Analysis Extent to verify your active analysis extent. Any layers added to the map will be put in the group layer associated with this analysis extent.
3. Click the Business Analyst drop-down menu and click Customer Setup.
4. Click Create New Customer Layer, then click Next. ▶



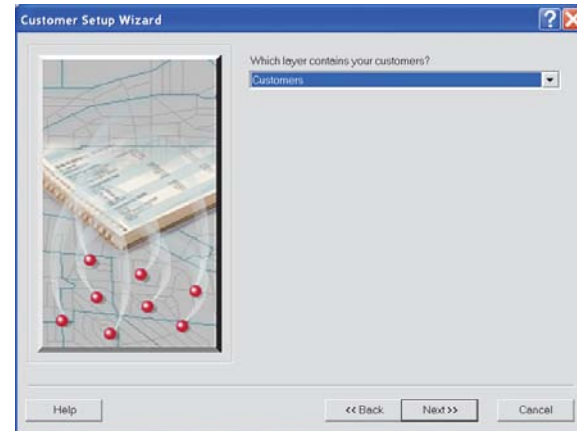
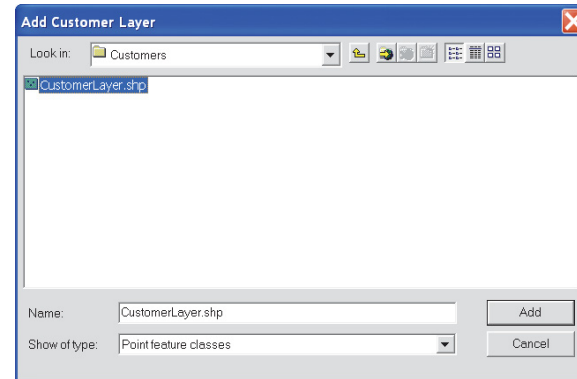
5. Click Map-ready data, then click Next.
6. Click In a file on my computer, or In my current map table of contents, then click Next. ►



7. If you selected In a file on my computer, click the browse button to navigate to the file that contains your customer data, click the file name and click Add. Click Next to continue.

8. If you selected In my current map table of contents, click the Which layer contains your customers drop-down menu to choose a layer, then click Next.

If the file isn't in the list, click Back and click In a file on my computer. ►

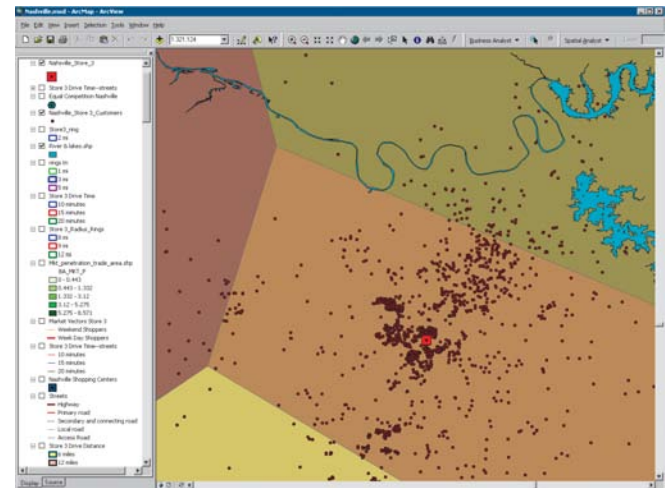
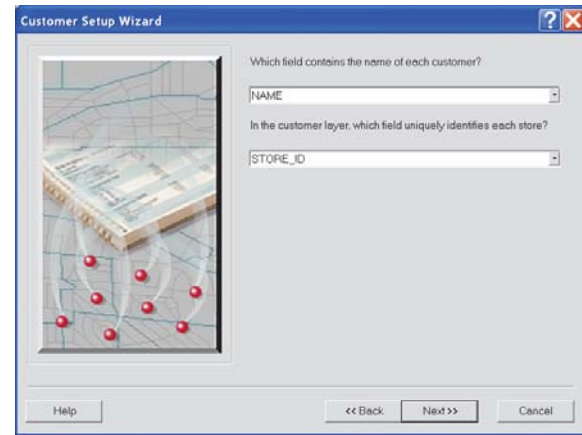


- Click the drop-down menu to choose the field that contains the name of each customer. Click the second drop-down menu to choose the field that uniquely identifies each store in the customer layer.

The second drop-down menu is required if you are using the analysis and trade area tools that require association with the store and customer such as Customer Derived Trade Areas.

- Type a name and comments for your customer layer, then click Finish.

Your customer points appear as a layer in your map.

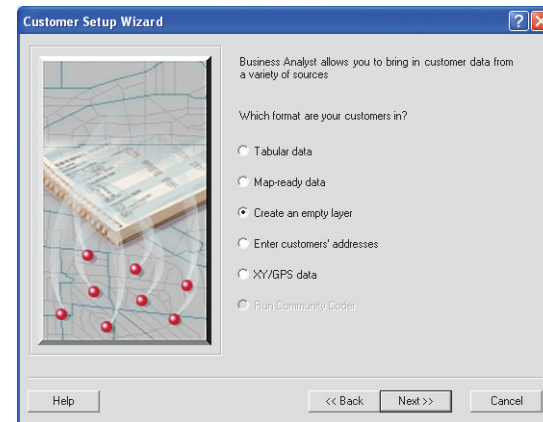
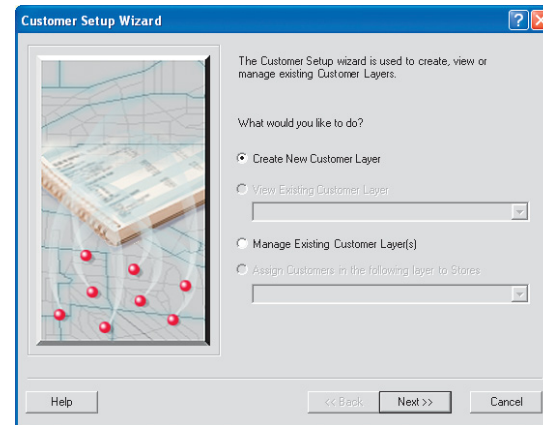




## Creating an empty customer or store layer

You can use the Customer Setup Wizard to build an empty customer or store layer. Business Analyst allows you to set up a layer and define the field name, field alias, field type, and precision/scale of the field if appropriate. You can go back later and populate the layer with field values.

1. Click the Business Analyst drop-down menu and click Customer Setup.
2. Click Create New Customer Layer, then click Next.
3. Click Create an empty layer, then click Next. ►



4. Click the Add button.

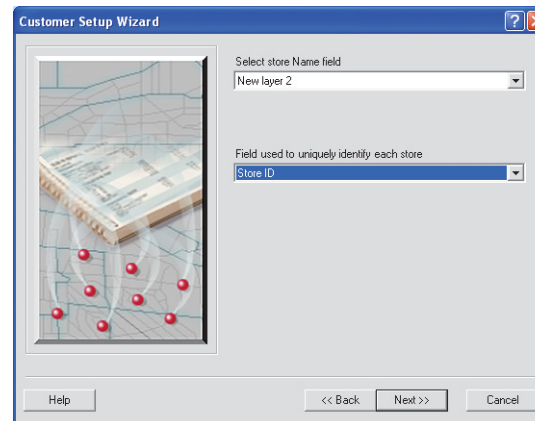
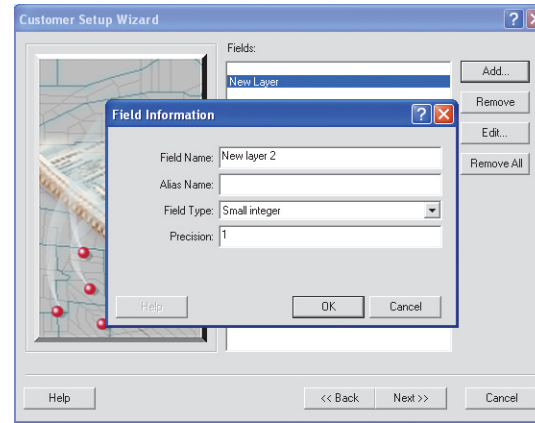
The Field Information dialog box opens. Complete the following information:

- Type a name in the Field Name text box.
- Type an alias name in the Alias Name text box (optional).
- Click the drop-down menu and click a Field Type.
- Type a number in the Precision text box.
- Click OK.

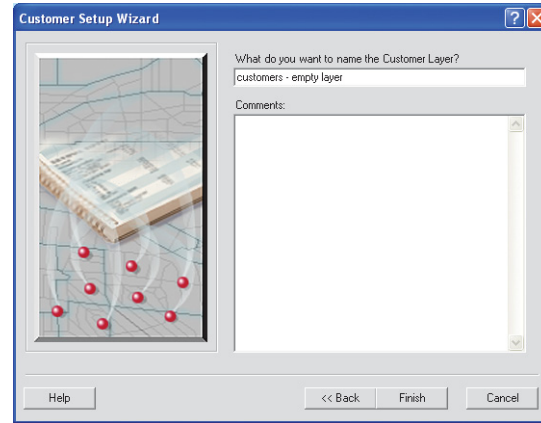
If you want to remove a field, click the field and click Remove. To make changes to a field, click the field and click Edit, make any necessary edits, then click OK. To remove all the fields in the list, click Remove All.

When you're finished adding fields, click Next.

- Click the drop-down menu and click a store name field from the list.
- Click the second drop-down menu and click the field used to uniquely identify each store, then click Next. ►



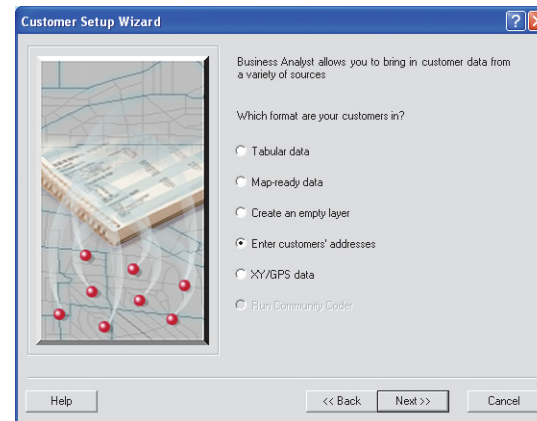
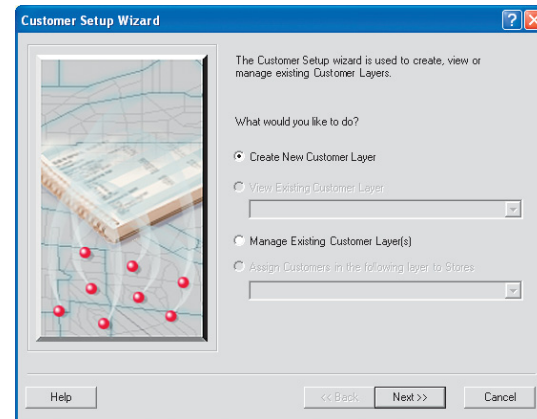
7. Type a customer layer name in the text box, type any comments, then click Finish.  
Your new customer layer is added to the table of contents.



## Entering customer or store addresses manually

If you don't have a customer or store database, you can use the Business Analyst Customer Setup Wizard to enter customer or store addresses manually and build your own address table. The table of addresses will be set up for use in Business Analyst and will be added as a layer to the map.

1. Click the Business Analyst drop-down menu and click Customer Setup.
2. Click Create New Customer Layer, then click Next.
3. Click Enter customers' addresses, then click Next. ►



4. Click the Add button.

The Geocode one address dialog box opens.

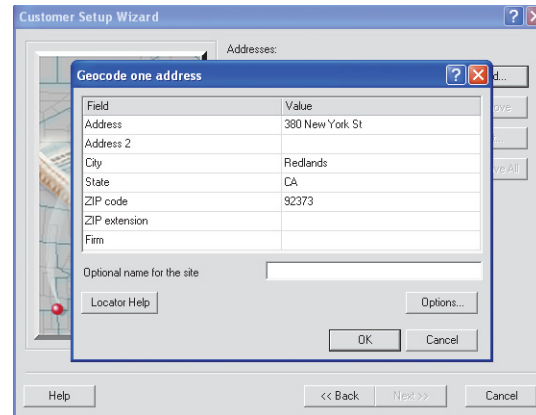
Complete the following information:

- a. Type an address in the Address text box.
- b. Type a city in the City text box.
- c. Type a state in the State text box.
- d. Type a Zip Code in the Zip code text box.
- e. Optionally, type a name in the Optional name for the site text box and click OK.

If you want to remove an address, click the address and click Remove. To make changes to an address, click the address and click Edit, make any necessary edits, then click OK. To remove all addresses, click Remove All.

When you're finished adding addresses, click Next.

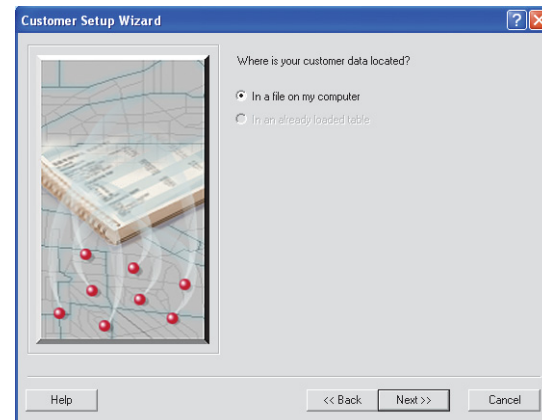
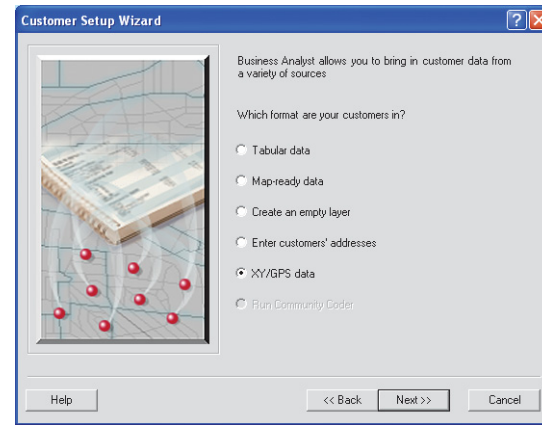
5. Type a customer layer name in the text box, type any comments, then click Finish.



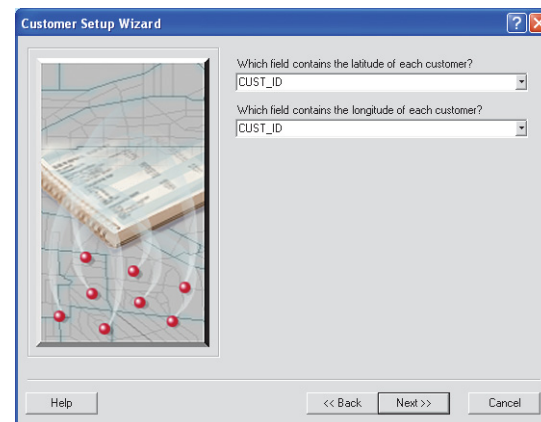
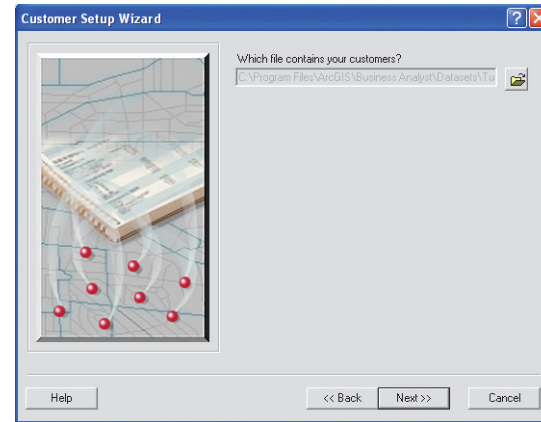
## Adding customer or store data containing x,y coordinates

Business Analyst provides the ability to add stores or customers to the map when you have a table of x,y coordinates (latitude–longitude). This enables you to use a table created with output from a GPS device or from sources providing location information in x,y format. Your x,y coordinates must appear in decimal degrees.

1. Click the Business Analyst drop-down menu and click Customer Setup.
2. Click Create New Customer Layer, then click Next.
3. Click XY/GPS data, then click Next.
4. Click In a file on my computer, then click Next. ►



5. Click the browse button and navigate to the file that contains your customers.
6. Click the drop-down menu and click the field that contains the latitude of each customer.  
Click the second drop-down menu and click the field that contains the longitude of each customer, then click Next. ►



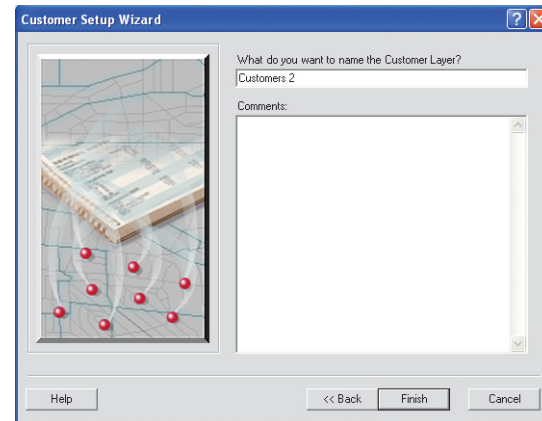
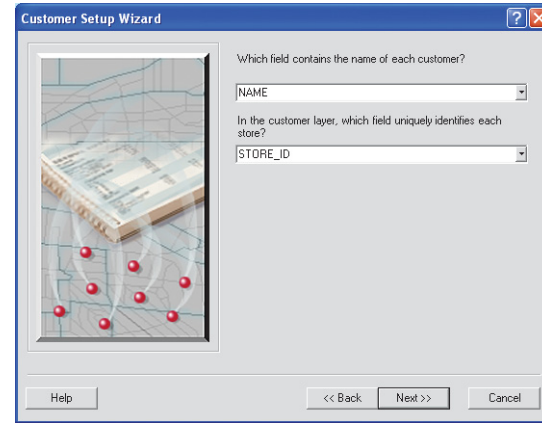


7. Click the drop-down menu and click the field that contains the name of each customer.

Click the second drop-down menu and click the field that uniquely identifies each store in the customer layer, then click Next.

The second drop-down menu is required if you are using the analysis and trade area tools that require association with the store and customer such as Customer Derived Trade Areas.

8. Type a name for the customer layer in the text box, type any comments, then click Finish.



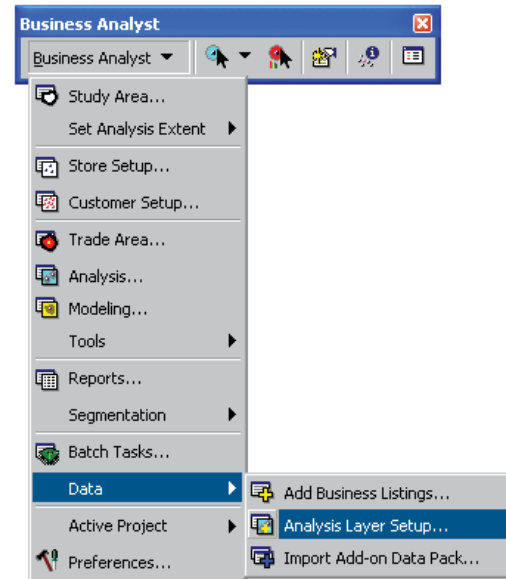
## Analysis layer setup

Business Analyst allows your data to be used in any of the wizards and creates reports with this data. All layers included with Business Analyst are already set up; however, you can revise setup on layers on your map by using the Analysis Layer Setup Wizard.

Analysis layer setup is often used to import custom data, such as sales volumes, and joins it to a standard level of geography such as ZIP Codes. You can also use your own demographic data, estimates, projections, business statistics, or consumer expenditure information. This data must have a geographic identifier associated with it since this tool is designed to join your custom data with an existing polygon or point layer—for example, if you want to report on your sales data at the ZIP Code level, make sure that a valid ZIP Code field was included in your database. This allows you to join your database to our ZIP Code boundary or your own ZIP Code boundary file, if added in the table of contents. ►

1. Click the Business Analyst drop-down menu and click Data > Analysis Layer Setup.

The Analysis Layer Setup Wizard opens. ►



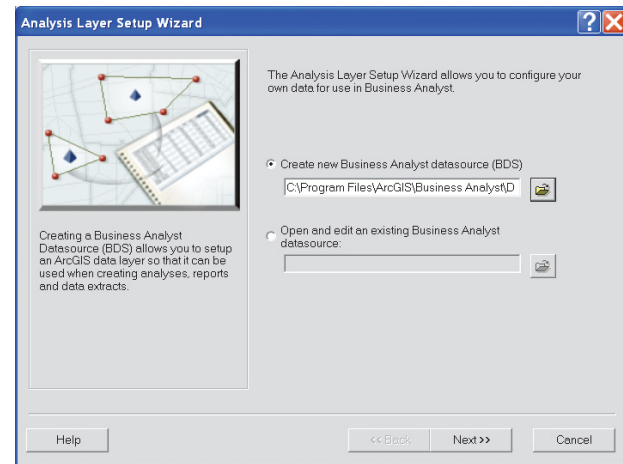
If you are setting up a point layer, you can choose the variable aggregation method and whether to weight the variable during analysis. Setting up a geographic layer (polygon) also offers a choice of apportionment method.

### Tip

*It is recommended that you save the database you want to process through the analysis layer setup to the same directory in which you saved your Business Analyst datasource (BDS). It is suggested to create a new folder in your My Output Data folder called BDS. This ensures that your work is saved to the same directory. It also ensures that the BDS file retains its integrity as it is dependent on the database file used to create it. If this database file is moved or deleted after the creation of the BDS layer, the BDS layer will no longer be viable.*

2. Click Create new Business Analyst datasource (BDS) and click the browse button, then navigate to the folder where you want to save the new BDS file. Type a name for the file and click Save.

Or click Open and edit an existing Business Analyst datasource and click the browse button to navigate to the file, then click Next. ►



## Field descriptions

**Variable:** Shows all variables you have selected for setup.

**Aggregation method:** Combines variable values. The options are to sum the value; average the values; use the min value; use the max value; or calculate the median, standard deviation, or variance.

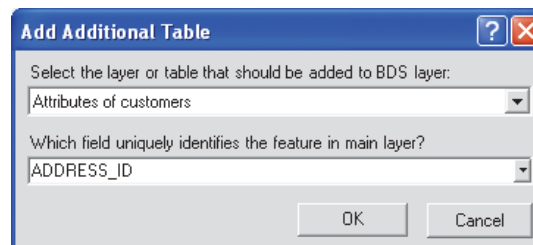
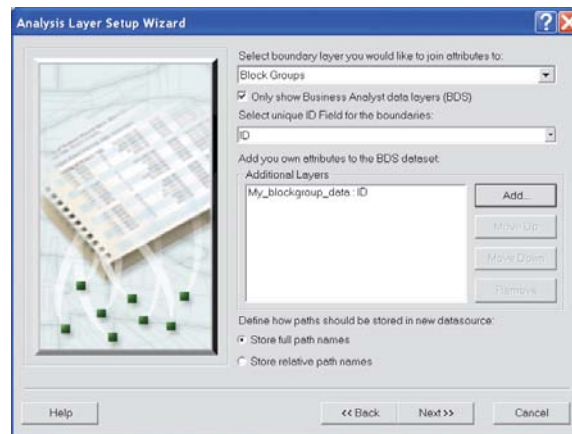
**Weight:** Weight the variable based on another variable that is in the Block Group layer. You could choose to weight consumer expenditures on furniture by 2003 Total Households. This provides you with the amount spent per household on furniture in a trade area.

**Apportionment method:** Use in apportioning a variable to a portion of geography when an analysis cuts across a geography. The analysis includes only the value of the variable that falls inside the analysis area. Depending on the variable, you have the choice of apportioning by AREA or one of the three primary demographics at the block point level (Population, Households, or Housing units).

3. Click the drop-down menu and click the boundary layer for which you want to join attributes.
4. Click the second drop-down menu and click the unique ID field for the boundaries.
5. Add your own attributes to the BDS dataset. Click the Add button and the Add Additional Table dialog box opens. Click the first drop-down menu and click the layer or table that you want to add to the BDS layer. Click the second drop-down menu and click the field that uniquely identifies the feature in the main layer, then click OK.

This is only used if you want to add in custom data. If you want to modify variables that are included in Business Analyst, select the appropriate geography that contains the variables you want to include.

6. Click Store full path names or Store relative path names to define how the paths should be stored in the new database, then click Next. ►



The demographic options (population, households and housing units) each have three different methods for determining the percentage of each that is contained within the geography.

(legacy): This method was the standard approach to calculating the percentage of demographic weights that fall within a geography. This approach first calculated the actual counts of the Population, Households Housing Units, Businesses at the Block Point level within a trade area that intersected a geography and then divided that by the total counts in the geography and multiplied that value by 100 to obtain the weight.

2000: This is the current method that is applied to year 2000 estimates in Business Analyst. This approach is faster as it already contains the percentages of Population, Households Housing Units, Businesses of each Block Point contained within a Block Group. This approach simply adds up the percentages of each Population, Households Housing Units, Businesses weight for each Block Point within a trade area that intersected the geography.

2008: This is the current method that is applied to current year estimates in Business Analyst. This approach is faster as it already contains the percentages of Population, Households Housing Units, Businesses of each Block Point contained within a Block Group. This approach simply adds up the percentages of each Population, Households Housing Units, Businesses weight for each Block Point within a trade area that intersected the geography.

If, for example, current year Total Population is set up to be apportioned using the block point variable POPULATION 2008 and you want to aggregate that data to a three-mile ring then all of the Block Groups completely contained within the simple ring will have 100% of their data apportioned to the ring. Any Block Groups that intersect the perimeter of the ring and are not 100% completely contained within the ring will have the percentage of the current year Total Population apportioned based on the percentage of Block Points weights that area contained within the ring.

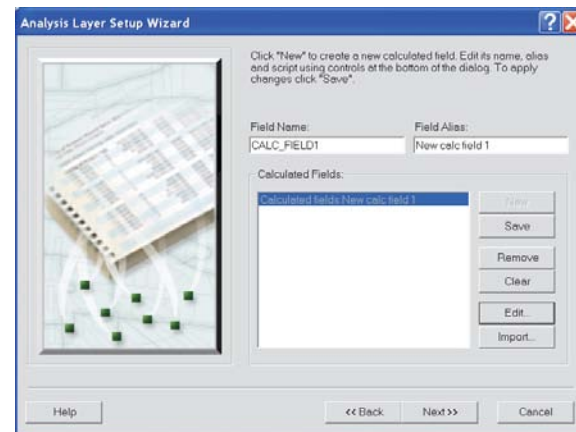
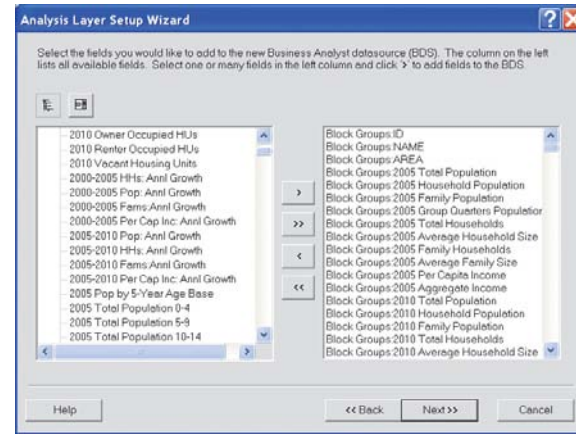
**Note:** If you bring standard Business Analyst variables into this wizard then all the field descriptions will automatically be selected for you with the appropriate values.

## Tip

### Layer variables

*The Analysis Layer Setup dialog box defines how layer variables will be treated during an analysis. You can easily resize the box by clicking and dragging its corners.*

- Click the fields you want to add to the new BDS layer from the column on the left. This column lists all available fields from the layer you selected for which to join attributes (in this case, all the demographic data associated with the Block Group layer) and all the data associated with your custom data. Click the right arrow button to move a field over to the right column. Click the double right arrow button to move all the fields to the right column. When you're finished adding fields, click Next.
- Click New to create a new calculated field. Type the field name and field alias in the text boxes, then click Save. Highlight the calculated field in the Calculated Fields text box and click Edit. A field calculator box appears, allowing you to create a new variable calculation, then click Save. Once you save a newly created field, you can add more new fields if you choose. When you're finished, click Next. ►

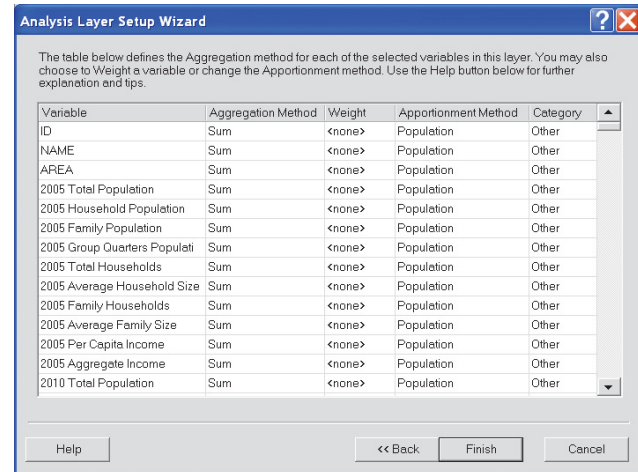


9. A table appears which contains predefined selections for any variable selected from the standard Business Analyst datasets. This includes custom calculations, Aggregation Method, and Weight, if applicable. If you added custom variables then you must assign these options manually for custom variable. Click Finish.

Your analysis layer is set up.

Now any wizard with the option to select a BDA layer to analyze will show the newly created BDS layer. Additionally, if you want to create custom reports, you can also select this BDA layer to create your own reports.

You should always weight data on individuals (per capita income, median age, and so on) by population and weight data on households (average household size, median household income, and so on) by households.





## Adding business listings

Business Analyst provides access to the *infoUSA* database of 10 million+ U.S. businesses. It can be used to identify customers or competitors and includes data by industry, company name, location, sales volume, and number of employees.

### Tip

#### Restricting the Business Analyst search

You can further limit the search by using the *Business Name*, *Size of Business (Sales/Employee)*, or *Corporate Information (Type of Site/Franchise)* options. The more categories you use, the narrower your search will be.

### Tip

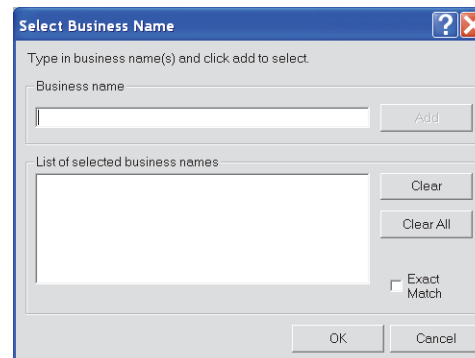
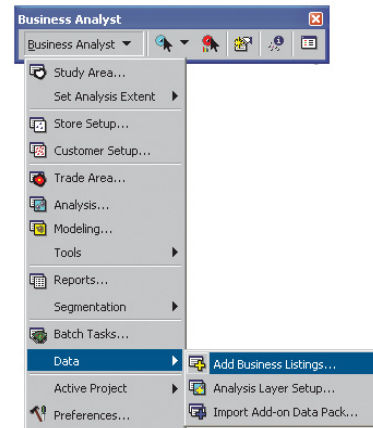
#### The Identify Business tool

Once your business layer is added to the map, you can use the *Identify Business* tool on the *Business Analyst* toolbar. Click the tool and click the business point on the map to show address, telephone number, sales volume, and employee range for that individual business.

1. Click the Business Analyst toolbar, click Data, then click Add Business Listings.

The Add Business Listings dialog box opens.

2. Define the business for which you want to search.
3. Type a name in the text box in the far right corner.
4. For the Type of Business (SIC) field, click Select and the Select Business Name dialog box opens. Type the business name and click Add. When you're finished adding business names, click OK. ►



## Tip

### Selecting Location

When you type the first letters of the state abbreviation and city in the text boxes, the state and city lists jump to the letters you entered.

## Tip

Selecting the option for Select geography search criteria is the fastest way to add businesses. This is a simple database query and does not actually create a shape file. It creates a definition query and a virtual shape file.

Selecting Search include current extent or Search inside the features of a polygon layer specified performs a spatial query and exports the results as a new shape file and will take more time to process.

- For the Location field, click Select. The Select Location dialog box opens. Click Select geographic search criteria, then type the state abbreviation and city in the State Abbr and City text fields. If you know the ZIP Code, you can type it in the ZIP Code text box.
- Click OK and you are returned to the main Add Business Listings dialog box.
- To select the Type of Business (SIC), click Select and the Business Type Dialog box opens.  
  
In the Key Words text box, type "hardware". The Code and Description lists jump to the code and descriptions that match what you entered. Click 5251 HARDWARE STORES. You can also type the SIC code in the SIC Codes text box. Click OK.
- Click Finish.

Your selections are displayed on the map and added to the TOC as the Business layer.

Select one of the ways to specify location search criteria.

Search inside current extent

Search inside the features of the polygonal layer specified

San Francisco County

Use selected features only

Select geographic search criteria

Select one or more geographic search criteria by placing a check next to the desired location in the selection box. The Find box allows you to quickly locate an area in the selection list. Once selected, the areas will be shown in the Selected Locations box.

Find

State Abbr. City ZIP Code

ca san fr

Select

CA  San Francisco, ...  94005

94014  94015

Clear All Clear All Clear All

Selected Locations

San Francisco, CA

Clear

Clear All

OK Cancel

Enter the SIC codes or SIC description keywords in the appropriate box. Use a semicolon or comma to separate codes or keywords. Place a check next to the desired selection(s). The selection summary will be displayed in the Selected SIC Codes box.

Select

Key Words: SIC Codes

hardware AND

OR

Categories to Show: All Categories

Code	Description
<input checked="" type="checkbox"/> 5251	HARDWARE STORES

Select All

Clear All

Selected SIC Codes

Code	Description
5251	HARDWARE STORES

Clear

Clear All

OK Cancel

## Importing a Business Analyst add-on datapack

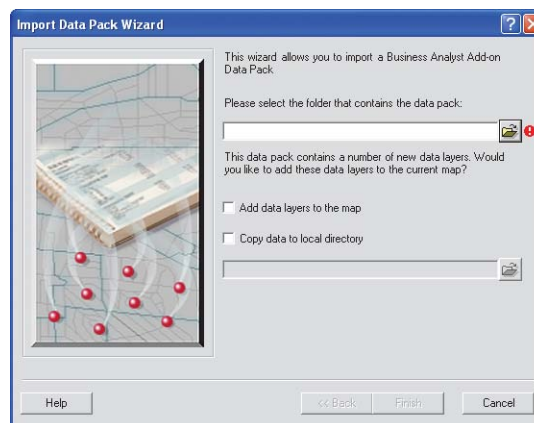
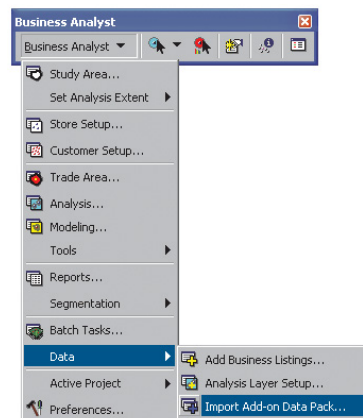
ESRI offers additional data packs for Business Analyst that meets the needs of specific industries. The Import Data Pack Wizard will import and set up those datasets for use in Business Analyst. This field visibility tab is unique to Business Analyst and will not appear on any machine that does not have this extension installed.

1. Click the Business Analyst drop-down menu and click Data, then click Import Add-on Data Pack.

The Import Data Pack Wizard opens.

2. Click the browse button to navigate to the data pack folder.
3. To Add data layers to your map, check the Add data layers to the map check box. To copy to your local directory, check the Copy data to local directory check box, then click the browse button to navigate to the location for which you want to copy the data.
4. Click Finish.

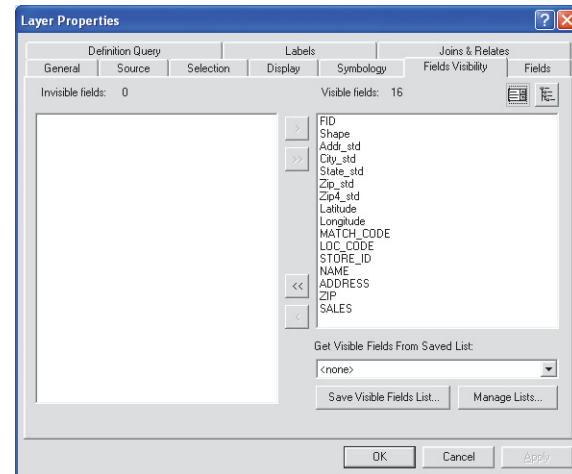
The data will now be available for use in Business Analyst.



## Setting field visibility

You can control which fields are visible in each layer using the Fields Visibility tab on the Layer Properties dialog box. The field settings you choose will be used in any analysis performed on the layer.

1. In the table of contents, right-click the layer for which you want to change the visible fields and click Properties.
2. Click the Fields Visibility tab and use the arrow keys to move fields to the Visible fields or Invisible fields column.
3. You have the option of saving the Visible fields list. This is used when you have several analyses to perform that may use different field listings. You can easily switch between the visible fields by clicking one from the Get Visible Fields From Saved List dropdown menu.
4. If you prefer to make your field selection from a tree structure of available field categories rather than from a list, click the Tree Structure button. You can then browse the categories to find your desired fields.
5. Click Apply, then click OK to activate your selection.



## Managing existing customer or store layers

Business Analyst allows you to manage the customer and store layers you have created. This allows you to perform the following operations on any of your previously created customer or store layers:

- Opening a layer that is not present in the current map document
- Modifying a layer by stepping through the Customer Setup and Store Setup Wizard choices made when the layer was created
- Deleting one or more layers
- Renaming a layer or editing comments
- Reviewing geocoding of the layer points on the map
- Assign Customers to Stores

### Tip

#### Using the Store Setup or Customer Setup wizards for this task

*The Customer Setup and Store Setup wizards are identical for this task. This example uses the Customer Setup Wizard. You can follow the same steps using the Store Setup Wizard to accomplish this with a store layer.*

1. Click the Business Analyst drop-down menu and click Customer Setup.

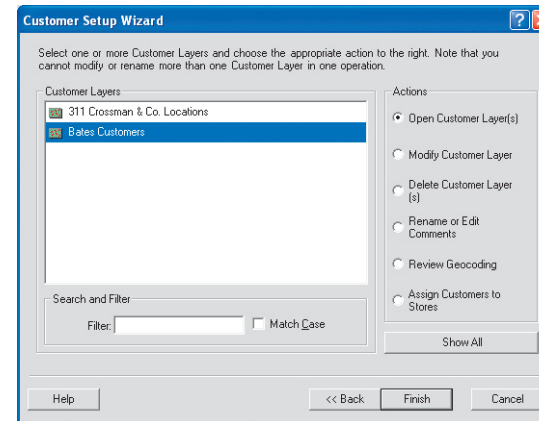
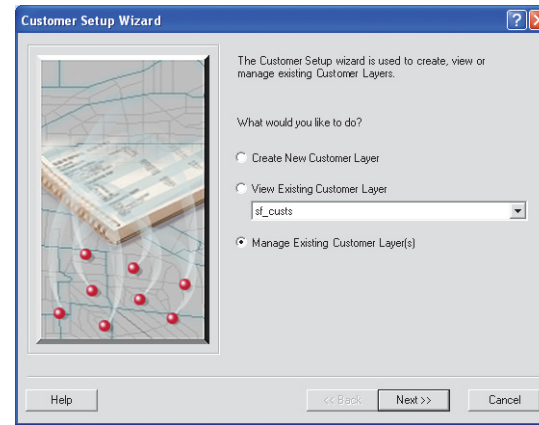
The Customer Setup Wizard opens.

2. Click Manage Existing Customer Layer(s).
3. Click Open Customer Layer(s), Modify Customer Layer, Delete Customer Layer(s), Rename or Edit Comments, Review Geocoding, or Assign Customers to Stores.

4. This step depends on which option you chose in step 3.

If you chose Open Customer Layer(s), click the layer you want to open, then click Finish and the layer opens.

For all the other options, make your selections and continue through the Customer Setup Wizard as you have in the previous chapters.



## Substituting your own terms for customers and stores

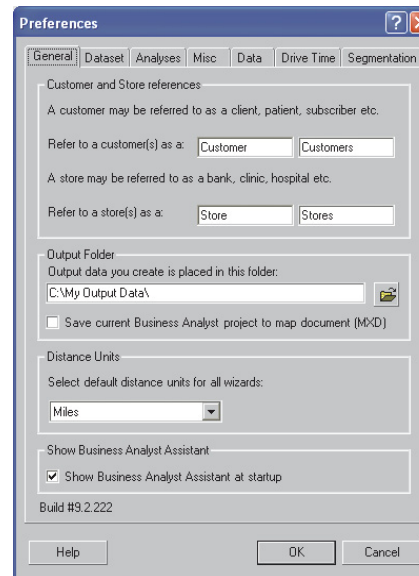
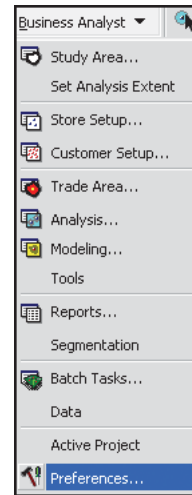
You can substitute other terms for customers and stores using Preferences. Examples are banks and clients, hospitals and patients, or preschools and children depending on your field of work. Preferences customizes Business Analyst for you using the terms you choose on all the wizard panels.

### Tip

#### Using the Preferences dialog box

*The Preferences dialog box allows you to change more than how you refer to customers and stores. You can also adjust data formats, geocoding services, and dataset locations (using the Data tab) and specify how rings and group layers are displayed and named (using the Analysis tab). The General tab allows you to specify the location of the output folder to store data, analyses, and study areas for your maps as well as turn on the automatic spatial reference adjustment. This feature changes the projection as you zoom in to keep the northerly direction oriented toward the top of your map.*

1. Click the Business Analyst drop-down menu and click Preferences.  
The Preferences dialog box opens.
2. Click the General tab then type the term you want to use to refer to customers in the text box.
3. Type the term you want to use to refer to stores in the text box.
4. Click OK.  
Your preferences will be used throughout the Business Analyst wizards.







# Trade areas—customer data required

# 7

## IN THIS CHAPTER

- **Customer-derived areas**
- **Market penetration**
- **Trade area penetration**
- **Distance decay areas**

This chapter describes creation of trade areas when you have customer data available. Use of customer data in creation of your trade areas is preferable in most cases.

ArcGIS Business Analyst has four methods of trade area creation using customer data:

- Customer-derived areas will create trade areas based on location of your customers.
- Market penetration compares the number of customers you have within a geographic area with a base value, such as total population, in that area.
- A Trade Area Penetration report compares the number of customers within a trade area to a base value, such as total households.
- Distance decay areas calculate the market penetration values for a number of ring or drive time areas around your stores. The Distance Decay report illustrates how far your customers are traveling to a store compared with a base value, such as population or households.

## Customer-derived areas

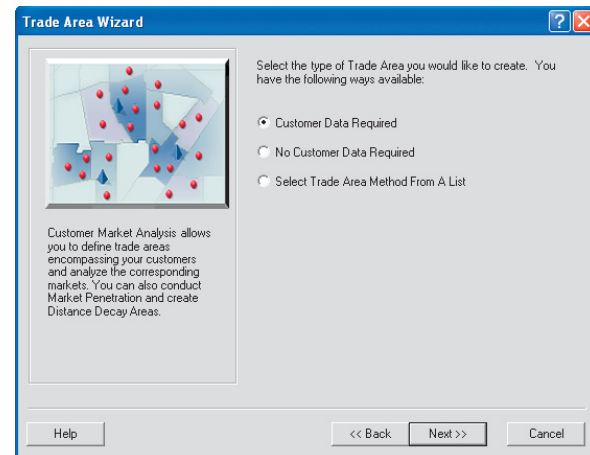
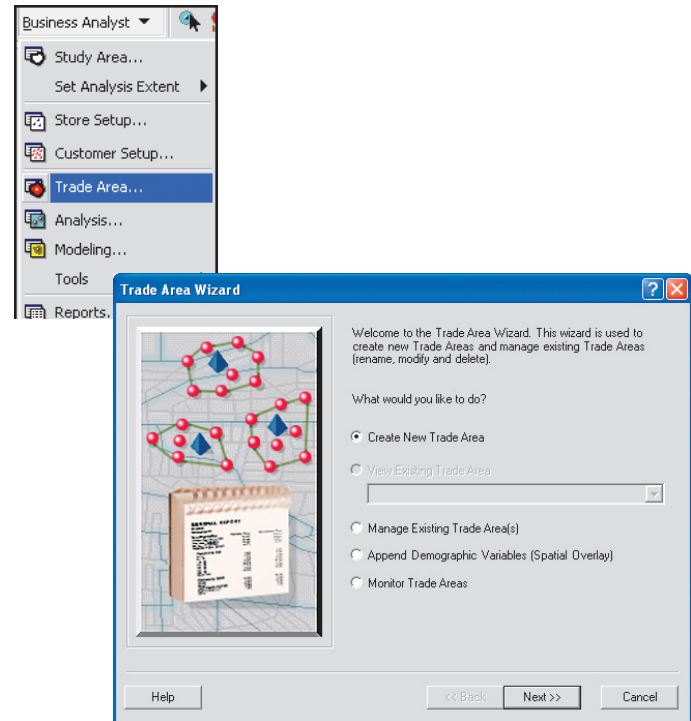
A customer-derived area is a method to create customer data from required trade areas. From the Trade Area Wizard, choose Customer Derived Areas to create a trade area based on the location of your customers or based on some weighted value associated with each customer such as sales data.

Creating a trade area using customer data allows you to encompass your customers and analyze the corresponding markets.

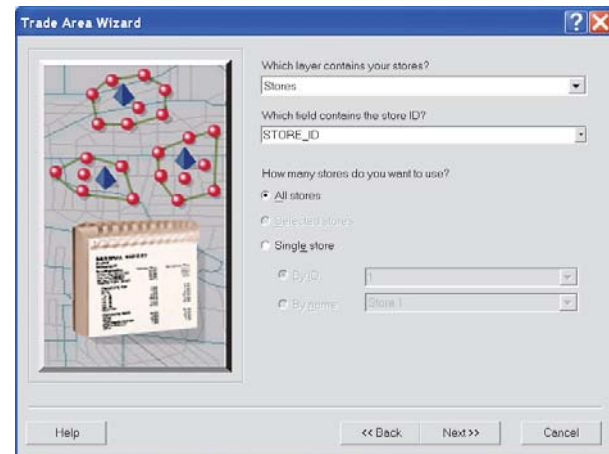
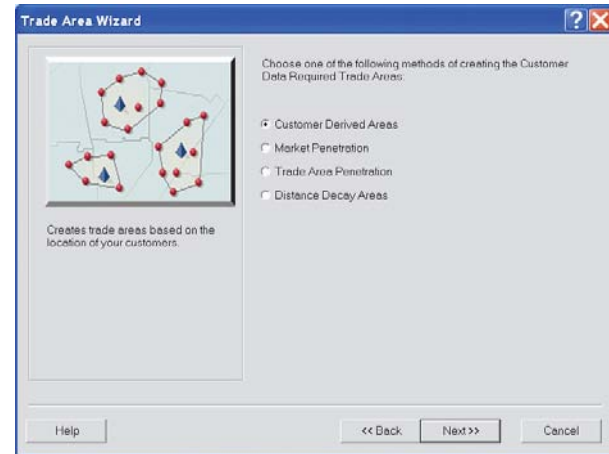
**Note:** Before creating a customer-derived trade area, use the Study Area Wizard to create a study area that encompasses all of your customers. This defined extent will ensure your entire customer base is used in the analysis for best results.

## Creating a trade area using customer-derived areas

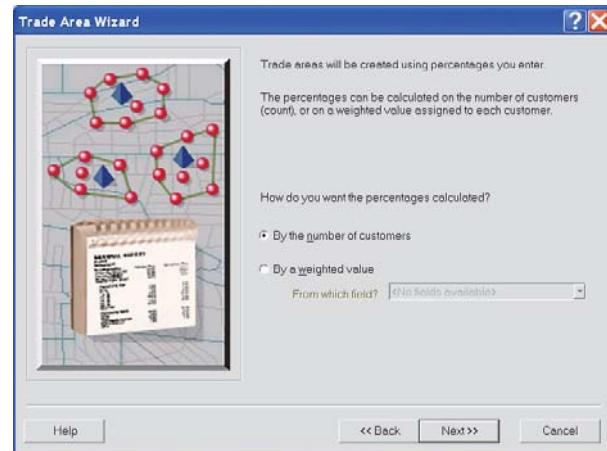
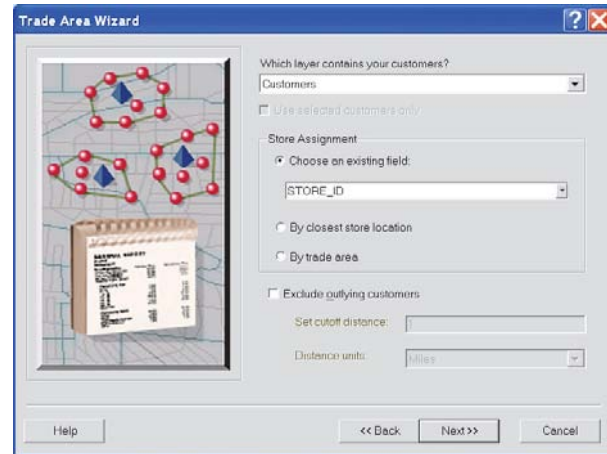
1. Click the Business Analyst drop-down menu and click Trade Area.
2. Click Create New Trade Area, then click Next.
3. Click Customer Data Required, then click Next. ►



- Determine how to create the trade area, click Customer Derived Areas, then click Next.
- Click the drop-down menu and click the layer that contains your stores.
- Click the second drop-down menu and click the field that contains the store ID.
- Determine how many stores you want to use: All stores, Selected stores, or Single store. If you choose Single store, click By ID or By name and choose an option from the respective drop-down menu. Click Next to continue. ►



8. Click the drop-down menu and click the layer that contains your customers.
9. For Store Assignment, click Choose an existing field, By closest store location, or By trade area, then click Next.
10. To exclude customers outside a certain distance, click Exclude outlying customers and set the cutoff distance in units, then click Next.
11. Determine how to calculate the percentages: By the number of customers or By a weighted value. If you choose By a weighted value, click the drop-down menu and choose a field. This weighted field could be customer sales figures in your customer database. ►



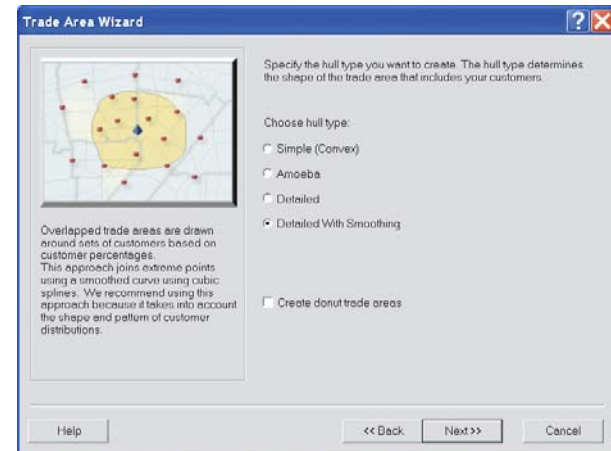
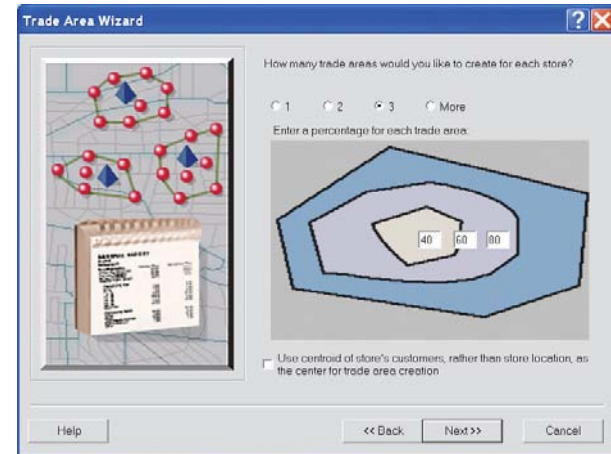
## Tip

### Hull type

The hull type determines the shape of the trade area that includes your customers.

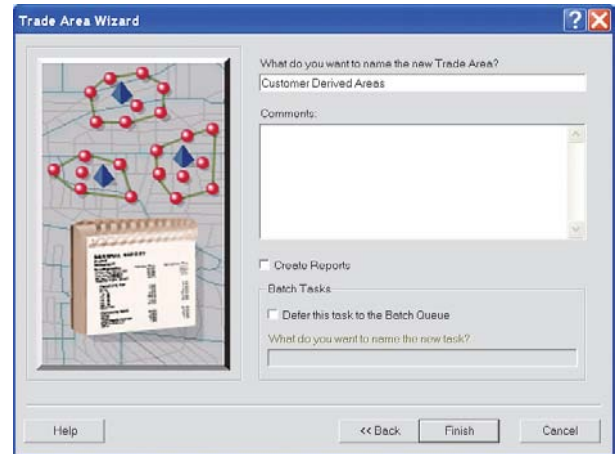
Reports in Business Analyst are formatted for 1–3 trade areas.

12. Choose how many trade areas you want to create for each of your stores: 1, 2, 3, or More.
13. Enter a percentage for each trade area in the text fields. You have the option to use the centroid of the store's customers rather than the physical store location. This option is rarely used but is available. Click Next.
14. Choose the hull type you want to create: Simple (Convex), Amoeba, Detailed, or Detailed With Smoothing.
15. If you want to create donut trade areas, check the Create donut trade areas check box, then click Next. By default, the trade areas will be overlapping, meaning a 60 percent trade area will include all customers in the 40 percent trade area. Donut trade areas will only contain the customers outside smaller rings. For example, in 40–60–80 percent donut trade areas, the 60 percent donut would only include customers outside the 40 percent area and inside the 80 percent area. ►





16. Type a name for the new trade area in the text box and enter any comments.
17. You have the option of creating a variety of reports on the trade areas. Check Create Reports if you want to run reports on the data. You also have the option of deferring the reports to the Batch Queue to run later.
18. Click Finish.

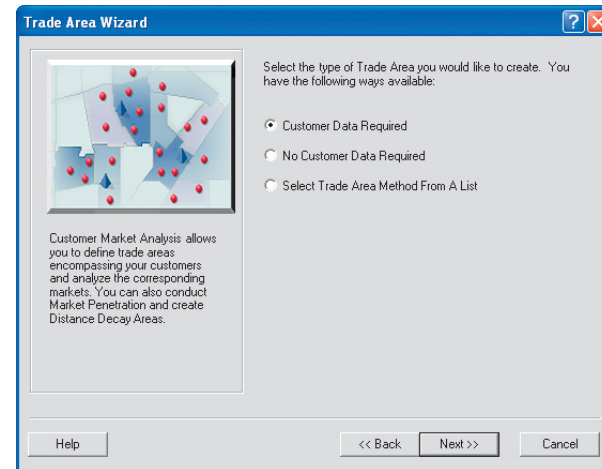
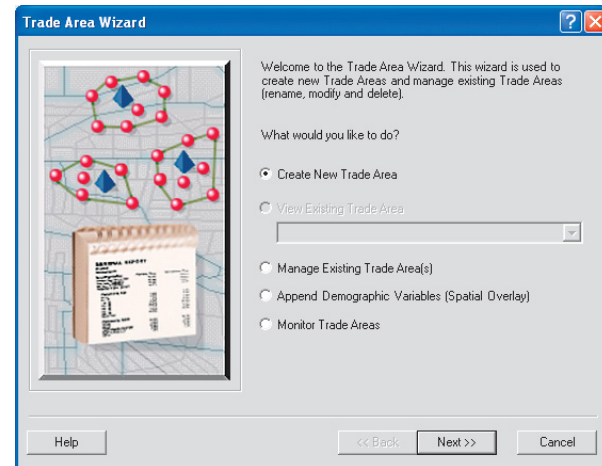


# Market penetration

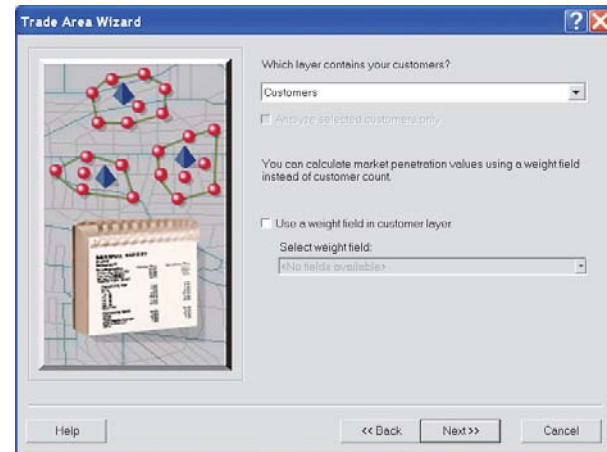
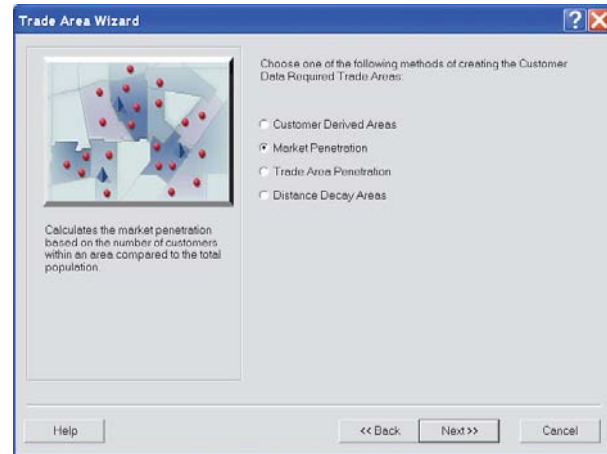
Calculates the market penetration based on the number of customers within an area. This is compared to the total population to a base value such as the total population in that area.

## Creating a trade area using market penetration

1. Click the Business Analyst drop-down menu and click Trade Area.  
The Trade Area Wizard opens.
2. Click Create New Trade Area, then click Next.
3. Click Customer Data Required, then click Next. ►

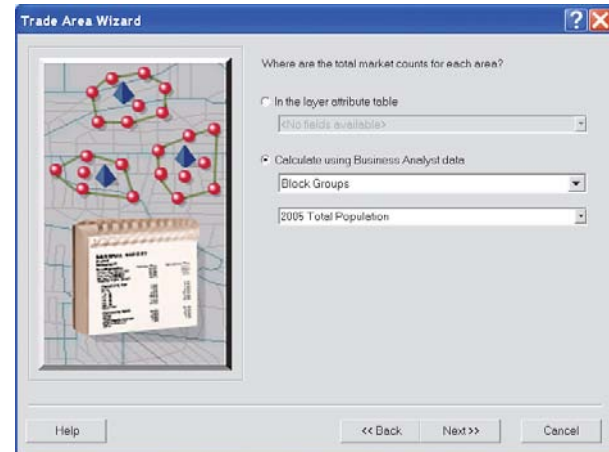
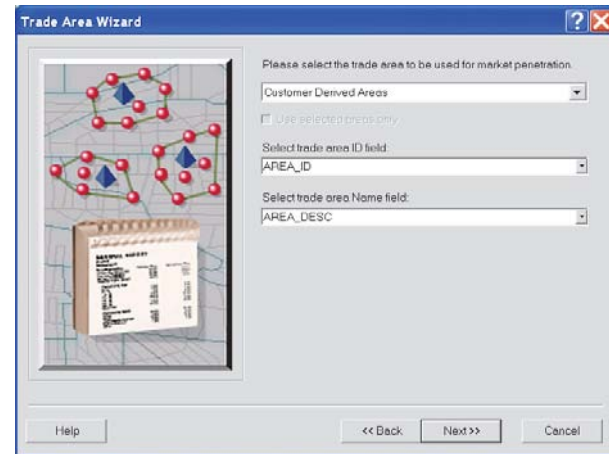


4. Determine how to create the trade area, click Market Penetration, then click Next.
5. Click the drop-down menu and click the layer that contains your customers. If you have selected certain customers on the map or in the customer layer attribute table, you will have an option to analyze selected customers only.
6. If you want to calculate market penetration values using a weight field instead of customer count, click Use a weight field in customer layer, click the drop-down menu and choose a weight field, then click Next.
7. Click the drop-down menu to choose the base layer to use for calculating market penetration. In most cases you will use one of the Business Analyst data layers (BDS) that contains demographic information. To ease selection of one of the BDS layers from all layers on the map, check Only show Business Analyst data layers (BDS).
8. If you selected certain geographic areas on the map, an option will be available to use selected areas only. ►

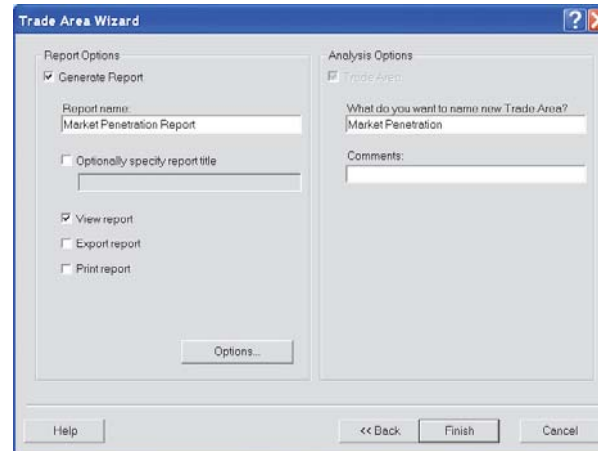
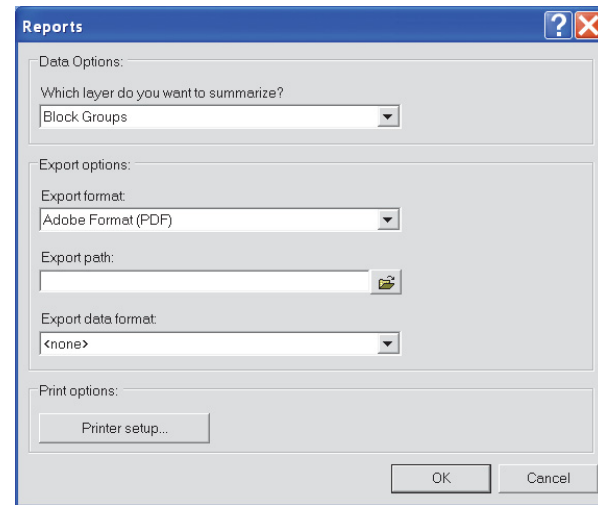




9. Click the second drop-down menu to choose the ID field, then click the third drop-down menu to choose the Name field. Click Next to continue.
10. Choose the source of total market counts by selecting one of the following:
  - In the layer attribute table, if you choose this option, click the drop-down menu and make a selection.
  - Calculate using Business Analyst data; if you choose this option, click the drop-down menus to make your selections.
11. Click Next. ►



12. The various option buttons allow you to choose a demographic layer to summarize the report export format, the export path, and a format for exporting the raw data to a table for further analysis. When you're finished making your selections, click OK.
13. Click Generate Report, enter the report name and, optionally, the report title, and check to View report, Export report, or Print report. Type a name for the trade area and any comments, then click Finish.



# Trade area penetration

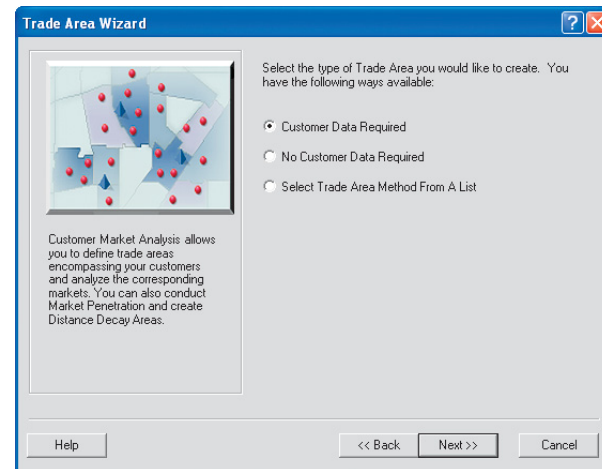
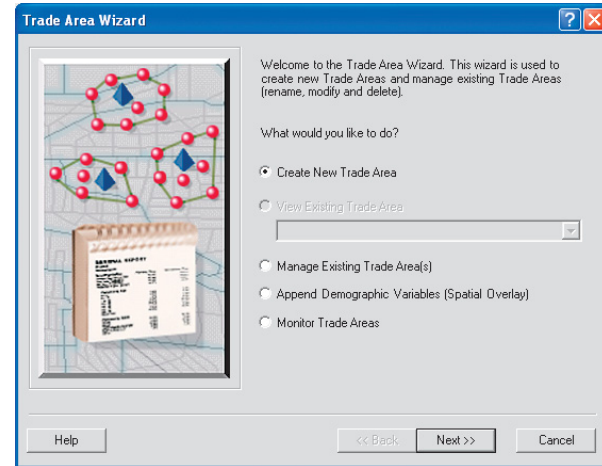
Trade area penetration calculates the penetration for each trade area. A Trade Area Penetration Report is based on the number of customers within a trade area compared to a base value, such as total households.

## Creating a trade area using trade area penetration

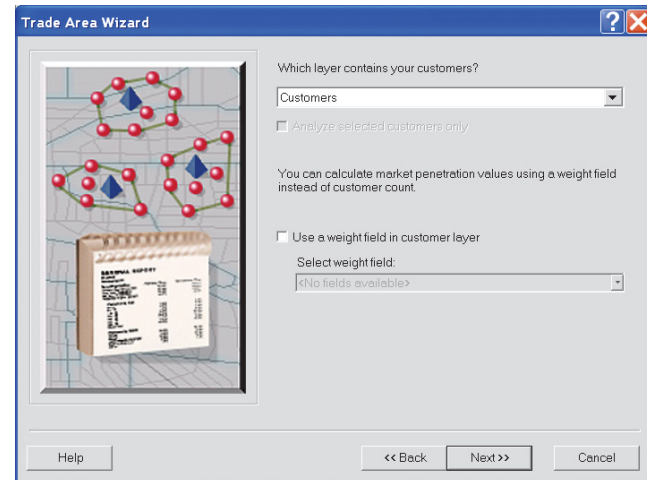
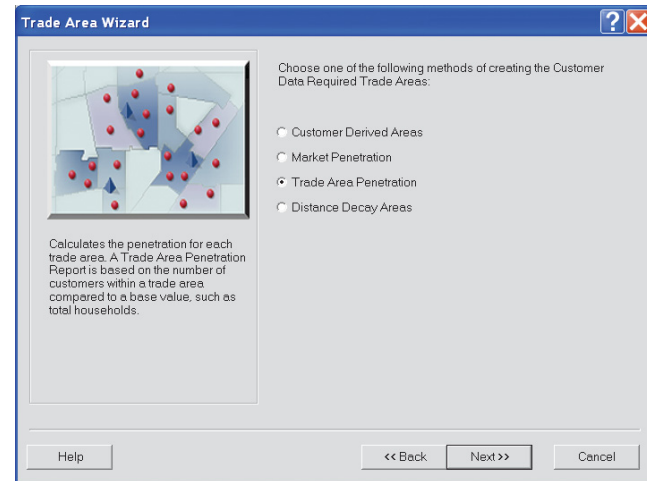
1. Click the Business Analyst drop-down menu and click Trade Area.

The Trade Area Wizard opens.

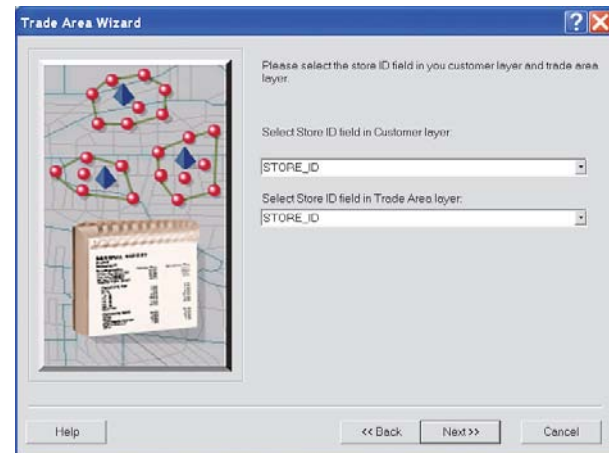
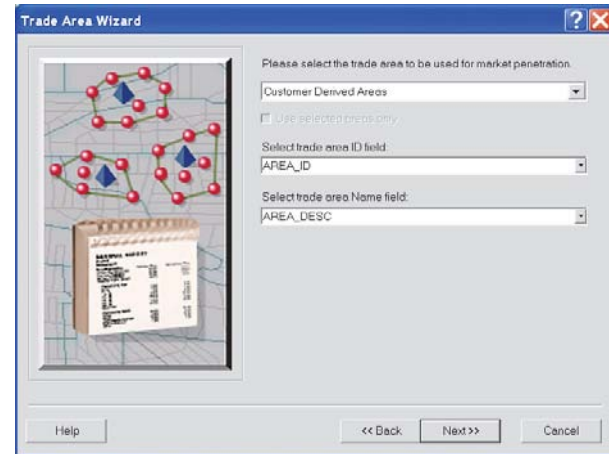
2. Click Create New Trade Area, then click Next.
3. Click Customer Data Required, then click Next. ►



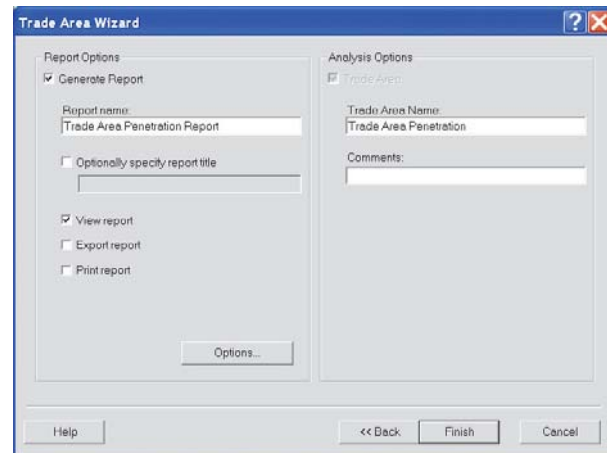
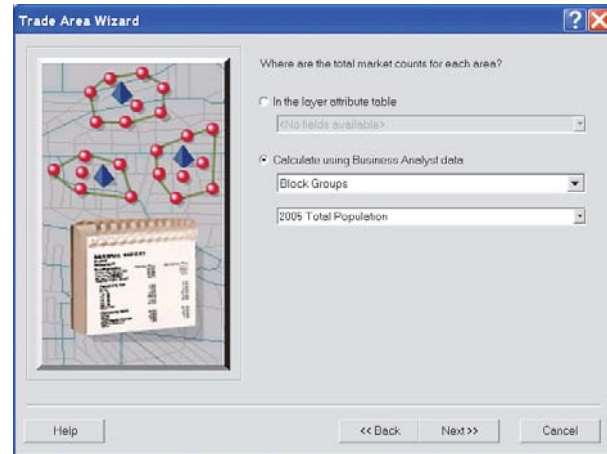
4. Determine how to create the trade area, click Trade Area Penetration, then click Next.
5. Click the drop-down menu and click the layer that contains your customers.
6. If you want to calculate market penetration values using a weight field instead of customer count, click Use a weight field in customer layer, click the drop-down menu and choose a weight field, then click Next. ►



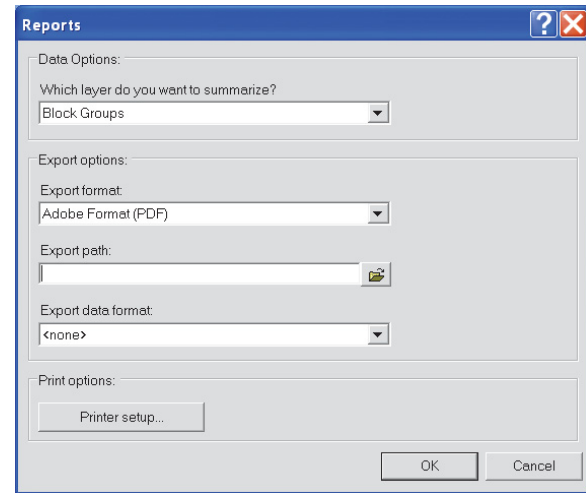
7. Click the drop-down menu to choose the trade area to use for market penetration, click the second drop-down menu to choose the trade area ID field, then click the third drop-down menu to choose the trade area Name field. Click Next to continue.
8. Click the drop-down menu to choose the Store ID field in your customer layer, click the second drop-down menu and choose the Store ID field in the Trade Area layer, then click Next. ►



9. Choose the source of total market counts by selecting one of the following:
  - In the layer attribute table, if you choose this option, click the drop-down menu and make a selection.
  - Calculate using Business Analyst data, if you choose this option, and click the drop-down menus to make your selections.
10. Click Next.
11. Click Generate Report, enter the report name and, optionally, the report title, and check to View report, Export report, or Print report. Type a name for the trade area and any comments. ►



12. The various drop-down menus allow you to choose a demographic layer to summarize the report export format, the export path, and a format for exporting the raw data to a table for further analysis. When you're finished making your selections, click OK.





## Distance decay areas

Individual locations or pieces of geography often have greater importance or more weight if they are closer to an area of examination. For example, customers who live in a ZIP Code adjacent to a store are more likely to visit the store than potential customers who live in a ZIP Code five miles away. You may want to create distance decay trade areas that reflect the inverse relationship between distance and propensity to visit a location. Specifically, as distance increases, the geographic importance of a piece of geography within a study area diminishes.

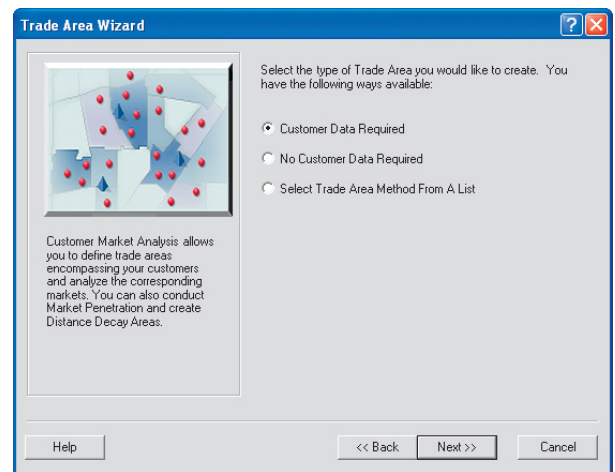
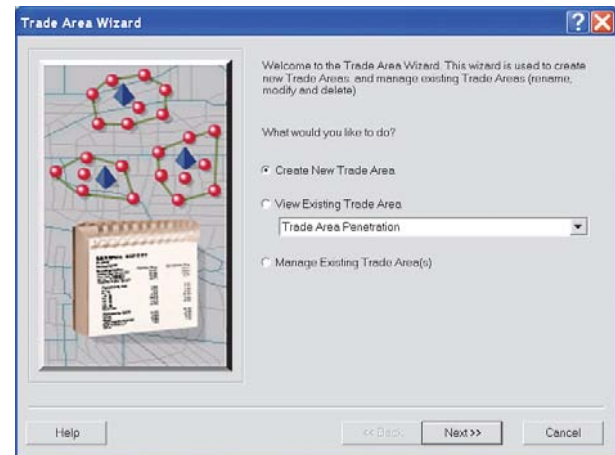
In principle, distance decay trade areas are no different than a simple weighted area. Business Analyst distance decay functionality provides the mechanism to create these areas based on the geographic principle of distance decay: The propensity to visit a store decreases as the distance to the store increases. People are more likely to visit a store if they are closer to the location. ►

## Creating a trade area using distance decay areas

1. Click the Business Analyst drop-down menu and click Trade Area.

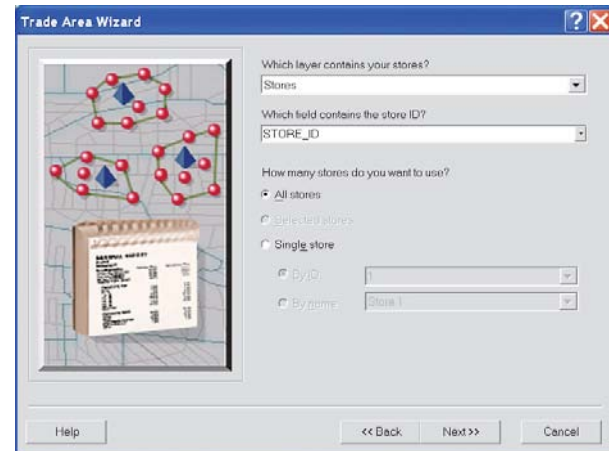
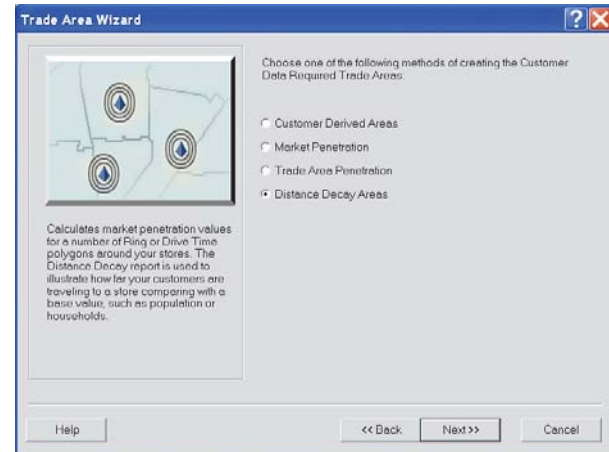
The Trade Area Wizard opens.

2. Click Create New Trade Area, then click Next.
3. Click Customer Data Required, then click Next. ►



Distance decay area calculates market penetration values for a number of ring or drive time polygons around your stores. The Distance Decay Report shows how far your customers are traveling to a store in comparison to a base value, such as population.

- Determine how to create the trade area, click Distance Decay Areas, then click Next.
- Click the drop-down menu and click the layer that contains your stores.
- Determine how many stores you want to use: All stores, Selected stores, or Single store, then click Next. ►



## Tip

### Simple ring

*Simple ring trade areas are created around your stores using a specified radius.*

## Tip

### Drive time

*Drive time trade areas are created around your stores, including all areas accessible along the street network given your maximum travel time or distance.*

7. Click Simple Ring or Drive Time to determine how you want to define the distance decay areas around your stores, then click Next.

- a. If you choose Simple Ring, do the following:

Choose the number of rings you want to create for each store.

Choose the size of the rings you want to create for each store.

Click the Distance Units drop-down menu to choose a distance from the list.

Click Next.

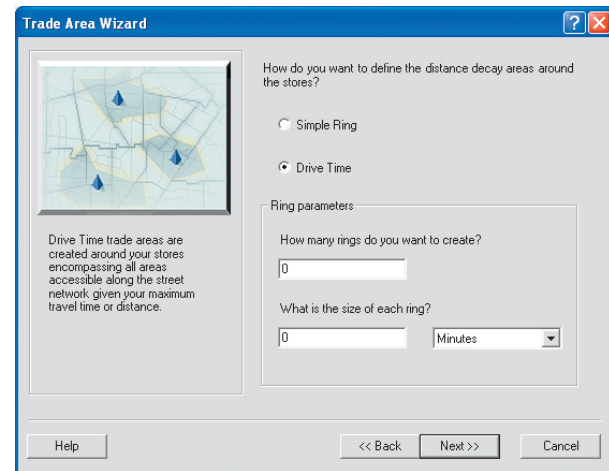
- b. If you choose Drive Time, do the following:

Choose how many drive time trade areas you want to create.

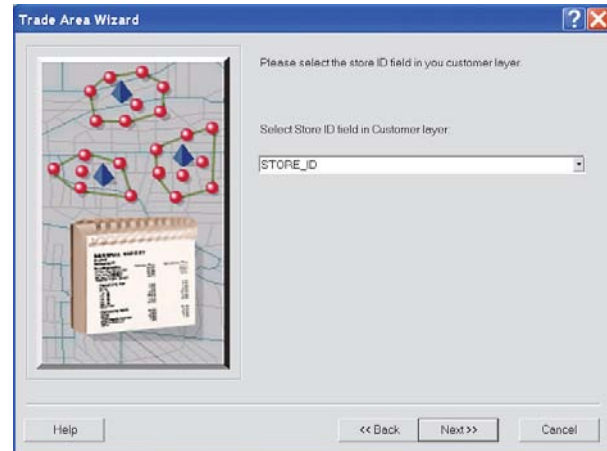
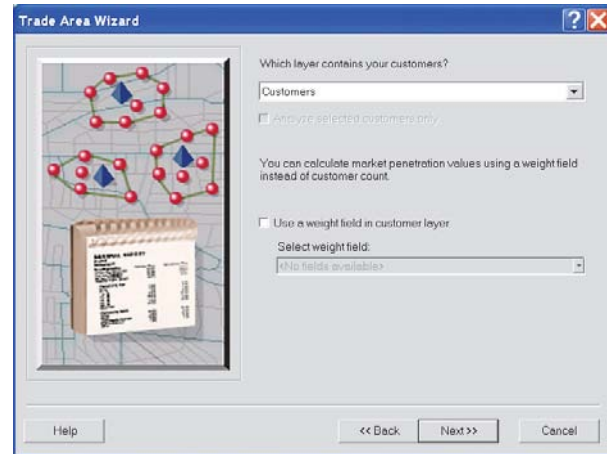
Choose the size of the rings you want to create for each store.

Click the Measure Units drop-down menu to choose a time or distance from the list.

Click Next.



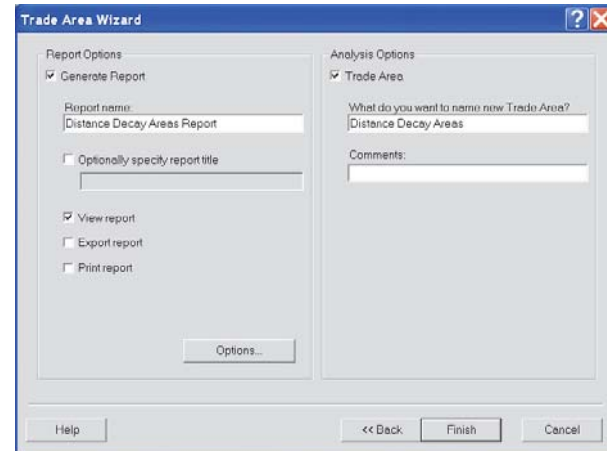
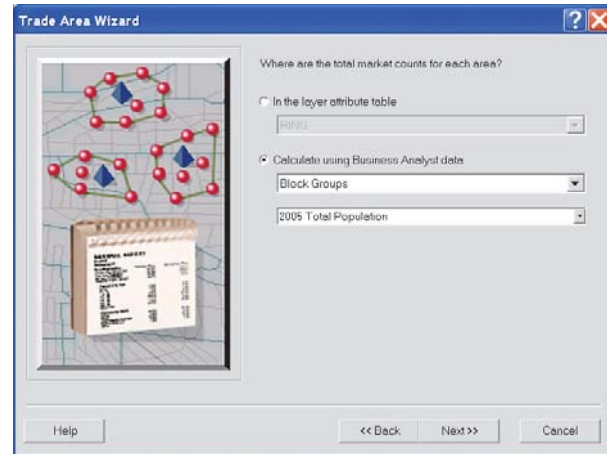
8. Click the drop-down menu to choose the layer that contains your customers. If you want to calculate market penetration values using a weight field instead of customer count, click Use a weight field in customer layer, click the drop-down menu and choose a weight field, then click Next.
9. Click the drop-down menu to choose the store ID field in your customer layer. ►



10. To determine where the total market counts are for each area, choose one of the following:

- In the layer attribute table, if you choose this option, click the drop-down menu and make a selection.
- Calculate using Business Analyst data, if you choose this option, click the drop-down menus to make your selections.

11. Click Generate Report, enter the report name and, optionally, the report title and check to View report, Export report, or Print report. Type a name for the trade area and any comments and click Finish.





# Trade areas—no customer data required

# 8

## IN THIS CHAPTER

- **Simple rings**
- **Nonoverlapping rings**
- **Data-driven rings**
- **Drive-time polygons**
- **Threshold Trade Areas**
- **Equal competition (Thiessen)**
- **Huff equal probability trade areas**
- **Grids**
- **Draw area**
- **Standard levels of geography**
- **Subgeography**

Customer-based market analysis requires geocoded customer data. This type of data may not be available as your business may not collect customer addresses, it may be too expensive to acquire customer locations from credit card services, or you may have no customer data if your company is expanding into a new area. Other methods of analysis are available to help you visualize, analyze, and evaluate business locations. These methods all use existing or proposed store locations instead of customer points. Only stores that fall within your study area will be analyzed.

Geography level-based trade areas are created using standard geography—for example, you can create trade areas from a list of geographies such as states, counties, or ZIP Codes. You can import your own list, choose from a Business Analyst list, or make a selection from a map of geographies.

You also have the option of creating trade areas by subgeography. This is creating trade areas for each standard geography boundary inside another layer boundary, such as drive-time trade area.

Once you have created trade areas using either of these geography methods, you can group geographies into larger geographies (for instance, territories) using the Business Analyst Dissolve by Attribute tool.

## Simple rings

*Ring studies* are the simplest and most widely used type of market area analysis. Since a business person might not know what shape the market or service area should be, a simple circle is used to begin the process. Many preliminary market studies begin with an analysis of one-, three-, and five-mile rings, but this may vary from retailer to retailer.

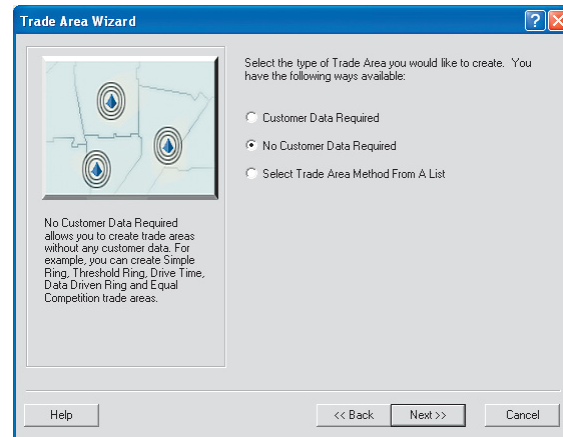
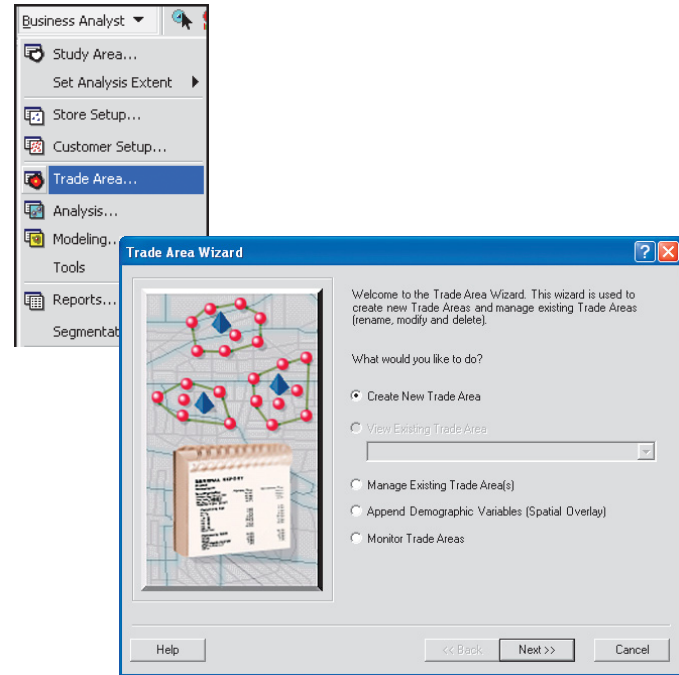
Once the rings have been generated, the underlying demographics are extracted. What is the total population within one mile? How many households are within three miles? What is the average household income within five miles? These are all questions that ring studies can answer.

Simple ring studies are generally used to generate a rough visualization of the market areas around points. Suppose a company is expanding into a new market and plans on leasing space in the major shopping centers in that market. The company may begin the analysis process with a series of ring studies around the major malls. The characteristics of these rings can be compared to similar rings around successful existing operations. ►

## Creating a no customer data required trade area using simple rings

1. Click the Business Analyst drop-down menu and click Trade Area.
2. Click Create New Trade Area, then click Next.
3. Click No Customer Data Required as the type of trade area you want to create, then click Next. ►

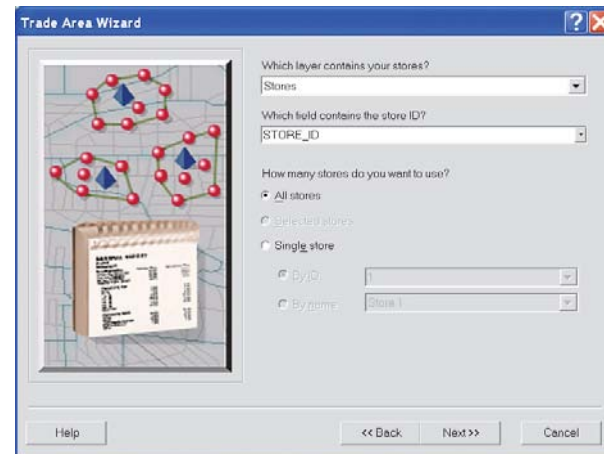
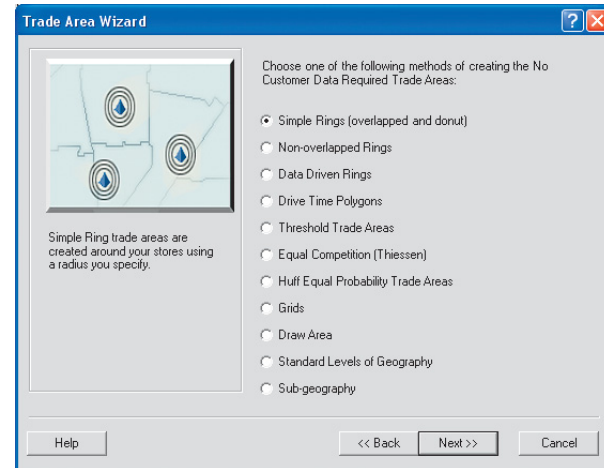
The Trade Area Wizard opens.



Other examples of simple ring store-based analysis include:

- A commercial real estate company calculates underlying demographics for five- and ten-mile rings around each available property as part of a standard report.
- A large HMO provides a count of the number of employees within three, five, and ten miles of each of its branch clinics as part of its proposal to potential clients.

4. Determine how to create the trade area; click Simple Rings (overlapped and donut), then click Next.
5. Click the drop-down menu and click the layer that contains your stores.
6. Click the second drop-down menu and click the field that contains the store ID.
7. Determine how many stores you want to use by clicking All stores, Selected stores, or Single store. If you choose Single store, click By ID or By name and choose an option from the respective drop-down menu. Click Next to continue. ►



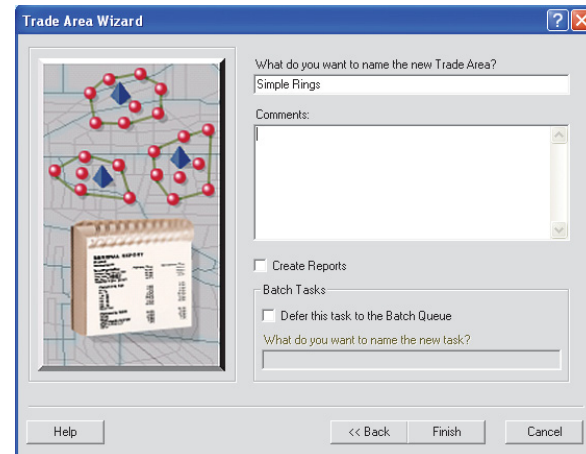
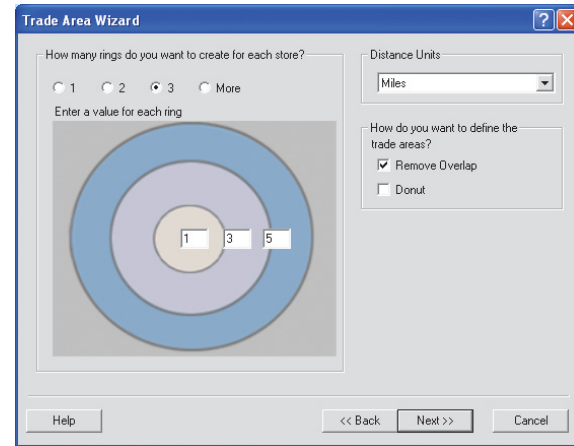


8. Choose how many rings you want to create for each store, 1, 2, 3, or More, then type a value for each ring in the text boxes.
9. Click the Distance Units drop-down menu to choose a distance from the list.
10. To define the trade area, click either Remove Overlap or Donut, then click Next. By default, Business Analyst defines rings using the radius you choose, measuring from the center outward. If you check Donut, Business Analyst calculates values between rings—for example, Center to Ring 1, Ring 1 to Ring 2, Ring 2 to Ring 3, and so on.

If you check Remove Overlap and have rings from two different stores that intersect, Business Analyst will calculate a straight-line boundary between the intersect points of the two rings.

11. Type a name for the new trade area in the text box and type any comments, then click Finish.

Your new trade area is created and displayed on the map.



# Nonoverlapping rings

Nonoverlapping rings are trade areas created around your stores using a radius that you specify.

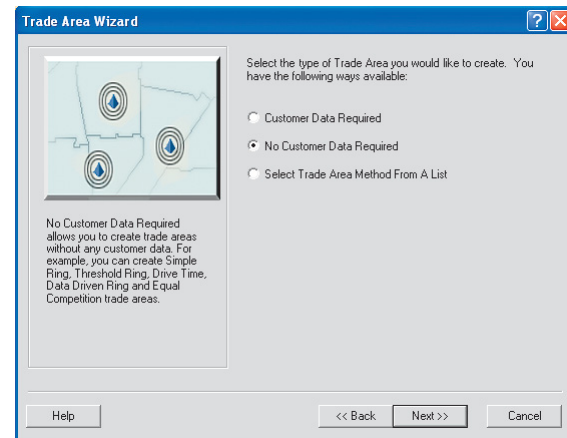
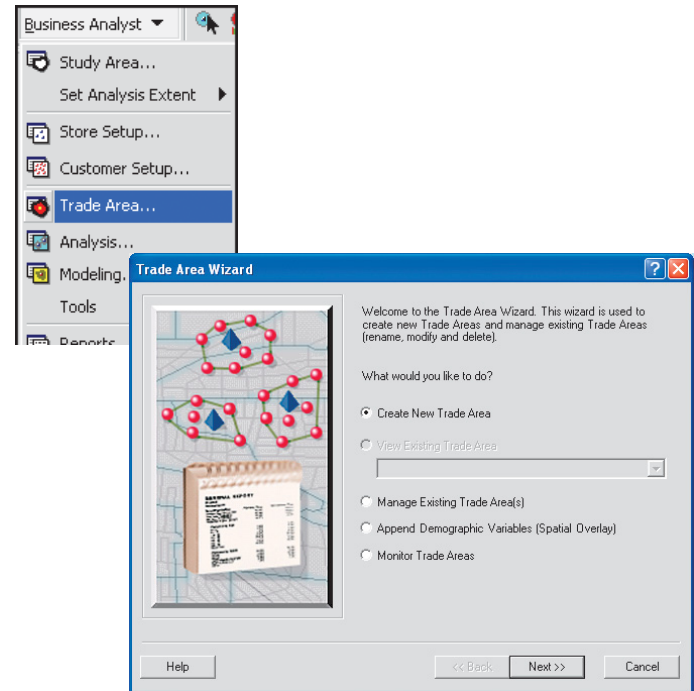
Alternatively, you can calculate the rings based on some field value in your store layer. Any rings that intersect will have the overlap removed. Business Analyst does this by calculating a straight-line boundary between the points of intersection.

## Creating a no customer data required trade area using nonoverlapping rings

1. Click the Business Analyst drop-down menu and click Trade Area.

The Trade Area Wizard opens.

2. Click Create New Trade Area, then click Next.
3. Click No Customer Data Required as the type of trade area you want to create, then click Next. ▶

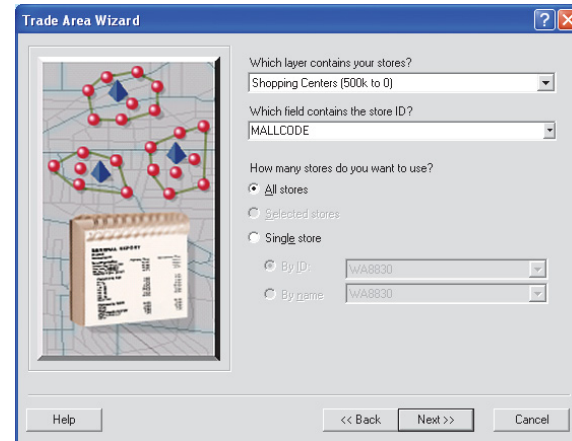
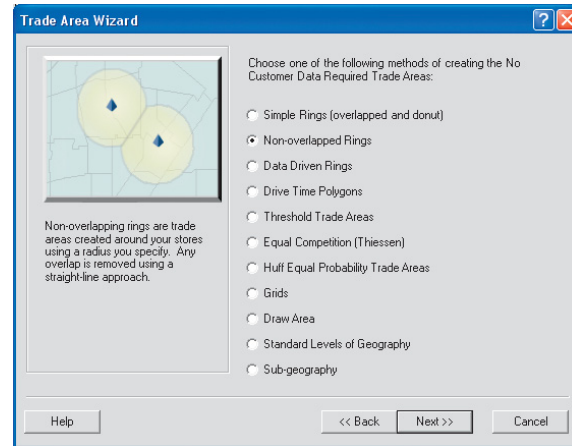


## Tip

### Calculating Statistics

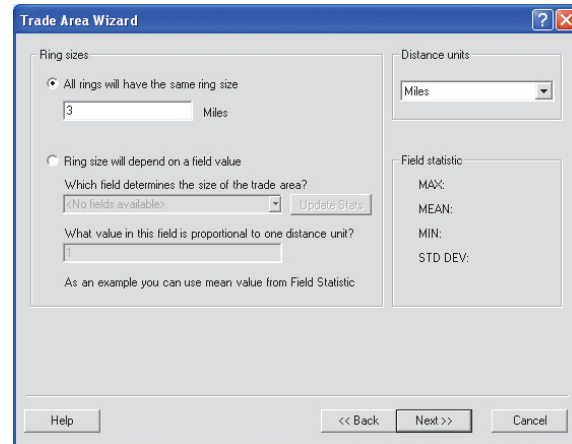
Click the *Update Stats* button to have *Business Analyst* calculate statistics for all values in the selected field. These statistics can be helpful in choosing the value in the next box that will equate with one distance unit—for example, if you choose store sales, a store with more sales would have a larger ring around it. You can determine the area of the rings on the map by changing the value that equates to one distance unit.

- Determine how to create the trade area; click *Non-overlapped Rings*, then click *Next*.
- Click the drop-down menu and click the layer that contains your stores. Click the second drop-down menu and click the field that contains the store ID.
- Determine how many stores you want to use by clicking *All stores*, *Selected stores*, or *Single store*. If you choose *Single store*, click *By ID* or *By name* and click an option from the respective drop-down menu, then click *Next*. ▶



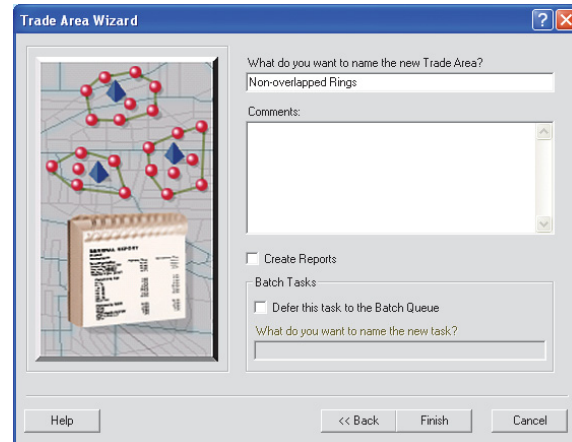
7. Choose the ring sizes:

Click All rings will have the same ring size, then type a number for the distance. To change the distance units, click the Distance Units drop-down menu and choose from the list. Or click Ring size will depend on a field value, click the Distance Units drop-down menu and choose from the list. Or click Ring size will depend on a field value and click the drop-down menu to choose which field determines the size of the trade area. Type a number in the text box: What value in this field is proportional to one distance unit?



8. Type a name for the new trade area in the text box, type any comments, then click Finish.

Your new trade area is created and displayed on the map.



## Data-driven rings

You can generate *data-driven rings* in store market analysis. The size of the ring is determined by some numeric value in the store data, such as sales or store size. For healthcare, it could be number of hospital beds, while for media it might be signal strength for radio stations. The greater the data value, the larger the size of the ring. This analysis is primarily used to look at your competition, but it can also be used to analyze potential new locations.

A shopping mall with 1,000,000 square feet should be able to attract customers over a larger distance than one with 250,000 square feet. Data-driven rings can give an analyst a rough idea of the drawing radius of shopping centers. The estimated population can determine if the center's service area meets a certain threshold population required for a business. Other examples of data-driven rings include:

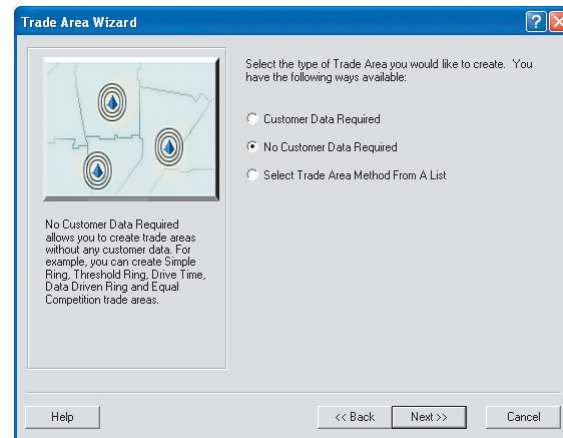
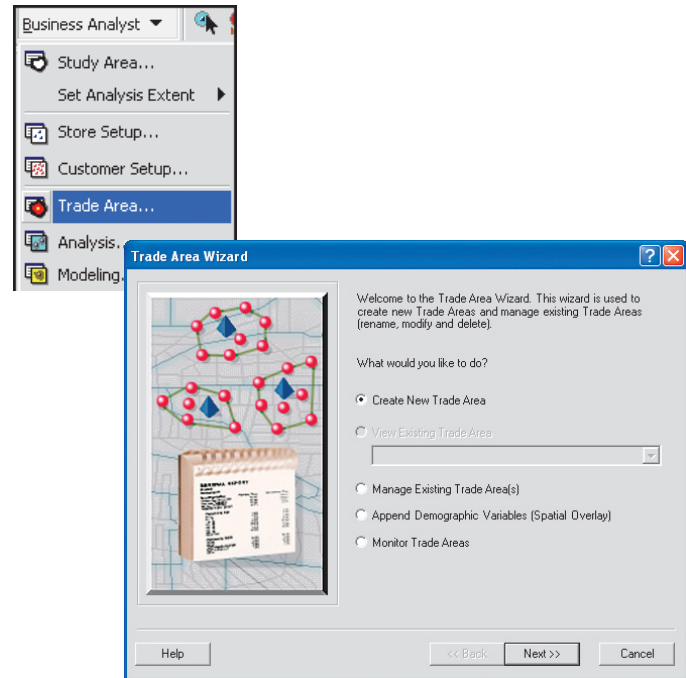
- The developer of small shopping centers uses rings based on gross leasable area (GLA) to analyze the effects of competing centers. ►

## Creating a no customer data required trade area using data-driven rings

1. Click the Business Analyst drop-down menu and click Trade Area.

The Trade Area Wizard opens.

2. Click Create New Trade Area, then click Next.
3. Click No Customer Data Required as the type of trade area you want to create, then click Next. ►



- Store managers can use rings driven by total sales to justify higher real estate costs in larger power centers.

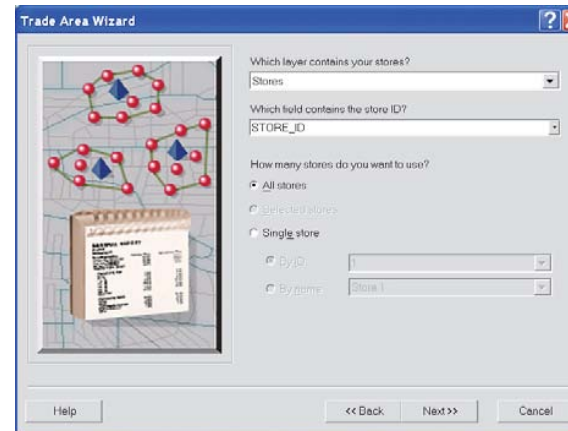
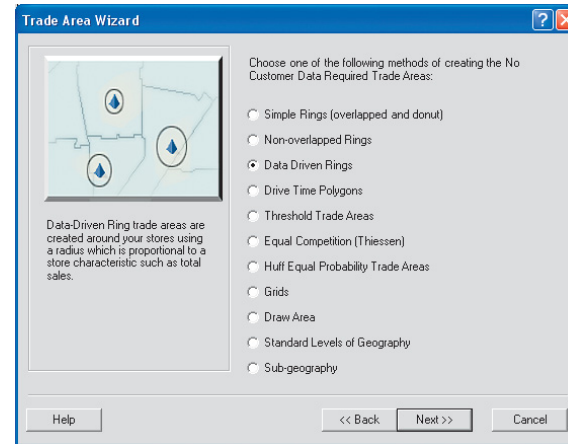
Data-driven rings can be created around your stores when you specify a value in the store data. This value is set equal to a distance and the rings are calculated in this way.

This is typically used to create radius trade areas for competitors so a store owner can see if a store is being cannibalized by the competition. It can also be used to look for gaps in the market area.

To determine what value you want to use, choose the field that determines the size of the trade area. If you already know what value you want to use, type it in the text box. If you aren't sure what value you want to use, click Field statistic. The minimum, maximum, and mean values appear on the left side of the dialog box.

If you choose your stores' total sales field and specify \$100,000, to be proportional to a one-mile ring, then a store with \$200,000 in sales will have a two-mile ring, a store with \$750,000 will have a 7.5-mile ring, and so on. This task guides you through this process.

4. Determine how to create the trade area, click Data Driven Rings, then click Next.
5. Click the drop-down menu and click the layer that contains your stores. Click the second drop-down menu and click the field that contains the store ID.
6. Determine how many stores you want to use by clicking All stores, Selected stores, or Single store. If you choose Single store, click By ID or By name and choose an option from the respective drop-down menu. Click Next to continue. ▶



## Tip

### Calculating Statistics

Click the *Advanced* button to have *Business Analyst* alter the dependencies on the value that determines the size of the trade area. You can use polynomial dependency instead of the linear approach. By default, the relationship between the size field you select is linear. You can use the *Advanced* setting to equalize the relationship between the size field and the area. For instance the area of the ring can be shown proportional to gross leasable area.

- Click the drop-down menu and click Which field determines the size of the trade area, then type a number in the text box: What value in this field is proportional to a one distance unit?
- Click the Distance Units drop-down menu and choose a distance unit from the list.
- Click the *Advanced* button to define a polynomial dependency, then click *Next*.
- Type a name for the new trade area in the text box, type any comments, then click *Finish*.

Your new trade area is created and displayed on the map.

Trade Area Wizard

Ring sizes

Which field determines the size of the trade area?

TOTSALSALES Update Stats

Distance units

Miles

Field statistic

MAX:  
MEAN:  
MIN:  
STD DEV:

What value in this field is proportional to one mile?

1

As an example you can use mean value from Field Statistic

<<Advanced

You can use polynomial dependency between area size and ring radius instead of linear (default). This option can be used when you think, for instance, that the ring should be proportional to the square root of GLA of your store.

Define custom exponent. Recommended values are between 0 and 2.

1.0

Help << Back Next >> Cancel

Trade Area Wizard

What do you want to name the new Trade Area?

Data Driven Rings

Comments:

Create Reports

Batch Tasks

Defer this task to the Batch Queue

What do you want to name the new task?

Help << Back Finish Cancel



## Drive time polygons

You can generate drive time areas that use actual street networks and approximated driving times. Equal competition market areas do not adjust for the way people actually travel on the ground. Equal competition market areas are based on as-the-crow-flies distances, while people in the real world use real roads and streets to get where they want to go. A two-mile trip might take five minutes on one road network and fifteen on another.

Pizza delivery once again provides a good example for the use of drive time polygons. A company may want to limit deliveries to a total of 15 minutes. This means that the delivery limit of each store might be restricted to eight minutes (six minutes to the delivery point, three minutes at the delivery site, and six minutes to return).

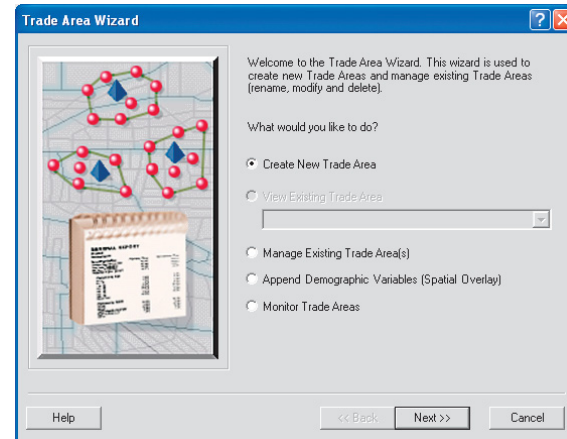
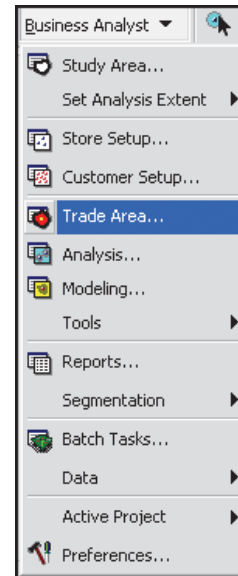
Overlap can occur. Some chains have solved this problem by using equal competition areas where drive time overlap occurs to make each service zone unique and using the drive times at the edge of built-up urban areas to restrict delivery distances and times. ►

## Creating a no customer data required trade area using drive-time polygons

1. Click the Business Analyst drop-down menu and click Trade Area.

The Trade Area Wizard opens.

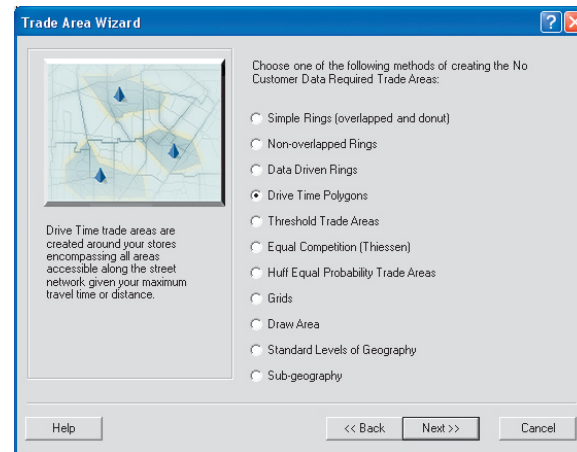
2. Click Create New Trade Area, then click Next. ►



Other examples of drive time areas include:

- Drive time is the defining measure for most urban travel. Potential customers respond much more to a location advertised as being within five minutes than one within two miles.
- Appliance repair operations use drive time polygons to estimate the total length of service calls.
- Video stores locate stores so at least some minimum population is within five minutes of each store. The threshold population is also dependent on the number and location of competitors within each drive time polygon.
- Drive time analysis creates three types of results: drive time (by actual street network drive distance), drive distance, and service area boundaries.

3. Click No Customer Data Required as the type of trade area you want to create, then click Next.
4. Determine how to create the trade area; click Drive Time Polygons, then click Next. ►



## Tip

### Using StreetMap Drive Time

On the Drive Time Polygons menu, you can choose to use the ESRI StreetMap™ drive time engine by selecting StreetMap from the Drive Time Polygons drop-down menu.

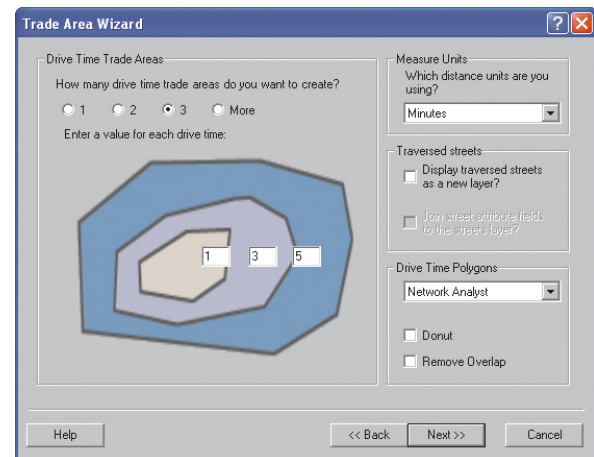
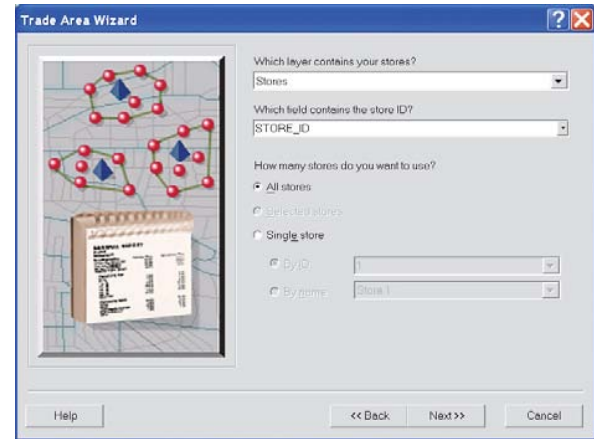
### Network Analyst vs. StreetMap drive times

As a default, Business Analyst uses the ArcGIS Network Analyst extension to perform drive time analysis. You also have the option to use StreetMap to calculate drive times. Using the StreetMap option may return more generalized polygons, but can be used for large datasets where accuracy is less a factor. StreetMap drive times are generally created much faster and can be used when estimating travel time or distance for a large number of store points.

## Tip

You can globally set the drive time algorithm in the Business Analyst Preferences > Drive Time tab.

- Click the drop-down menu and click the layer that contains your stores. Click the second drop-down menu and click the field that contains the store ID.
  - Determine how many stores you want to use by clicking All stores, Selected stores, or Single store. If you choose Single store, click By ID or By name and click an option from the respective drop-down menu. Click Next to continue.
  - Choose how many drive time trade areas you want to create, 1, 2, 3, or More, then type a value for each drive time in the text boxes.
  - Click the Measure Units drop-down menu and click the units you want to use. Under Traversed streets, check the box if you want to Display traversed streets as a new layer. Under Drive Time Polygons, check the box if you want to Remove Overlap.
- By default, drive time rings are calculated from the center outward—for example, 0 to 1, 0 to 3, and 0 to 5 miles. You can choose Donut, which will summarize values between rings—for example, 0 to 1, 1 to 3, and 3 to 5 miles. ►

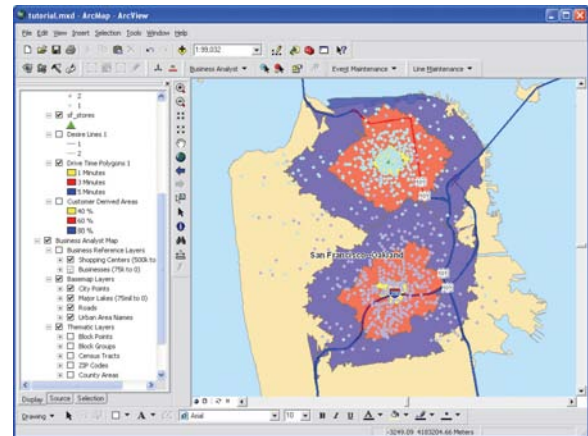
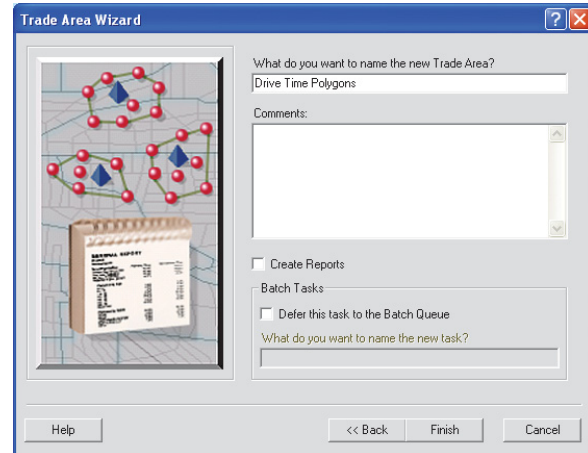


## Tip

### Choosing Measure Units

*On the Measure Units drop-down menu, you can choose time or distance. If you choose a distance, decimal entries are acceptable.*

9. Type a name for the new trade area in the text box, type any comments, then click Finish.  
Your new trade area is created and displayed on the map.



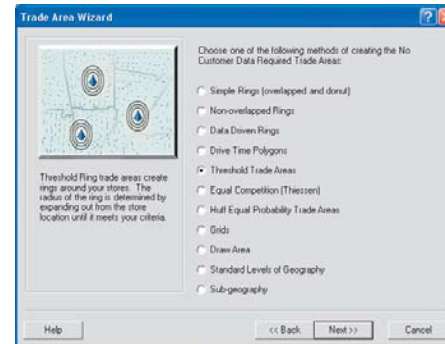
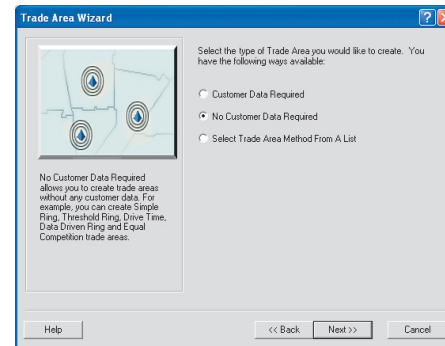
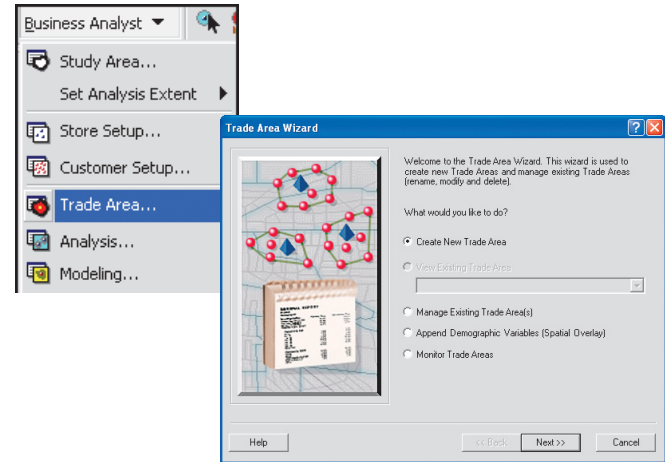
# Threshold Trade Areas

Threshold Trade Areas create polygons around your stores. The radius of the polygon is determined by expanding out from the store location until it meets your criteria. The polygons can be concentric rings or drive time areas.

You can choose any layer and field in that layer to use in creating the rings. By default, the Block Points layer is selected but it is recommended that you change this to Block Groups to access all of the demographic variables available. You could also use any of the ESRI Community™ demographic data from the Block Group layer or even your own data as part of a BDS layer. Business Analyst automatically uses block-point data aggregation to more accurately define the threshold areas.

## Creating a no customer data required trade area using threshold rings

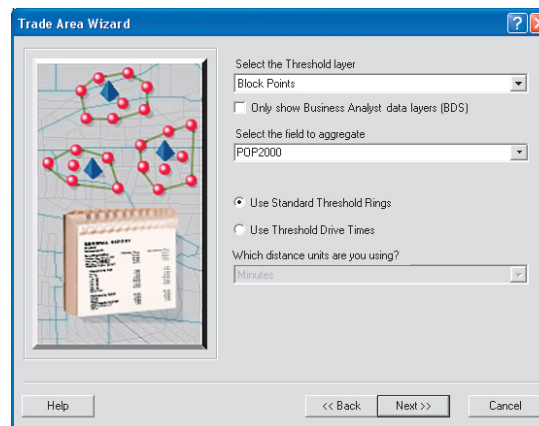
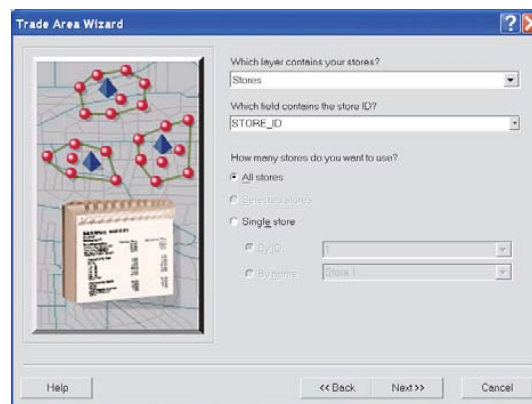
1. Click the Business Analyst drop-down menu and click Trade Area.  
The Trade Area Wizard opens.
2. Click Create New Trade Area, then click Next.
3. Click No Customer Data Required as the type of trade area you want to create, then click Next.
4. Determine how to create the trade area, click Threshold Trade Areas, then click Next.



## Tip

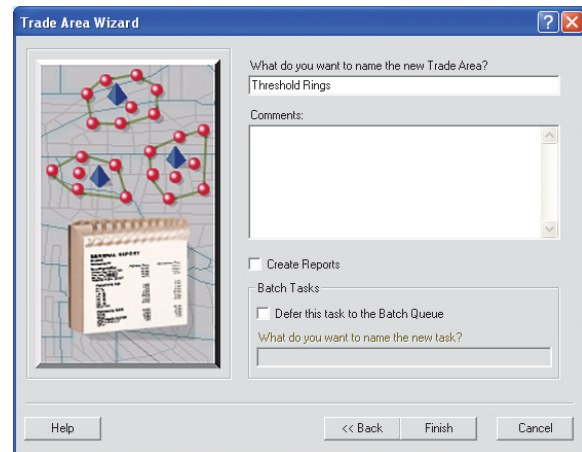
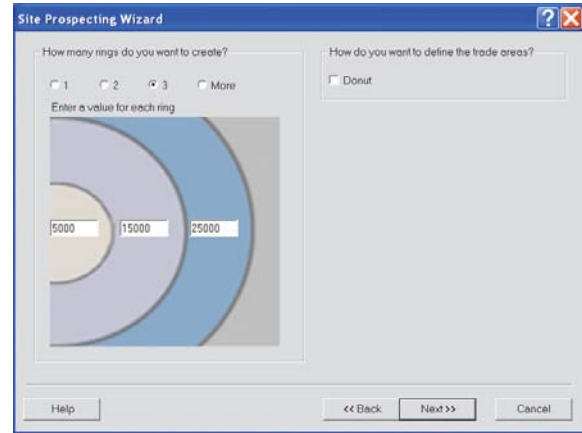
*You can select Block Groups and the current year Total Households.*

- Click the drop-down menu and click the layer that contains your stores. Click the second drop-down menu and click the field that contains the store ID.
- Determine how many stores you want to use by clicking All stores, Selected stores, or Single store. If you choose Single store, click By ID or By name and click an option from the respective drop-down menu. Click Next to continue.
- Click the drop-down menu and click the layer that contains the Threshold field for summarization. Note that you can choose to show only the Business Analyst data (BDS) layers. Click the second drop-down menu and click the field to aggregate.
- Select your polygon method:  
Use Standard Threshold Rings to create concentric circles around each point.  
Use Threshold Drive Times to generate drive time areas around each point. If you choose this option, select your distance units.
- Click Next to continue. ►



- Choose how many rings you want to create, 1, 2, 3, or More, then type a value for each ring in the text boxes. By default, all rings are summarized from the center point outward. You can click Donut, which will summarize values between rings, for example, 0 to ring 1, between ring 1 and ring 2, between ring 2 and ring 3, and so on. Click Next to continue.
- Type a name for the new trade area in the text box, type any comments, then click Finish.

Your new trade area is created and displayed on the map.





## Equal competition (Thiessen)

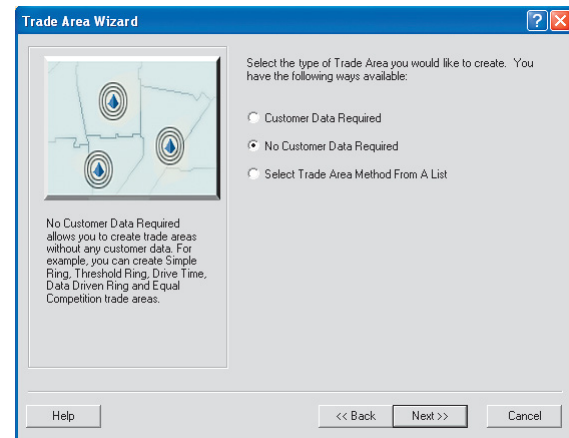
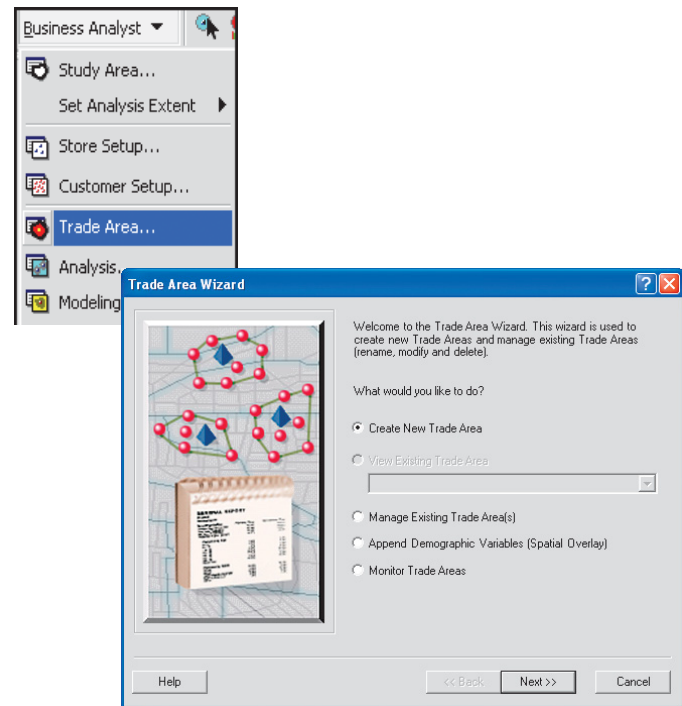
Another type of store-based market area is called *equal competition* (also called *Thiessen polygons*). This type of trade area assumes that consumers will travel to the closest store or facility. A line is drawn exactly halfway between two competing centers.

Equal competition areas can provide a better understanding of the natural market areas of a facility. This is the best type of market area to use for store-specific direct mail. Each customer receives advertising geared toward a specific store location. There are no multiple mailings, and the customer is directed to the nearest store. This lowers direct mail costs and generally increases the hit rate.

Pizza deliveries use equal competition areas to define delivery markets. The order is directed to the location closest to the customer, and there is no competing overlap. All locations in each equal competition area can be geocoded by street address. Each incoming call can be automatically routed to the ►

## Creating a no customer data required trade area using equal competition (Thiessen)

1. Click the Business Analyst drop-down menu and click Trade Area.
2. Click Create New Trade Area, then click Next.
3. Click No Customer Data Required as the type of trade area you want to create, then click Next. ►



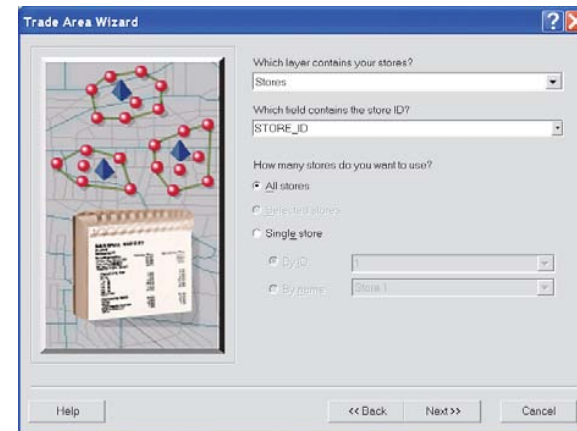
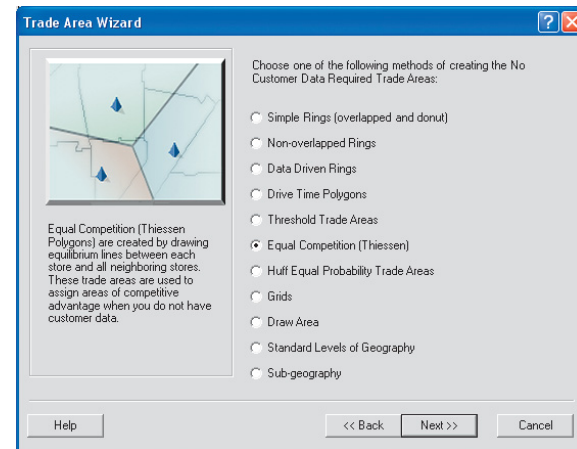
proper store by asking the customer for a street address.

Equal competition areas provide accurate estimates of store trade areas for operations without customer records. The corners of multiple equal competition areas are often good locations for new store expansion.

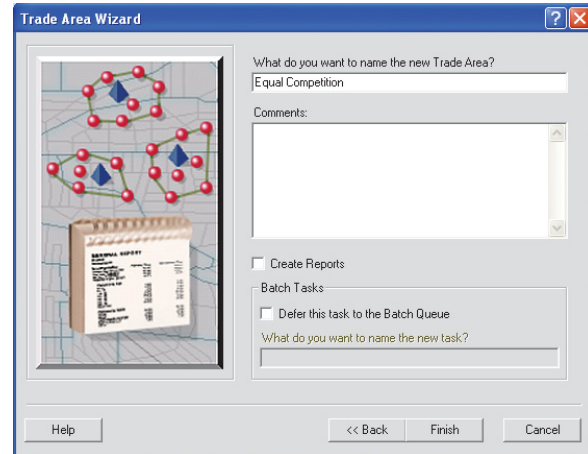
Available area is apportioned into trade areas for each store by creating boundary lines equidistant from each of the store locations.

Equal competition (Thiessen polygons) are created by drawing equilibrium lines between each store and all neighboring stores. These trade areas are used to assign areas of competitive advantage when you do not have customer data.

- Determine how to create the trade area; click Equal Competition (Thiessen), then click Next.
- Click the drop-down menu and click the layer that contains your stores. Click the second drop-down menu and click the field that contains the store ID.
- Determine how many stores you want to use by clicking All stores, Selected stores, or Single store. If you choose Single store, click By ID or By name and click an option from the respective drop-down menu. Click Next to continue. ▶



7. Type a name for the new trade area in the text box, type any comments, then click Finish.
- Your new trade area is created and displayed on the map.



# Huff equal probability trade areas

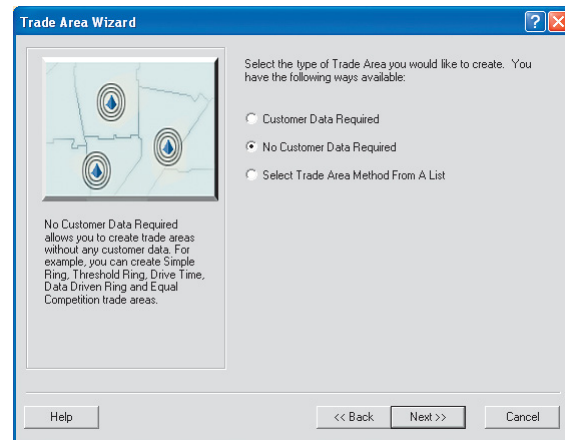
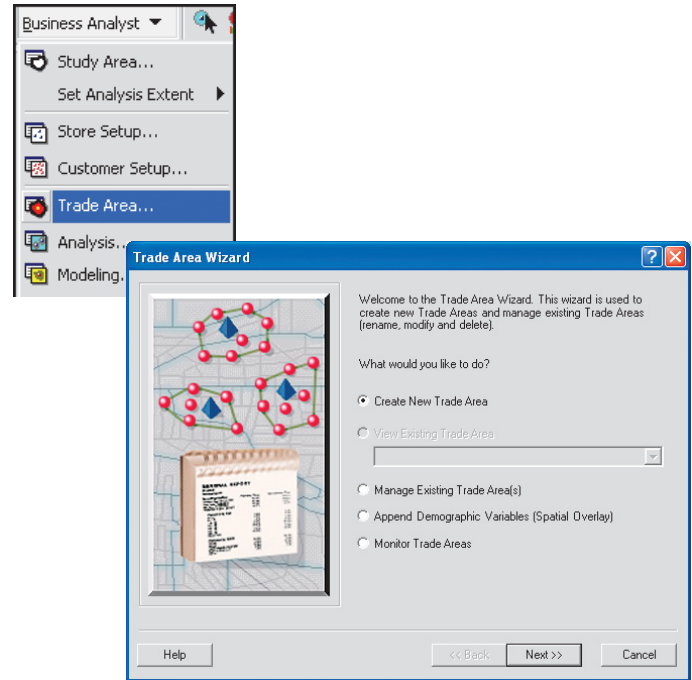
Huff equal probability trade areas are similar to equal competition areas, but the boundaries between the stores are weighted based on one or more variables. These weights can be calculated from results of a Huff model you have run, or you can enter the parameters manually using predictor variables in your store layer.

## Creating a no customer data required trade area using Huff equal probability

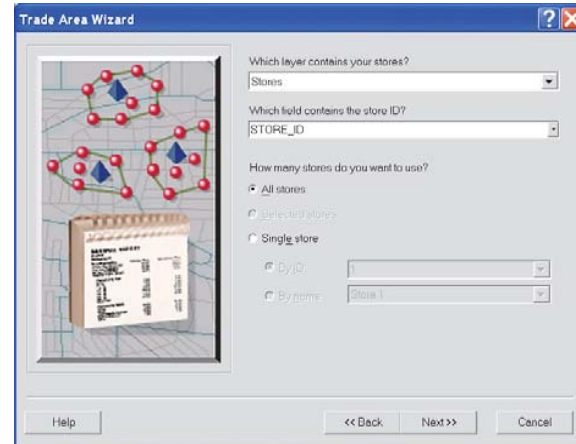
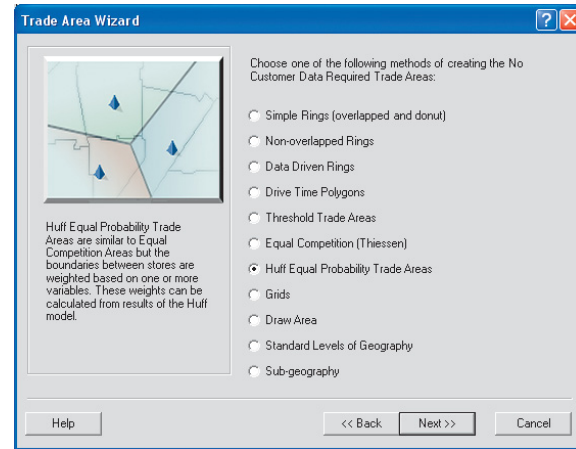
1. Click the Business Analyst drop-down menu and click Trade Area.

The Trade Area Wizard opens.

2. Click Create New Trade Area, then click Next.
3. Click No Customer Data Required as the type of trade area you want to create, then click Next. ▶



4. Determine how to create the trade area; click Huff Equal Probability Trade Areas, then click Next.
5. Click the drop-down menu and click the layer that contains your stores. Click the second drop-down menu and click the field that contains the store ID.
6. Determine how many stores you want to use by clicking All stores, Selected stores, or Single store. If you choose Single store, click By ID or By name and click an option from the respective drop-down menu. Click Next to continue. ►

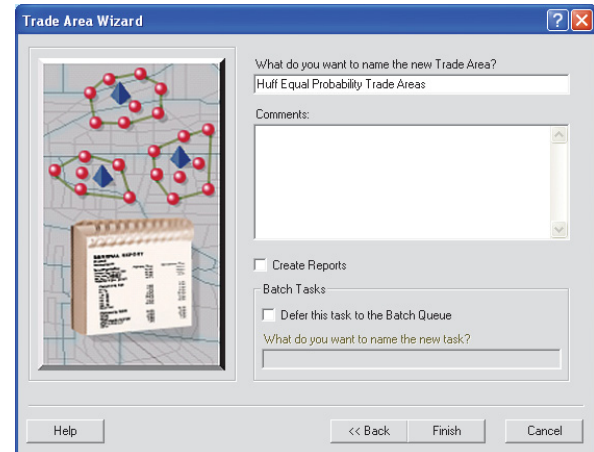
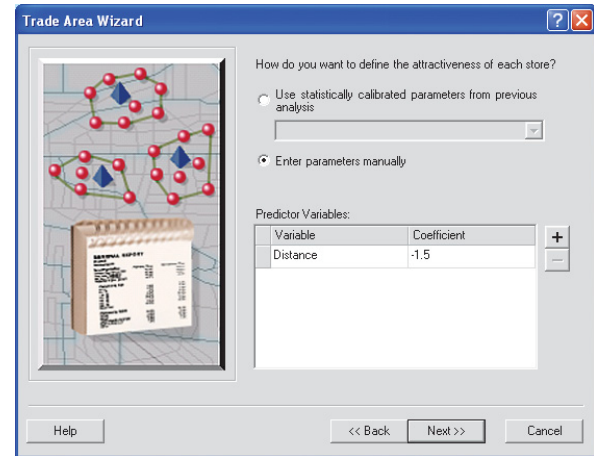


## Tip

*It is recommended to use a statistically calibrated output from a Huff model.*

- Determine how you want to define the attractiveness of each store. You can click Use statistically calibrated parameters from previous analysis, then click the drop-down menu to make a selection. Alternatively, you can click Enter parameters manually, and set the Predictor Variables using the plus (+) and minus (-) buttons, then click Next.
- Type a name for the new trade area in the text box, type any comments, then click Finish.

Your new trade area is created and appears on the map.



# Grids

## About Grids

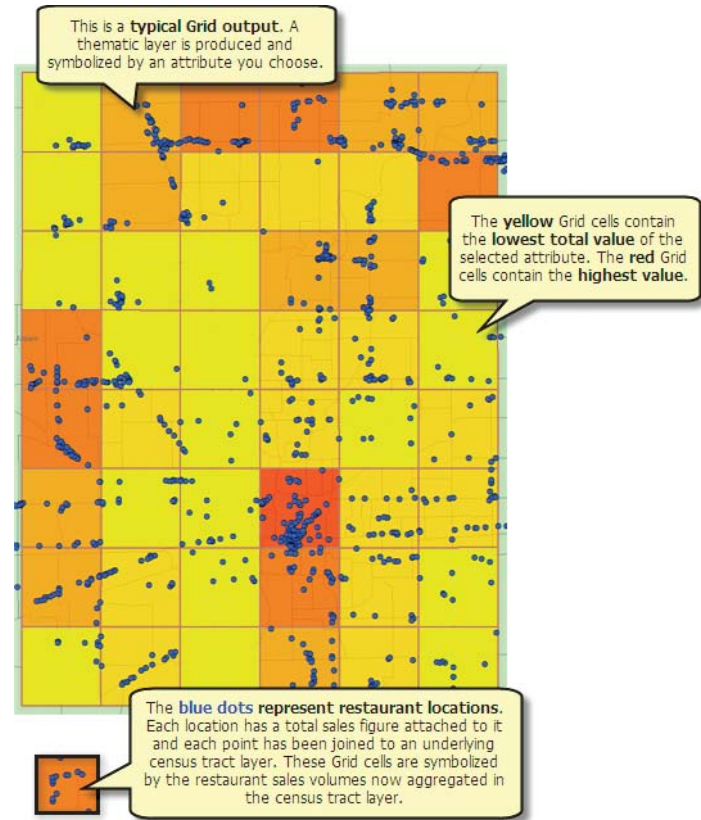
An area of equal-sized grids are created over the designated study area. You can create grid cells based on the current extent, study area extent, or the extent of a feature in another layer. You can append demographic data to a grid cell to provide a normalized view of the data, identifying hot spots and areas of interest. Hot spot grid areas appear with prominent red coloring by default.

## Example of Grids output

This example shows a typical Grid analysis output created in Business Analyst.

- A default thematic layer is added to the map symbolized from the variable you choose.
- The attribute table contains unique cell identifiers and aggregated data for each selected variable for every cell.
- By default, the variable is broken down using Natural Breaks into five classes and added to the Table of Contents.

Here is an example of the Grid thematic layer.





Here is an example of the Grid Attribute table. This attribute table is directly related to the thematic output on the previous page.

**A\_Area\_ID** is automatically generated by concatenating the **COLUMN\_ID** and **ROW\_ID** fields. This produces a field suitable for labeling each cell, much like a bingo table.

These fields come from the **restaurant point database**. The **SALES\_VOL** is used as the main symbolization value.

FID	Shape	AREA_ID	ROW_ID	COLUMN_ID	A_COLUMNID	A_Area_ID	SALES_VOL	NUMBER_EMP	2007 Total Population
0	Polygon	0	0	0	A	A0	1601.79	34	1685
1	Polygon	1	0	1	B	B0	21710.38	416	3018
2	Polygon	2	0	2	C	C0	53284.15	1048	12423
3	Polygon	3	0	3	D	D0	40922.96	867	8537
4	Polygon	4	0	4	E	E0	29311.97	600	5621
5	Polygon	5	0	5	F	F0	32304.29	704	6990
6	Polygon	6	1	0	A	A1	2823.51	56	2115
7	Polygon	7	1	1	B	B1	25739.99	606	9613
8	Polygon	8	1	2	C	C1	11720.64	211	16624
9	Polygon	9	1	3	D	D1	8318.25	164	6433

These fields are typical in the Grid attribute table, they are automatically generated to describe the individual cell IDs

This field represents a variable that is **not symbolized on the map**, but the data is aggregated for each cell and included in the attribute table. This variable comes from the **census tract layer**.

Here is an example of the Grid layer added to the ArcMap Table of Contents.

The Grid values are added to the Table of Contents and automatically broken into a **Natural Breaks classification**. You can modify the classes and symbology in the Layer Properties. Restaurant sales volume value is used to symbolize the Grid cells in this example.

SALES_VOL
\$427.76 - \$7,606.79
\$7,606.80 - \$16,069.49
\$16,069.50 - \$32,304.29
\$32,304.30 - \$60,277.31
\$60,277.32 - \$126,426.69

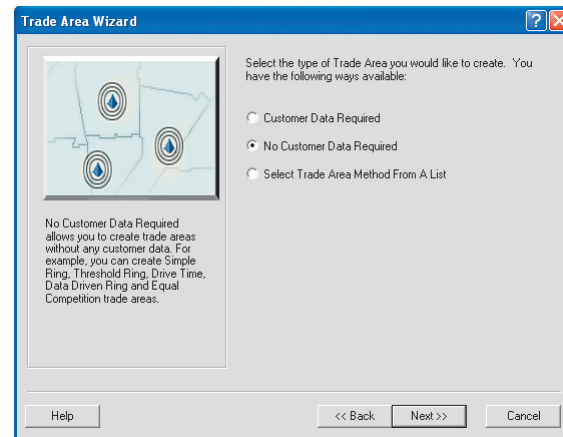
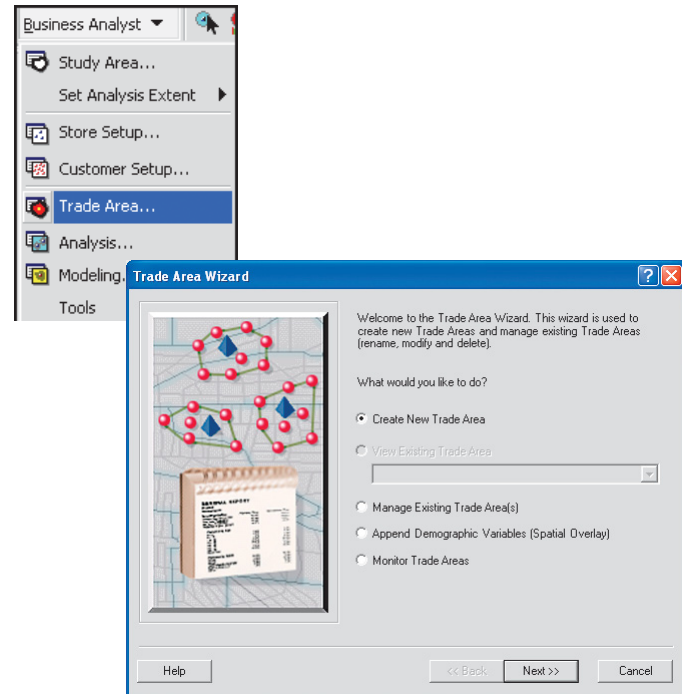
## Using grids

An area of equal-sized grids is created over the designated study area. You can create grid cells based on the current extent, study area extent, or the extent of a feature in another layer. You can append demographic data to a grid cell to provide a normalized view of the data, identifying hot spots and areas of interest. Hot spot grid areas appear with prominent red coloring by default.

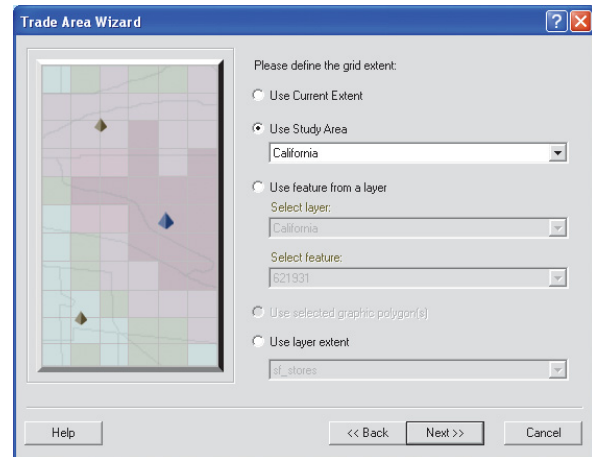
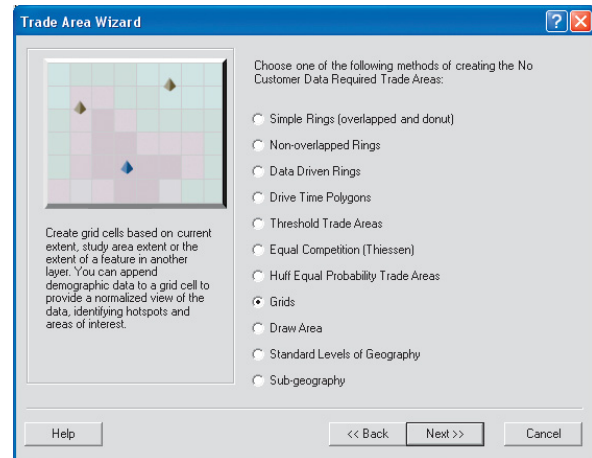
## Creating a no customer data required trade area using grid areas

1. Click the Business Analyst drop-down menu and click Trade Area.
2. Click Create New Trade Area, then click Next.
3. Click No Customer Data Required as the type of trade area you want to create, then click Next. ▶

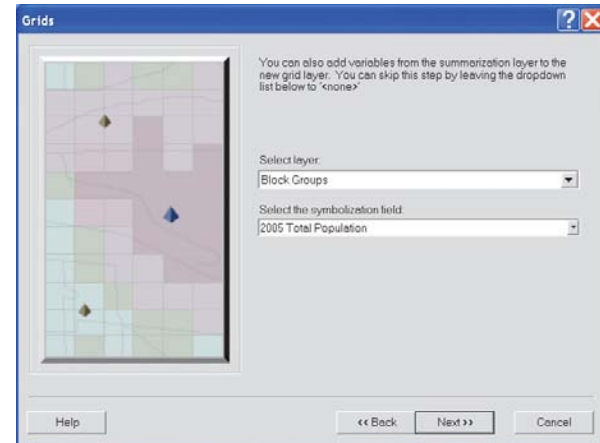
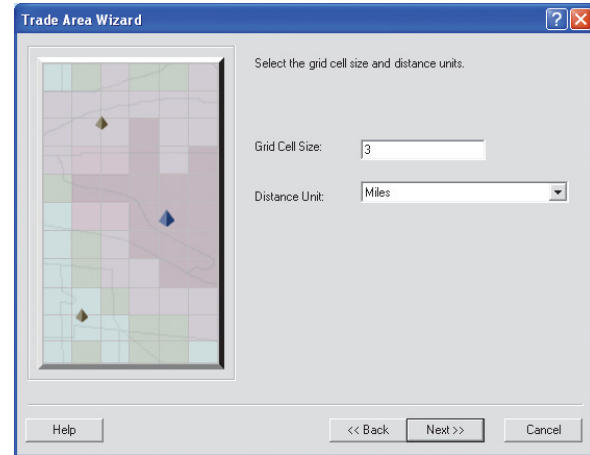
The Trade Area Wizard opens.



- Determine how to create the trade area; click Grids, then click Next.
- Define the grid extent; click Use Current Extent, Use Study Area, Use feature from a layer, Use selected graphic polygon, or Use layer extent, then click Next. ►

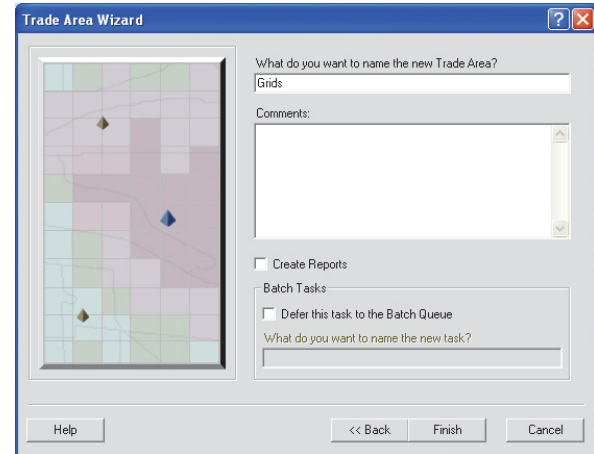
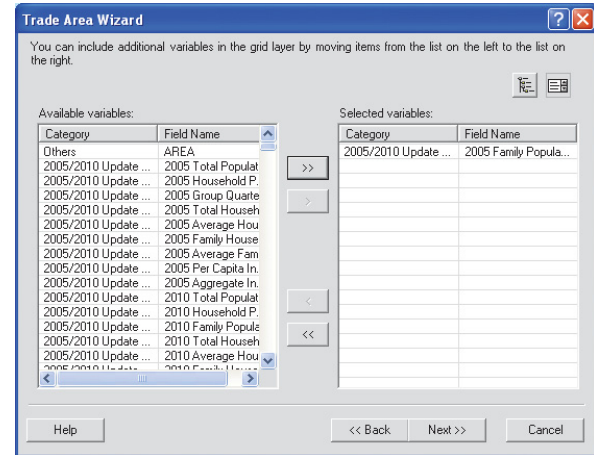


6. Determine the grid cell size and distance units. Type a number in the Grid Cell Size text box and choose distance units from the Distance Unit drop-down menu and click Next.
7. You can add variables from the summarization layer to the new grid layer, or you can skip this step by leaving the drop-down menu set to <none>. To add variables from the summarization layer, click the Select layer drop-down menu and click a layer, then click the Select the symbolization field drop-down menu and choose from the list. ►



8. To include additional variables, choose from the Available variables list, then click the Add button to add them to the Selected variables column. Click Next when you are finished adding variables.
9. Type a name for the new trade area in the text box, type any comments, then click Finish.

Your new trade area is created and appears on the map.

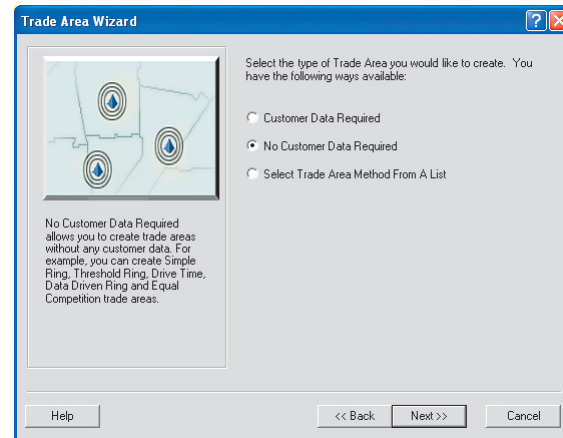
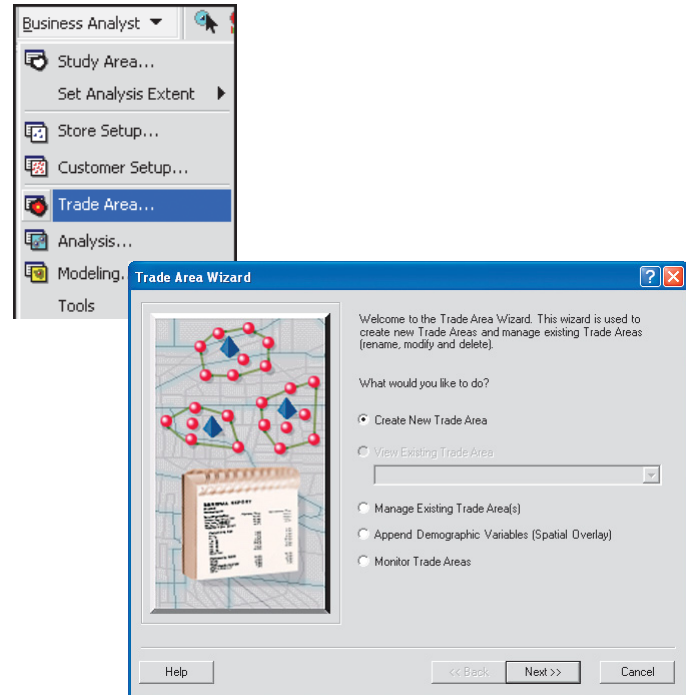


## Draw area

You can create custom trade areas of any size or shape. This can be helpful when designing an area that does not exist in any standard geographies. The Draw Area Wizard will automatically open the new polygon feature from the ArcGIS Drawing toolbar to allow you to create a customized polygon.

## Creating hand drawn trade areas

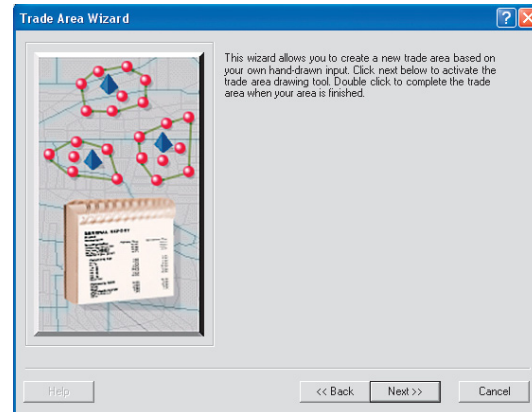
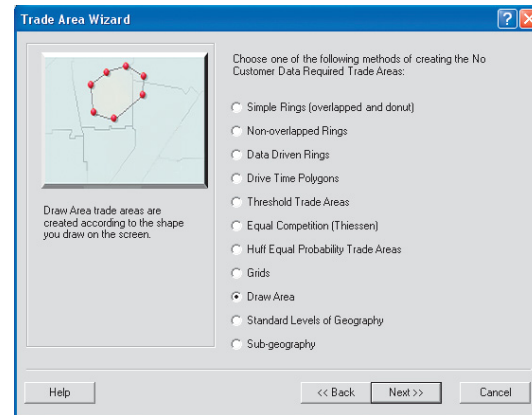
1. Click the Business Analyst drop-down menu and click Trade Area.
2. Click Create New Trade Area, then click Next.
3. Click No Customer Data Required as the type of trade area you want to create, then click Next. ▶



## Tip

*You can only create single polygons using the Draw Area tool. Multipart polygons are not supported using this function. To create multipart polygons you can use the Business Analyst Study Area wizard to select multiple graphic polygons or use the ArcGIS Editor toolbar and create a new feature class.*

4. Determine how to create the trade area, click Draw Area, and click Next.
5. Click Next to activate the trade area drawing tool. When you are finished, double-click to complete the trade area. ►

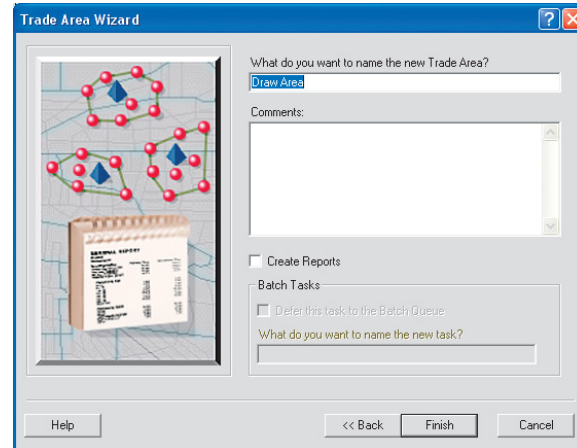
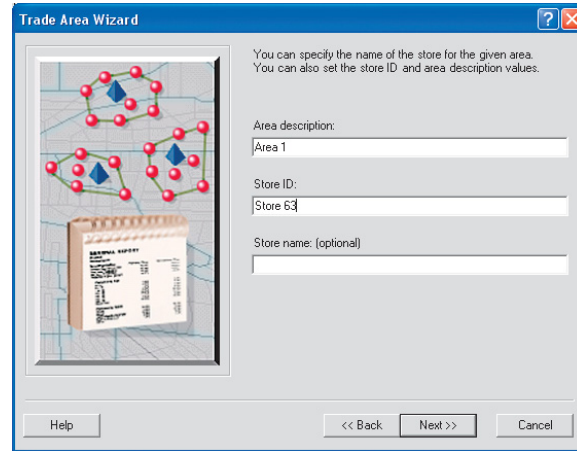




6. Type a name for the area description, type a store ID, and a store name which is optional. Click Next.

7. Type a name for the new trade area in the text box, type any comments, then click Finish.

Your new trade area is created and appears on the map.



## Standard levels of geography

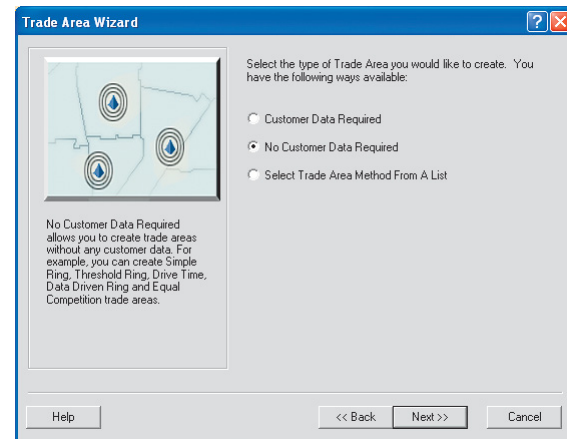
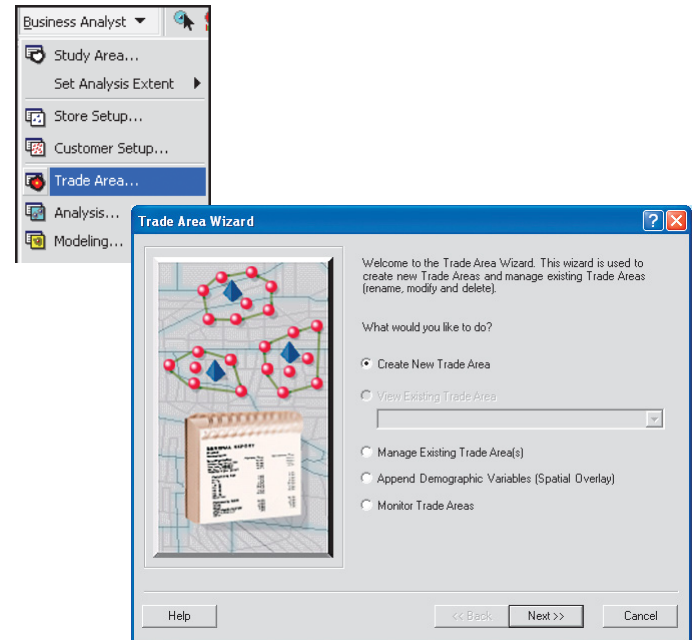
You create trade areas for a list of standard geography units, such as states, counties, tracts, ZIP Codes, Block Groups, Core Based Statistical Areas (CBSA), or Designated Market Areas (DMA). Individual trade areas are created for each unique geography—for example, each state, each ZIP Code—that you select.

## Creating a geography level-based trade area using standard levels of geography

1. Click the Business Analyst drop-down menu and click Trade Area.

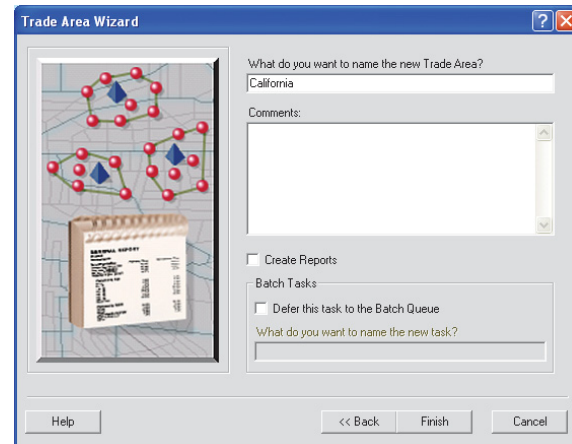
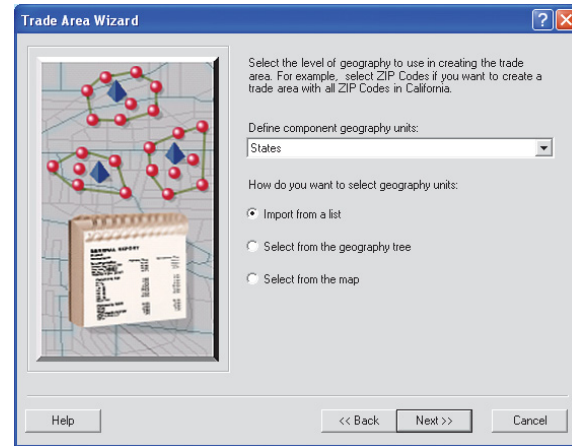
The Trade Area Wizard opens.

2. Click Create New Trade Area, then click Next.
3. Click No Customer Data Required as the type of trade area you want to create, then click Next.
4. Determine how to create the trade area, click Standard Levels of Geography, then click Next. ►



5. Click the drop-down menu to choose the level of geography to use in creating the trade area—for example, ZIP Codes, CBSAs, and so forth.
6. Choose how you want to select geography units: Import from a list, Select from the geography tree, or Select from the map; then click Next.
7. Depending on which option you chose in step 7, browse to select the file containing geography units, select from the geography tree, or use the Select Features tool on the map, then click Next.
8. Type a name for the new trade area in the text box and type any comments, then click Finish.

Your new trade area layer is created and appears on the map. It contains polygon areas for each geography. If you want to separate the polygons into trade area layers, you can use the Business Analyst Dissolve by Attribute tool.

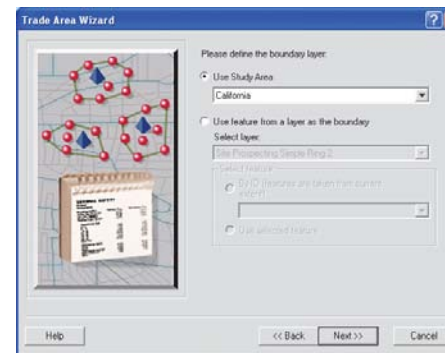
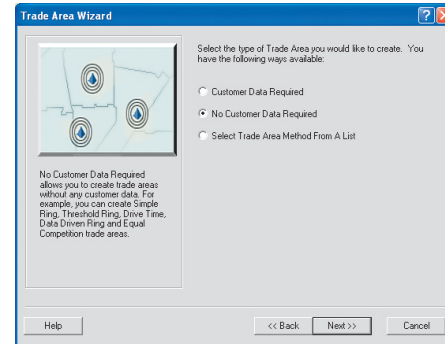
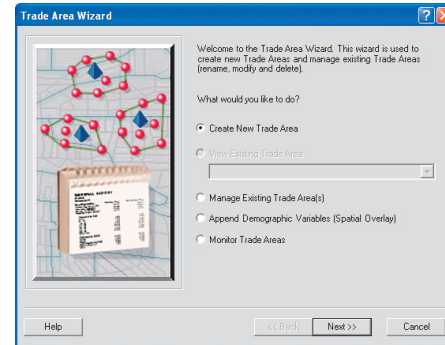


# Subgeography

Clicking Subgeography trade areas allows you to create trade areas for each standard geography boundary inside another layer boundary, for example, block groups inside a drive time boundary.

## Creating a geography level-based trade area using subgeography

1. Click the Business Analyst drop-down menu and click Trade Area.  
The Trade Area Wizard opens.
2. Click Create New Trade Area, then click Next.
3. Click No Customer Data Required as the type of trade area you want to create, then click Next.
4. Determine how to create the trade area, click Sub-geography, then click Next.
5. To define the boundary layer, click Use Study Area and click a study area from the drop-down menu, or click Use feature from a layer as the boundary, then choose the layer from the drop-down menu. Then, click By ID and choose from the drop-down list, or click Use selected feature and click Next. ►



## Tip

### Calculating ratios

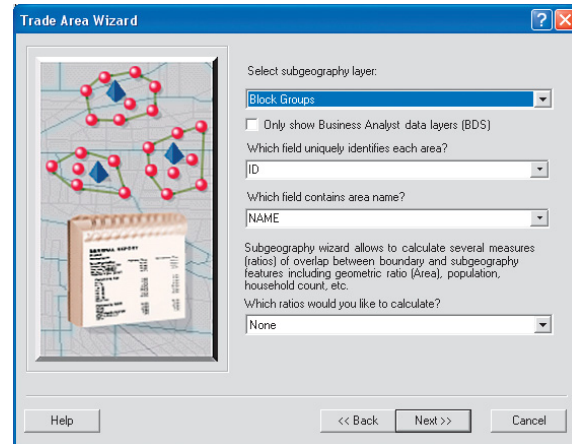
The Subgeography Trade Area tool gives you the option to calculate the ratios of the underlying geographies. For example, let's say you create a Subgeography Trade Area of all ZIP Codes within a county. You can use the calculate ratios option to determine what percentage of ZIP Codes exist within the county boundary. Ratios for population, households, housing units, business counts, and general area can be generated. The ratio output appears in the trade area attribute table.

**Area Only:** This method means that a percentage will be calculated only where subgeographies intersect the boundary layer (e.g., percentage of area for each ZIP Code boundary within a county boundary).

**All:** This method calculates the percentage of population, housing units, households, and business points of the subgeography layers within the overall boundaries. In addition, area ratio is also included.

**None:** Selecting None will exclude ratio calculations in Subgeography Trade Areas. The outputted attribute table will contain no percentage information.

- To select the subgeography layer, click From the list of Business Analyst Data layers and choose from the drop-down menu, or click From the list of all layers and choose from the drop-down menu. Click which field uniquely identifies each area and which field contains area name from the drop-down menus and click Next. ►



## Tip

### **Polygon selection methods**

You can choose different Sub-geography Trade Area selection methods that affects how the data is returned.

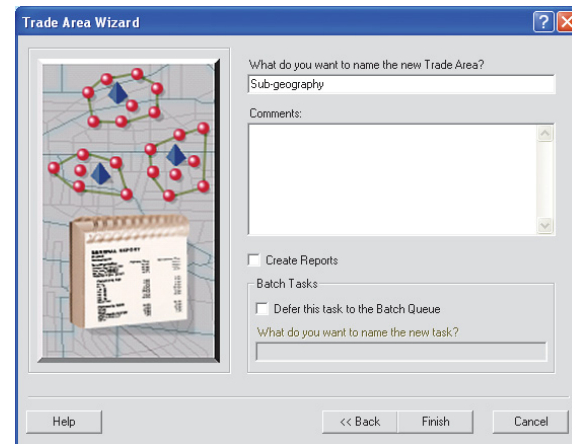
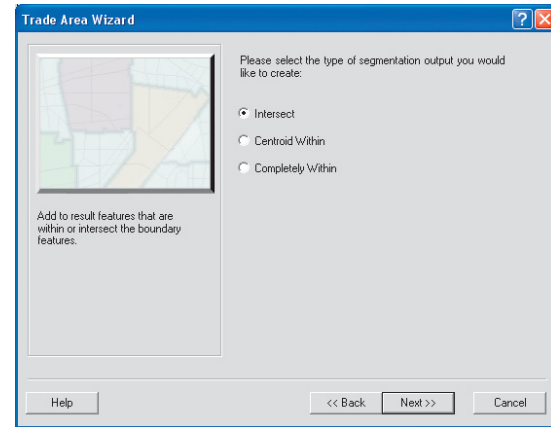
**Intersect:** Selects every ZIP polygon within the county, ZIP polygons crossing over the county boundaries, plus any ZIP polygons adjacent to the county. Using the intersect method could result in polygons stretching far away from the original boundary.

**Centroid Within:** Selects every ZIP polygon with its geographical center point within the county only. A ZIP Code can cross over into the county boundary and not actually be included in the analysis because its center points are outside the county.

**Completely Within:** Selects every ZIP polygon that is entirely within the county. The ZIP boundaries that touch or cross over the county boundary are not included.

7. Choose the type of segmentation output you want to create: Intersect, Centroid Within, or Completely Within; then click Next.
8. Type a name for the new trade area in the text box and type any comments, then click Finish.

Your new trade area layer is created and appears on the map. It contains polygon areas for each subgeography that was inside the boundary.







# Monitor and manage trade areas

# 9

## IN THIS CHAPTER

- Measure cannibalization
- Track trade area change
- Manage existing trade areas

Monitor Trade Areas allows you to track trade area change or measure cannibalization.

# Measure cannibalization

Measure Cannibalization calculates the amount of overlap between two or more trade areas.

## Creating the Monitor Trade Areas trade area using Measure Cannibalization

1. Click the Business Analyst drop-down menu and click Trade Area.

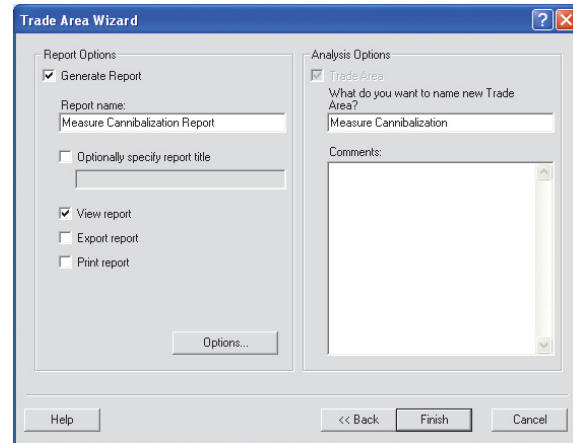
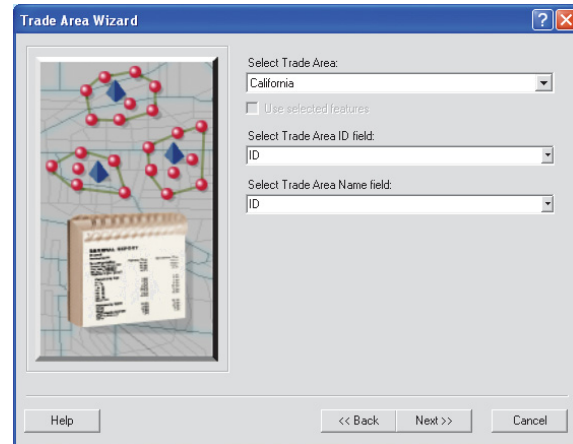
The Trade Area Wizard opens.

2. Click Monitor Trade Areas, then click next.
3. Determine how to create the trade area, click Measure Cannibalization, then click Next. ►



4. Click the drop-down menu to select the trade area. Click the second drop-down menu to select the trade area ID field, click the third drop-down menu to select the trade area name field, then click Next.
5. Click Generate Report, then type a name in the Report name text box. Optionally, specify a report title.
6. Type a name for the new trade area in the text box and enter any comments, then click Finish.

Your new trade area is created and appears on the map.



## Track trade area change

Track Trade Area Change is used primarily to track trade area change over time. This tool can also be used to compare any two overlapping trade areas.

### Creating the Monitor Trade Areas trade area using Track Trade Area Change

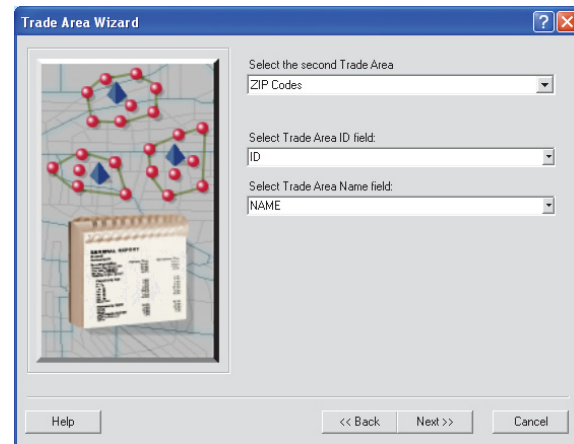
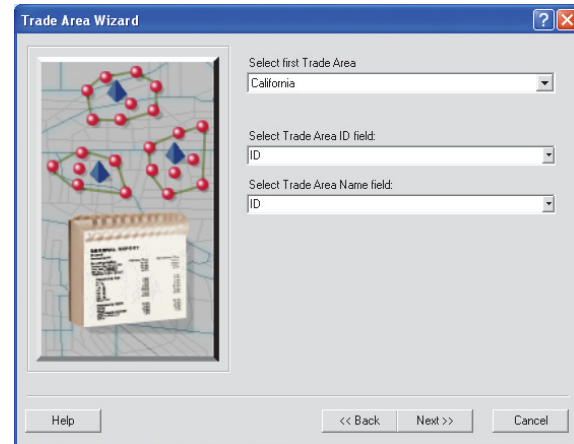
1. Click the Business Analyst drop-down menu and click Trade Area.

The Trade Area Wizard opens.

2. Click Monitor Trade Areas, then click next.
3. Determine how to create the trade area, click Track Trade Area Change, then click Next. ►

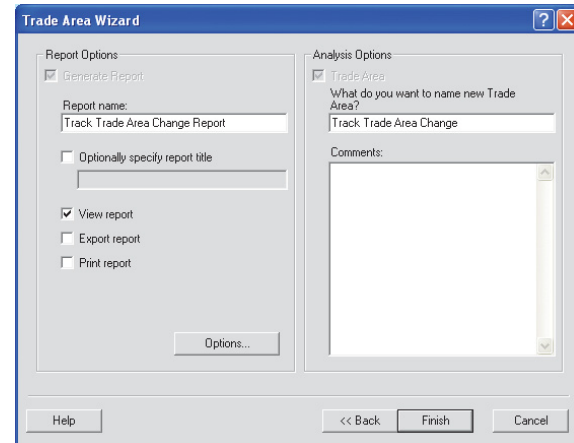
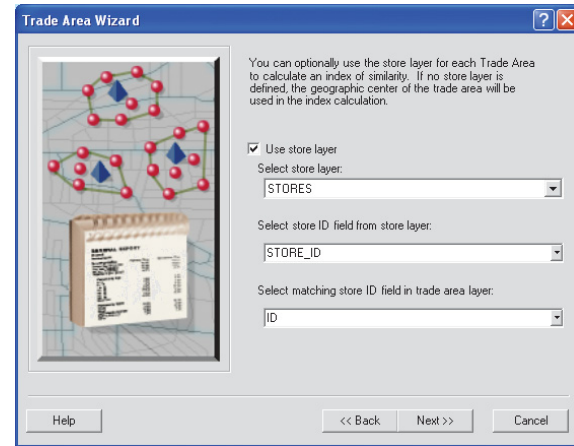


- Click the drop-down menu to select the first trade area. Click the second drop-down menu to select the trade area ID field, click the third drop-down menu to select the trade area name field, then click Next.
- Click the drop-down menu to select the second trade area. Note that the first and second trade areas must be different. Click the second drop-down menu to select the trade area ID field, click the third drop-down menu to select the trade area name field, then click Next. ►



6. Optionally, you can use the store layer for each trade area to calculate an index of similarity. To do this, click Use store layer, then click the drop-down menus to select the store layer, store ID field from store layer, and the matching store ID field in the trade area layer, then click Next.
7. Click Generate Report, then type a name in the Report name text box. Optionally, specify a report title. Then click View report, Export report, or Print report.
8. Type a name for the new trade area in the text box and enter any comments, then click Finish.

Your new trade area is created and appears on the map.



# Manage existing trade areas

This option allows you to view, modify, delete, or rename trade areas, and edit comments.

## Tip

### Using the different managing views

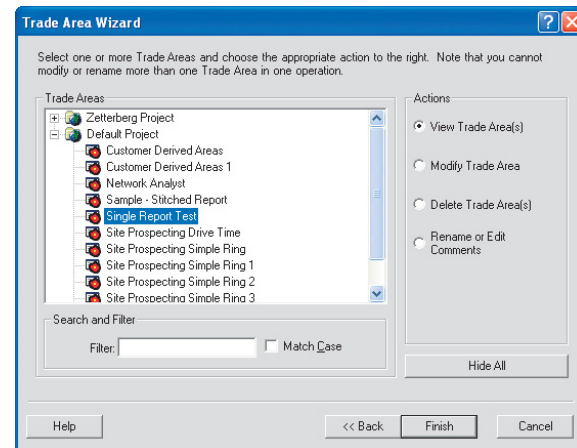
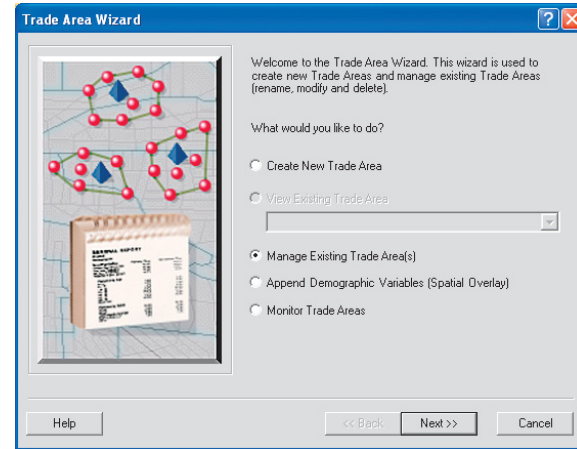
You can view the trade areas you are managing in two different ways: Show All and Hide All.

Click Show All to display trade areas grouped by individual Projects in a tree view.

Click Hide All to display all trade areas for the active Project only.

## Managing existing trade areas

1. Click the Business Analyst drop-down menu and click Trade Area.  
The Trade Area Wizard opens.
2. Click Manage Existing Trade Area(s), then click Next.
3. Select one or more Trade Areas and choose the appropriate action: View Trade Area(s), Modify Trade Area, Delete Trade Area(s), or Rename or Edit Comments for trade areas, then click Finish.







# 10

## Analysis

### IN THIS CHAPTER

- Using customer prospecting
- Using desire lines
- Using Find similar
- Using mean store center
- Using spatial overlay
- Managing existing analyses

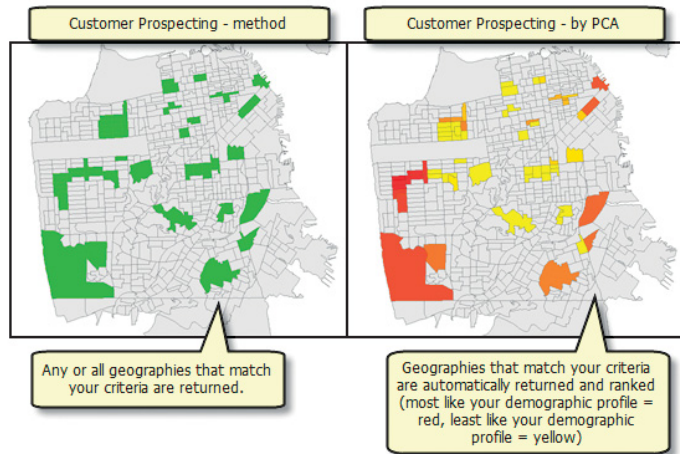
The Analysis section of ArcGIS Business Analyst contains sophisticated yet easy-to-use tools to help solve complicated business problems. Working progressively through the Business Analyst menu, a typical Analysis technique usually involves input from previous Business Analyst steps. Each Analysis tool requires some type of point or polygon input, such as geocoded points (Store and Customer Setup) and polygons (Study Areas, Trade Areas). Running Analysis tools gives you a better understanding of your customer base, demographic profile, and potential site selections.

# Customer prospecting and profiling

## About customer prospecting

Customer prospecting allows you to locate regions with ideal demographic characteristics for targeting new customers. You can locate these ideal geographies in two ways:

- Manually set the demographic profile to locate similar geographies. This is recommended if you understand the statistical breakdown of your demographic attributes.
- Find the similar geographies based on the Principal Components Analysis (PCA) method. This is recommended if you know the demographic attributes, but want Business Analyst to help return and automatically rank similar geographies.



## What are the demographic characteristics of my customers?

To use the Customer Prospecting Wizard, you must know the type of customers for which the Customer Prospecting Wizard will look. You may not be sure of the profile of your best customers so you can use *customer profiling* to find the demographic profile of a set of customers.

With customer profiling, every area (ZIP Codes, block groups, and tracts) has associated demographic data. The example below shows each block group with an average household income.

In this example, four customers living in different block groups are profiled. Each customer is tagged with the value of the block group they fall within. The values for each customer are totaled and divided by the number of customers.

Customer	Average household income
1	\$ 25,000
2	\$ 25,000
3	\$100,000
4	\$ 50,000
Total	\$200,000

Total avg. income / Total no. of cust. = Profile average

$$\$200,000 \quad / \quad 4 \quad = \quad \$50,000$$

Now that you know the profile of your customers, you can use these values in customer prospecting to look for other areas with the same type of customers.

Some examples of customer profiling include the following:

- A national retail chain uses customer profiling to provide benchmark customer characteristics for each regional division. The data is analyzed to uncover regional differences in the customer database. These characteristics are used to fine-tune the merchandise mix in different regions of the country.
- Another retail chain uses customer profiling to determine that it serves three distinct markets: inner city, suburban, and freestanding small city. Each market responds to different types of advertising.
- A large insurance company finds that the number and kind of policies vary considerably with customer profile. This information is used to provide better agent leads.

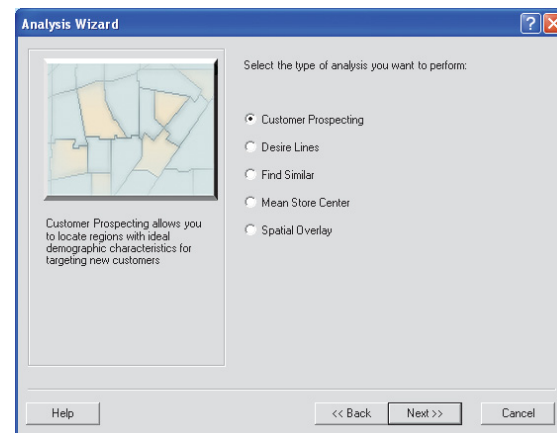
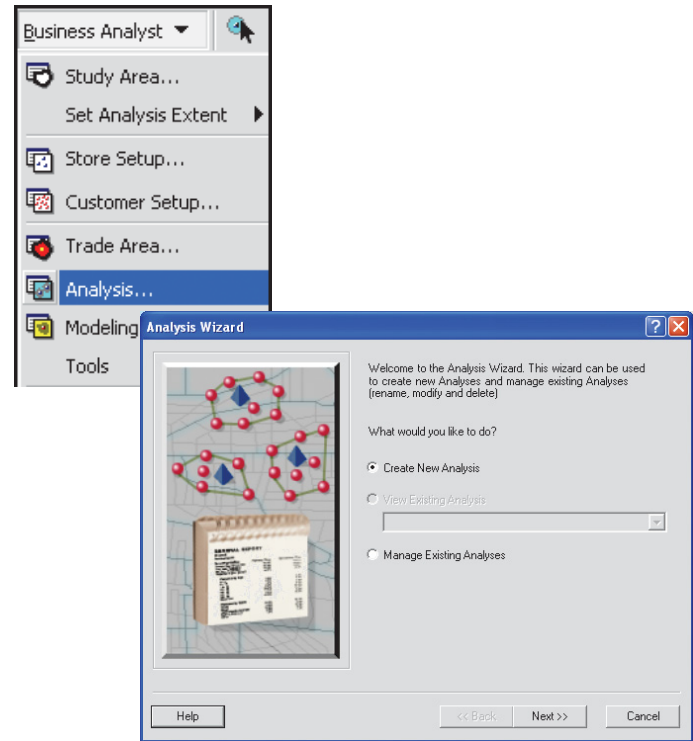
## Using customer prospecting

Customer prospecting allows you to locate regions with ideal demographic characteristics for targeting new customers.

### Performing an analysis using customer prospecting

1. Click the Business Analyst drop-down menu and click Analysis.
2. Click Create New Analysis, then click Next.
3. Click Customer Prospecting as the type of analysis you want to perform, then click Next.

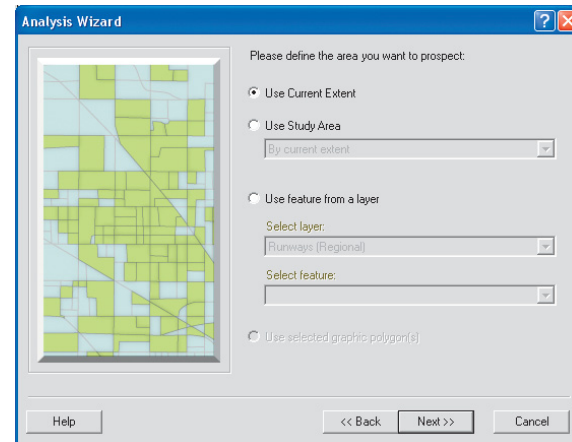
The Analysis Wizard opens.



## Tip

*The ESRI BDS layers appear on this screen, but if you created your own standard BDS layers then you can select them here.*

- Click the level of geography you want to prospect, then click Next.
- Define the area you want to prospect. Click Use Current Extent, Use Study Area, Use feature from a layer, or Use selected graphic polygon(s), then click Next. ►

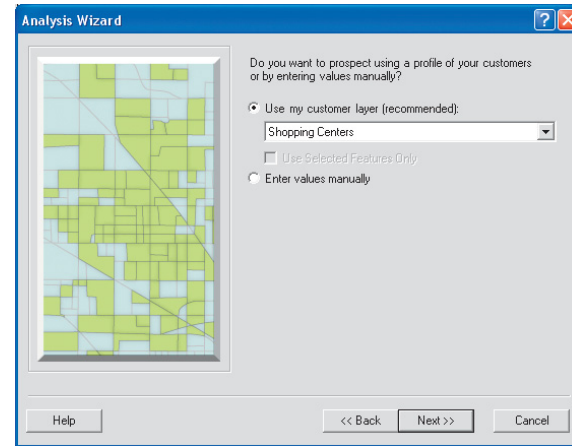


## Tip

*The Customer Prospecting tool searches for the intersecting geographies of your customer point file in order to build your demographic profile.*

6. Choose whether you want to prospect using a profile of your customers (recommended) or by entering values manually, then click Next.
  - a. If you choose Enter values manually, click the desired variables from the list, then you can manually adjust the Floor and Ceiling values for each variable you choose. To find targets that meet all the criteria, click Match all criteria (AND), or to find targets that match one or more of the variables, click Match any criteria (OR).

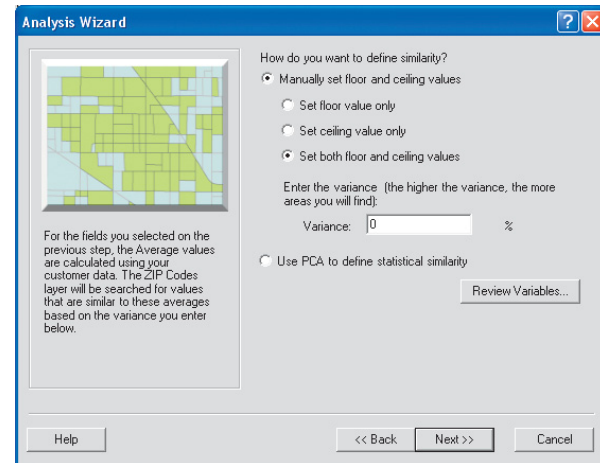
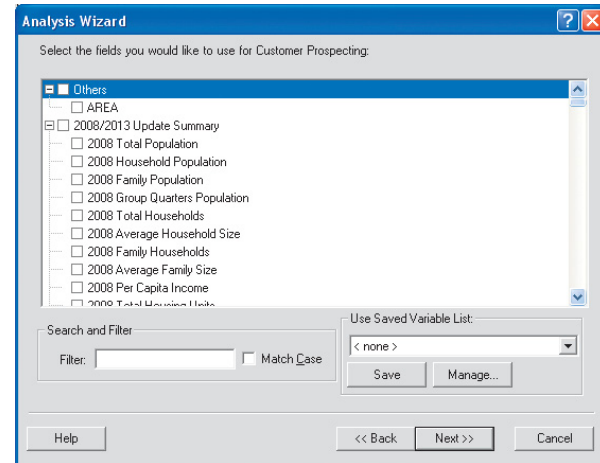
At any time, you can click a variable and click Show in the Field Statistics box. This information can be helpful in setting Floor or Ceiling values. ►





The Principal Components Analysis (PCA) technique ranks geographies by demographic characteristics. Geographies are ranked to find those that are most similar to your customer demographic profile.

- b. If you choose Use my customer layer, check the fields you want to use for customer prospecting, then click Next.
7. Choose how you want to define similarity. You can manually set floor and ceiling values or you can use PCA to define statistical similarity.
- a. If you choose to manually set floor and ceiling values, click Set floor value only, Set ceiling value only, or Set both floor and ceiling values. Type the variance in the Variance text box, then click Next.
  - b. If you choose Use PCA to define statistical similarity, click the check box, then click Next. ►



8. If you chose to manually set floor and ceiling values, the Validating Parameters dialog box opens and processes the information. When finished, you can manually adjust the floor and ceiling values for each variable by double-clicking the variable and typing values in the Floor and Ceiling text boxes.

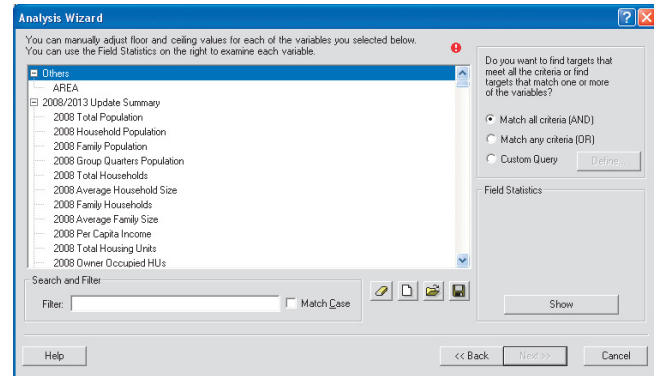
8a. If you chose to Use PCA to define statistical similarity, the Define parameters for Principal Components Analysis dialog box opens. Enter the number of sites that you want to rank.

Eigenvalue is, in most cases, used with a value of 1. This value should only be changed by users with statistical backgrounds who understand the workings of PCA.

9. Determine if you want to find targets that meet all of the criteria or targets that match one or more of the variables. Click Match all criteria (AND) or Match any criteria (OR).

If you want to view field statistics, click the Show button.

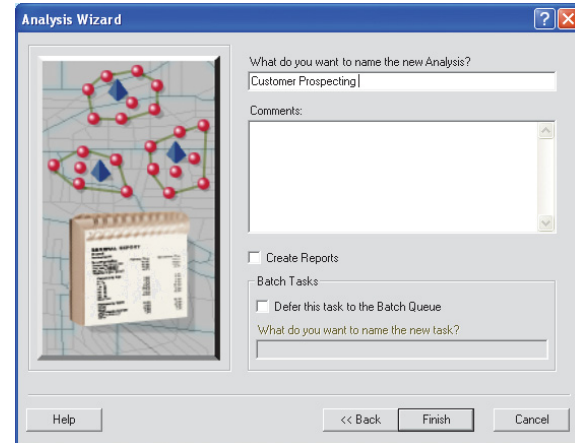
9a. Click Next. ►





10. Type a name for the new analysis, type any comments in the Comments text box, then click Finish.

The analysis appears on the map.

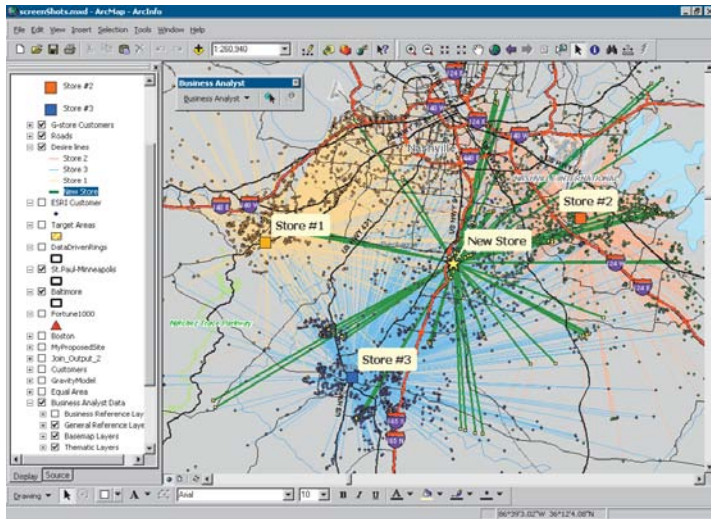


# Desire lines

*Desire lines*, or *spider diagrams*, are a series of rays drawn from each customer to the store. They can be both unweighted (where each customer is counted equally) or weighted (the line from each customer is drawn in different colors or thicknesses depending on variables such as sales or visits). Desire lines graphically illustrate the directions of pull in the marketplace. More customers may be pulled from one or two directions than from other directions. Desire lines also provide a quick and simple method to see if stores are cannibalizing each other.

The graphic below shows unweighted desire lines drawn from each customer to its store. The desire lines have been drawn as different colors for each store.

Weighted values aren't used to calculate desire lines but to display the lines differently. The thickness (or color) of each desire line is proportional to the weighted variable for that particular customer.



Desire lines can be weighted by any number in the customer database—for example, a hospital might weight each patient line by the number of hospital stays per year. Insurance policy holders might be weighted by the number of policies or the dollar value of claims.

Some other examples of desire lines include:

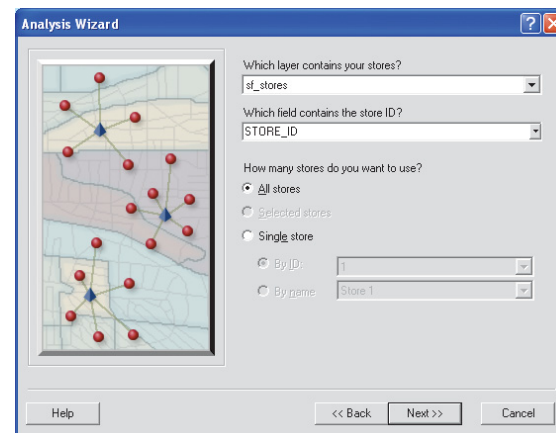
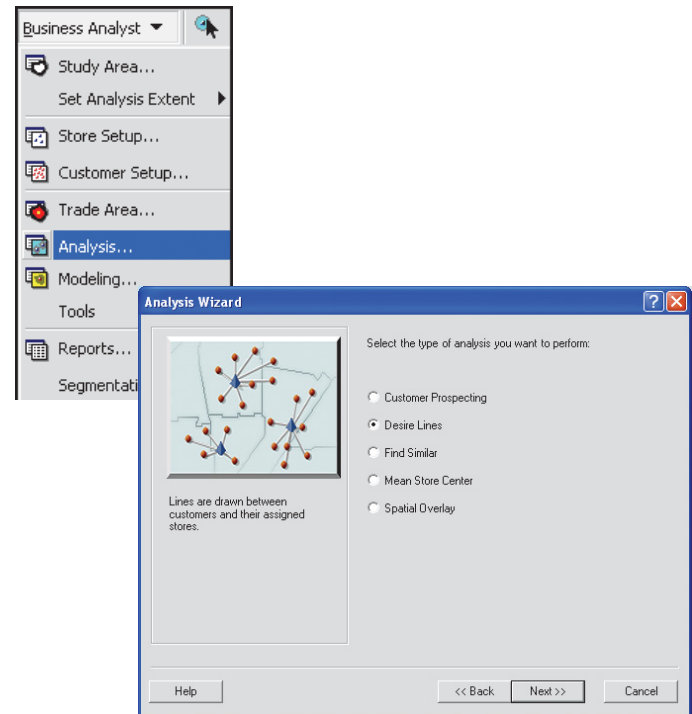
- A lawn and garden operation uses desire lines to adjust advertising expenditures by visualizing the greater draw toward expanding suburbs and a more limited reach toward the inner city. New locations are located accordingly.
- A national home improvement store maps weekday and weekend desire lines to better understand variations in these market segments.
- A convenience store/gas station chain creates desire lines based on affinity card data to examine the impact of new, suburban locations on older, highway-oriented stores. Older, marginal operations are closed when excessive cannibalization can be seen.
- A multistore dry cleaning/laundry operation uses customer addresses and time of day to visualize customer travel patterns such as going to work versus going home.
- Large supermarket chains use desire lines weighted by sales to analyze the effect of distance on expenditures per visit.
- A retailer uses desire lines to identify weekday versus weekend shoppers. The resulting analysis can be used to identify consumer behavior and shopping patterns—for example, weekday shoppers travel shorter distances than weekend shoppers.

## Using desire lines

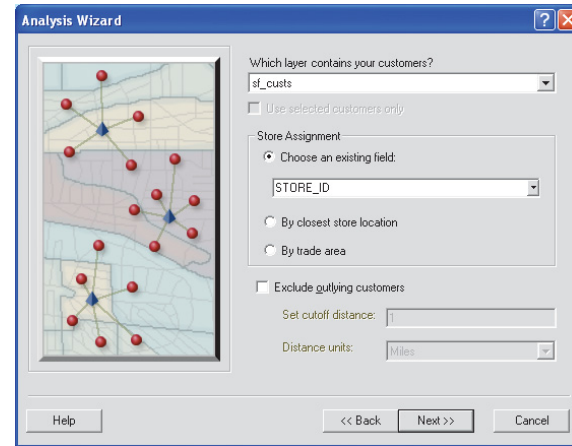
Desire lines show which customers visit which stores. A line is drawn from each customer point to its associated store point, making it easy to see the actual area of influence of each store.

### Performing an analysis using desire lines

1. Click the Business Analyst drop-down menu and click Analysis.  
The Analysis Wizard opens.
2. Click Create New Analysis, then click Next.
3. Click Desire Lines as the type of analysis you want to perform, then click Next.
4. Click the drop-down menu and click the layer that contains your stores. Click the second drop-down menu to choose the field that contains a unique ID for each store.
5. Choose how many stores you want to use, click All stores, Selected stores, or Single store, then click Next. ►



6. Click the drop-down menu and click the layer that contains your customers. Click the second drop-down menu and click the layer that contains your store ID. If you don't have a store assignment for each customer, Business Analyst can create one by assigning customers to the closest store location or by using a trade area layer that contains trade areas for each store.
7. You have the option of checking the box to Exclude outlying customers. If you check this box, type a distance and click the Distance units from the drop-down menu. This is the distance outward from each store beyond which customers will not be included. ►

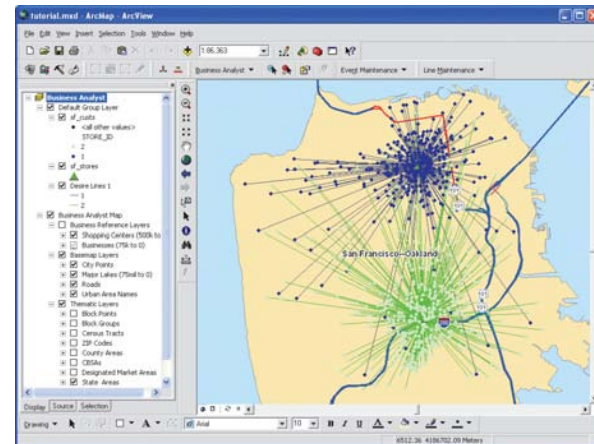
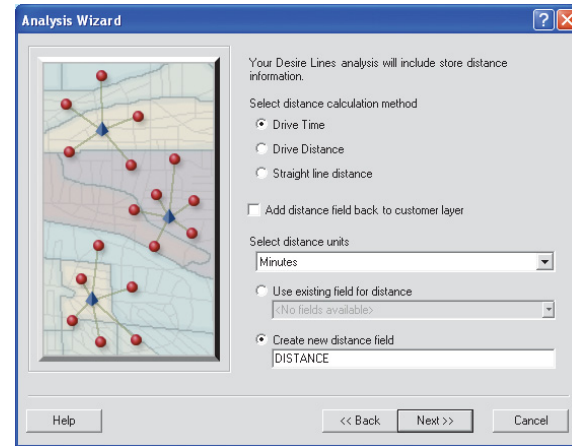


8. Your Desire Lines analysis layer will contain store distance information. To choose the distance calculation method, click Drive Time, Drive Distance, or Straight line distance. Note that the distance displayed on the map will always appear as straight lines.

You have the option of checking the box that will also add this distance information to each record in the customer layer.

9. Choose the distance units from the Select distance units drop-down menu, then click Use existing field for distance or click Create new distance field, then click Next. This applies to the field in the customer layer to use for the customer distances from their assigned stores.
10. Type a name for the new analysis, type any comments, then click Finish.

The Desire Lines Analysis layer appears on the map.



# Find similar

## About customer prospecting

Find Similar is a tool that scores potential new sites against a known, well-performing site called a *master site*. Two techniques are available. The first, or conventional, technique compares values for up to five variables between the master site and the scored sites. You will assign a +/- percentage of the master site value that you want the new site values to fall within. Sites are then assigned a score of 1–5 based on the number of variables that match the criteria you set.

The second, more powerful technique uses a series of multivariate statistical techniques, including Principal Component Analysis (PCA), to create groups (factors) of like variables. This approach will rank the trade areas around each of the scored sites by comparing each of the scored site variable groups with the same variable groups of the master site. You choose the number of best (most similar) sites you want shown.

Why do some stores do better than others? The old real estate axiom of “Location, location, location” is usually the most important part of the answer.

The Find Similar tool is based on the idea that the characteristics of a master site can be used to find similar sites elsewhere. Find similar allows you to score any polygon data such as simple rings, drive times, other forms of trade areas, and census tracts. It also allows you to score point locations by associating the point with its underlying geography polygon and the characteristics of that polygon. Use find similar for a quick overview of a large number of potential sites and pick the top-scoring sites for additional analysis.

The master site might be based on your best location or a typical location. You can choose a master site based on a store with a particular product mix or one with the highest rate of same-store sales. You must select a master site candidate for the Find Similar tool to score against.

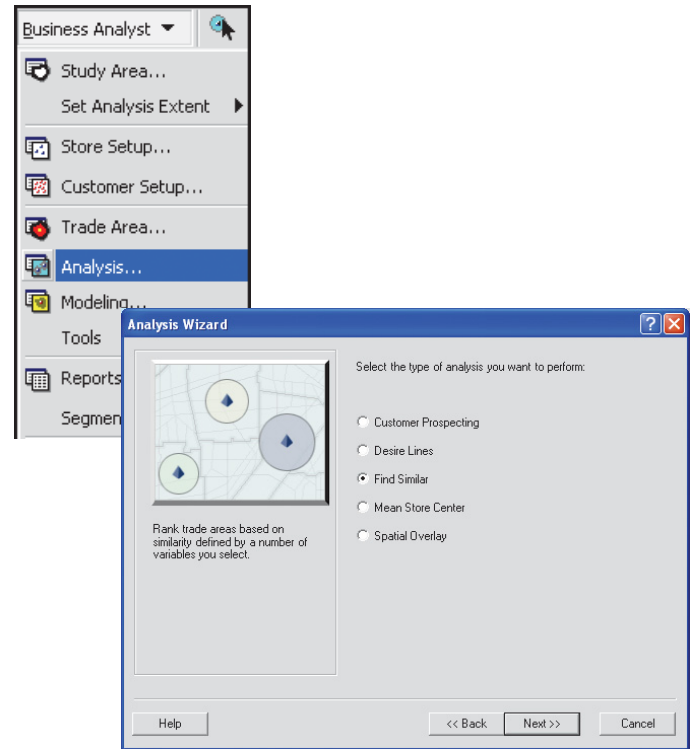
The Find Similar tool also needs a number of sites to score (scored sites) against the master site. The master site and scored sites need to be in the same layer.

The Find Similar Wizard is flexible as to what is used for sites. Some examples of site inputs are a database of points added as a layer using the Store Setup Wizard; a database of points geocoded by latitude–longitude or address and set up using the Analysis Layer Setup Wizard; rings, drive times, or other trade areas created in Business Analyst; or any polygons added as a layer on the map and set up using the Analysis Layer Setup Wizard. Although it isn’t required, you should compare similar-sized areas around the master and scored sites—for example, if you’re using a five-minute drive time around your master site, you should create and use a five-minute drive time around your scored sites.

Scored site rings can be generated around a set of points you determine to be important. Examples include points with traffic counts higher than a user-defined value, points representing empty parcels zoned commercial, or buildings for sale or lease.

## Performing an analysis using find similar

1. Click the Business Analyst drop-down menu and click Analysis.  
The Analysis Wizard opens.
2. Click Create New Analysis, then click Next.
3. Click Find Similar, then click Next. ►



## Tip

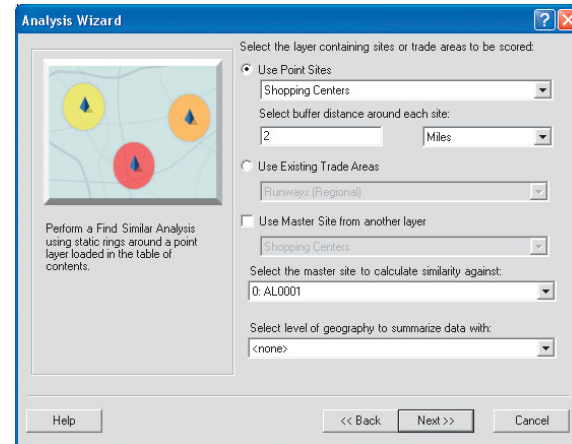
*Find Similar areas created in different ways:*

**Simple buffers created around an existing point file:** Creates a simple ring at the distance you specify for each point. Your analysis is run for each buffer.

**Existing Trade Areas:** Allows you to use any previously created geography. Instead of the simple buffers, more sophisticated polygons such as drive time areas or customer derived trade areas can be used as the Find Similar area.

**Using a Master Site from a different layer:** Offers convenience when your potential store locations are in a separate database than your benchmark store. You may have a database of possible store locations for which you can keep adding. The database may contain more fields and attributes than your benchmark store layer, such as phone numbers and contact information. This feature allows you to link relevant fields from one database to the next, but leaves out any fields not used in your analysis.

4. Choose the layer containing sites (points) or trade areas (previously loaded into the Table of Contents) to be scored.
  - For the Use Point Sites option: Click Use Point Sites, click the drop-down menu and select the layer containing points to be scored, then type a buffer distance around each site and select a distance unit from the drop-down menu.
  - For the Use Existing Trade Areas option: Click Use Existing Trade Areas, click the drop-down menu and select the layer containing trade areas.
5. Check on Use Master Site from another layer if your benchmark location is in a different database or feature class than the sites you are analyzing.
  - Select the master site layer from the drop-down menu.
  - Select the master site within the layer to calculate similarity against. This is your benchmark layer for which all other potential sites will be compared.
6. Click the drop-down menu and choose the level of geography to summarize data with, then click Next. ►





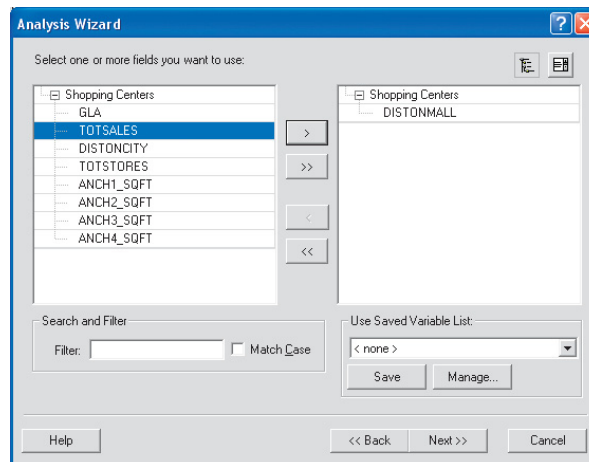
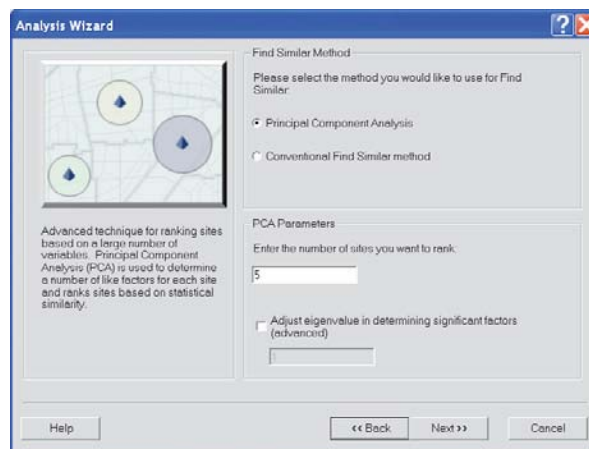
## Tip

*Eigenvalue is a factor used in Principal Component Analysis and, in most cases, is used with a value of 1. This value should only be changed by users with statistical backgrounds who understand PCA.*

## Tip

*Find similar variables are often characteristics of site features and statistics, such as square footage, monthly rent, parking spaces, population, and so on. These variables are all compared against the same variables of the master site.*

- Choose the method you want to use to find similar sites. Principal Component Analysis is recommended.
- For the Conventional Find Similar method, continue to step 13. For the Principal Component *Analysis method*: Click Principal Component Analysis, in the PCA Parameters box enter the number of sites you want to rank, and adjust the eigenvalue as necessary.
- Click Next.
- Select the variables you want to use in your Find Similar analysis. Use the right-arrow to include the available variables. You can also use a saved variable list at this time. Click Next.
- If you did not choose the option to Use a Master Site from another layer, type a name for the new Find Similar analysis, then click Finish. ►



## Tip

*Conventional find similar allows for only five total variables for ranking. The PCA method is not used.*

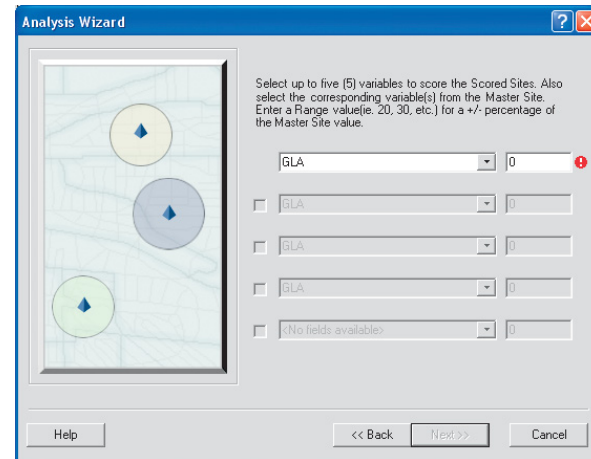
If you chose the option to Use a Master Site from another layer, you may need to match the fields from your master site to the potential sites database. The Find Similar tool will automatically link fields in the different database that contain the same field names. Once you have selected two fields, press the link button. The fields will appear in the Matched Fields section. Any fields that are not assigned between the databases will be excluded from the analysis.

12. Type a name for the new analysis, type any comments, then click Finish.

Your results are displayed on the map.

13. For the Conventional Find Similar method: Click Conventional Find Similar method and click Next.
14. From the drop-down menus, select up to five variables from your database that you want to factor into your site ranking. Enter a percentage that you would like the sites to be scored according to the master site value.

If you did not choose the option to Use a Master Site from another layer, type a ►



## Tip

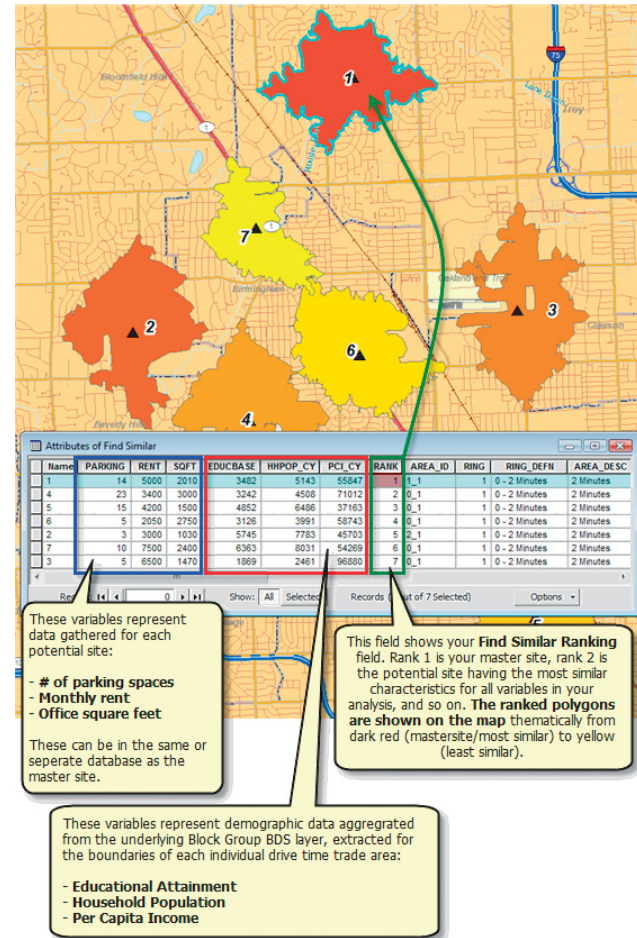
**Saving linked fields:** When linking fields from your master site database to your potential sites database, you can save the matched fields for later use. To save the matched fields, click Save As provided on the Match Fields page and navigate to a location where you want to store the file. The file is an .fmp file (Field Map) file which is an xml-based file. Click Open Folder to locate and retrieve the .fmp file.

name for the new Find Similar analysis, then click Finish.

If you chose the option to Use a Master Site from another layer, you may need to match the fields from your master site to the potential sites database. The Find Similar tool will automatically link fields in the different database that contain the same field names. Once you have selected two fields, press the link button. The fields will appear in the Matched Fields section. Any fields that are not assigned between the databases will be excluded from the analysis.

15. Type a name for the new analysis, type any comments, then click Finish.

Your results appear on the map.



## Mean store center

When considering sites for a new store, potential customers are your first concern—their location and their demographics. The mean store center analysis creates a centroid in the mean geographic center of your customer points.

This centroid can be calculated by:

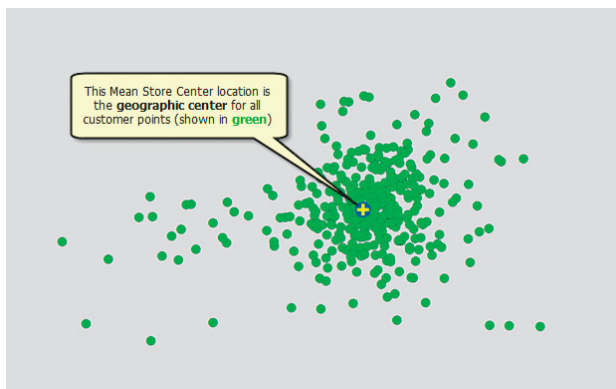
- Number of customers
- Weighted value (such as sales or visits)

### Calculating the centroid by number of customers

When the centroid is calculated by the number of customers, each customer point has an equal value. Since the centroid represents a balance point between all customers, it will be located roughly in the center of the customers. If customers are more densely populated on one side, the centroid will be pulled in that direction.

### Example: Single Mean Store Center using locations

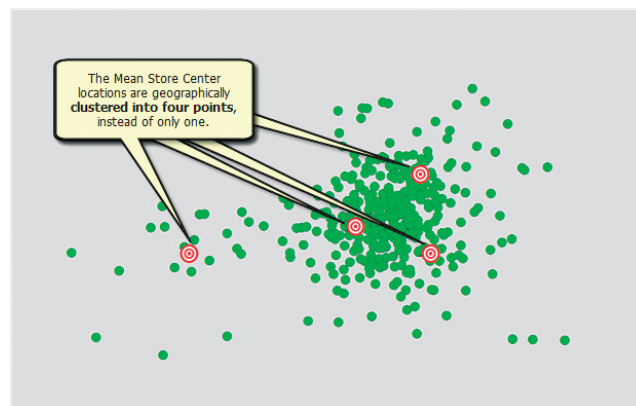
This example shows a single Mean Store Center. The location is based on the geographic locations of the surrounding customer points.



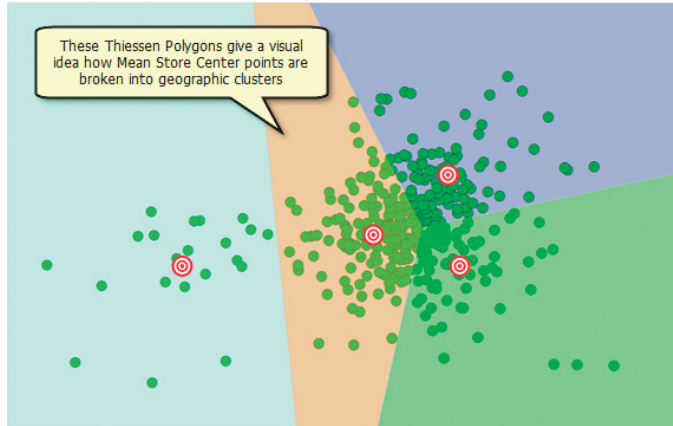
### Example: By using customer locations

Suppose you want to expand your chain of sporting equipment stores into a new market area. Your existing customer profile shows that you sell to a limited demographic segment that includes high-income, well-educated people who play golf.

To begin, you might purchase a mailing list of households with similar demographics in the expansion market, geocode them using the Customer Setup Wizard, then calculate the centroid by the number of prospects. The resulting centroid would be a good start in looking for a new location.



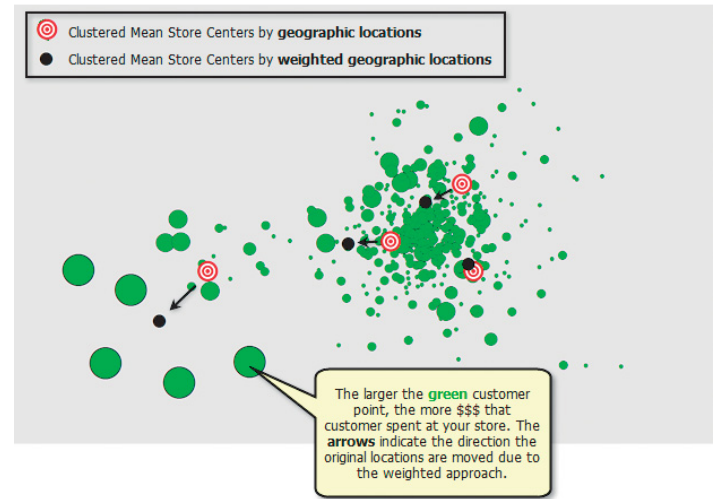
This example shows Mean Store Centers clustered into four different points. The Thiessen Polygons in the second picture below give a visual representation of equally distributed areas from each clustered point.



### Example: Clustered Mean Store Center by weighted values

This example shows the difference between Mean Store Centers using simple clustered geographic locations and using the locations with a weighted factor. In this instance, the weighted factor is a dollar amount identified with each customer point. The black arrows demonstrate how the weighted factors move the clustered mean centers of the customer points by “pulling” them toward the larger features. The larger features (green circles) are simply a graphical representation of their respective volumetric attribute (sales volume). The larger the sales figure, the larger the circle. This is not part of the Mean Store Center tool, but is a function within the ArcGIS layer symbology used to better demonstrate the scenario.

Notice the location of the centroid in the following graphic when calculated by a weighted value, in this case, sales. The centroid is no longer in the center of the customer points, but has shifted toward the customers who spend more money.



Suppose the building leases for two of your bank branches expire at the end of the year. You want to know if the leases are worth renewing. Using each branch’s customer set, you calculate a centroid weighted by the number of visits or total deposits. You can compare the resulting centroids with the actual branch locations. If a branch is far from a centroid, you might consider looking at other properties instead of renewing the leases.

Some other examples of how businesses use centroids include:

- A high-end men’s clothing store loses its lease at a long-time location. It uses its customer database weighted by total sales per year as the base to search for a new location.
- A rapid auto oil change franchise uses the business addresses of existing customers to find an optimum location for a new operation to serve customers near their workplace.
- A bank derives a weighed centroid for each product type (home/auto loans, CDs, and investments) and assigns the branch closest to each centroid to specialize in that product.

## Using mean store center

Mean store center finds the weighted or unweighted geographic center of a group of customers.

Any numeric variable, such as sales or number of visits, can be used for weighting.

If an existing store is far from its optimal location then there is risk that a direct competitor could locate a store that would be in a better location to serve your existing customer base.

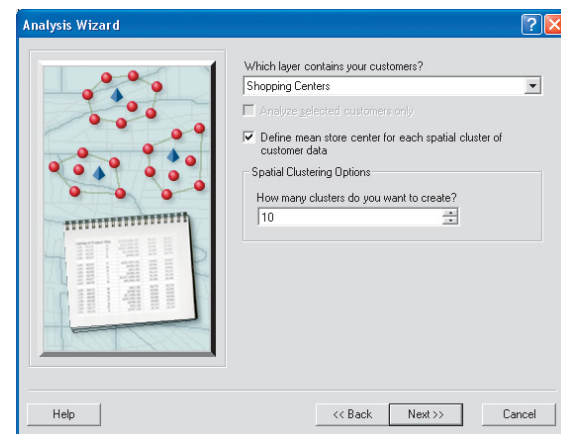
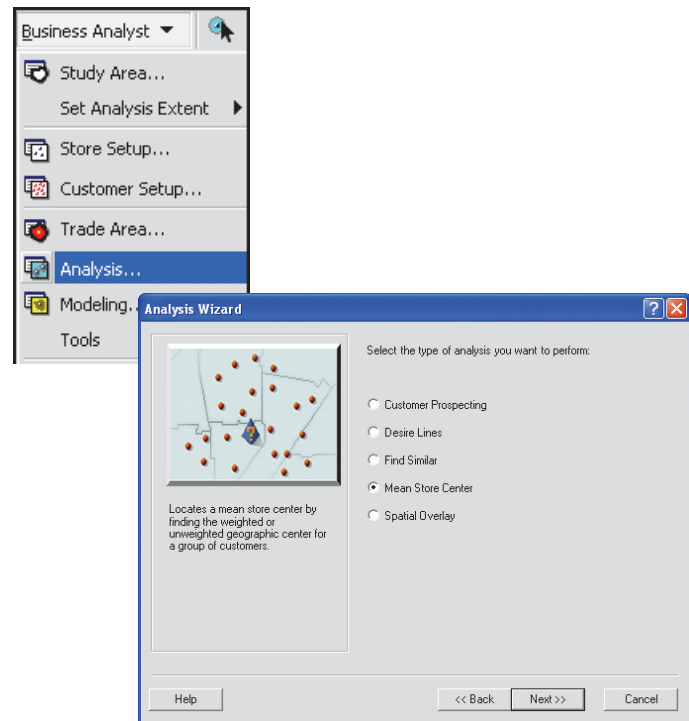
### Tip

#### ***Clustering using the K-means algorithm***

*Creating multiple Mean Store Center locations uses a clustering algorithm called K-means. The K-means approach finds geographic concentrations in a point database and determines their center points. After identifying a cluster partition, the process continues iteratively until all points are associated with the closest mean center.*

## Performing an analysis using mean store center

1. Click the Business Analyst drop-down menu and click Analysis.  
The Analysis Wizard opens.
2. Click Create New Analysis, then click Next.
3. Click Mean Store Center as the type of analysis you want to perform, then click Next.
4. Click the layer that contains your customers, then click Next.
5. To define the mean store center for each spatial cluster of customer data, check the check box.  
Spatial Clustering Options
6. Select the number of clusters you want to create in the Spatial Clustering Options section. ►



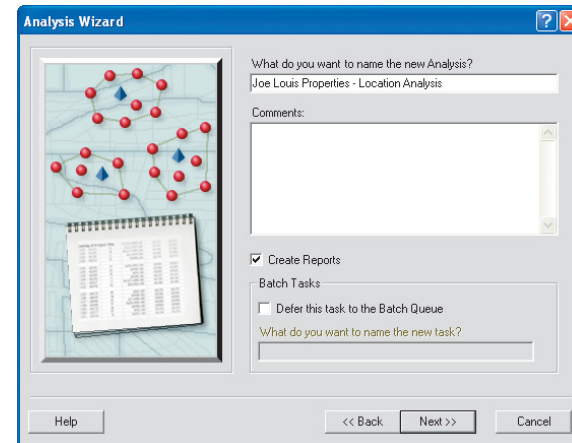
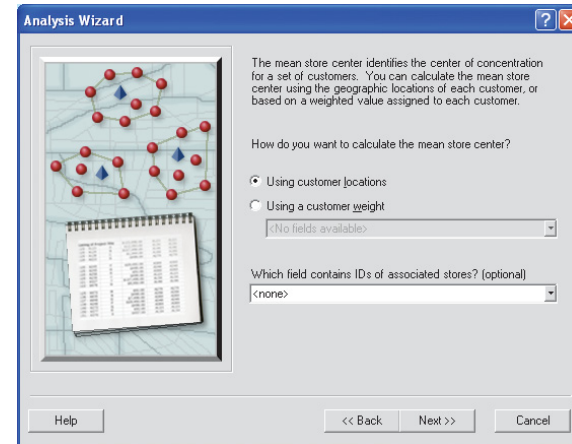


## Tip

A centroid calculated by a weighted value considers each customer to have an individual value. The centroid is not created in the center of all customers but in the center of the customers who most satisfy the value you've weighted.

Suppose you want to calculate the centroid by customer sales. The location of a customer who has spent \$100 at your store will be counted 100 times more than a customer spending only one dollar. When the centroid is calculated, this weighting pulls the centroid toward the more important points.

- Choose how you want to calculate the mean store center.
- Optionally, click the drop-down menu to choose which field contains IDs of associated stores, then click Next.  
Use this option if you have customers from multiple stores in one layer. If you choose <none>, the mean store center is calculated for all customers in the layer.
- Type a name for the new analysis, type any comments, then click Finish. If you want to create a Mean Store Center Report, check Create Reports and click Next.  
Batch Tasks  
Defer this task to the Batch Queue  
What do you want to name the new task?
- Click the drop-down menu to choose the layer that contains your stores.
- Click the second drop-down menu to select the store ID field.
- Select the distance calculation method and distance.
- Type the name of the report and click Finish.



# Spatial overlay

*Spatial overlay* allows you to extract data from one layer, such as block groups, to an overlay layer, such as a trade area that you have created in Business Analyst.

You begin this analysis with two layers. The first, input layer, contains the underlying data that you want to extract. Data is extracted from this layer into a second, or *overlay*, layer. Suppose you have demographic and socioeconomic data at the block group level. You can create a market area as a new layer based on your knowledge of the draw of a particular store. You might also create some sales territories (layers) that cut across the boundaries of the underlying input data layer.

Spatial overlay has been improved to work not only with polygons but also with point layers. The possible input layer and overlay layer combinations are:

<b>Input layer</b>	<b>Overlay layer</b>
--------------------	----------------------

Polygon	Polygon
---------	---------

Point	Polygon
-------	---------

Polygon	Point
---------	-------

An example of a point layer as the overlay layer is using your customer layer to overlay block group polygons with demographics to add demographic characteristics for each customer into your customer layer database.

Spatial overlay allows you to answer questions, such as how many households are there in my overlay polygons, what are the demographic characteristics of each of my customers, or what is the per capita income in this market area. Spatial overlay gives better answers to such questions than competing methods. The key idea is that data fields are assigned from an underlying data layer to an overlay layer.

If the overlay layer is a polygon and cuts across a polygon input layer, the data will be apportioned based on the apportionment method identified in the Analysis Layer Setup Wizard. This will be one of the four methods of area, population (block point), households (block point), or total housing units (block point). Geography layers that come with Business Analyst are already set up but can be changed using the Analysis Layer Setup Wizard.

You will begin with a simple example of area apportionment of population. If a block group falls completely within the overlay polygon, all of its population is counted. If only 50 percent of the block group falls within the overlay polygon, only 50 percent of its population is counted. This gives you a more accurate estimate than if you just added up the polygons that touched or had their center within the overlay polygon.

Apportioning based on block point data (population, households, or housing units) is a better method than area apportionment. A majority of a block group's population may reside in one quadrant of the block group. Apportioning by area doesn't take this into account.

The process is straightforward when considering data that represents whole quantities such as population, households, housing units, people aged 12–17, and so on. It becomes complicated for proportional data such as average age, per capita income, or median household income. For these cases, a weighted average must be used.



Consider the following exaggerated example of two underlying polygons—for example, block groups—and a single overlay polygon—for example, a market area. The situation is illustrated by the following graphic:

A	B
Population = 10	Population = 1,000
Per Capita Income = \$100,000	Per Capita Income = \$25,000

The overlay polygon, shown in red, is assigned all the population in data polygon B but only 50 percent of the population in data polygon A for a total of 1,005 people. What is the best estimate of per capita income? You could just average the two figures ( $[\$100,000 + \$25,000]/2$ ) for an estimated value of \$62,500. This figure, however, is not a good estimate of the income of the market area. There are a few (5) with high incomes and a large number (1,000) with much more modest incomes.

The best estimate of per capita income for this market area can be obtained from a weighted average. You should always weight data on individuals—for example, per capita income or median age—by population and weight data on households—for example, average household size or median household income—by households. In this example, you'll multiply the estimated overlay population of A (5) by per capita income (\$100,000) for a total of \$500,000. Next, you'll multiply the overlay population of B (1,000) by per capita income (\$25,000) for a total of \$25,000,000.

Adding these two sums together gives a total of \$25,500,000. When you then divide by the total number of people in the overlay polygon (1,005), you get an estimated per capita income of \$25,373. This figure is a better estimate of the per capita income of a randomly selected person from within the overlay polygon. Weighting of variables can be set up using the Analysis Layer Setup Wizard.

## Using spatial overlay

Spatial overlay analysis extracts data from one layer and joins it to another layer.

To access and run the Spatial Overlay Wizard, you must have at least one polygon layer in your map document.

The *Spatial Overlay Wizard* is a simple tool to use. You choose an input layer, overlay layer, and a name for the new spatial overlay layer that is created.

If you added a layer of your own to the map and want to use it as an input layer for spatial overlay, you will first need to proceed through the Analysis Layer Setup Wizard for that layer. It is a brief wizard that lets Business Analyst know how you want data in that layer aggregated.

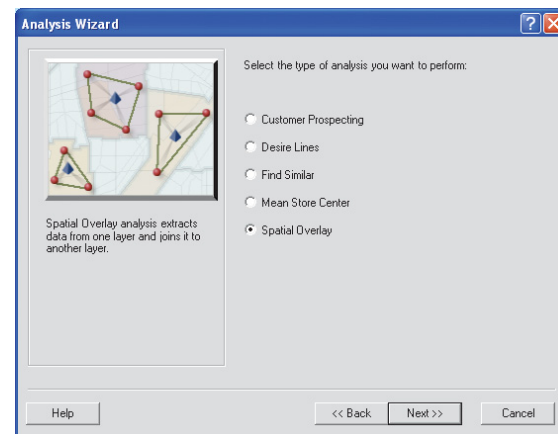
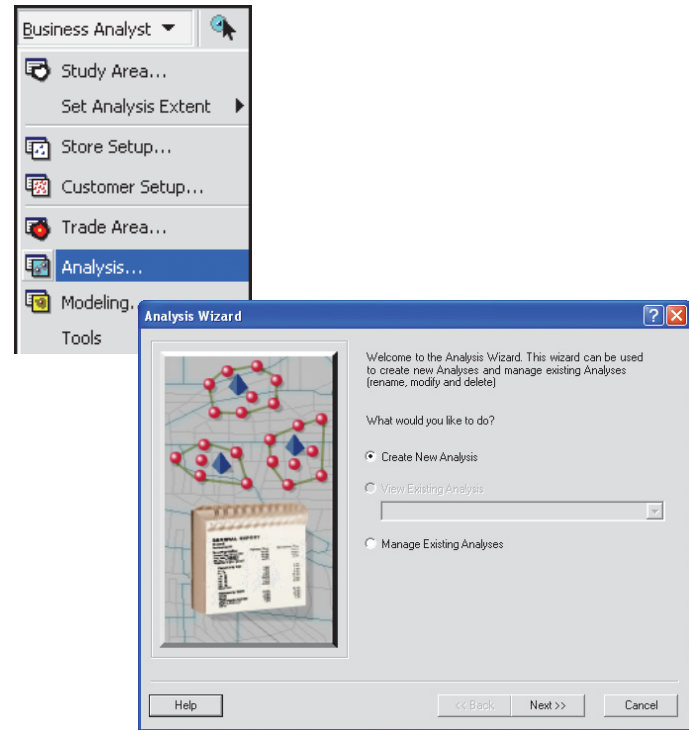
## Performing an analysis using spatial overlay

1. Click the Business Analyst drop-down menu and click Analysis.

The Analysis Wizard opens.

2. Click Create New Analysis, then click Next.

3. Click Spatial Overlay as the type of analysis you want to perform, then click Next. ►



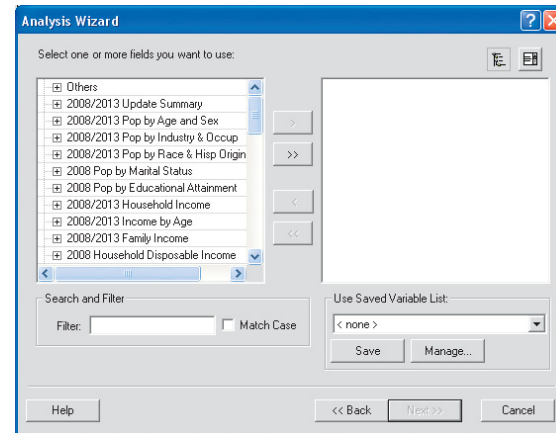
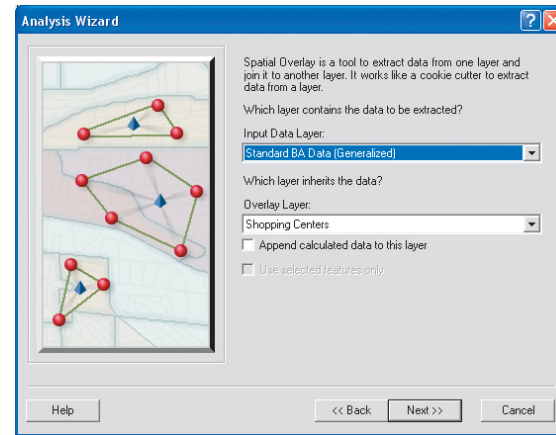
## Tip

*Standard BA Data refers to the demographic data provided in Business Analyst. These layers are controlled through the Business Analyst Preferences > Data tab where you can set different layer and thresholds plus choose your data aggregation method.*

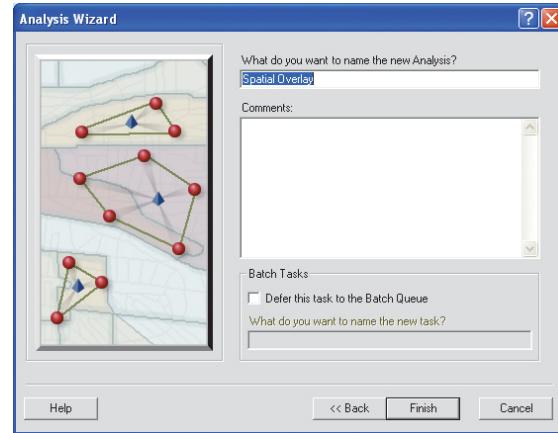
## Tip

*Running a Spatial Overlay produces a new layer that is identical to the Overlay Layer plus adds the desired calculated data to the new layer's attribute table. If you select Append calculated data to this layer the calculated data is also appended to the original Overlay Layer. This is helpful if you plan to run multiple Spatial Overlays containing different calculated data fields, but want to append each field to the original Overlay Layer.*

- Click the Input Data Layer drop-down menu to choose the layer that contains the data to be extracted, click the second drop-down menu to choose the Overlay Layer, then click Next. In the diagram shown, Standard BA Data demographics are being added to a store layer.
- Select one or more fields you want to use from the list, then click the right arrow button to move the field(s) to the column on the right. To select multiple fields, hold down the Ctrl key and click the fields you want to use, then click the right arrow button. To move all fields in the list to the right column, click the double right arrow button. When you're finished adding fields, click Next. ▶



6. Type a name for the new analysis, type any comments, then click Finish.



# Managing existing analyses

This wizard option is used to open, modify, delete, or rename an existing analysis.

## Tip

### Using the analysis options on the Analysis Wizard

*Open Analysis(es)*—Adds a previously created analysis to your current map document (.mxd).

*Modify Analysis*—Steps you through the wizard selections of a previously created analysis and permits changes.

*Delete Analysis(es)*—Removes an analysis from your current map document and permanently deletes it from your My Output Data folder on your hard drive.

*Rename or Edit Comments*—Allows you to rename the analysis or change the Comments block.

## Tip

### Using the different managing views

You can view the analyses you are managing in two different ways: Show All and Hide All.

Clicking the Show All button will display analyses grouped by individual Projects in a tree view.

Clicking the Hide All button will display all analyses for the active Project only.

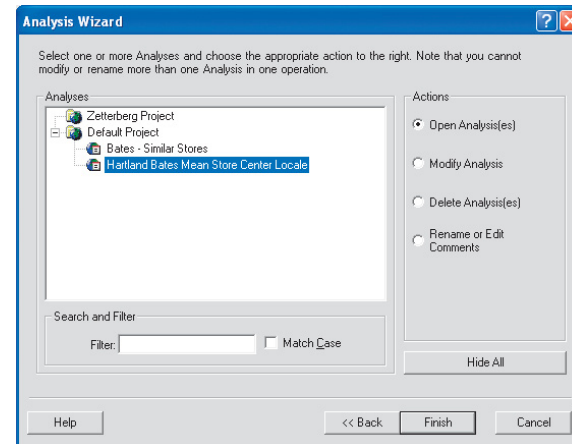
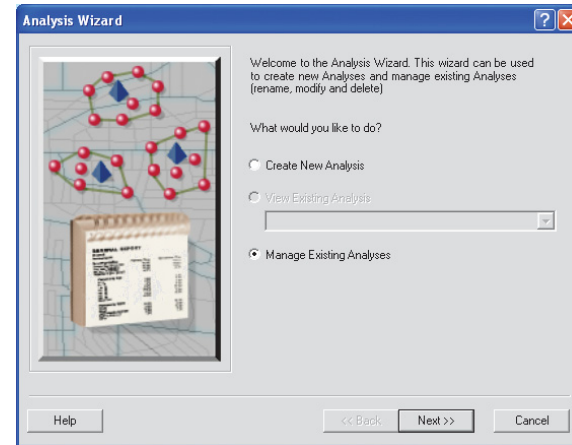
1. Click the Business Analyst drop-down menu and click Analysis.

The Analysis Wizard opens.

2. Click Manage Existing Analyses, then click Next.

3. Click one or more analyses and choose one of the following options: Open Analysis(es), Modify Analysis, Delete Analysis(es), or Rename or Edit Comments, then click Finish.

The options listed above change depending on how many analyses you choose to manage at once—for example, if you choose two analyses at once, you can only open or delete them. The other actions become inactive.





# Modeling

# 11

## IN THIS CHAPTER

- **How the original Huff model (in Business Analyst) works**
- **Original Huff model**
- **Advanced Huff model with statistical calibration**
- **Huff model calibration**
- **Using dissolve by attribute**
- **Managing existing modeling analyses**
- **Managing model calibration parameters**

This chapter provides tools to generate sales predictability models based on basic and advanced approaches utilizing the Huff model developed by Dr. David Huff. Methods of statistical calibration of the model are provided to make use of either survey data or real customer data that you may have.



# How the original Huff model (in Business Analyst) works

The *Huff model* is an established theory in spatial analysis. It is based on the principle that the probability of a given consumer visiting and purchasing at a given site is some function of the distance to that site, its attractiveness, and the distance and attractiveness of competing sites.

This specific model, in the area of spatial interaction research, was refined and made operational by Dr. David Huff of the University of Texas nearly 40 years ago. The advent of powerful desktop computers has made it possible to apply the model.

The basic Huff formulation of the model takes the following form:

$$P_{ij} = \frac{W_i / D_{ij}^\alpha}{\sum_{i=1}^n \left( W_i / D_{ij}^\alpha \right)}$$

Where:

$P_{ij}$  = the probability of consumer  $j$  shopping at store  $i$ .

$W_i$  = a measure of the attractiveness of each store or site  $i$ .

$D_{ij}$  = the distance from consumer  $j$  to store or site  $i$ .

$\alpha$  = an exponent applied to distance so that the probability of distant sites is dampened. It usually ranges between 1.5 and 2.

In practice, census polygons—for example, block groups—are substituted for individual consumers. The calculated probability for each polygon is then multiplied by some data element in the polygon database (for instance, households and dollars spent on groceries). This measure can then be summarized to give an estimate of the total. Some measure of size, such as gross leasable area (GLA), is often used as a surrogate for attractiveness.

A site has many attributes that make it attractive to consumers. *Attractiveness* can be computed as a function of many attributes. For a retail store, these would be its retail floor space, number of parking spaces, or product pricing. Attractiveness of a car dealer could be a function of its display area, frontage, and advertisement. The attractiveness of an office building could be a function of how many offices are currently located within it. Attractiveness is expressed as one number that combines all the factors that make a center attractive. This number is usually referred to as an index. An *index of attractiveness* for a center is one number describing the factors that make it attractive to its customers. This index could also be derived by counting how many people come to that destination or by conducting a consumer survey.

You can control the distance that the Huff model will extend. Type a value that will encompass all your competitors. You can use the Measure tool to estimate the distance that should be used.

You can choose the distance units to be either miles or kilometers.

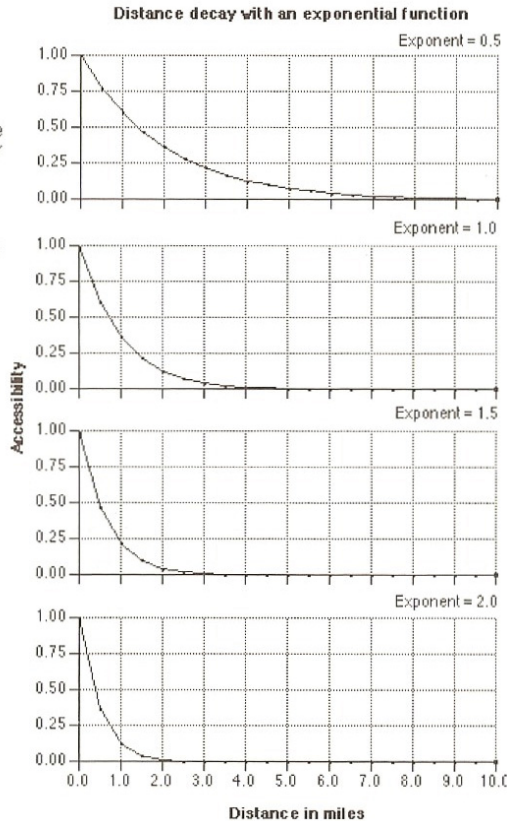
This section lists some commonly used terms and their meanings in the context of the Huff model.

## Distance–decay function

A person's perception of how far a destination is may not be a linear function of distance. That is, customers are more likely to shop at a place closer to home than far away. In other words, distance is viewed as a nonlinear deterrent to movement. This phenomenon can be modeled by using a distance–decay function. The use of a power distance–decay function is borrowed from Newton's famous law of gravitation from which the term gravity model is derived. A distance–decay parameter, symbolized by the Greek letter beta, can be used to exaggerate the distance to destinations. Some activities such as grocery shopping have a large exponent indicating that customers will

travel only a short distance for such things. Other activities such as furniture shopping have a small exponent because customers are willing to travel farther to shop for furniture.

This series of graphs shows how accessibility of a location decreases with distance when using an exponential function. The distance decay is presented for four values of the distance exponent, from 0.5 to 2.0. Note that as distance approaches zero, the values become one.



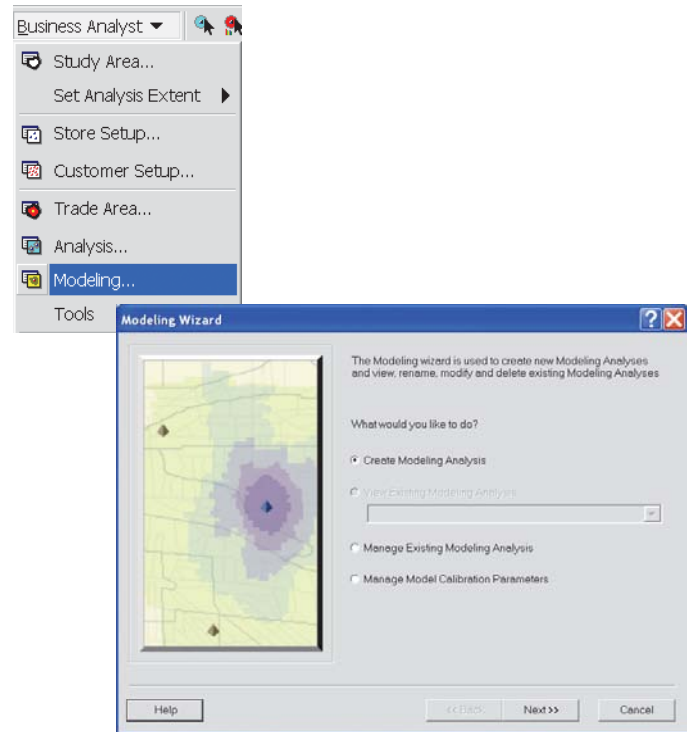
The exponential function is typically used for computing interactions over a small distance, such as within a city.

All Huff model inputs, exponents, trade area size, and results require detailed analysis by someone who is well versed in the operation of such a model. Some calibration is always required to account for other factors such as leakage (when people don't buy all their groceries at supermarkets, some of that spending leaks to other trade areas, such as convenience stores, farmer's markets, and mail order).

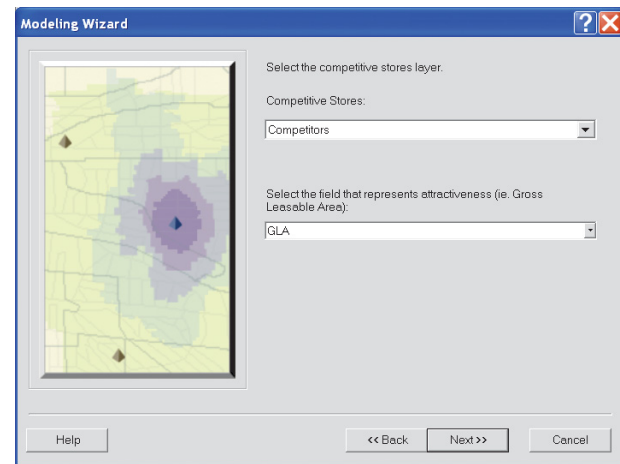
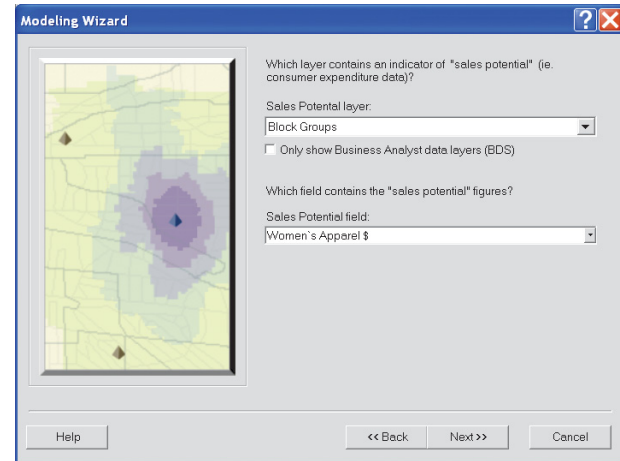
## Original Huff model

The original Huff model described on the previous pages provides a simple tool to estimate sales potential of an area. It takes into consideration your proposed site location, competitor locations, sales potential data, and attractiveness field. The sales potential data is often a geography layer, a block group or tract, containing a sales potential value such as consumer expenditure on furniture, apparel, auto repairs, and so on. Business Analyst geography contains consumer expenditure fields. The attractiveness field shows how attractive the competitor is to its customers. The most commonly used attractiveness attribute is GLA.

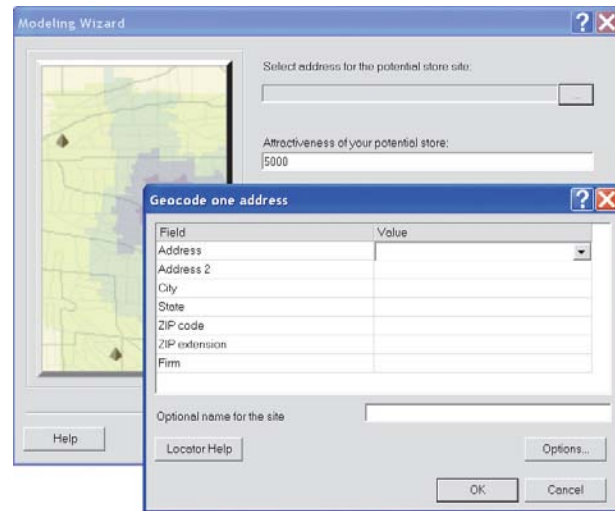
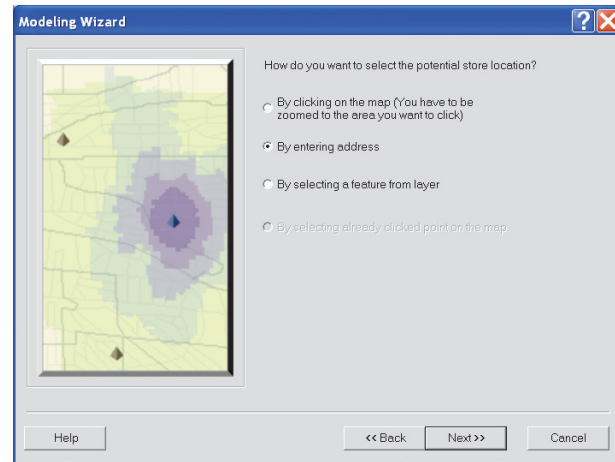
1. Click the Business Analyst drop-down menu and click Modeling.
2. Click Create Modeling Analysis and click Next.
3. Click Original Huff Model as the type of modeling analysis and click Next. ►



4. Click the first drop-down menu and click the layer containing your sales potential field. You have the option of checking the box to Only show Business Analyst data layers (BDS). Business Analyst geography layers contain many fields, including consumer expenditure data, that can be used as an indicator of sales potential.
5. Click the second drop-down menu and click the field that contains the sales potential figures. Business Analyst geography layers often use a tree structure to present categories of fields that can be expanded to show individual fields in that category. You can hold the Ctrl key and click any plus (+) or minus (-) sign in the tree structure to expand or collapse the tree structure. Click Next.
6. Click the first drop-down menu and click the layer containing your competitive stores. Click the second drop-down menu and click a field that represents attractiveness for the competitive stores to GLA, for example. Click Next. ►



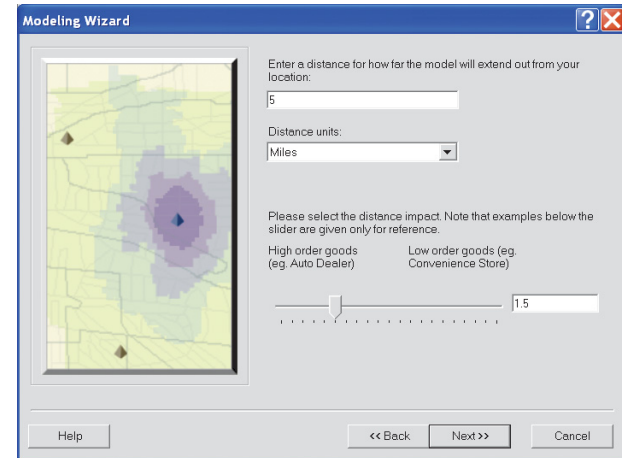
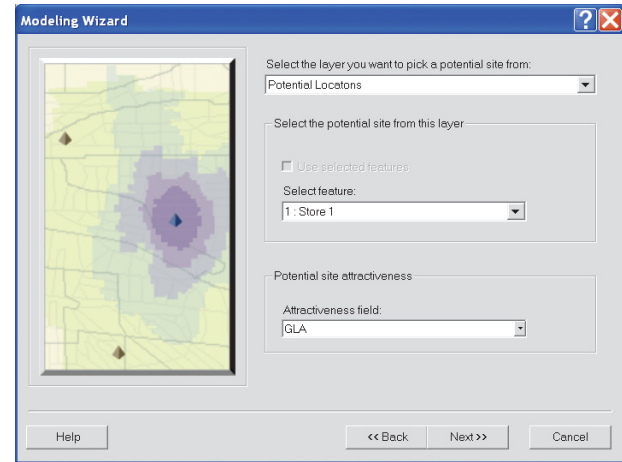
7. Click one of the methods of selecting a potential store location.
8. If you click By entering address, enter the address of the location by clicking each field in the Value column. Click OK to continue.
9. Type an attractiveness value for the potential site. This field can be compared to the attractiveness field of the competitive stores. Click Next. ►



10. If you click By selecting a feature from layer, click the first drop-down menu and click the layer containing the potential site. Click the second drop-down menu and click the individual feature to use for the site location, then click the third drop-down menu and click the attractiveness field for the potential site. This field can be compared to the attractiveness field of the competitive stores. Click Next.

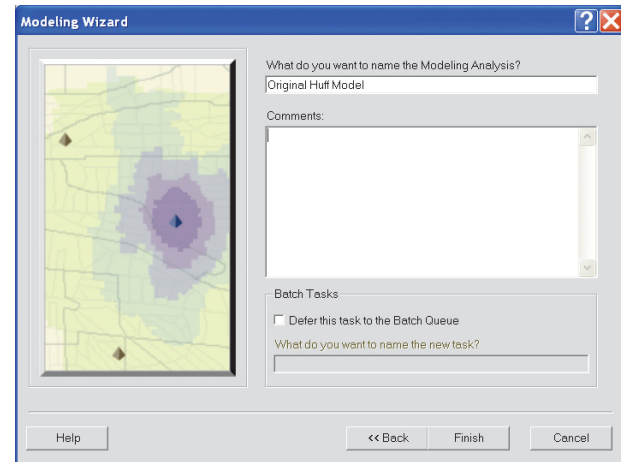
11. Type a distance that the model will extend out from your potential site location. Click the Distance units drop-down menu and click the distance units.

12. Use the slider bar or type a number between 1 and 3 to indicate the impact of travel distance on a customer's willingness to travel to make a purchase at the store. The lower the number, the more willing the customer is to travel a greater distance to make the purchase. Click Next. ►



13. Type a name for the new model in the text box and type any comments, then click Finish.

Your new analysis area is created and appears on the map.





# Advanced Huff model with statistical calibration

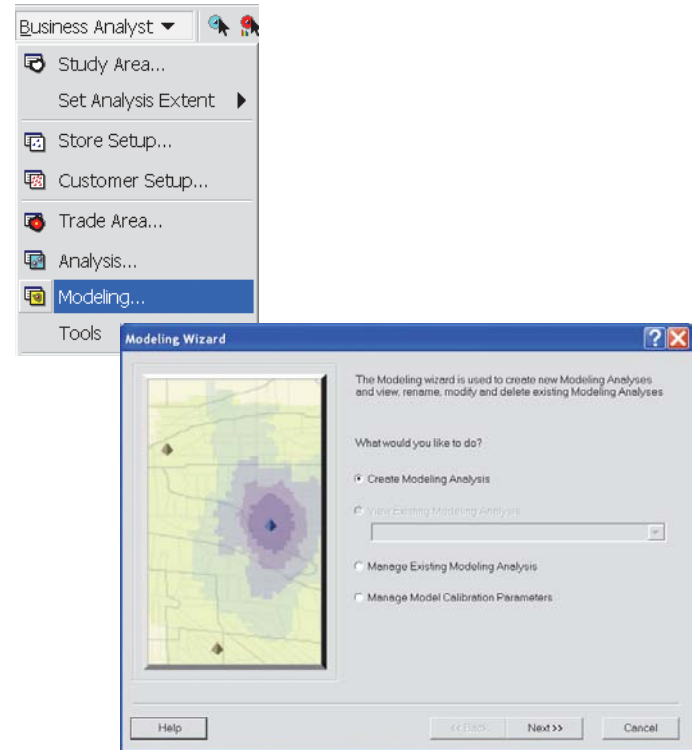
The advanced Huff model uses improvements by Dr. David Huff on the original Huff model to enhance its performance. Specifically, this method will allow distance between stores and customers to be calculated through standard Euclidean (straight-line) distance or, alternatively, drive time or drive distance. Multiple parameters can be selected for each store rather than a single variable. The advanced Huff model also contains a calibration utility that allows you to calculate the proper exponent values in the model through observed shopping behavior or through a market survey. The calibration utility is discussed in more detail in the Huff model calibration section that follows.

The results of the Huff model can be used to:

- Estimate, define, and analyze market potential.
- Assess economic impact of a new site location. ▶

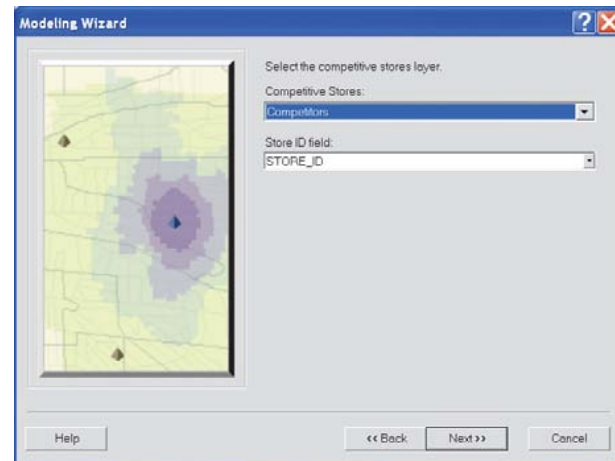
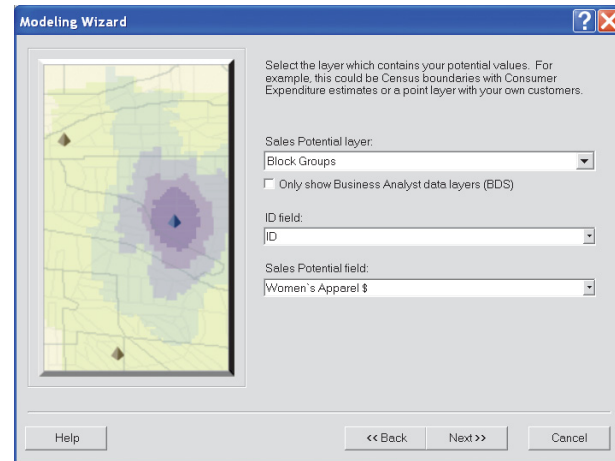
1. Click the Business Analyst drop-down menu and click Modeling.
2. Click Create Modeling Analysis and click Next.
3. Click Advanced Huff Model with Statistical Calibration as the type of modeling analysis and click Next. ▶

The Modeling Wizard opens.

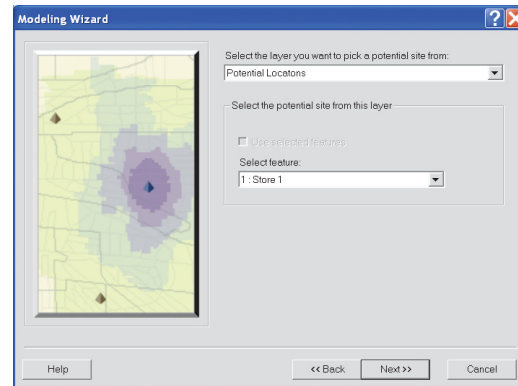
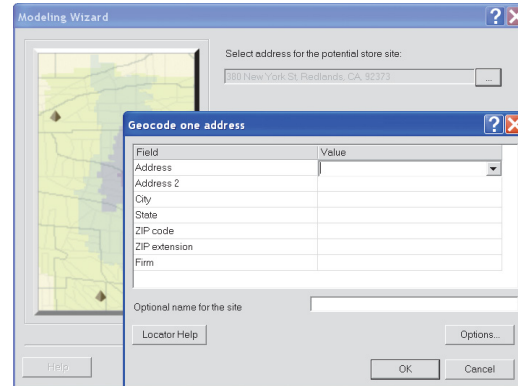
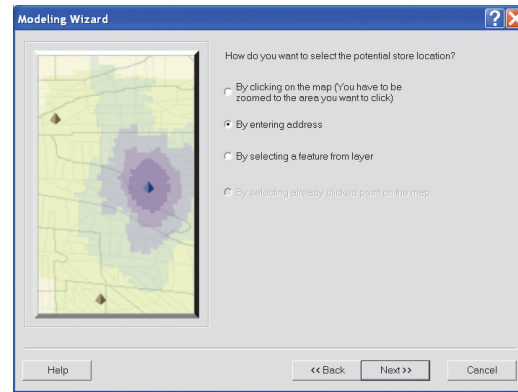


- Forecast sales and potential of existing stores and outlets.
- Assess the impact of competitive and environmental changes on outlet performance.

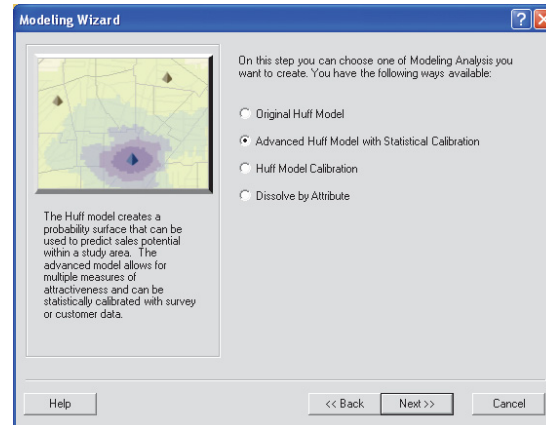
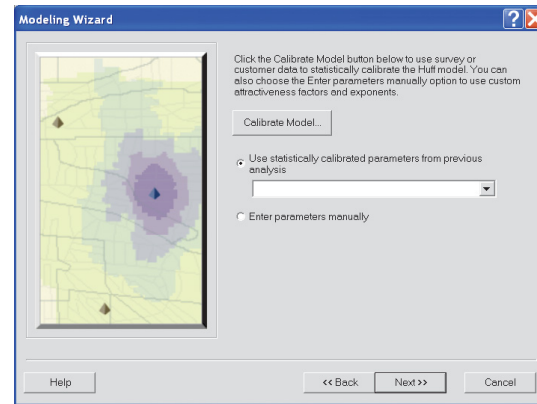
4. Click the first drop-down menu and click the layer containing your sales potential field. You have the option of checking the box to Only show Business Analyst data layers (BDS). Business Analyst geography layers contain many fields, including consumer expenditure data, that can be used as an indicator of sales potential.
5. Click the second drop-down menu and click the ID field for your Sales Potential layer. Click the third drop-down menu and click the sales potential field. Business Analyst geography layers often use a tree structure to present categories of fields that can be expanded to show individual fields in that category. You can hold the Ctrl key and click any plus (+) or minus (-) sign in the tree to expand or collapse the tree structure. Click Next.
6. Click the first drop-down menu and click the competitive stores layer. Click the second drop-down menu and click the Store ID field. Click Next. ►



7. Click one of the methods of selecting a potential store location.
8. If you click By entering address, enter the address of the location by clicking each field in the Value column. Click OK to continue.
9. If you click By selecting a feature from layer, click the first drop-down menu and click the layer containing the potential site. Click the second drop-down menu and click the individual feature to use for the site location. Click Next. ►



10. The Calibrate Model utility is covered in detail in the Huff model calibration section that follows. You can also access this information by clicking the Advanced Huff Model with Statistical Calibration option on the Modeling Wizard. Click Use statistically calibrated parameters from previous analysis or click Enter parameters manually. Choose either and click Next. ►



11. If you click Enter parameters manually, the dialog box to the right will appear. Click a method for how distance will be calculated in the model. Use the + or - buttons to add or remove predictor variables. After adding a variable, click the variable in the Variable column to activate a drop-down menu for choosing any variable in the layer. Click the Variable table in the Potential Site Value column and type a value. Click the Coefficient column and type a value between -1.0 and -3.0 that indicates the impact of travel distance on a customer's willingness to travel to make a purchase at the store. The closer the number is to -1.0, the more willing the customer is to travel a greater distance to make the purchase. Click Next.

The screenshot shows the 'Modeling Wizard' dialog box. Under 'Distance measurement', the 'Use Drive Time' radio button is selected. Under 'Predictor variables', a table lists 'Distance' with a Potential Site Value of 'N/A' and a Coefficient of '-1.5', and 'GLA' with a Potential Site Value of '5000' and a Coefficient of '-1.5'. The 'GLA' row is selected with a mouse cursor. Buttons for 'Help', '<< Back', 'Next >>', and 'Cancel' are visible at the bottom.

12. Type a name for the new model in the text box and type any comments, then click Finish.

Your new analysis area is created and appears on the map.

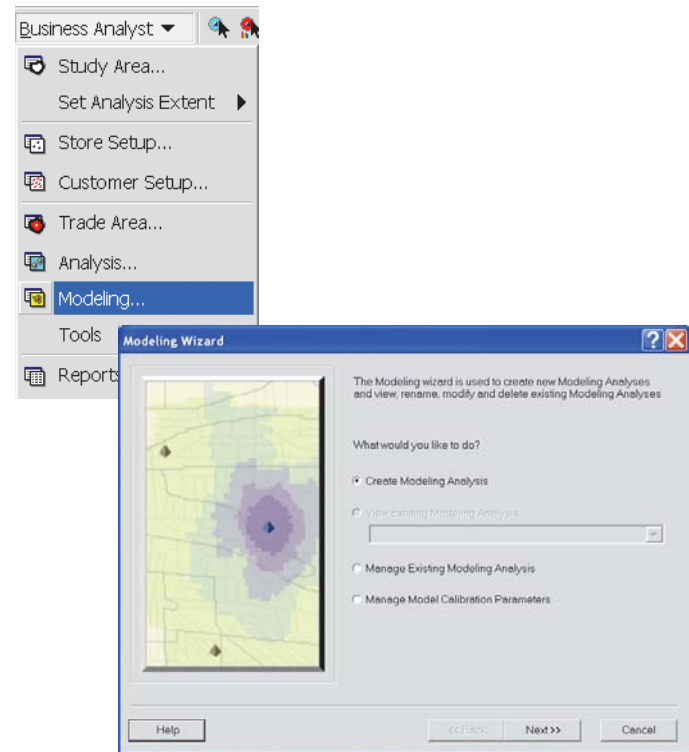
The screenshot shows the 'Modeling Wizard' dialog box. The text box 'What do you want to name the Modeling Analysis?' contains 'Advanced Huff Model'. Below it is a 'Comments' text area. Under 'Batch Tasks', the checkbox 'Defer this task to the Batch Queue' is unchecked. A text box below asks 'What do you want to name the new task?'. On the left, a map shows a purple circular analysis area centered on a location. Buttons for 'Help', '<< Back', 'Finish', and 'Cancel' are visible at the bottom.

# Huff model calibration

Business Analyst offers two forms of model calibration—using real customer data and using survey data. Calibration of any model is critical to maximizing its predictive value. You will need the following to calibrate your model:

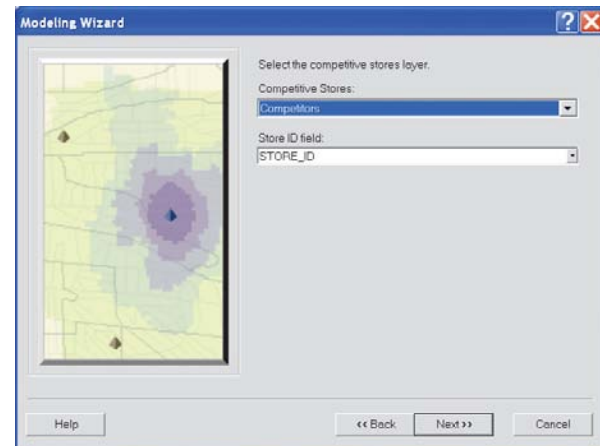
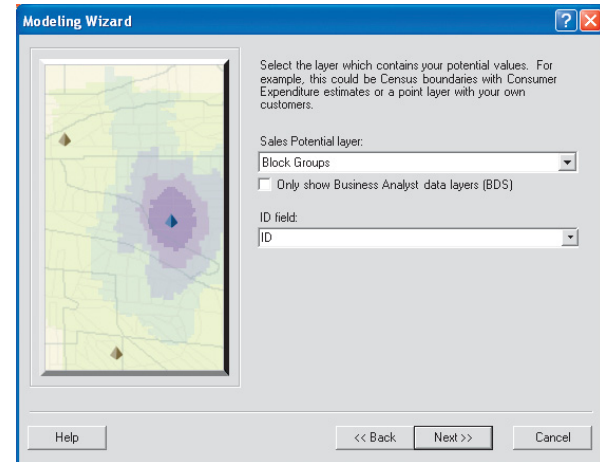
- If using real customer data, it must contain information from a sample of households in each subgeography area within the study area. You need customer data for each existing and competitive store location in the study area. The customer information is converted in the model to proportions for each subgeography area.
- Survey data will be used to determine the frequency of shopping trips each respondent makes to the stores within the study area. Exit interviews are a good method for collecting this information.
- Ensure that each subgeography area is adequately represented in the sample. ►

1. Click the Business Analyst drop-down menu and click Modeling.
2. Click Create Modeling Analysis.
3. Click Huff Model Calibration as the type of modeling analysis and click Next. ►



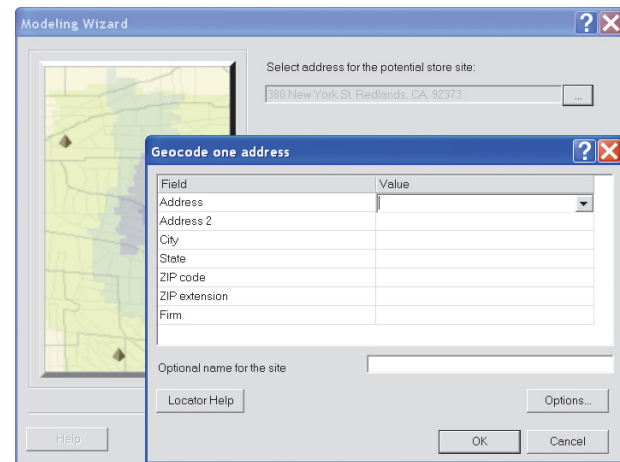
- The Potential Customers geographic level is usually a polygon trade area representing subareas where potential customers live. This can also be a point layer—for example, block centroids—that has associated demographic data.
- The competitive store layer should include all competitive locations in a given study area. This layer should also include any of your existing store locations in the study area, since they will act as competitors to a new store location. In most cases, this layer will be a Business Analyst store layer.
- Competitive store locations can be extracted from the Add Business Listings function in ArcGIS Business Analyst.
- The first step in executing this wizard is to define a study area that includes all the trade areas of all competing stores being analyzed. ►

4. Click the first drop-down menu to select the layer containing your sales potential field. You have the option of checking the box to Only show Business Analyst data layers (BDS). Business Analyst geography layers contain many fields, including consumer expenditure data, that can be used as an indicator of sales potential.
5. Click the second drop-down menu and click the ID field for your sales potential layer. Click the third drop-down menu and click the sales potential field. Business Analyst geography layers often use a tree structure to present categories of fields that can be expanded to show individual fields in that category. You can hold down the Ctrl key and click any + or - in the tree to expand or collapse the tree structure. Click Next.
6. Click the first drop-down menu and click the competitive stores layer. Click the second drop-down menu and click the Store ID field. Click Next. ►



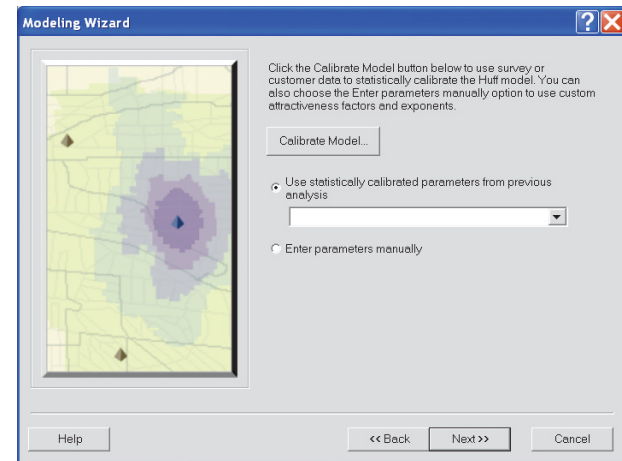
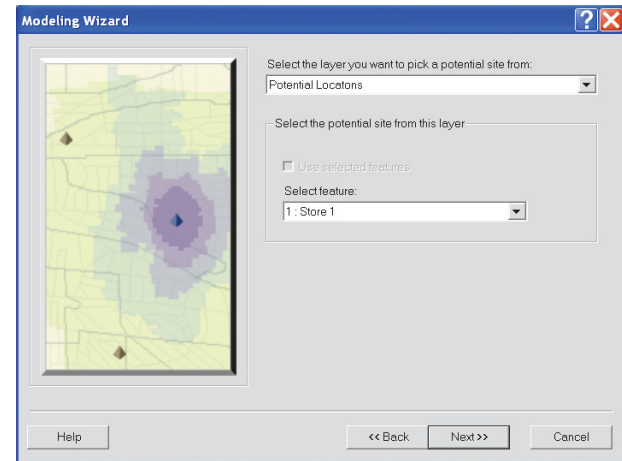
- Store attraction fields, also known as predictor values, often include attributes of a store, such as square footage, number of parking spaces, advertising, store hours, prices, age, appearance, signage, accessibility, and so forth.

7. Click one of the methods of selecting a potential store location.
8. If you click By entering address, enter the address of the location by clicking each field in the Value column. Click OK to continue. ►





9. If you click By selecting a feature from layer, click the first drop-down menu and click the layer containing the potential site. Click the second drop-down menu and click the individual feature to use for the site location. Click Next.
10. The Calibrate Model utility is covered in detail in the Huff model calibration section that follows. It is also provided in the Advanced Huff model wizard as a convenience. You have a choice of selecting the statistically calibrated parameter from a previous analysis or entering the parameters manually. Choose an alternative and click Next. ▶

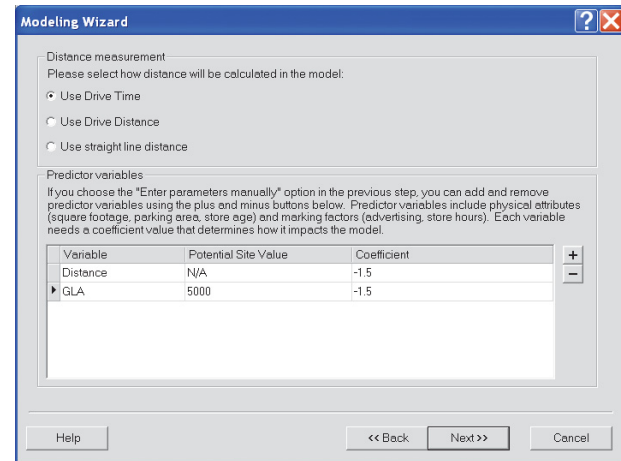


11. If you click Enter parameters manually, the dialog box to the right will appear. Click a method for how distance will be calculated in the model. Use the + or - buttons to add or remove predictor variables. After adding a variable, click the variable in the Variable column to activate a drop-down menu for choosing any variable in the layer. Click the variable table in the Potential Site Value column and type a value.

Click the Coefficient column and type a value between -1.0 and -3.0 to indicate the impact of travel distance on a customer's willingness to travel to make a purchase at the store. The closer the number is to -1.0, the more willing the customer is to travel a greater distance to make the purchase. Click Next.

12. Type a name for the new model in the text box and type any comments, then click Finish.

Your new analysis area is created and appears on the map.



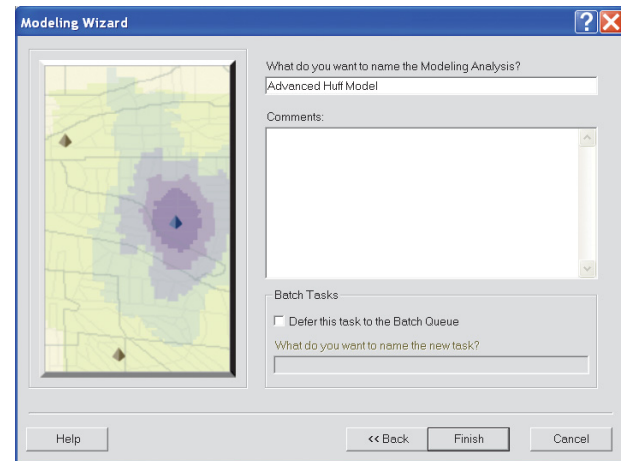
The Modeling Wizard dialog box is titled "Modeling Wizard" and has a help icon and a close icon in the top right corner. It contains two main sections: "Distance measurement" and "Predictor variables".

**Distance measurement:** This section asks "Please select how distance will be calculated in the model:" and has three radio button options: "Use Drive Time" (selected), "Use Drive Distance", and "Use straight line distance".

**Predictor variables:** This section explains that if the "Enter parameters manually" option was chosen, predictor variables can be added or removed. It lists that predictor variables include physical attributes (square footage, parking area, store age) and marketing factors (advertising, store hours). Each variable needs a coefficient value.

Variable	Potential Site Value	Coefficient	
Distance	N/A	-1.5	
GLA	5000	-1.5	

At the bottom of the dialog box are four buttons: "Help", "<< Back", "Next >>", and "Cancel".



The Modeling Wizard dialog box is titled "Modeling Wizard" and has a help icon and a close icon in the top right corner. It contains three main sections: a map, "What do you want to name the Modeling Analysis?", and "Batch Tasks".

**Map:** A map showing a geographic area with a purple shaded region indicating the analysis area.

**What do you want to name the Modeling Analysis?:** A text box containing "Advanced Huff Model".

**Comments:** A large text area for entering comments.

**Batch Tasks:** A section with a checkbox "Defer this task to the Batch Queue" (unchecked) and a text box "What do you want to name the new task?".

At the bottom of the dialog box are four buttons: "Help", "<< Back", "Finish", and "Cancel".

## Using dissolve by attribute

You can use the Dissolve by Attribute function on the Modeling Wizard with the output from the original or advanced Huff model and dissolve the attribute probability field. For example, you can create primary, secondary, and tertiary trade areas based on the output probabilities of the original Huff model. The output from the Huff Model tools in Business Analyst creates a probability for each subgeography unit in the study area. For example, the output from the Huff models will create a probability of households in each block group of patronizing a new store location.

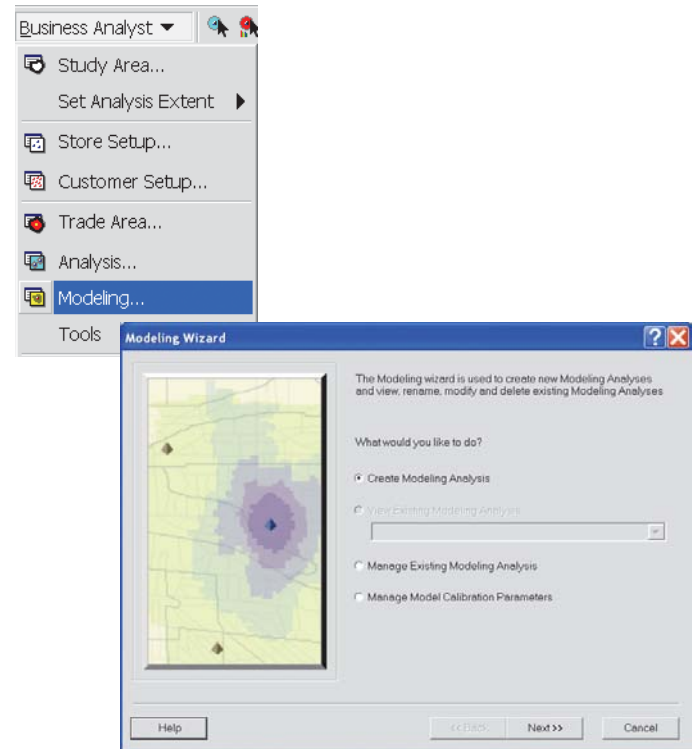
The Dissolve by Attribute option allows you to collapse the probability attributes in the block groups to create trade areas—for example, you can create three trade areas with the following probabilities:

- 70–100 percent
- 40–70 percent
- 10–40 percent

In this case, the layer created would contain the three polygon features based on the ranges above. You can then use these trade areas to ►

1. Click the Business Analyst drop-down menu and click Modeling.
2. Click Create Modeling Analysis and click Next.
3. Click Dissolve by Attribute as the type of modeling analysis and click Next. ►

The Modeling Wizard opens.



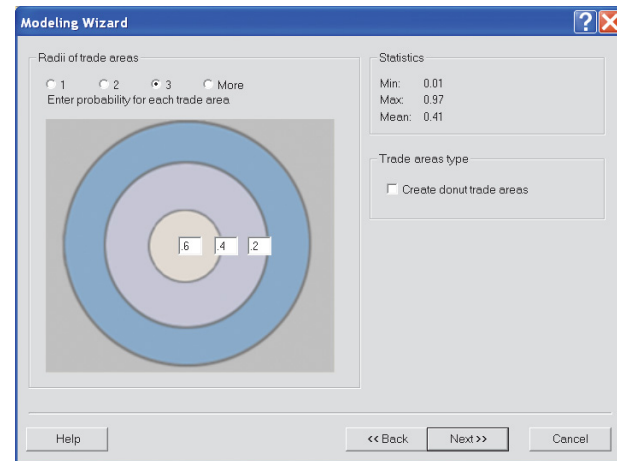
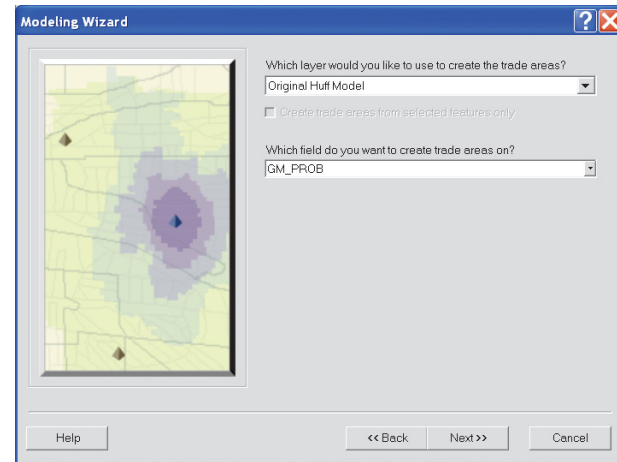
effectively target potential clients in these areas to suit your business needs, such as marketing campaigns, sales territory generation, and so forth.

Use the Dissolve by Attribute option when you want to aggregate and dissolve features based on a specified attribute or attributes—for example, you could take a layer containing sales data collected on a county-by-county basis and use the Dissolve by Attribute option to create a layer containing contiguous sales regions based on the name of the salesperson in each county.

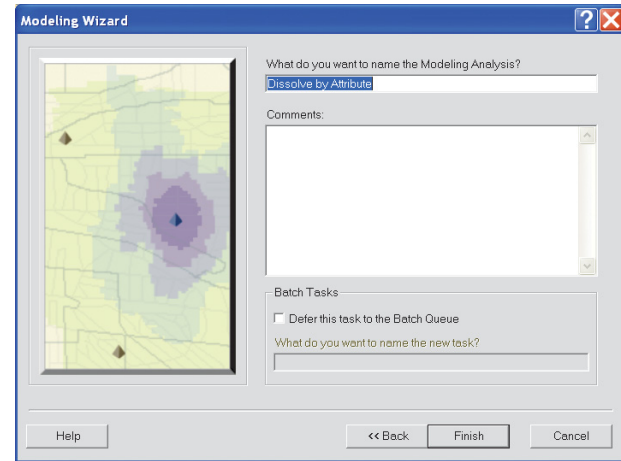
4. Click the first drop-down menu and click the results from an original or advanced Huff model. If you have pre-selected particular trade areas, the check box will be visible and available to check.

Click the second drop-down menu and click the field you want to use in creating the trade areas. In the case of the Huff models you have created, this will probably be the GM\_PROB field. Click Next.

5. Click the number of probability rings you want and type the probability using decimal points—for example, enter 60% as .60. Statistics are shown with the Min, Max, and Mean probabilities for your reference. You have the option of clicking the box to Create donut trade areas. Click Next. ►



6. Type a name in the text box to save the new probability trade areas and type any comments, then click Finish. Your new trade area layer is created and appears on the map.



# Managing existing modeling analyses

You can use the Managing existing modeling analyses to view, modify, delete, or rename an existing modeling analysis—for example, if you have previously created a Huff model, you can use this tool to rename the output layer. You can also modify the parameters for a model and rerun the analysis.

## Tip

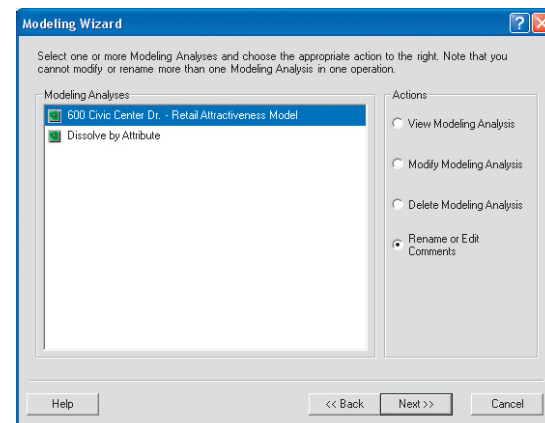
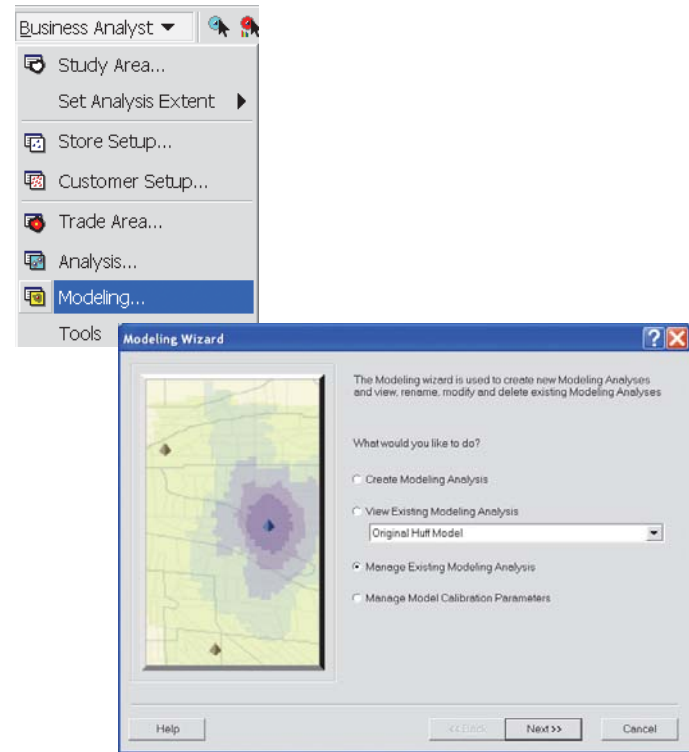
### Using the different managing views

You can view the modeling analyses you are managing in two different ways: *Show All* and *Hide All*.

Clicking the *Show All* button will display modeling analyses grouped by individual Projects in a tree view.

Clicking the *Hide All* button will display all modeling analyses for the active Project only.

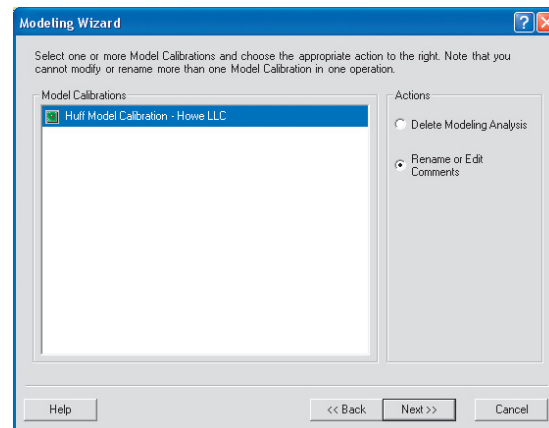
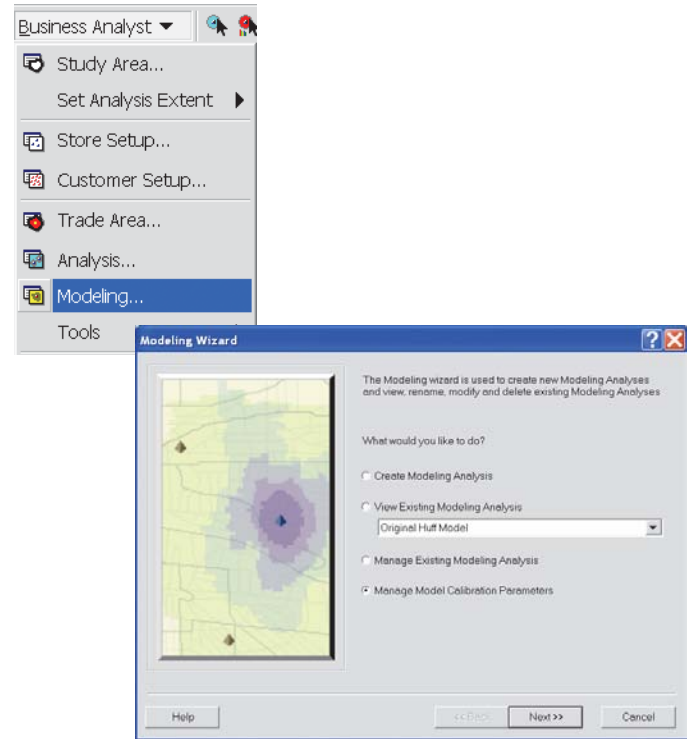
1. Click the Business Analyst drop-down menu and click Modeling.  
The Modeling Wizard opens.
2. Click Manage Existing Modeling Analysis and click Next.
3. Click the modeling analysis you want to use. Click View Modeling Analysis to add the model layer to the map, click Modify Modeling Analysis (which steps you through the wizard), click Delete Modeling Analysis, or click Rename or Edit Comments. Click Next or Finish, depending on your chosen action.



# Managing model calibration parameters

You can use the Managing model calibration parameters to view, modify, delete, or rename an existing modeling calibration parameter—for example, if you have previously created an advanced Huff model with statistical calibrations, you can use this tool to rename the output parameters. You can also modify the settings for a model calibration and re-create the analysis.

1. Click the Business Analyst drop-down menu and click Modeling.
2. Click Manage Model Calibration Parameters and click Next.
3. Click one or more model calibrations and click the desired action to delete, or rename/edit comments. Click Next or Finish, depending on your chosen action.







# Working with maps

# 12

## IN THIS CHAPTER

- **Displaying points as charts**
- **Classification methods**
- **Displaying points as different colors**
- **Displaying points as different sizes**
- **Displaying lines as different colors**
- **Displaying lines as different thicknesses**
- **Displaying charts in areas**
- **Displaying areas as different colors**
- **Setting dot density in areas**

This chapter shows different methods you can use to improve the appearance of your maps. It also presents methods for thematic analysis of maps.

## Displaying points as charts

You can display the points on your map as charts using the Thematic Mapping Wizard. Charts can be effective for comparing several values at once. For instance, you might display your stores as a pie chart, each wedge representing the percentage of total yearly sales for a specific product.

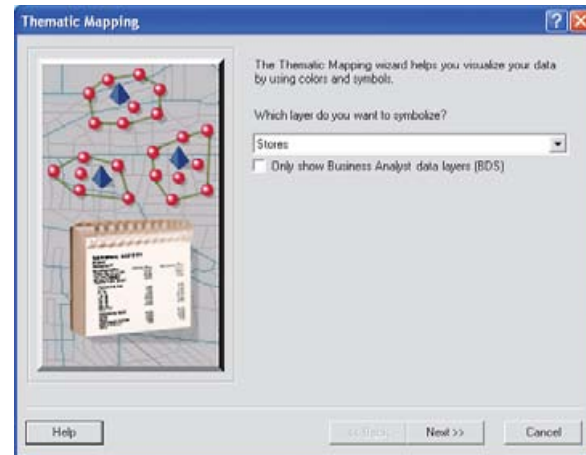
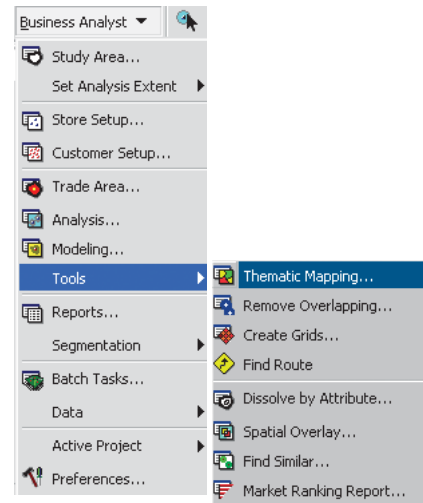
A pie chart is useful for comparing proportions of different categories in a total amount, whereas a bar chart compares actual values rather than proportions of a total.

### Tip

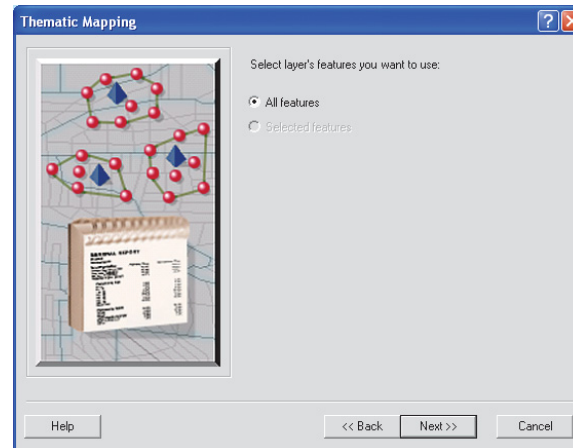
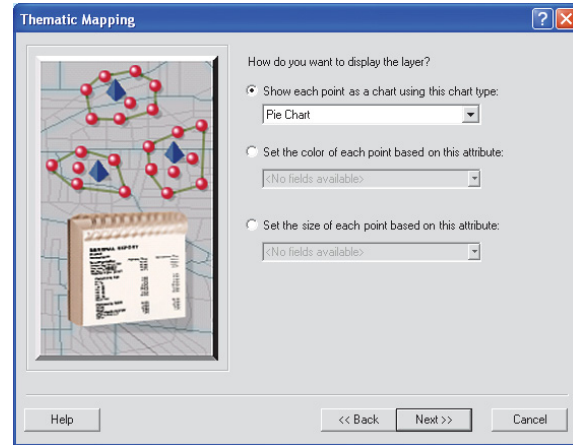
#### Using charts

- Compare only a few points (20 or 30 at most).
- Use five categories or less on your chart.
- Make sure that the values between points vary enough to actually show differences.

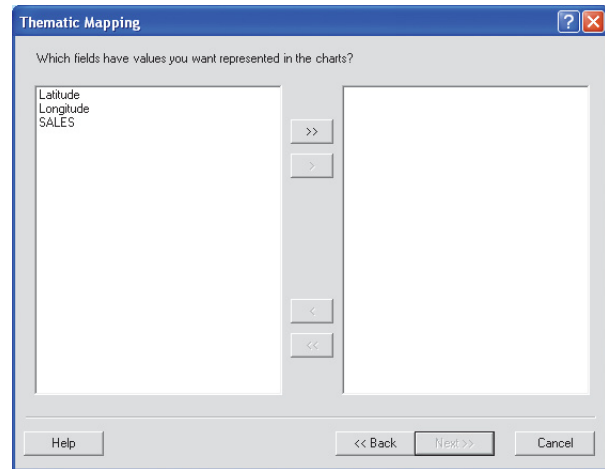
1. In ArcMap, open the study area with the points you want to display as charts.
2. Click the Business Analyst drop-down menu then highlight Tools and click Thematic Mapping.  
The Thematic Mapping Wizard opens.
3. Click the drop-down menu and click the layer you want to symbolize, then click Next. ▶



4. Click Show each point as a chart using this chart type, click the drop-down menu and click Pie Chart, then click Next.
5. If you want to use all features, click All features, then click Next. To use Selected features, you will first need to have the features selected on the map or in the layer's attribute table. ►

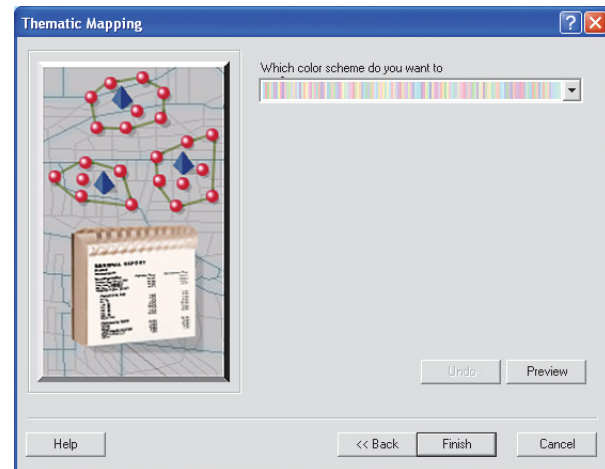


- From the list on the left, click the field that has values you want represented in the charts, then click the single right arrow button to move it to the column on the right. To choose more than one field, hold down the Ctrl key and click each field you want, then click the single right arrow button to move them to the column on the right. To move all the fields to the right column, click the double right arrow button. When you're finished, click Next.



- Click the drop-down menu and choose the color scheme you want to use, then click Finish.

The charts appear on the map.



## Classification methods

There are several different classification methods you can choose to organize your data when performing thematic mapping. These include equal interval, natural breaks, quantile, equal area, and standard deviation.

In the *Equal Interval classification method*, each class has an equal range of values; that is, the difference between the high and low value is equal for each class. You should use this method if your data is evenly distributed and you want to emphasize the difference in values between the features.

With the *Natural Breaks (Jenks) classification method*, data values that cluster are placed into a single class. Class breaks occur where there is a gap between clusters. You should use this method if your data is unevenly distributed; that is, many features have the same or similar values and there are gaps between groups of values.

With the *Quantile classification method*, each class has roughly the same number of features. If your data is evenly distributed and you want to emphasize the difference in relative position between features, you should use the quantile classification method. If, for example, the point values are divided into five classes, points in the highest class would fall into the top fifth of all points.

With the *Geometrical Interval classification method*, class ranges are based on intervals that have a geometric sequence based on a multiplier. It creates these intervals by minimizing the square sum of elements per class; this ensures that each interval has an appropriate number of values within it and the intervals are fairly similar. This algorithm was specifically designed to accommodate continuous data. It produces a result that is visually appealing and cartographically comprehensive.

With the *Standard Deviation classification method*, class breaks are placed above and below the mean value at intervals of 1, 0.5, or 0.25 standard deviations until all the data values are included in a class.

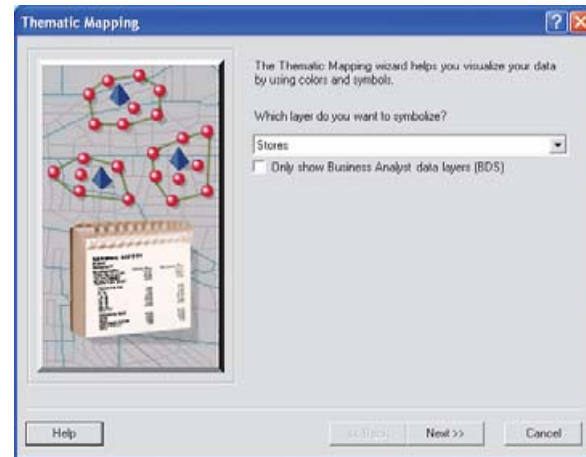
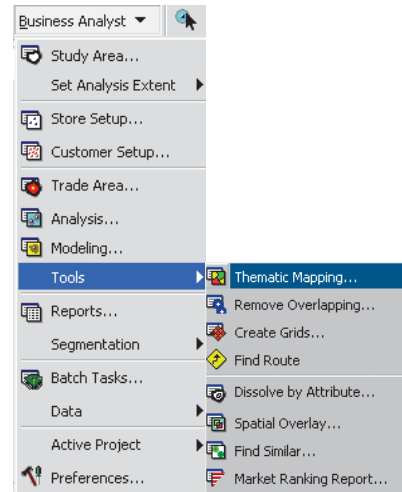
## Displaying points as different colors

Displaying points as different colors based on the values of a numeric attribute is an example of a *graduated color map*. Because colors don't necessarily imply a magnitude, this kind of map is useful for showing data that is ranked, such as 1 to 10 or low to high, or has a numerical progression, such as measurements, counts, rates, or percentages.

For example, you might want to display your customers as different colors, depending on how often they visit the store.

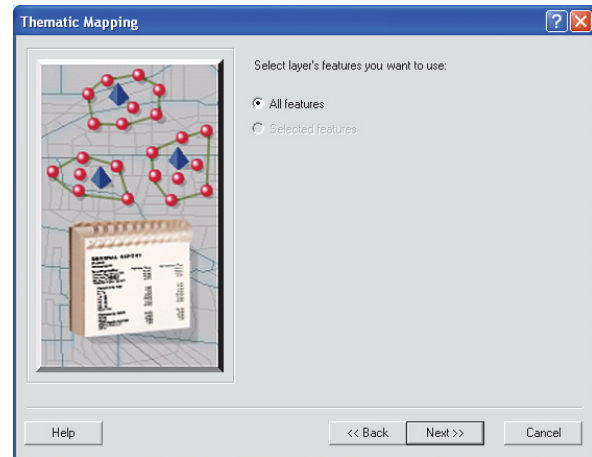
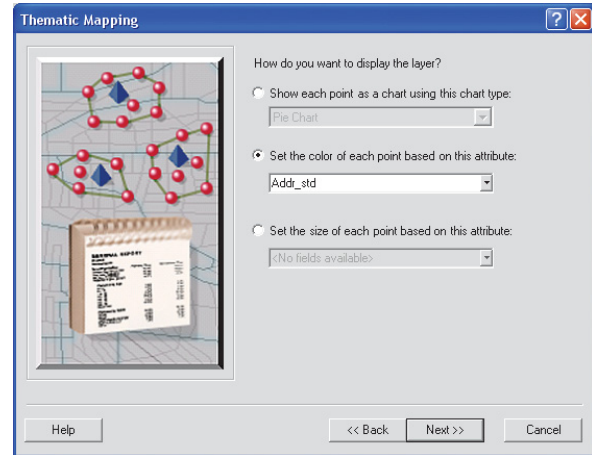
You can also use a nonnumeric attribute to display points as different colors—for example, you could display your stores as different colors according to the name of their regional manager.

1. In ArcMap, open the study area with the points you want to display as different colors.
2. Click the Business Analyst drop-down menu then highlight Tools and click Thematic Mapping.  
The Thematic Mapping Wizard opens.
3. Click the drop-down menu and click the layer you want to symbolize, then click Next. ▶





- Click Set the color of each point based on this attribute, then click Next.
- Click All features to use all features. Click Selected features to use only the features you have selected on the map or in the layer's attribute table. Click Next to continue. ►

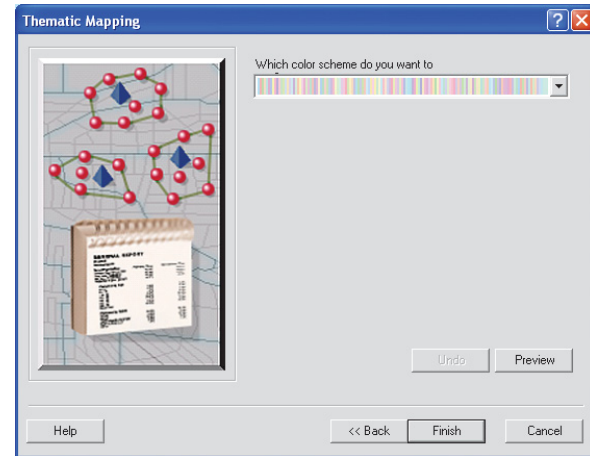


## Tip

### Previewing your results

*Optionally, click the Preview button to see the results on your map without changing it permanently. To return to the original legend, click Undo.*

6. Click the drop-down menu and click the color scheme you want to use.
7. Optionally, click the Preview button to see the results on your map without changing it permanently. To return to the original legend, click Undo.
8. Click Finish.  
The points in the chosen layer appear as different colors on the map.

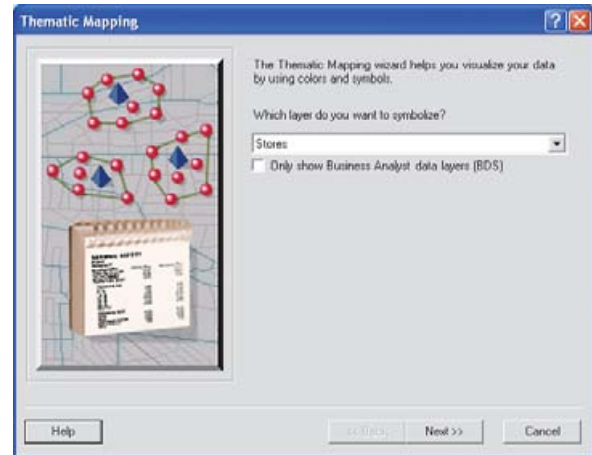
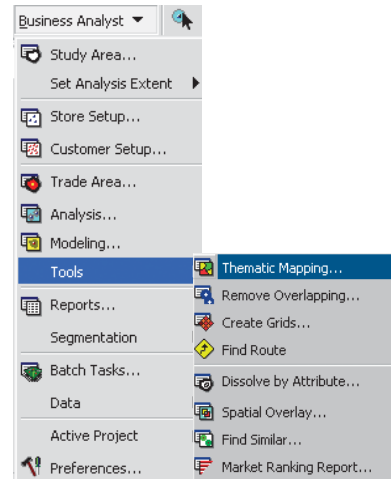




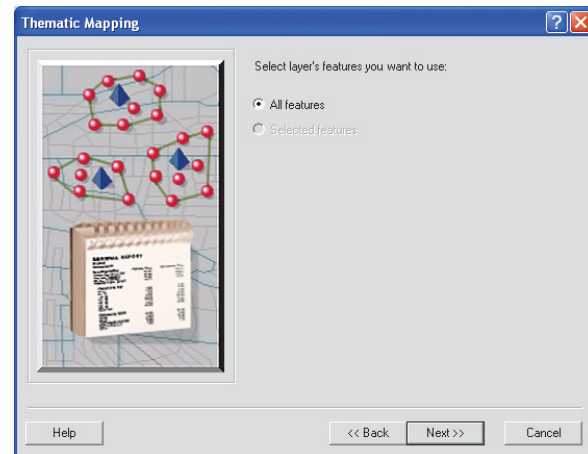
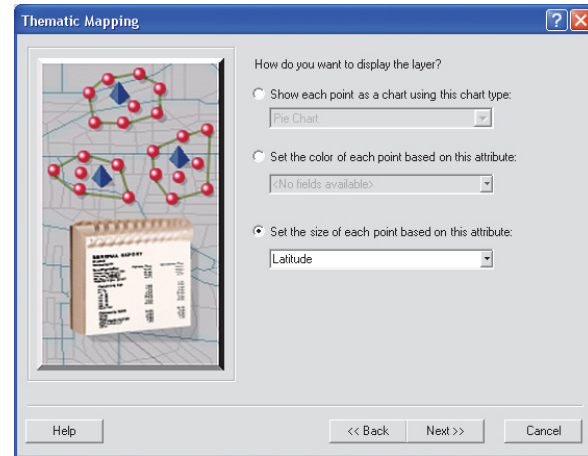
## Displaying points as different sizes

You can display points using a symbol that varies in size to represent different values. This is an example of a *graduated symbol map*. Graduated symbols work best for counts and amounts, since most people associate the size of the symbol with magnitude—for example, stores could be displayed as different sizes according to their sales volume, or you could show customers according to total purchases or visits.

1. In ArcMap, open the study area with the points you want to display as different sizes.
2. Click the Business Analyst drop-down menu then highlight Tools and click Thematic Mapping. The Thematic Mapping Wizard opens.
3. Click the drop-down menu and click the layer you want to symbolize, then click Next. ►



4. Click Set the size of each point based on this attribute, then click Next.
5. Click All features to use all features. Click Selected features to use only the features you have selected on the map or in the layer's attribute table. Click Next to continue. ►



## Tip

### Normalizing data

Normalization is the process of dividing one numeric attribute value by another to minimize differences in values based on the size of areas or the number of features in each area—for example, normalizing (or dividing) total population by total area gives population per unit area, or density.

You have the option to choose a normalization field when you are displaying points as different sizes. You can also choose <none> if you don't want your point data normalized.

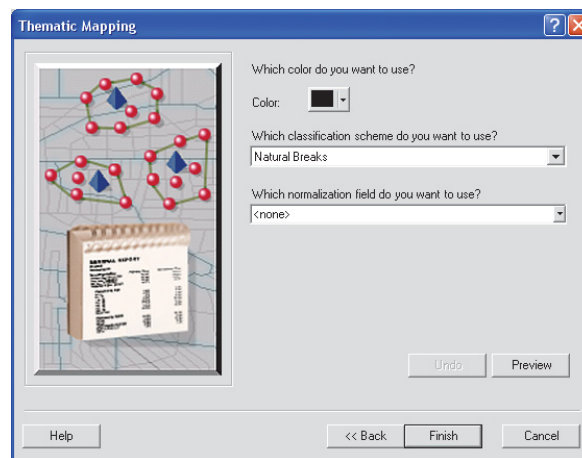
## Tip

### Previewing your results

Click the Preview button to see the results on your map without changing it permanently. To return to the original legend, click Undo.

6. Click the Color drop-down menu and click the color you want to use.
7. Click the second drop-down menu to choose the classification scheme you want to use.
8. Optionally, click the third drop-down menu to choose which normalization field you want to use.
9. Click Finish.

The points in the chosen layer appear as different sizes.



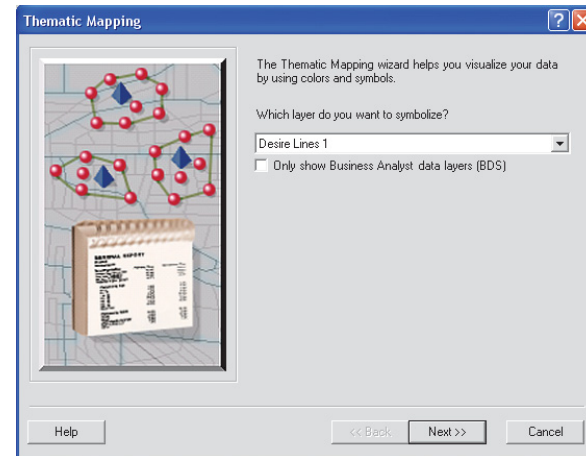
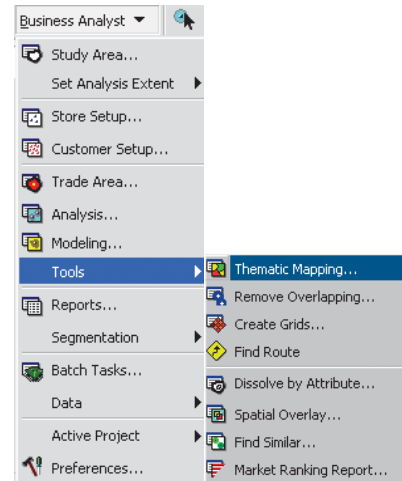
## Displaying lines as different colors

Using different colors can also be an effective method for displaying lines; the color of the lines varies according to the value of a particular attribute. Because colors don't necessarily imply a magnitude, this is useful for showing data that is ranked, such as 1 to 10 or low to high, or has a numerical progression, such as measurements, rates, or percentages.

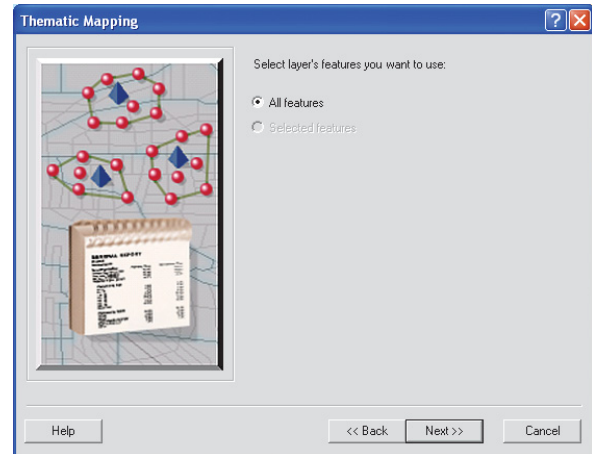
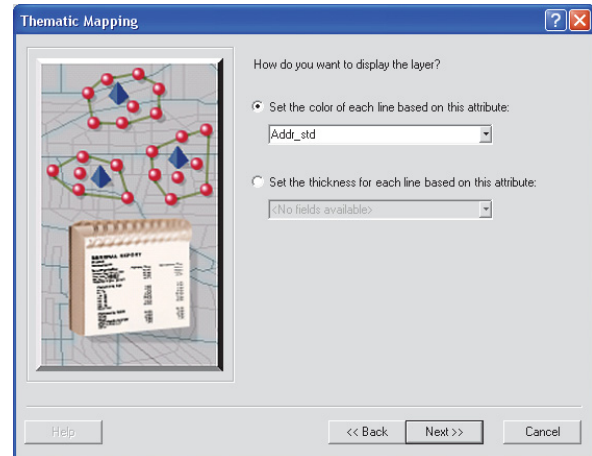
For example, you could display desire lines as different colors according to the store each customer visits or whether or not the customer is a preferred shopper.

1. In ArcMap, open the study area with the lines you want to display as different colors.
2. Click the Business Analyst drop-down menu then highlight Tools and click Thematic Mapping.
3. Click the drop-down menu and click the line layer you want to symbolize, then click Next. ▶

The Thematic Mapping Wizard opens.



- Click Set the color of each line based on this attribute, then click an attribute from the drop-down menu and click Next.
- Click All features to use all features. Click Selected features to use only the features you have selected on the map or in the layer's attribute table. Click Next to continue. ►



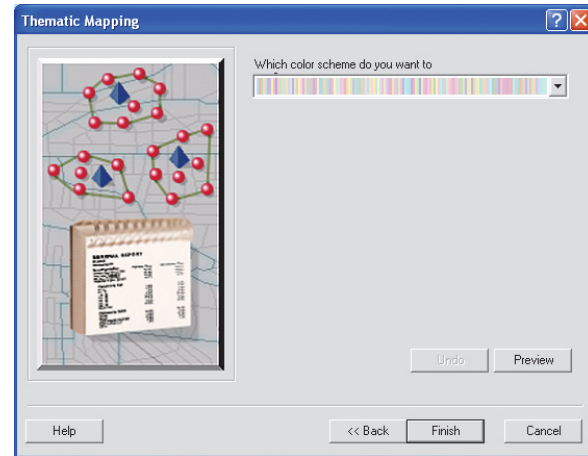
## Tip

### Previewing your results

*Optionally, click the Preview button to see the results on your map without changing it permanently. Click Undo to return to the original legend.*

6. Click the drop-down menu and click the color scheme you want to use.
7. Click Finish.

The lines in the chosen layer appear as different colors on the map.

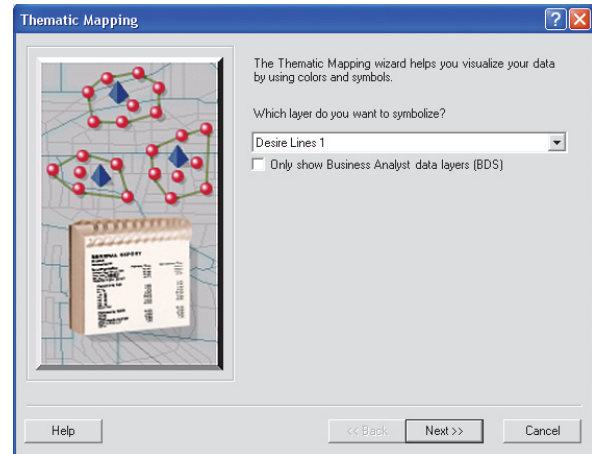
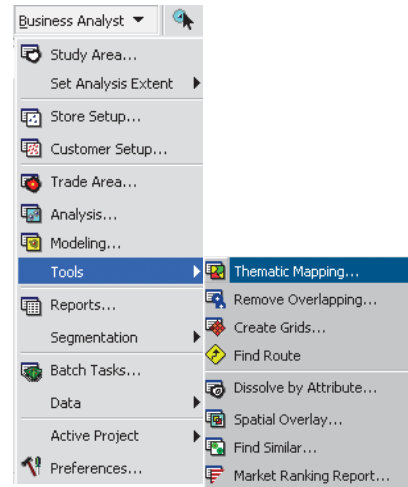


## Displaying lines as different thicknesses

You can display lines as different thicknesses to represent different values. This is another example of a graduated symbol map. Graduated symbols work best for counts and amounts, since most people associate the size of the symbol with magnitude—for example, roads could be displayed as different thicknesses based on traffic volume during rush hour. Desire lines could be displayed by total sales or number of visits for each customer.

1. In ArcMap, open the study area with the lines you want to display as different colors.
2. Click the Business Analyst drop-down menu then highlight Tools and click Thematic Mapping.
3. Click the drop-down menu and click the line layer you want to symbolize, then click Next. ▶

The Thematic Mapping Wizard opens.



## Tip

### Normalizing data

Normalization is the process of dividing one numeric attribute value by another to minimize differences in values based on the size of areas or the number of features in each area—for example, normalizing (or dividing) total population by total area gives population per unit area, or density.

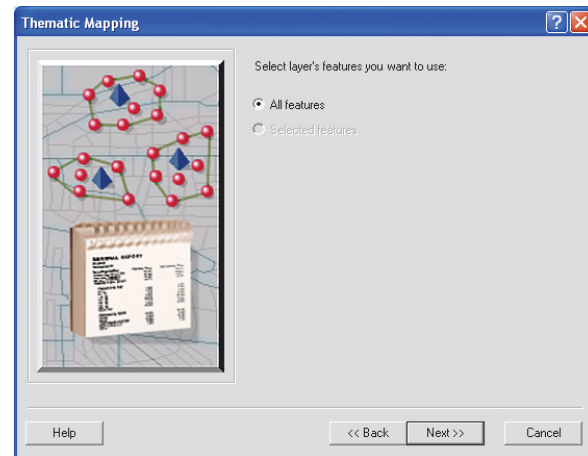
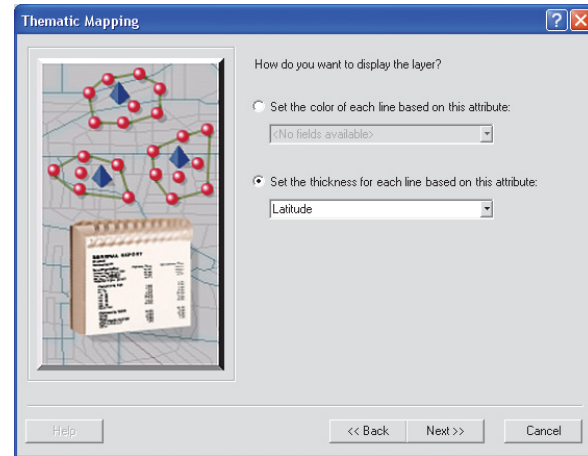
You have the option to choose a normalization field when you are displaying points as different sizes. You can also choose <none> if you don't want your point data normalized.

## Tip

### Previewing your results

Click the Preview button to see the results on your map without changing it permanently. To return to the original legend, click Undo.

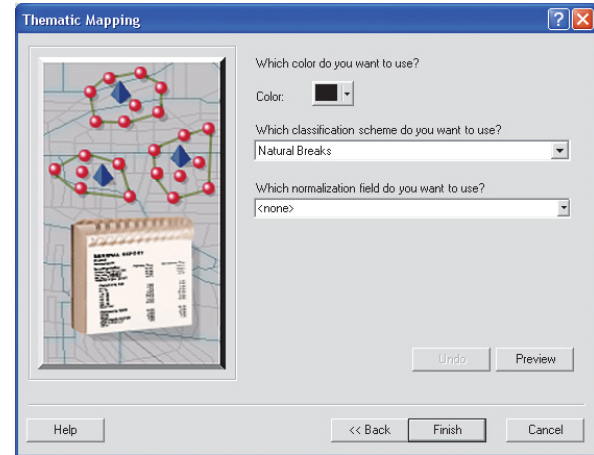
- Click Set the thickness for each line based on this attribute and click an attribute from the drop-down menu, then click Next.
- Click All features to use all features or click Selected features to use only selected features. Click Next to continue. ►





6. Click the Color drop-down menu and click the color you want to use.
7. Click the second drop-down menu to choose the classification scheme you want to use.
8. Click the third drop-down menu to choose which normalization field you want to use.
9. Click Finish.

The lines in the chosen layer appear as different thicknesses.



## Displaying charts in areas

You can display charts in areas on your map using the Thematic Mapping Wizard. Charts can be effective for comparing several values at once. For instance, you might display ZIP Codes as a pie chart, each wedge representing population by race. You could display tracts as bar charts representing the number of people who rent and those who are homeowners.

A pie chart is useful for comparing proportions of different categories in a total amount, whereas a bar chart compares actual values rather than proportions of a total.

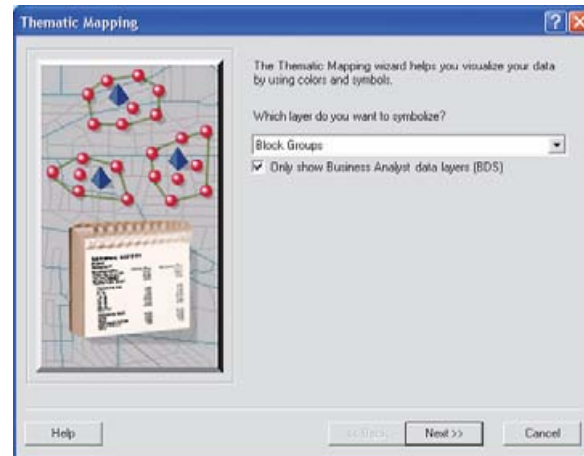
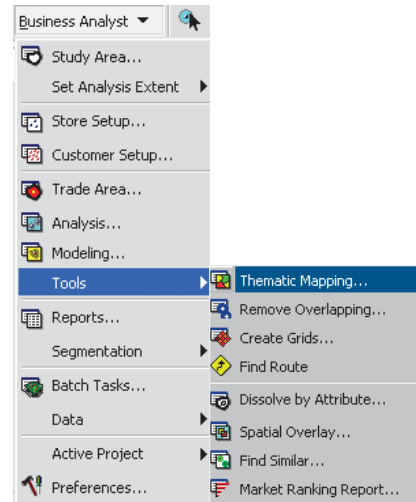
### Tip

#### Using charts

- Compare only a few areas (20 or 30 at most).
- Use five categories or less on your chart.
- Make sure that the values between points vary enough to actually show differences.

1. In ArcMap, open the study area with the areas you want to display different colors.
2. Click the Business Analyst drop-down menu then highlight Tools and click Thematic Mapping.
3. Click the drop-down menu and click the layer with areas you want to symbolize, then click Next. ▶

The Thematic Mapping Wizard opens.

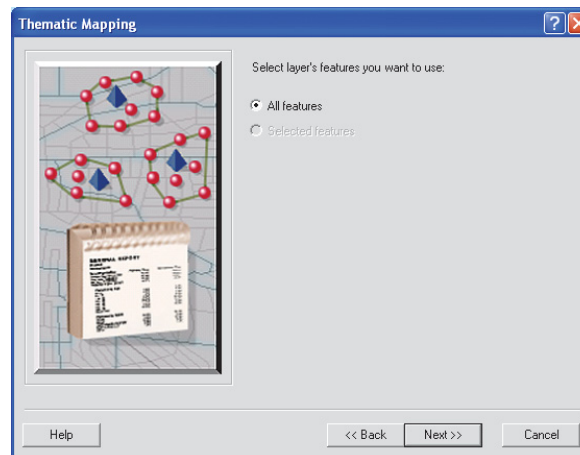
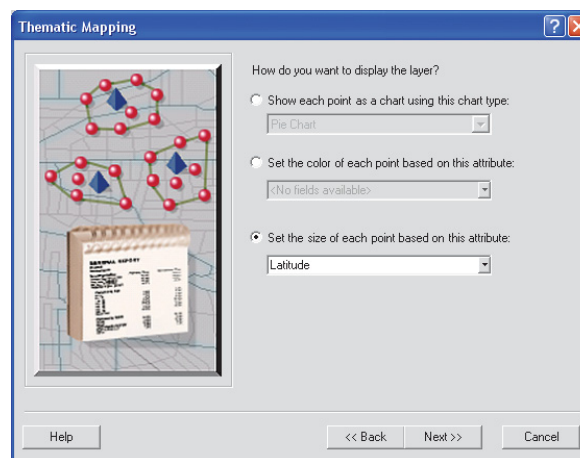


## Tip

### Previewing your results

Click the *Preview* button to see the results on your map without changing it permanently. Click *Undo* to return to the original legend.

- Choose one of the following: Click *Show each point as a chart* using this chart type and choose a chart type from the drop-down menu, click *Set the color of each point based on this attribute* and choose an attribute from the drop-down menu, or click *Set the size of each point based on this attribute* and choose an attribute from the drop-down menu. Once you've made your selection, click *Next*.
- Click *All features* if you want to use all features or *Selected features* if you only want to use selected features. Click *Next* to continue. ►



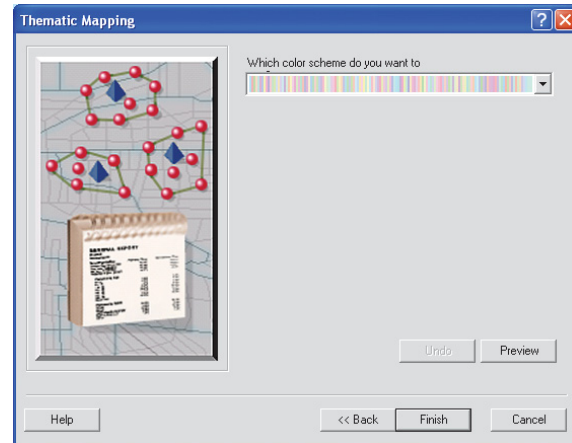
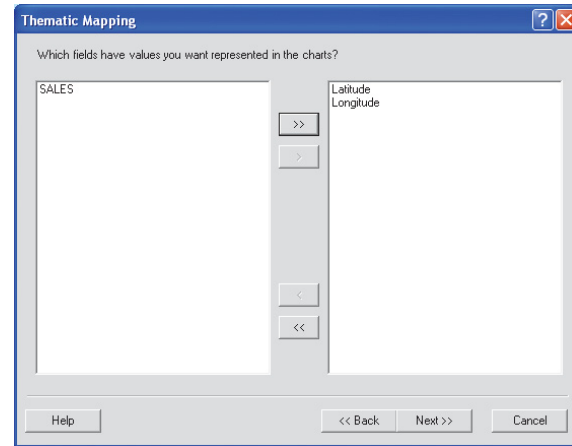
6. This step depends on the option you chose in step 4.

a. If you chose Show each point as a chart using this chart type, you are prompted to choose which fields have values you want represented in the charts. Click a field from the left column and click the right arrow button to move it to the right column. To move all fields to the right column, click the double right arrow.

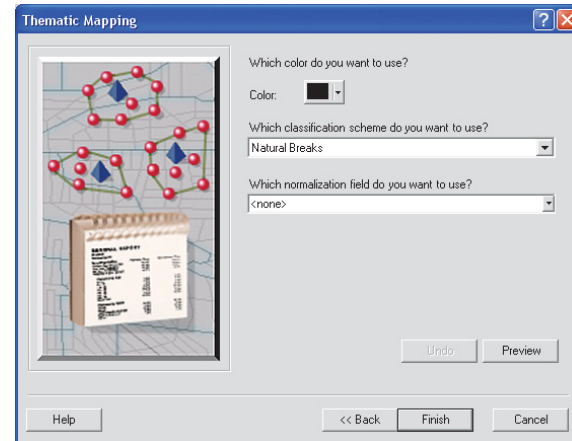
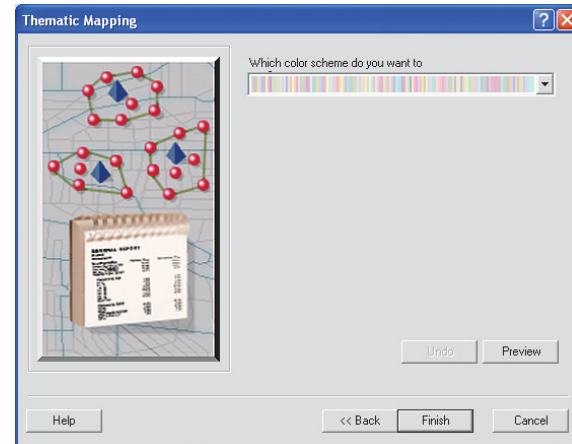
To remove the fields, click the field you want to remove and click the left arrow, or to remove all fields, click the double left arrow. When you're finished adding fields, click Next.

Click the drop-down menu to choose a color scheme you want to use, then click Finish.

The charts appear on the map. ▶



- b. If you chose Set the color of each point based on this attribute, you are prompted to choose the color scheme you want to use, then click Finish. The points are displayed on the map in the color scheme you selected.
- c. If you chose Set the size of each point based on this attribute, you are prompted to choose a color from the drop-down menu. Then, click the classification scheme and normalization field from the drop-down menus and click Finish.



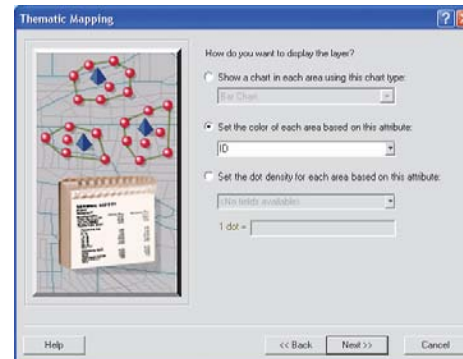
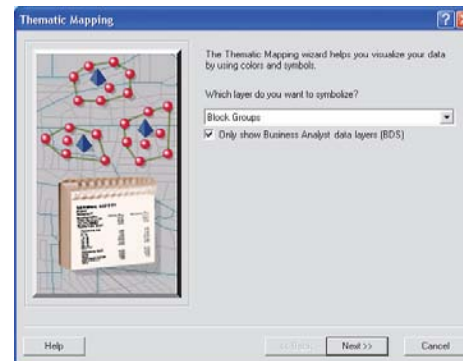
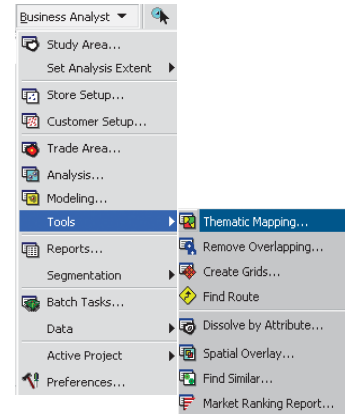
## Displaying areas as different colors

Displaying areas as different colors based on the values of a numeric attribute is another example of a graduated color map. Because colors don't necessarily imply a magnitude, this kind of map is useful for showing data that is ranked, such as 1 to 10 or low to high, or has a numerical progression, such as measurements, rates, or percentages—for example, you could display block groups according to average income or ZIP Codes by number.

You can also use a nonnumeric attribute to display areas as different colors—for example, you could display counties as different colors according to their name.

1. In ArcMap, open the study area with the area you want to display in different colors.
2. Click the Business Analyst drop-down menu then highlight Tools and click Thematic Mapping.
3. Click the drop-down menu and click the layer with areas you want to symbolize, then click Next.
4. Click Set the color of each area based on this attribute, then click Next. ►

The Thematic Mapping Wizard opens.



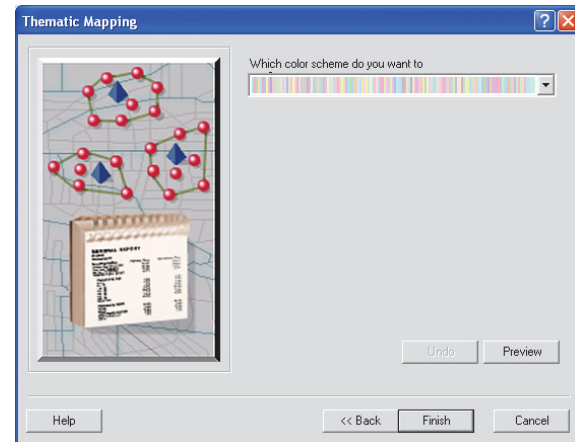
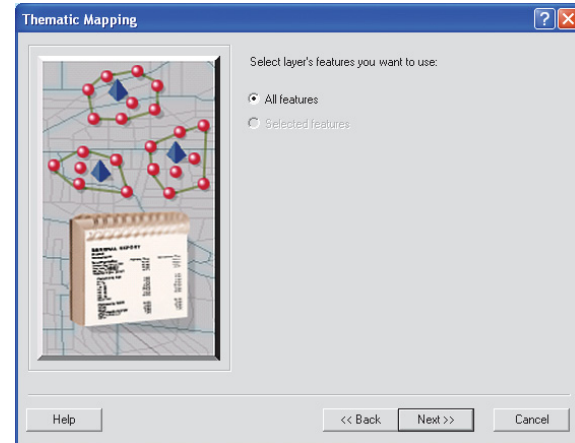
## Tip

### Previewing your results

Click the *Preview* button to see the results on your map without changing it permanently. Click *Undo* to return to the original legend.

5. Click All features to use all features or click Selected features to use selected features. Click Next to continue.
6. Click the drop-down menu and click the color scheme you want to use.
7. Click Finish.

The areas in the layer appear as different colors.

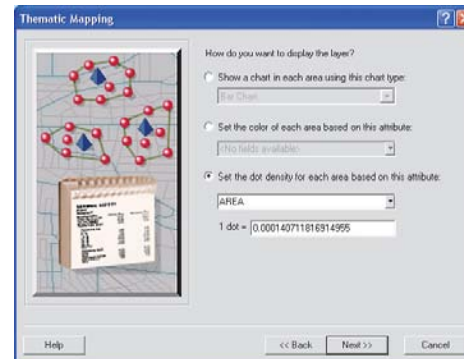
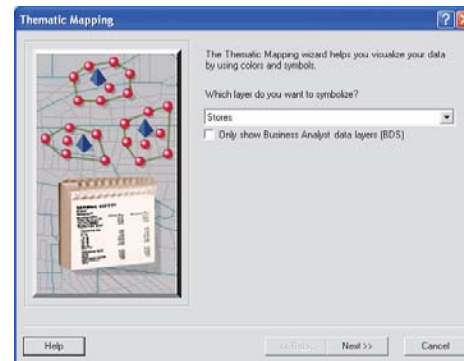
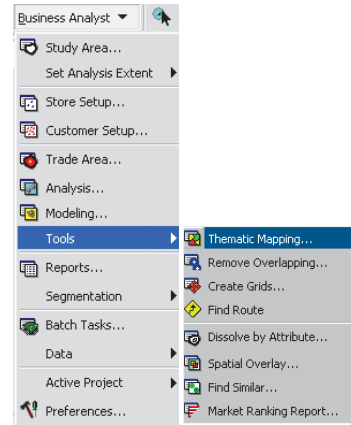


## Setting dot density in areas

Dot density allows you to show where things are concentrated, such as people per square mile. This is good for showing how an attribute is distributed throughout an area. For instance, a dot density map depicting population will show the strongest concentrations of dots where most people live, such as along rivers and near coastlines.

1. In ArcMap, open the study area with the areas you want to show using dot density.
2. Click the Business Analyst drop-down menu then highlight Tools and click Thematic Mapping.
3. Click the drop-down menu and click the layer with areas you want to symbolize, then click Next.
4. Click Set the dot density for each area based on this attribute and click the drop-down menu to choose the field for which you want to determine the dot density.

Type the value you want one dot to represent, then click Next. ▶





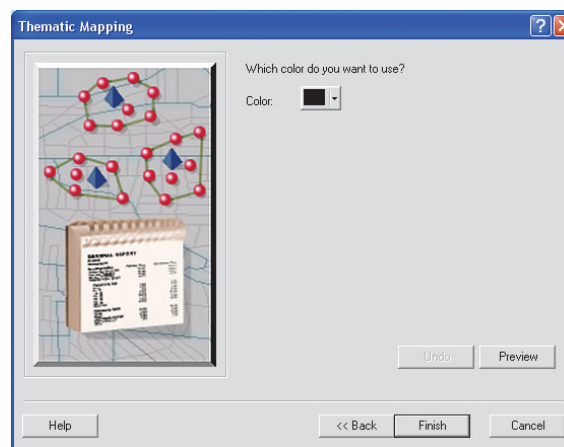
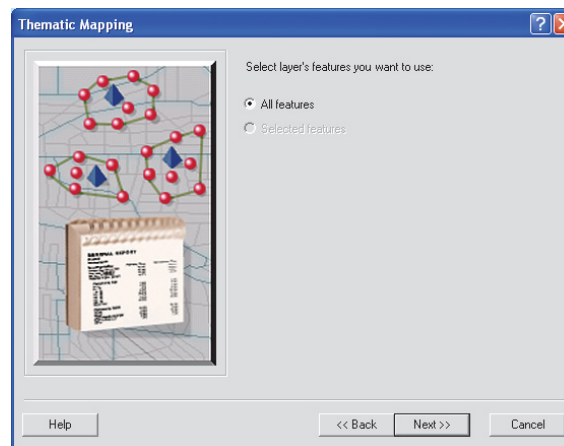
## Tip

### Previewing your results

Click the *Preview* button to see the results on your map without changing it permanently. Click *Undo* to return to the original legend.

5. Click All features to use all features or click Selected features to use only selected features. Click Next to continue.
6. Click the Color drop-down menu to choose a color for the dots.
7. Click Finish.

The areas in the layer appears using dot density.





# Tools

# 13

## IN THIS CHAPTER

- **Thematic mapping**
- **Remove trade area overlap**
- **Create grids**
- **Finding a route**
- **Dissolve by attribute**
- **Spatial overlay**
- **Find similar**
- **Market Ranking report**
- **Site prospecting**
- **Store prospecting**

The Tools section in ArcGIS Business Analyst is a repository of commonly used commands and techniques. Most of these tools are found throughout the software, but housed in individual wizards. Their functionality is identified for supplemental or support of other analyses run in Business Analyst. Think of the Tools section as a Bookmarks or Favorites menu of helpful functions. These include:

- Thematic mapping helps you visualize your data by using colors and symbols
- Removal of overlapping area between two or more trade areas
- Creating grids to permit normalized looks at demographics and other variables over an area with grid sizes that you can define
- Find routes between points using a variety of methods
- Dissolving boundaries between trade areas
- Extracting data from one layer and appending it to another
- Ranking a number of potential sites by statistically comparing them to a master site
- Creating Market Ranking reports
- Prospecting a site using one of several methods
- Creating trade areas by using store prospecting methods

## About tools

This section examines the various tools that are available in the software. These can be used to support other forms of analysis.

### **Thematic mapping**

Thematic mapping provides a suite of tools to help you improve the appearance of your maps. It also presents methods of thematic analysis. See Chapter 12, ‘Working with maps’, for more information.

### **Remove trade area overlap**

The Remove Overlapping tool provides several methods to remove overlap between two or more trade areas, such as the Thiessen polygon approach and grids (unweighted and weighted). See ‘Remove trade area overlap’ in this chapter.

### **Create grids**

Demographic data can be appended to a grid cell to provide a normalized view of the data, identifying hot spots and areas of interest. See Chapter 8, ‘Trade Areas—no customer data required’, for more information.

### **Finding a Route**

The Find Route Wizard allows you to find routes between points using a variety of methods. You can find an optimized route, the shortest travel distance between the points you select, or you can find a route from point to point based on an order you select. You can set the points, or stops, by clicking the map, by adding them from a layer, or by geocoding. See C:\Program Files\ArcGIS\Documentation for more information.

### **Dissolve by attribute**

You can use the Dissolve by Attribute functions on the Modeling Wizard with the output from the original or advanced Huff Model and dissolve the attribute probability field—for example, you can create primary, secondary, and tertiary trade areas based on the output probabilities of the

original Huff Model. The output creates a probability for each subgeography unit in the study area. See Chapter 11, ‘Modeling’, for more information.

### **Spatial overlay**

The Spatial Overlay tool extracts data from one layer and joins it to another—for example, suppose you have demographic and socioeconomic data at the block group level. You can create a market area as a new layer based on your knowledge of the draw of a store. You can also create sales territories that cut across the boundaries of the underlying Input data layer. See Chapter 10, ‘Analysis’, for more information.

### **Find similar**

This Find Similar tool ranks trade areas based on similarity defined by a number of variables selected. See Chapter 10, ‘Analysis’, for more information.

### **Market Ranking report**

The Market Ranking report Wizard allows you to view an interactive table of geographies ranked by one or more variables. See Chapter 14, ‘Reports and batch tasks’, for more information.

### **Site prospecting**

The Site prospecting tool performs prospecting in many ways, including using the Site Prospecting tool, performing site prospecting from the Business Analyst drop-down menu and using the Site Prospecting context menu. See Chapter 3, ‘Toolbar’, for more information.

### **Store prospecting**

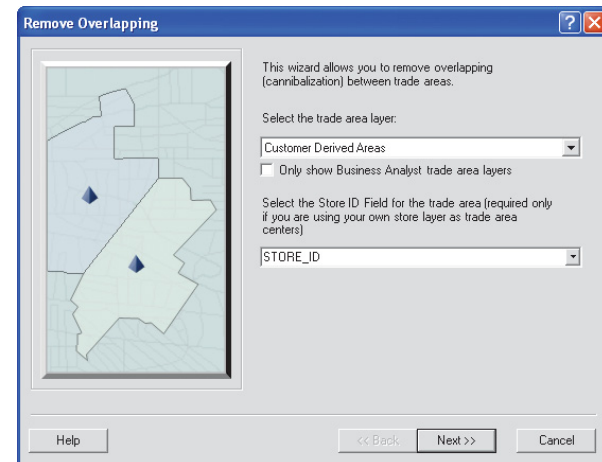
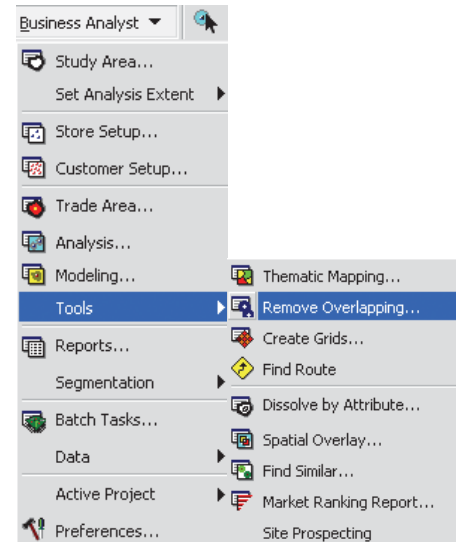
The Store Prospecting Wizard is most commonly used for accessing a database of potential store locations, although it is also capable of performing the function for a single site. See ‘Store prospecting’ in this chapter.

## Remove trade area overlap

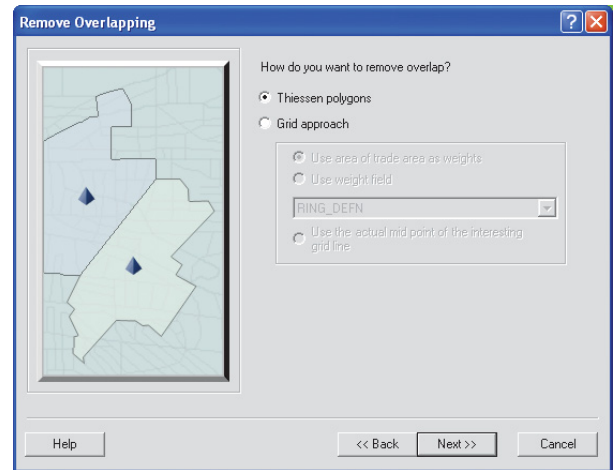
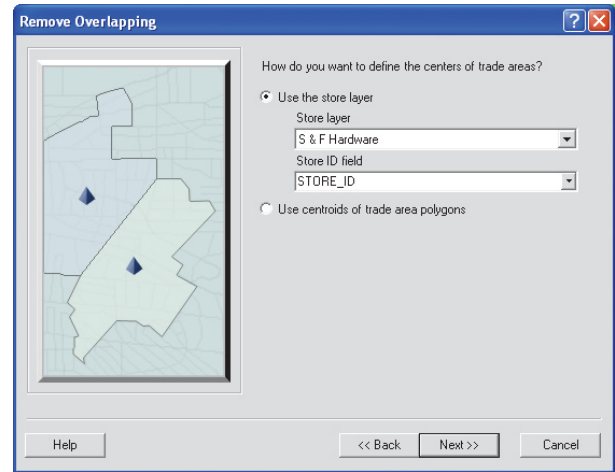
The Remove Overlapping tool provides several methods to remove overlap between two or more trade areas such as the Thiessen polygon approach and grids (unweighted and weighted).

1. Click the Business Analyst drop-down menu and click Tools, then click Remove Overlapping.
2. Click the first drop-down menu and click the trade area layer. Click the second drop-down menu and click the STORE\_ID field for the trade area, then click Next. ▶

The Remove Overlapping Wizard opens.

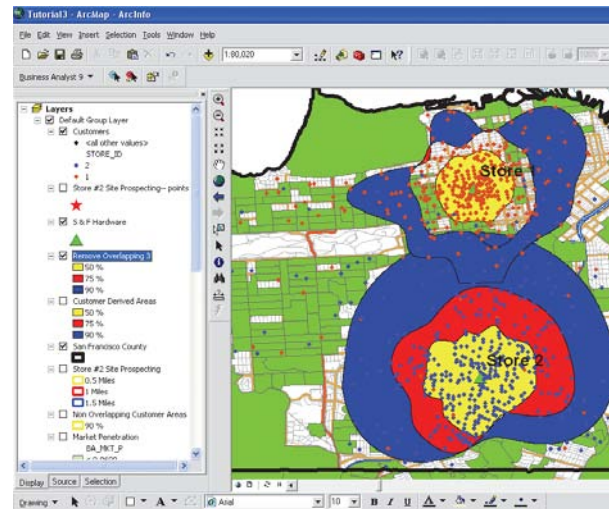
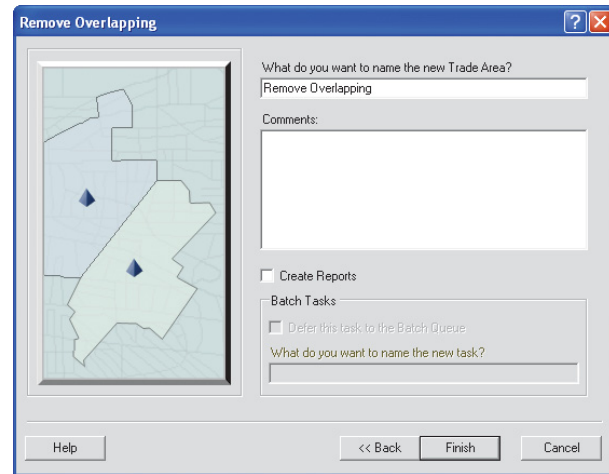


- To define the centers of the trade areas, click Use the store layer. Click the first drop-down menu and click the store layer, click the second drop-down menu and click the STORE\_ID field, then click Next.
- Choose how you want to remove the overlap. Click Thiessen polygons or Grid approach. ►



5. Type a name for your new trade area in the text box, type any comments, then click Finish.

The map results are shown in the map.

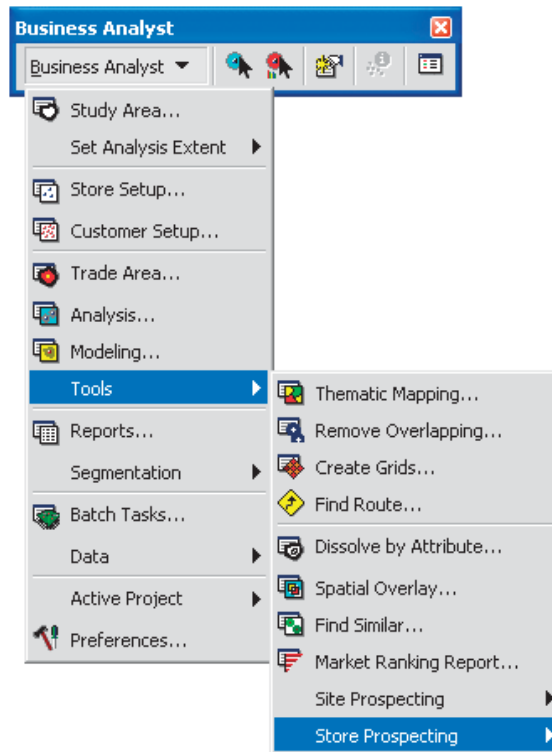




## Store prospecting

Business Analyst provides a powerful tool to search for new sites for your operation. It summarizes underlying demographics around possible new sites for comparison and analysis. You can prospect a site by typing in a street address, for example, if you know that a specific property is going to be up for sale or lease. The Site Prospecting tool also provides this capability in a quick, easy operation performed on a single site. The Store Prospecting Wizard is most commonly used for accessing a database of potential store locations, although it is also capable of performing the function for a single site. You can prospect a number of sites by starting with a layer of points contained in a layer, for example, if your real estate department has identified a number of possible expansion sites in a market. You would then generate demographic reports to compare sites, and possibly use the Find Similar Wizard to rank the sites against a known good site.

Once sites are identified, the Analysis Wizard generates either a simple ring; a drive time area around the potential site or sites based on a parameter that you provide (radius or minutes); or a threshold ring based on population, households, total housing units, number of businesses, or any other variable you choose to use. The exact value may be based on data collected for different stores—for example, most of your customers live within two miles or four minutes in similar markets—or an estimate developed for comparison. You can determine the population within a two-mile ring for all points being analyzed.





## Using a store layer

You can prospect a number of sites by starting with a layer of stores you have set up for use in Business Analyst.

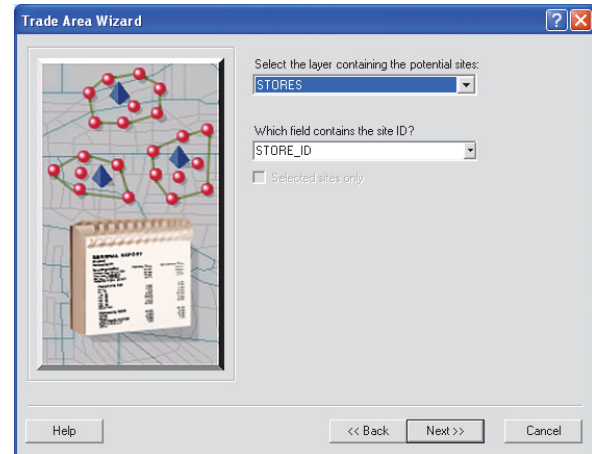
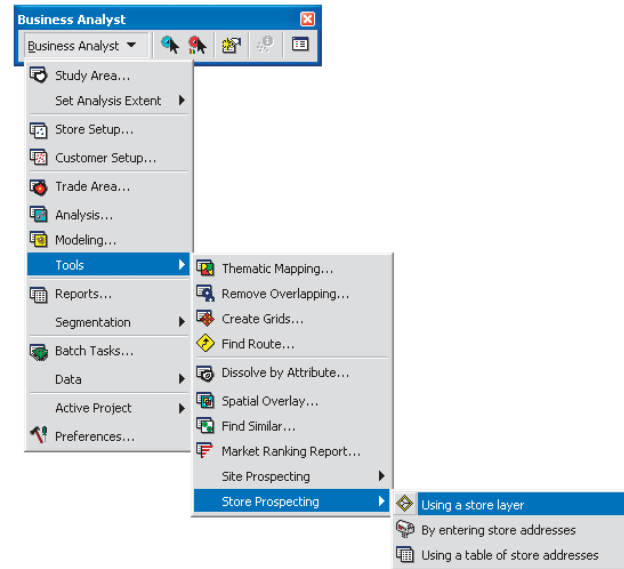
### Tip

*Threshold rings are usually calculated using the Block Point layer and one of the demographic variables collected at that level (Population, Households, or Housing Units). Business Analyst provides business counts as well. You can also use any other variable and Business Analyst will use a method of block point aggregation to sum the information.*

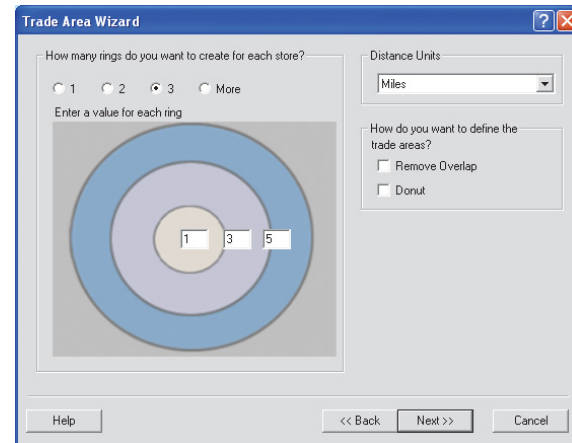
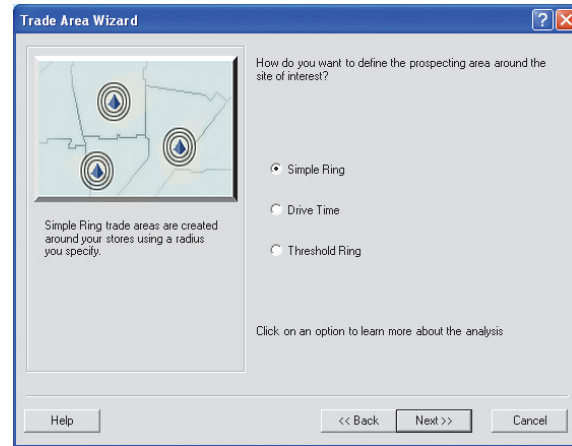
## Creating a store prospecting trade area using a store layer

1. Click the Business Analyst drop-down menu and click Tools, then click Store Prospecting to expand the menu. Click Using a store layer.
2. Click the drop-down menu and click the layer containing the potential sites.
3. Click the second drop-down menu and click the field that contains the site ID, then click Next. ▶

The Trade Area Wizard opens.

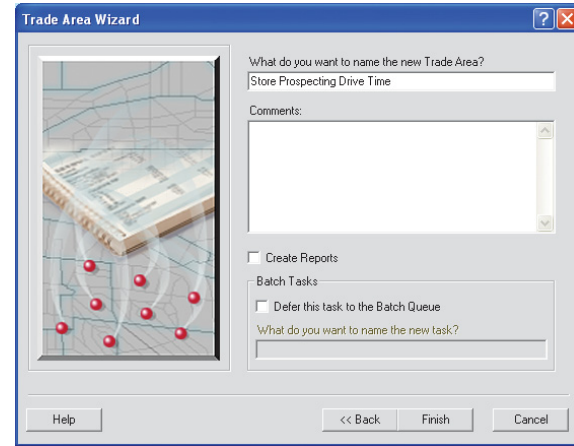


4. Choose how you want to define the prospecting area around the site of interest by clicking Simple Ring, Drive Time, or Threshold Ring, then click Next. For simple rings and drive times, skip to step 6.
5. For threshold rings, click the layer and field to be aggregated around each of your site locations. Click the first drop-down and click the field to be aggregated.
6. Choose how many rings you want to create for each store, 1, 2, 3, or More, then type a value for each ring in the next boxes.
7. Click the Distance Units drop-down menu to choose a distance from the list. ►



8. Type a name for the new trade area in the text box and type any comments, then click Finish.

Your new trade area is created and appears on the map.



## Entering store addresses

You can also enter individual store addresses to be used in assessing market potential of each store.

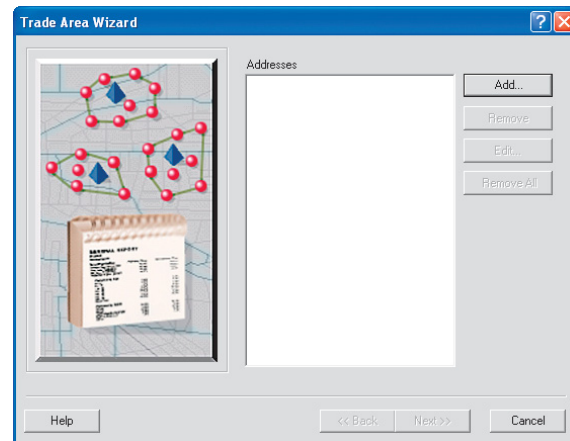
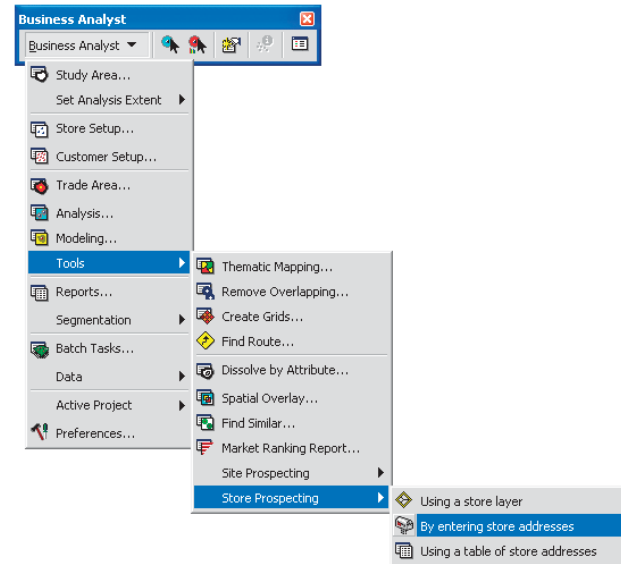
## Creating a store prospecting trade area by entering store addresses

1. Click the Business Analyst drop-down menu and click Tools, then click Store Prospecting to expand the menu. Click By entering store addresses.

The Trade Area Wizard opens.

2. Click the Add button.

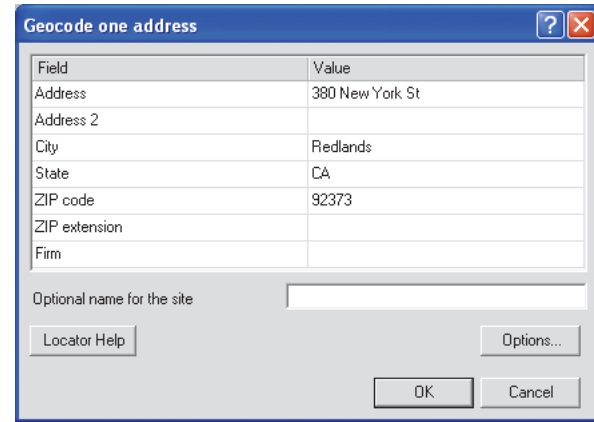
The Geocode one address dialog box opens. ▶



## Tip

Threshold rings are usually calculated using the Block Point layer and one of the demographic variables collected at that level (Population, Households, or Housing Units). Business Analyst provides business counts as well. You can also use any other variable and Business Analyst will use a method of block point aggregation to sum the information.

3. Type your store address and click OK to close the dialog box. To add another address, click the Add button again and type another store address. When you're finished, click Next.
4. Choose how you want to define the prospecting area around the site of interest by clicking Simple Ring, Drive Time, or Threshold Ring, then click Next. For simple rings and drive times, skip to step 6.
5. For threshold rings, click the layer and field to be aggregated around each of your site locations. Click the first drop-down menu and click the field to be aggregated. ▶



The "Geocode one address" dialog box contains a table with the following data:

Field	Value
Address	380 New York St
Address 2	
City	Fedlands
State	CA
ZIP code	92373
ZIP extension	
Firm	

Below the table is an "Optional name for the site" text box, a "Locator Help" button, an "Options..." button, and "OK" and "Cancel" buttons.



The "Trade Area Wizard" dialog box features a map on the left showing three circular trade areas around site locations. Below the map, it states: "Simple Ring trade areas are created around your stores using a radius you specify."

On the right, the question "How do you want to define the prospecting area around the site of interest?" is followed by three radio button options: "Simple Ring" (selected), "Drive Time", and "Threshold Ring".

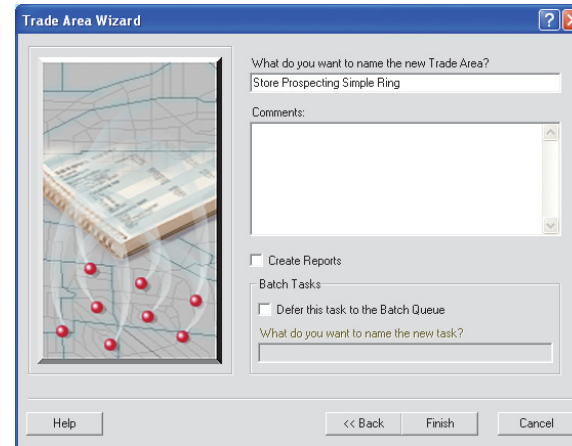
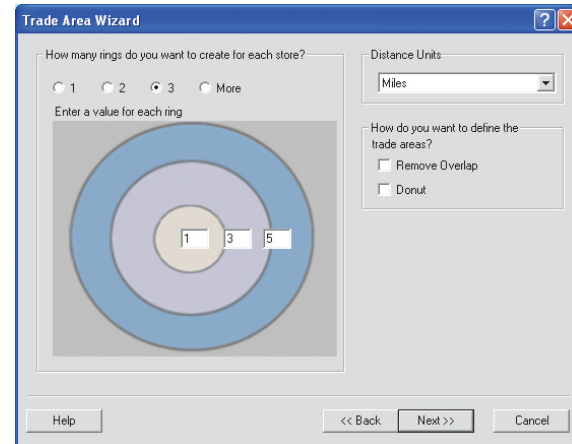
At the bottom, there is a "Help" button, and "Back" and "Next" buttons with double arrows, and a "Cancel" button.

6. Choose how many rings you want to create for each store, 1, 2, 3, or More, then type a value for each ring in the text boxes.
7. Click the Distance Units drop-down menu to choose a distance from the list.
8. To define the trade area, click either Remove Overlap or Donut, then click Next. Remove Overlap will use a straight line to connect the intersecting edges of any two rings that overlap. Donuts include only the values between rings, center to ring 1 boundary, ring 1 boundary to ring 2 boundary, and so forth.

For drive times, you can display traversed streets as a layer or create a detailed border for each drive time area.

9. Type a name for the new trade area in the text box and type any comments, then click Finish.

Your new trade area is created and appears on the map.



## Using a table of store addresses

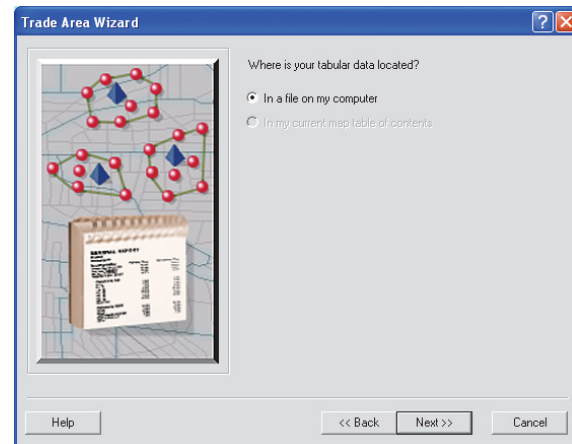
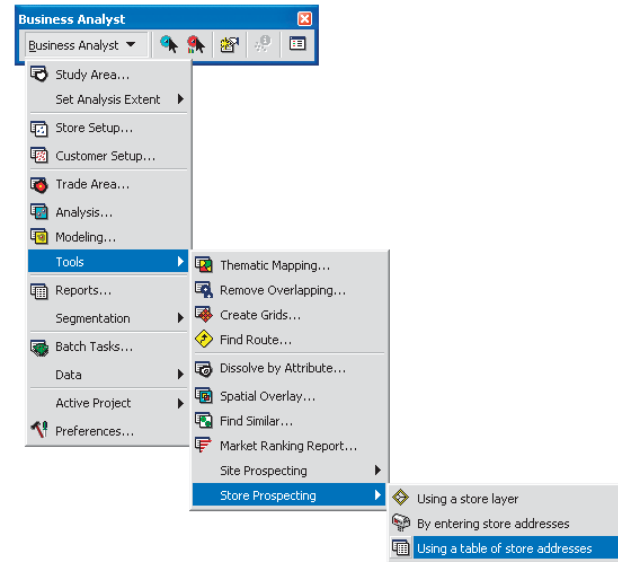
This is similar to using a store layer except in this wizard, the step of geocoding the database is also performed. This converts your table into a spatially referenced layer on the map.

## Creating a store prospecting trade area using store addresses

1. Click the Business Analyst drop-down menu and click Tools, then click Store Prospecting to expand the menu. Click Using a table of store addresses.

The Trade Area Wizard opens.

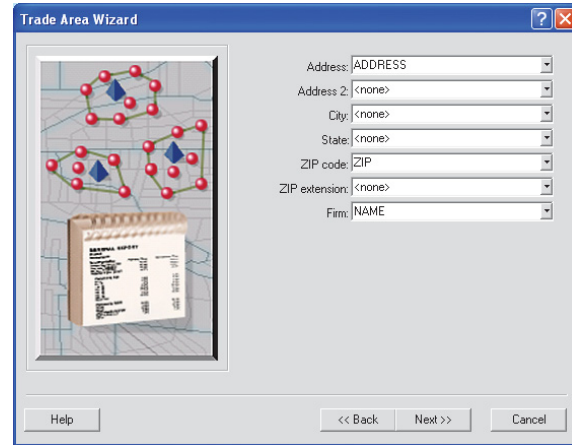
2. Choose where your tabular data is located by clicking In a file on my computer or In my current map table of contents, then click Next.
3. Click the browse button to browse to the location of your tabular data and click Next. ▶



## Tip

Threshold rings are usually calculated using the Block Point layer and one of the demographic variables collected at that level (Population, Households, or Housing Units). Business Analyst provides business counts as well. You can also use any other variable and Business Analyst will use a method of block point aggregation to sum the information.

- For threshold rings, click the layer and field to be aggregated around each of your site locations. Click the first drop-down menu and click the Threshold layer. Click the second drop-down menu and click the field to be aggregated.
- Choose how many rings you want to create for each store, 1, 2, 3, or More, then type a value for each ring in the next text boxes. ►



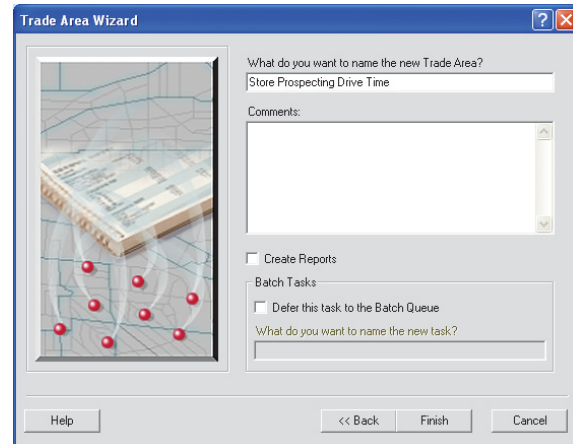
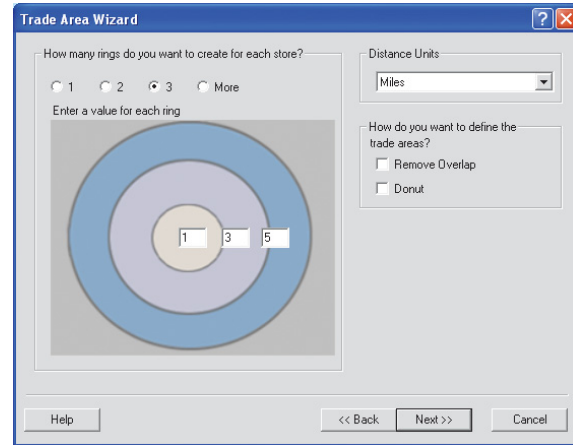


6. Click the Distance Units drop-down menu to choose a distance from the list.
7. To define the trade area, click either Remove Overlap or Donut, then click Next. Remove Overlap will use a straight line to connect the intersecting edges of any two rings that overlap. Donuts include only the values between rings, center to ring 1 boundary, ring 1 boundary to ring 2 boundary, and so forth.

For drive times, you can display traversed streets as a layer or create a detailed border for each drive time area. You can also choose the Street Map Drive Time option.

8. Type a name for the new trade area in the text box and type any comments, then click Finish.

Your new trade area is created and appears on the map.





# Reports and batch tasks

## IN THIS CHAPTER

- **About general reports and point and ranking reports**
- **Running reports for single or multiple layers**
- **Running a Locator report**
- **Running a Market Ranking report**
- **Running a Wind Rose report**
- **Running a Geographic Customer Summary report**
- **Running an Average Drive Time report**
- **Running a Summarize Points report**
- **Running a map layout report**
- **Managing existing reports**
- **Creating custom report templates**
- **Running and managing batch tasks**

Every businessperson knows the significance of a good report. Reports present the facts and figures behind your analysis and are invaluable companions to the maps you're creating.

The reports and batch tasks toolset provides tools to generate reports based on standard demographic or custom data, allowing market ranking and geographic analysis, site location, customer distribution, and standard demographic reports.

Crystal Reports by Business Objects formats and presents the reports. If you want to work with the summarized data in ArcGIS or other applications, you can have a table (.dbf) added to ArcGIS. You must have a printer connection (a default printer) for your computer for Crystal Reports to work. When working with tables, you can use the Tools menu to create a report or to proceed through the Crystal Reports wizard.

Report templates are stored in C:\Program Files\ArcGIS\Business Analyst\Datasets\Report Templates or in the directory where ArcGIS was installed.

# About general reports

This section examines the various templates associated with the report writing option within Business Analyst. All templates use geography data; therefore, all levels of geography can be used in any of the predefined reports. Report templates are stored in `\ArcGIS\Business Analyst\Datasets\ReportTemplates` which is the directory where ArcGIS was installed. If you create custom reports and want them available for future use, you must save them to the following directory: `C:\My Output Data\Report Templates_USA_EBIS`.

The level of geography depends on the scale of the coverage used for the report—for example, choosing a coverage at the block group level allows the user to create a report at the block group level. Similarly, you can create a report based on the shape of the study area or a selected group of objects on the map.

Business Analyst includes the following report templates that are preset to make use of the demographic data provided. You can use these templates as they are or revise them using the Crystal Reports Advanced Editor. Once saved, reports can be launched from the trade area in the Project Explorer.

## Report descriptions

### Age by Sex Profile report

This report measures the number of people in a geographic area according to their age and gender. The report includes Census 2000 data, current-year estimates, and five-year forecasts.

### Age report

This report displays incremental age groups as a percentage of the total population in the study area. These values are grouped into common increments such as 0–4, 5–14, 55–64, and 65 and over. This report also contains the total population and the median age for the study area.

### Benchmark report

This report compares multiple trade areas against one another to decipher the difference of one location to the next. You can measure the demographic characteristics of one area versus all other areas. The report shows statistical differences in number, percent, and index values. You can use a trade area geography as the benchmark, the average, or mean of all trade areas combined. You can also turn off the benchmarking capabilities to hide the differences.

### Business reports

This report allows you to gather information about business or shopping centers in your trade areas. You can choose from the Shopping Centers report, Business Locations report, and the Detailed Business Locations report.

### Comprehensive report

This report lists different demographic categories for your trade areas, including population statistics, race, income, consumer expenditure, and segmentation. The report shows the totals of each demographic variable in the trade area. Both current-year totals and five-year projections are shown for more than 600 variables in this report.

### Comprehensive Trend report

This report lists the most common demographic variables for the study area and compares the current-year totals and five-year projections. In the Population grouping, the estimated sum of the population for the current year is compared to the projected sum of the population in the study area for the five-year projection.

### **Customer Demographic Comparison report**

This report allows you to contrast the demographic attributes of one set of customers against another. You can compare a selected subset of customers to the entire layer or compare two separate customer layers. The differences are shown by total number and percentage.

### **Demographic and Income Profile report**

This profile compares essential characteristics of the Census 2000 data, current-year estimates, and five-year forecasts such as income, age, and race.

### **Executive Summary report**

This report provides key demographic attributes in a trade area in paragraph form. The report includes current year estimates, five-year forecasts, and Census 2000 demographic data. The report aids in site selection, market analysis, and trend evaluation decisions.

### **General report**

This report groups the basic demographic variables into a one-page list. The listed variables in each group are represented as percentages of the total for that group. The list is composed of Population and Household totals. The Population group is subdivided into age and race and the Household group contains household income information.

### **Household report**

This report classifies the households by percentage that are owned or rented in the study area. It also includes the current-year household total, five-year projection, and the projected growth rate between the current-year total and five-year projection.

### **Map Series report**

This report allows you to quickly produce map views of multiple areas and convert them into presentation-quality reports. You can also send the reports directly into an image file such as JPG or BMP—for example, you can create a Map Series Report for each trade area around 150 site locations.

### **Market Profile report**

This report is a comprehensive report that contains current-year updates, five-year projections, and Census 2000 data for population, households, housing units, income, age, race, and labor force.

### **Multi-Area report**

This report displays a current-year snapshot of a general variable assortment: Households by Income, Population by Age, and Population by Race for multiple trade areas. This could be for a three-ring study, drive times, or other trade areas that present multiple areas around a point. Other reports can also be used for multiple trade areas.

### **Population report**

This report lists the sum of the current year and five-year projections of total population. It also includes a projected growth rate percentage between the current-year totals and five-year projections.

### **Race report**

This report classifies the total population as a percentage based on race. The groups are White, Black, Asian, Pacific, Native American, Some Other Race, Two or More Races, and Hispanic Origin. The current-year total population is also included in this report.

### **Retail Expenditure report**

This report includes the total dollar amount spent; average amount spent per household, and the Spending Potential Index, which measures the amount spent for a product or service in one area compared to the U.S. average. This report also contains totals for Census 2000 data, current-year estimates, and five-year projections for population, households, and families.

### **Tapestry Segmentation Area Profile**

This report compares the Tapestry™ segmentation data groups selected within the study area to the same groups on a national level. Number, percent, and an index compared to the U.S. are included for every Tapestry segment as well as the LifeMode groups and Urbanization groups.

**Note:** The Tapestry Segmentation Area Profile is turned off by default and hidden in the Reports wizard. This is done because the Tapestry data is not available at the block group level with a standard Business Analyst license, but rather a Segmentation Module license.

## About point and ranking based reports

This section examines the various report templates where point data is used in your analysis or a ranking is associated. These are different than the standard summary reports that come bundled in Business Analyst. Many of the reports have the option of outputting an Analysis Layer, which is added to the map. You can choose from the following reports:

- Locator report

- Market Ranking report

- Wind Rose report

- Geographic Customer Summary report

- Average Drive Time report

- Summarize Points report

- Customer Demographic Comparison report

- Business Point reports



## Running reports for single layers

A number of standard demographic report templates are provided with Business Analyst. For more information on these reports, see 'About general reports' in this chapter. You can also create a general report that contains all categories. The Report Wizard uses summary data to create standard reports.

Choose a layer in your map with boundaries, such as drive time rings, equal competition areas, or even your own custom drawn trade area. The demographics that fall inside the boundaries of the layer will be summarized in the report.

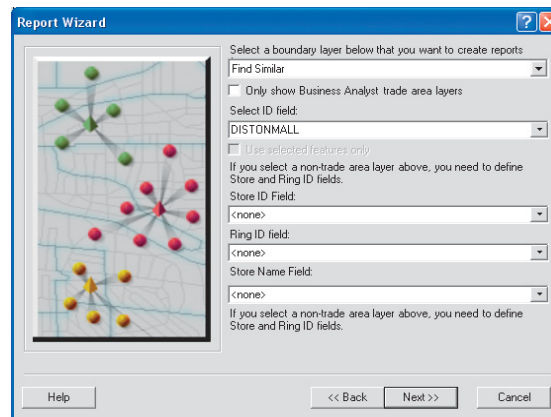
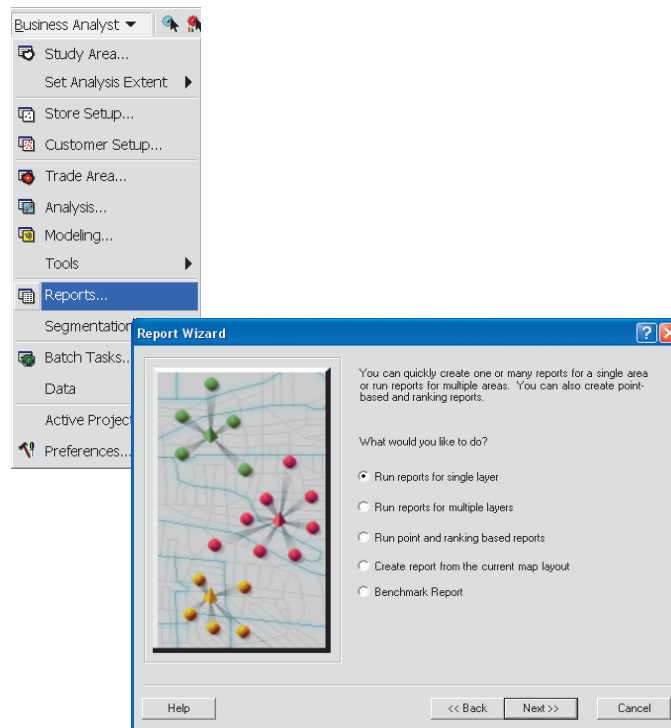
For example, if you created a Population report using simple ring trade areas as the layer with boundaries, your report would summarize the population data for each ring in the layer.

You can also create a report based on only certain boundaries of a layer. For instance, you might want to create a report using simple rings as the layer with boundaries but you might only be interested in one or two of those rings. ►

1. In ArcMap, open the map you want to use to create a report.
2. Click the Business Analyst drop-down menu and click Reports.
3. Click Run reports and click Next.

You can choose from Run reports for a single layer, Run reports for multiple layers, Run point and ranking based reports, Create report from the current map layout, and Benchmark Report.

4. Click Run reports for a single layer and click Next.
5. Choose the boundary layer for which you want to run a report. ►





You might also want to run a report for multiple layers in different layers all at the same time. For instance, you could have a layer that consists of a simple one-mile ring and another layer that contains a 10-minute drive time. You can now load both areas at the same time.

### Tip

#### Summarizing data for your reports

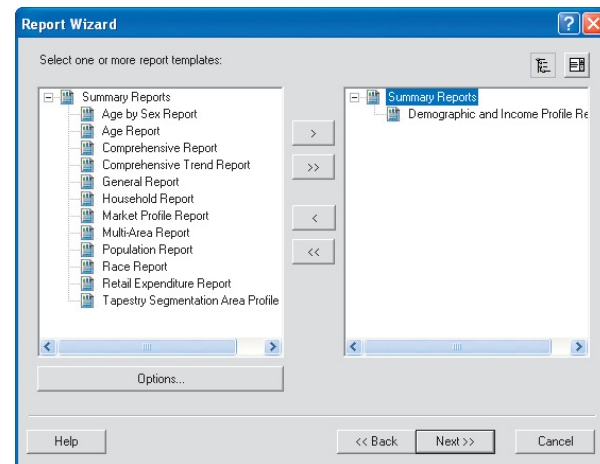
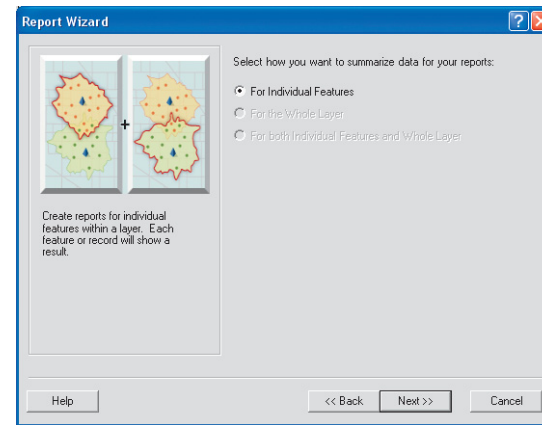
*When choosing how you want to summarize data for your reports, you can choose from the following:*

- For Individual Features
- For the Whole Layer
- For both Individual Features and Whole Layer

*If you run a Population Report on three different Simple Ring trade areas and choose the Individual Features option, the report will show the population for each individual ring on its own page. If you choose the Whole Layer option, a single report will total the combined population for all three simple rings.*

**Note:** The Select ID option only appears when you load a boundary layer that was not created within the Business Analyst Trade Area wizards.

6. If you are running a report on a non-Business Analyst trade area, select the layer ID. You will also need to define Store ID Field and Ring ID Fields.
7. Click Next.
8. Choose how you want to summarize data for your reports. You can choose from For Individual Features, For the Whole Layer, and For both Individual Features and Whole Layer.
9. Choose the demographic report you want to run. Click the buttons in the middle to navigate the template from one side to the other. Click Next or the Options button. ▶



## Tip

### Creating a stitched report

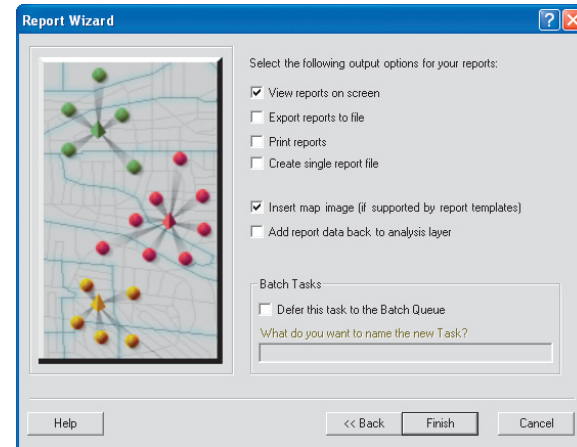
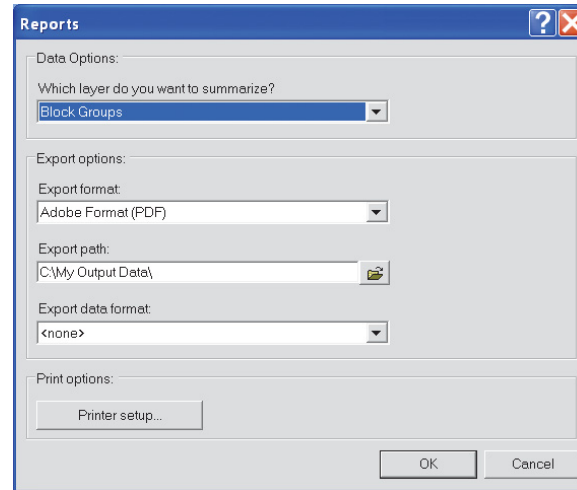
You have the option to select *Create single report file* before completing the Reports dialog box. This function is helpful when you want to create two or more reports for the same analysis, but do not want many individual files. The output is a combined set of reports in one file. You can then export to other formats from the Crystal Reports viewer.

10. You can click the Options button to change the geography by which the report will be summarized, where the report will be exported, as well as the format if you need the data in a table exported. These options can be saved permanently, or you can keep them for this time only.
11. How do you want to view the final report? The View reports on screen option will open the report for viewing when it is finished.

Export reports to file will export the report to the desired output using the Options button. Print reports will print the reports to the desired printer. Create single report file will combine multiple reports for the same analysis into a single report within the Crystal Reports viewer. You can choose all or one of the options.

You can also save this analysis to run at a later time. Click *Defer this task to the Batch Queue*, if desired, and give it a batch name.

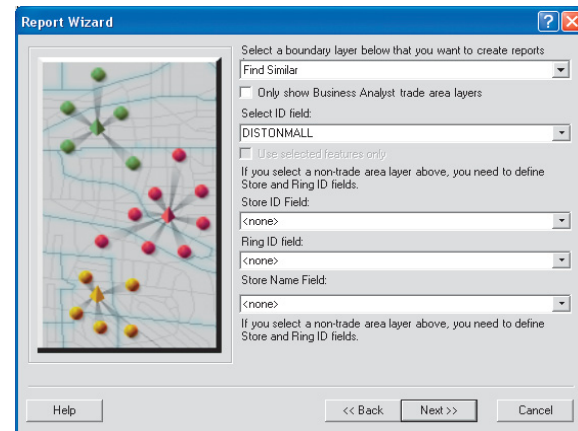
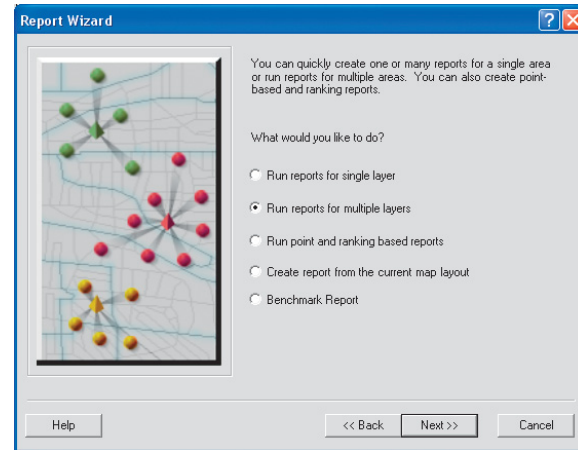
12. Click Finish.



## Running reports for multiple layers

You might want to run a report for two separate boundary layers at one time. The Run reports for multiple layers option allows you to do this. You can run a simple ring layer and a drive time layer at the same time.

1. Click Run reports for multiple layers and click next.
2. Click the plus button to add other polygon layers. You must complete the ID and summarizations setup options if you add non-Business Analyst trade areas.
3. Choose the summary reports you want to create, click Next. ►



## Tip

You can choose how the reports will handle the same report template for several boundaries.

**Create individual reports:** Creates a report(s) for each layer and each report type selected—for example, if you select a simple ring and a ZIP Code layer, and a Market Profile and Demographic & Income Profile, you get four reports.

**Stitch reports by trade area:** Creates a report(s) that groups the report type(s) together by layer—for example, if you select a simple ring and a ZIP Code layer, and a Market Profile and Demographic & Income Profile, you get two reports: (1) A simple ring layer with Market Profile and Demographic & Income Profile and (2) A ZIP Code layer with Market Profile and Demographic & Income Profile.

**Stitch reports together by report type:** Creates a report(s) that groups the layer(s) together by report type—for example, if you select a simple ring and a ZIP Code layer, and a Market Profile and Demographic & Income Profile, you get two reports: (1) A Market Profile with a simple ring layer and a ZIP Code layer and (2) A Demographic & Income Profile with a simple ring layer and a ZIP Code layer.

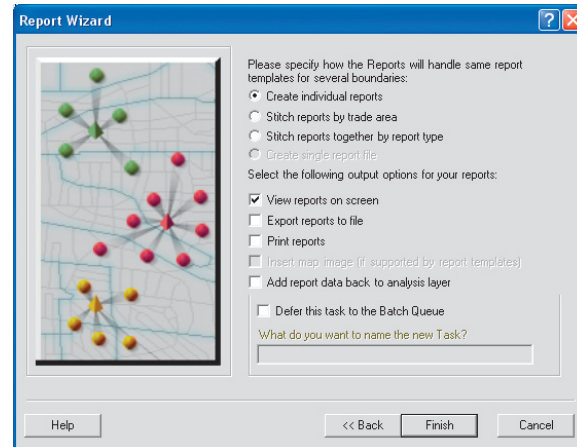
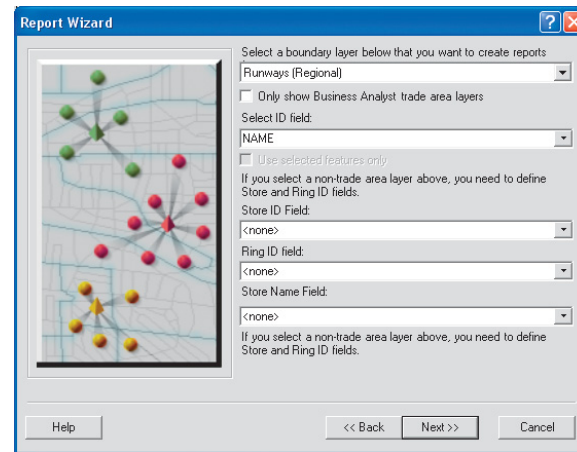
**Create single report file:** Creates a single report that groups all layers and report types together.

4. Choose the report presentation options. You can choose from Create individual reports, Stitch reports by trade area, Stitch reports together by report type, and Create single report file.

Choose the output options for your report. You can choose from View reports on screen, Export reports to file, Print Reports, Insert map image, and Add report data back to analysis layer.

You can also save this analysis to run at a later time. Click Defer this task to the Batch Queue.

5. Click Finish.

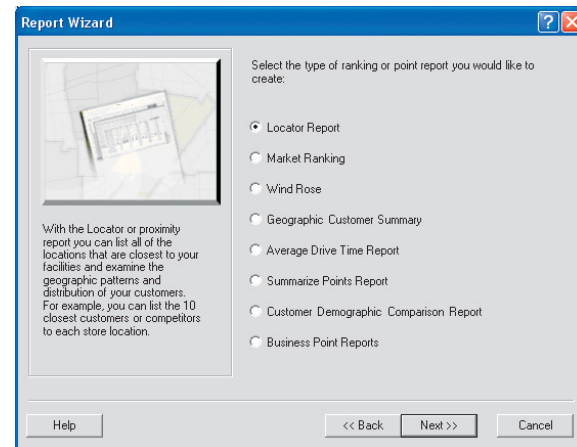
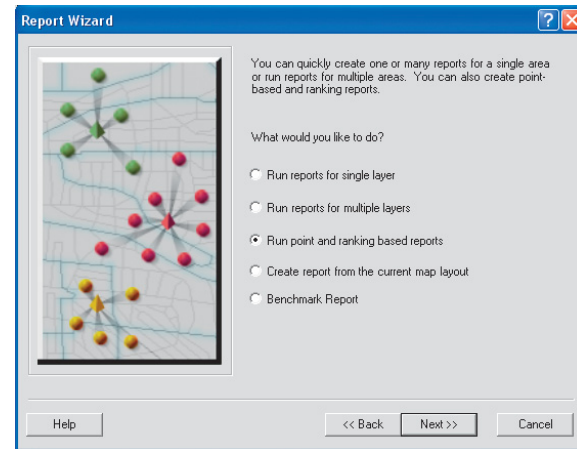


# Running a Locator report

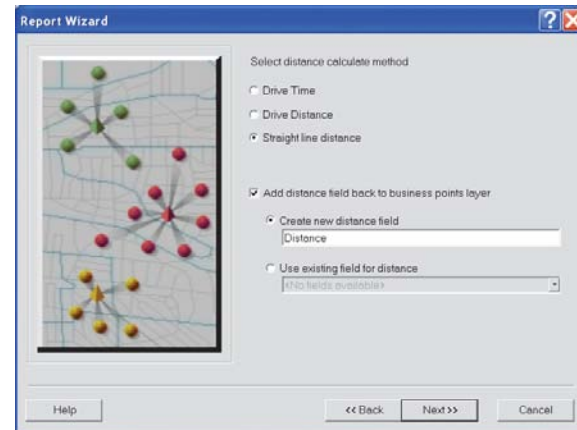
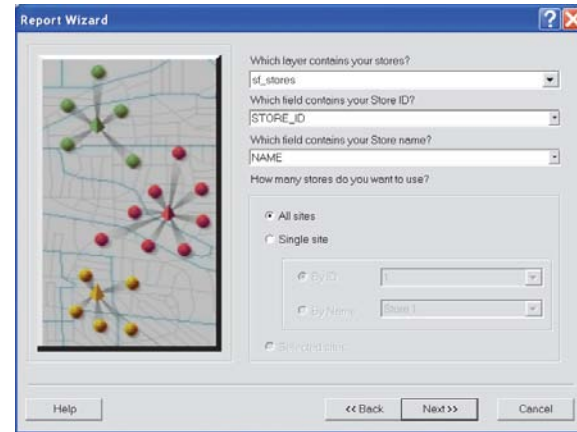
Do you ever want to know who your closest competitors are or where their store locations are compared to your store locations? The Locator report allows you to do this by telling you how many competitors fall within X miles of your store. You can also run this report to list the X number of closest stores to your locations.

This report can be run for any two point layers in your map. You can run this report to show the closest ZIP centroids to your center point. All you need are two point layers, which do not have to be store or customer layers.

1. Click Run point and ranking based reports and click Next.
2. Choose to run a Locator Report and click Next. ►



3. Select your point layer or center point. This will most likely be your store point or points. You can choose a store layer with multiple points. Click Next.
4. Select the distance calculate method, then click Next.
5. Select the layer that contains your business points.
6. Click Next. ►



## Tip

### Locator report page layout

A portrait report template only holds a limited number of characters per field. A landscape report can hold more information.

## Tip

### Locator report fields and headers

To fill out the Headers and Fields sections, you should have a good idea of what fields exist in your customer/competitor file.

7. Choose Portrait or Landscape.
8. Type in your desired header fields that appears on your Locator report.
9. Click Next.
10. Choose to generate the report and give it a name. You can also have Business Analyst create an output layer.
11. Click Finish.

The screenshot shows the 'Report Wizard' dialog box. On the left is a preview of a map with several colored pins (green, red, yellow) connected by lines. On the right, the 'Report orientation' section has 'Portrait' selected. Below it, the 'Fields' section has a table with two columns: 'Headers' and 'Fields'. The 'Name' field is set to 'NAME', 'Address' to 'ADDRESS', 'City' to 'City\_std', and 'State' to 'State\_std'. At the bottom are buttons for 'Help', '<< Back', 'Next >>', and 'Cancel'.

The screenshot shows the 'Report Wizard' dialog box. The 'Report Options' section has 'Generate Report' checked, 'Report name' set to 'Locator Report', and 'View report' checked. The 'Analysis Options' section has 'Create analysis layer' checked, 'Analysis layer name' set to 'Locator Report', and a 'Comments' text area. At the bottom are buttons for 'Help', '<< Back', 'Finish', and 'Cancel'.

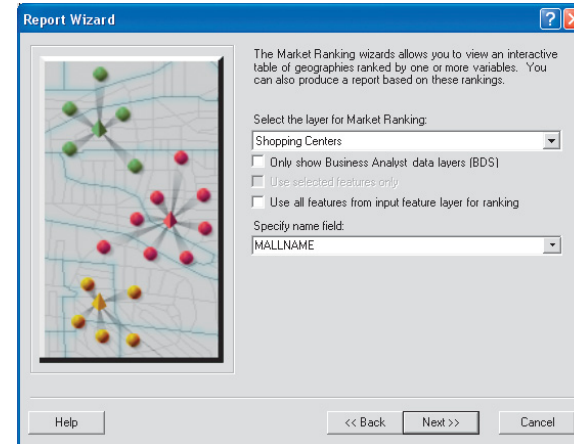
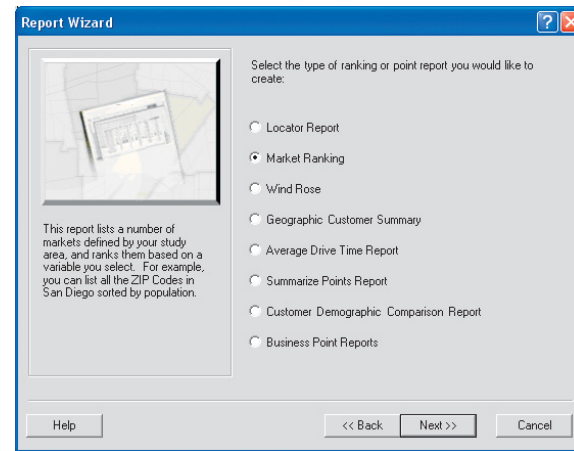
## Running a Market Ranking report

Do you know how all the ZIP Codes in San Diego rank based on income? Which ZIP Code has the highest median household income? This report will show you this in a report template.

1. Choose the Market Ranking report and click Next.
2. Select the boundaries you want to create a Market Ranking report.

**Note:** Click Only show Business Analyst data layers (BDS) to help minimize the list of layers.

3. Choose the name field as well as the variable you want to rank. Click Next. ►





## Tip

The Include average rank field is a helpful feature to show an overall ranking of all variables when more than one ranking field is important to your decision making. For example, you may rank the top twenty counties by greatest Per Capita Income, but want to see how the ranks are affected when Total Population, Average Family Size, Total Housing Units are included for each geography.

- You are given the option to create a percentage based on a variable. You can also limit the results to the top X number of boundaries as well as add variables to the ranking reports.

The following steps are optional.

- If you choose to add variables, click the desired field, then click Next.

**Note:** This is limited to 10 additional fields. ►

Report Wizard

Select the primary field for ranking:  
GLA

You can calculate the percentage based on the primary rank variable you selected in the previous step.

Would you like to rank with percentages?  
What field should be used as the base in the percentage calculation?  
<No fields available>

Limit the number of features for ranking to first  
1000

Help << Back Next >> Cancel

Report Wizard

Include additional fields to the Market Ranking

Category	Field Name
Others	DISTONMALL
Others	DISTONCITY
Others	TOTSTORES
Others	ANCH1_SQFT
Others	ANCH2_SQFT
Others	ANCH3_SQFT
Others	ANCH4_SQFT

Selected fields:  
TOTSALES

Search and Filter  
Filter:   Match Case

Use Saved Variable List:  
< none >

Include average rank field

Help << Back Next >> Cancel

6. You will get an interactive table that displays your market ranking data by the desired boundaries. You can sort any of the fields by clicking the table header. You can also select one of the items and zoom to the location on the map.
7. Once satisfied with the table, click Next. This screen will allow you to generate the report as well as create an analysis layer. Click Finish.

Name	2005 Female Population 18+	Percentage	2005 Per C.	2005 Total Population	2005 Total Population
3.031	1814	240.8568	18891	4610	4610
32.011	1777	190.9229	22869	3215	3215
51.031	1762	274.0636	8452	4829	4829
13.001	1518	251.5810	20408	3819	3819
37.004	1459	163.6737	31856	2368	2368
07.002	1416	211.3701	16155	2993	2993
31.021	1372	293.9359	19515	3484	3484
25.001	1340	304.8507	13763	4085	4085
30.012	1284	244.3146	21051	3137	3137
17.001	1265	237.5484	56070	3005	3005
26.002	1213	194.3941	123034	2358	2358
30.011	1188	249.8164	22977	2989	2989
36.001	1153	256.2679	17420	2955	2955
76.012	1152	341.8403	19898	3938	3938
78.003	1148	268.5540	30251	3083	3083
30.032	1145	244.1821	24238	2786	2786
30.031	1145	244.6268	22503	2801	2801
23.001	1140	268.4211	32595	3080	3080
14.001	1139	249.0334	35399	2934	2934

**Report Options**

Generate Report

Report name:

Optionally specify report title

View report

Export report

Print report

**Analysis Options**

Analysis

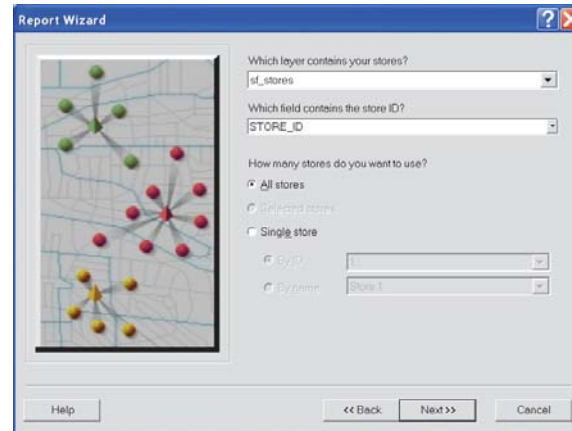
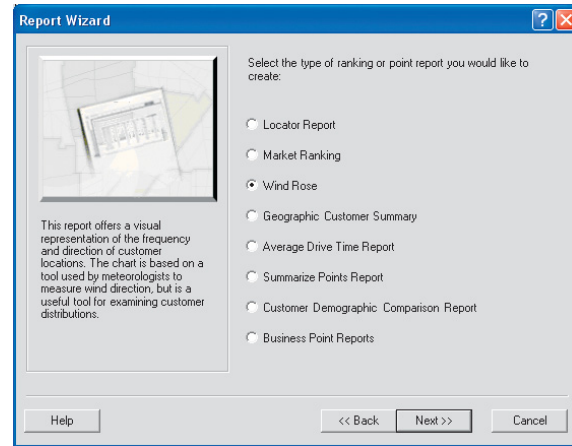
What do you want to name new Analysis?

Comments:

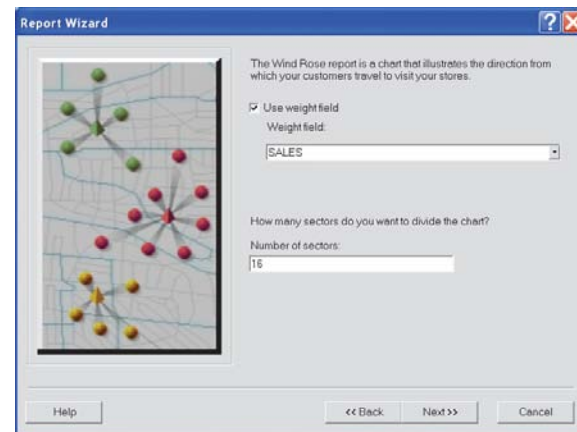
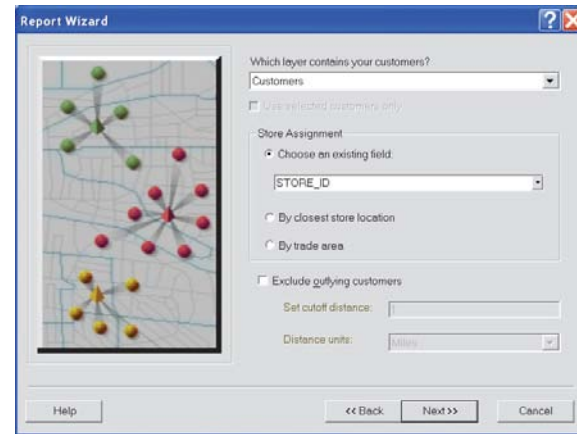
# Running a Wind Rose report

The Wind Rose report allows you to see where your customers are coming from by sectors. You can also see where most of your sales are coming from by creating customer-based geographic sectors radiating away from your store location.

1. Choose to run the Wind Rose report and click Next.
2. Choose your store layer and store layer ID field and click Next. ►

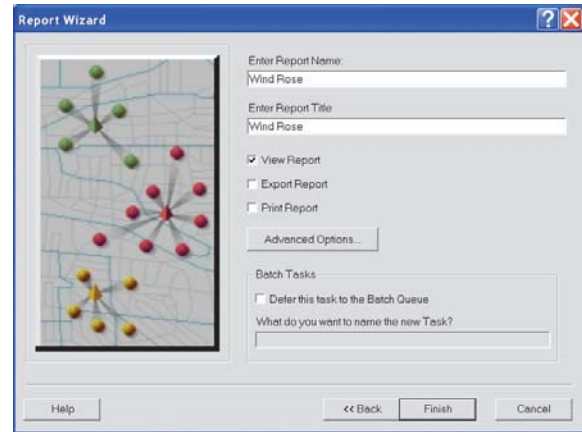


3. Choose your customer layer and choose a Store Assignment option. Choose whether to exclude outlying customers and the cutoff distance.
4. Optionally, you can choose a volumetric field.
5. Choose the number of sectors and click Next. ►



6. Give the report a name and a title and click Finish.

**Note:** You can also set this up to run at a later date with the batch option.

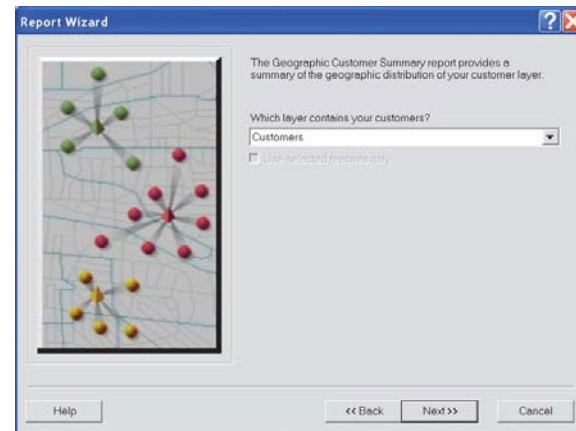
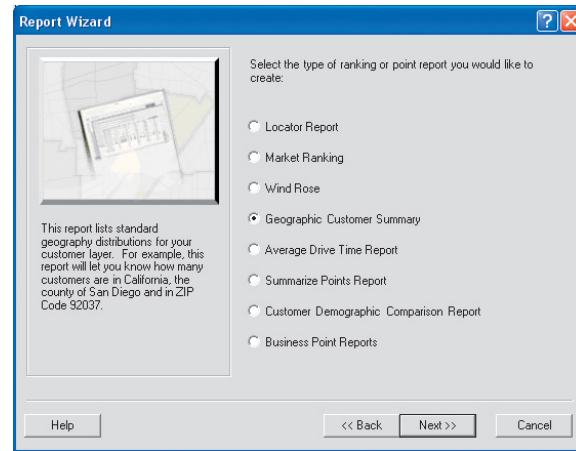


# Running a Geographic Customer Summary report

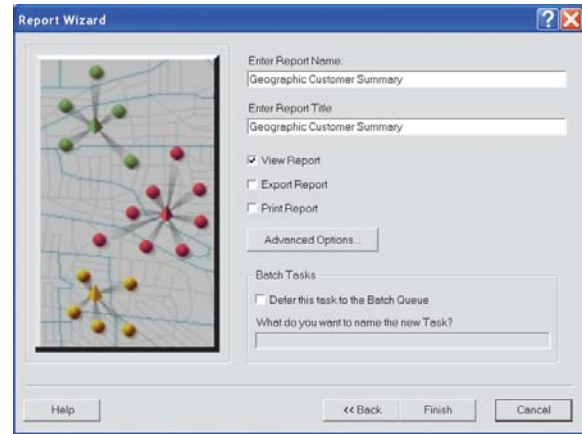
The Geographic Customer Summary report allows you to quickly get an idea of what your customers look like geographically.

This report only works on point layers.

1. Choose to run a Geographic Customer Summary report and click Next.
2. Choose a customer layer and click Next. ▶



3. Give the report a name and a title and click Finish.



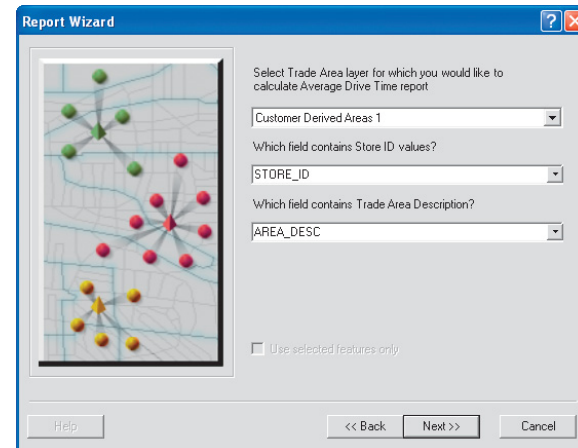
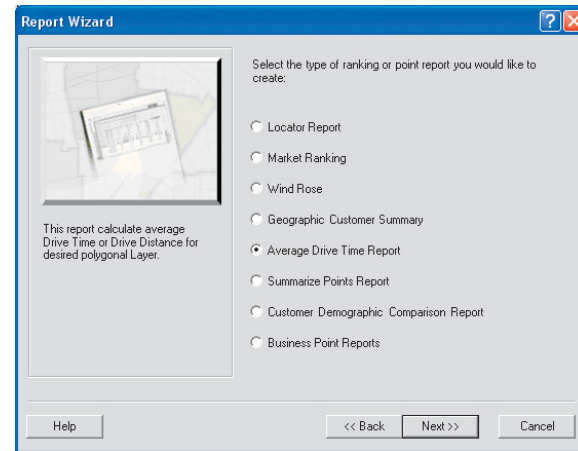
## Running an Average Drive Time report

The Average Drive Time report calculates the average, min, and max drive time for an existing trade area polygon. The drive time will be calculated from the center point or the store location to create the trade area.

### Tip

*This tool can be used to calculate the average drive time for a customer derived trade area. Using this tool will help you estimate how far customers travel within a primary trade area. Once this is determined, in a given market, you can use the drive time trade area tool to estimate a primary trade area for a new store.*

1. Choose the Average Drive Time report and click Next.
2. Select the trade area for which you want to create an Average Drive Time report.
3. Choose the field that contains the store ID.
4. Choose the field that contains the trade area description. Click Next. ►

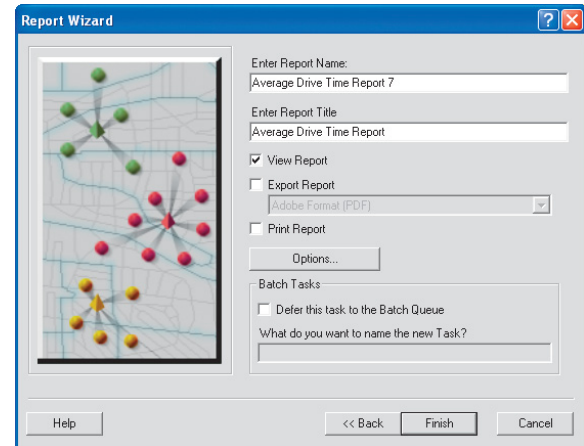
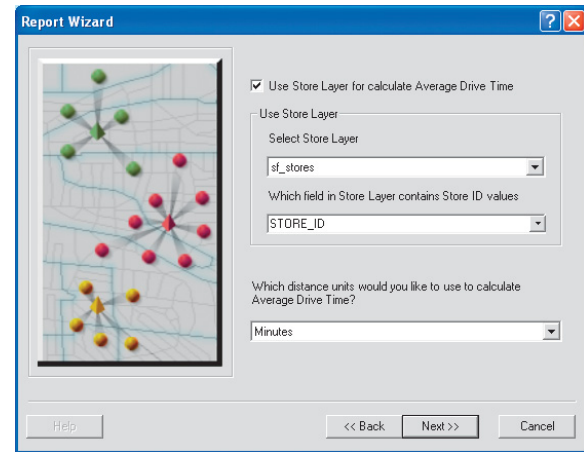




5. Check the option Use Store Layer to calculate your drive time, then select the relevant store information in the drop-down menus.

If you do not check Use Store Layer, Business Analyst will calculate the average drive time from the center of the trade area.

6. Select the distance units to calculate the drive time.
7. Give the report a name and title and click Finish.



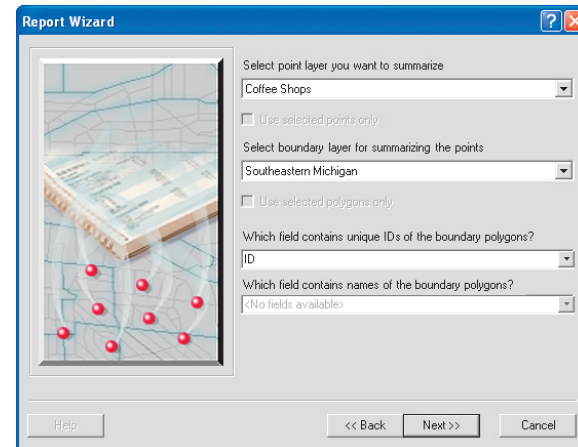
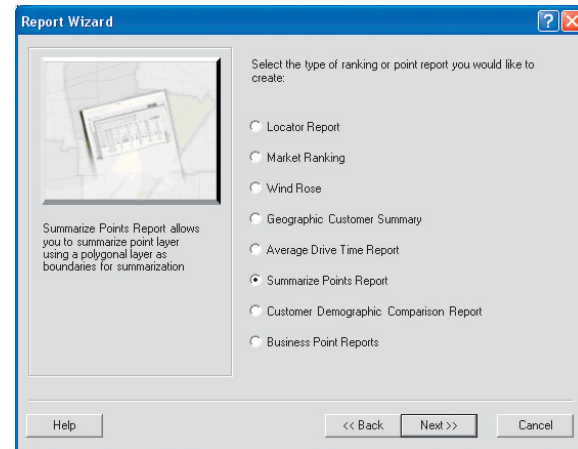
## Running a Summarize Points report

The Summarize Points report allows you to quickly total the number of business locations within a given area. You can summarize site specific values for your trade area or any other polygon layer, such as sales volume, total employees, or number of transactions. The tool summarizes points within a polygon. You can run this report to calculate how many customers are within each ZIP Code. This report only works on point layers.

### Tip

*You can use this tool to calculate the number of customers, competitors, and businesses in your trade areas. This tool can be used with any Business Analyst provided point layer (i.e., businesses and shopping centers) or your own point layers (customers, competitors, and so on).*

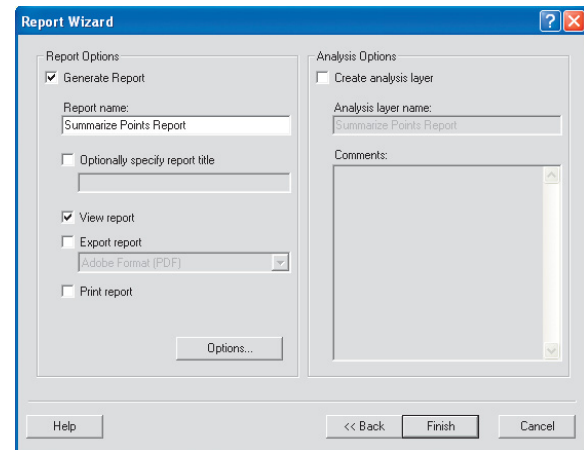
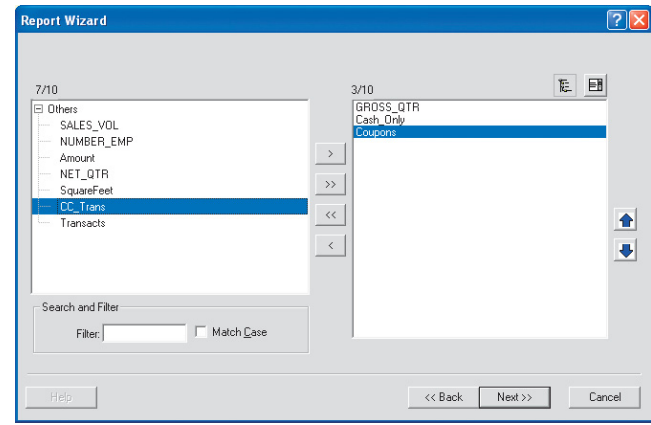
1. Choose to run a Summarize Points report and click Next.
2. Choose the point layer you want to summarize and select the boundary layer and boundary layer ID for your analysis. Click Next. ►



## Tip

*If you have numerous variables you can use the filter tool search to find specific attribute fields.*

3. Choose the point layer database variables you want to summarize. You can choose one or more. Click the buttons in the middle pane to navigate the variable from one side to the other.
4. Give the report a name and create an analysis layer, if needed, then click Finish. At this dialog box you can also create an analysis layer (i.e., ZIP Codes with customer summary).

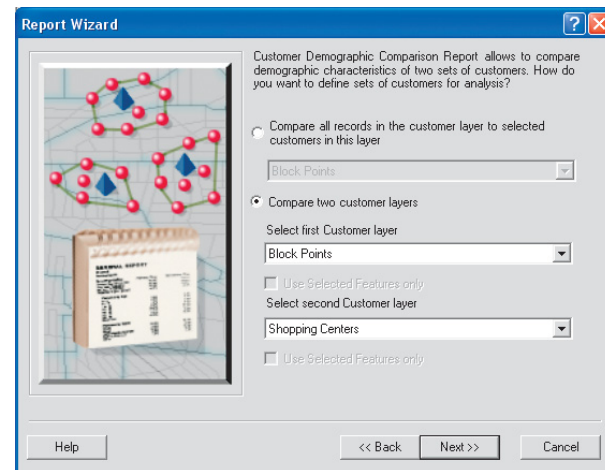
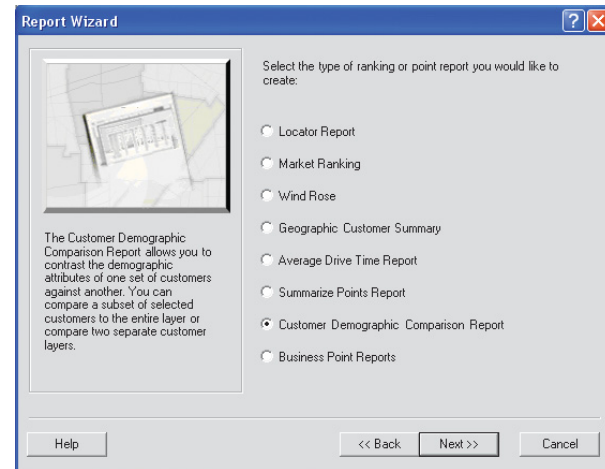


# Customer Demographic Comparison report

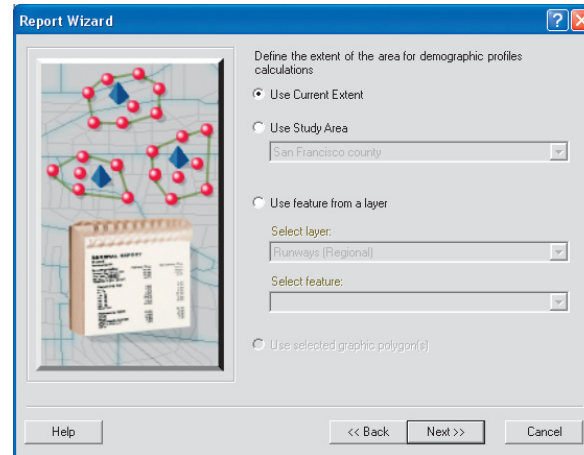
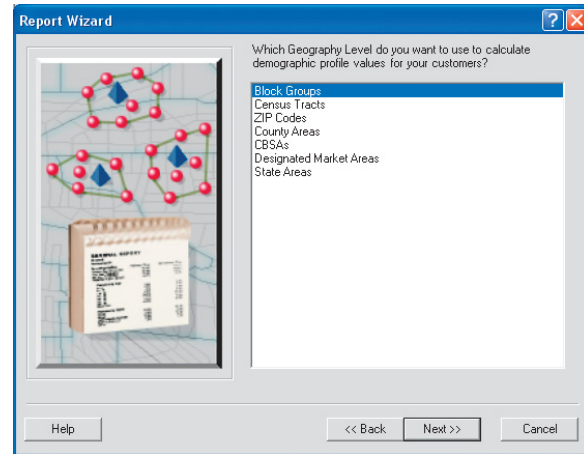
The Customer Demographic Comparison report allows you to contrast the demographic attributes of one set of customers against another. You can compare a selected subset of customers to the entire layer or compare two separate customer layers.

Think of the report as using a combination of Customer Profiling and the Benchmark report. It takes a profile of the underlying geographies that intersect your customer points and compares it to another customer profile you select. The differences are shown by total number and percentage.

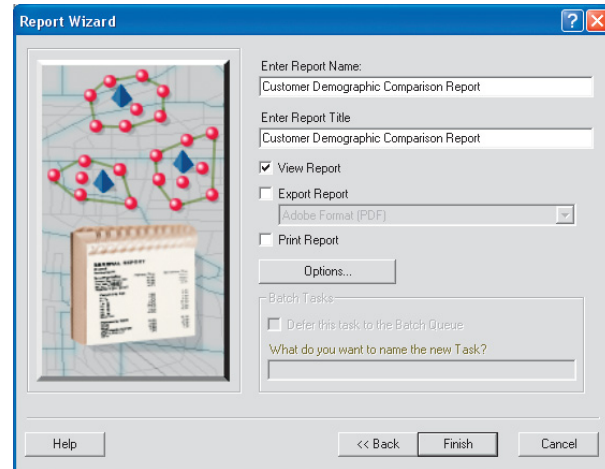
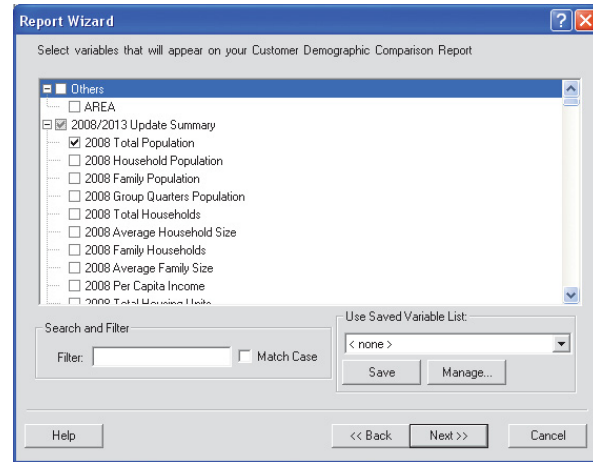
1. Click Reports.
2. Click Run point and ranking based reports.
3. Click Customer Demographic Comparison Report, then click Next.
4. Select your customer layer(s) in one of two ways:
  - a. Compare all records in the customer layer to selected in this layer. Your customer points must be selected prior to choosing this option.
  - b. Compare two customer layers. If you choose this option, complete the remaining customer layer information on the dialog box.
5. Click Next.



6. Choose the geography level to calculate the demographic profile, click Next.
7. Choose your extent or your analysis. You can choose the current extent of the map, a predefined Study Area, a feature within a layer, or a selected graphic polygon. Click Next. ►



8. Select the variables that will make up the demographic profile, click Next.
9. Review the report options and give your report a name. Click Finish.



# Business Points reports

The Business Points reports allow you to quickly gather information about the businesses or shopping centers in an area. There are three different reports:

- Businesses Locations report
- Detailed Business Locations report
- Shopping Centers report

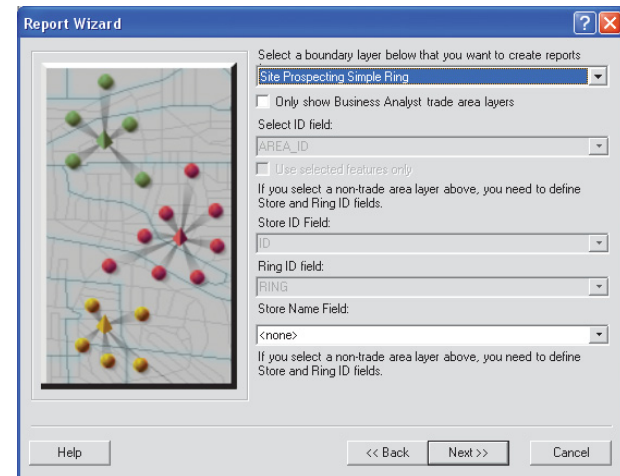
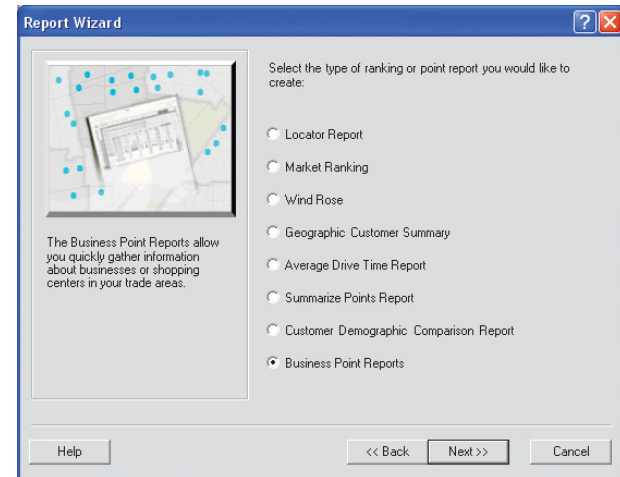
These reports only work on point layers and are especially designed to leverage the DMM shopping centers and *infoUSA*® business point locations included in Business Analyst.

1. Click Reports.
2. Click Run point and ranking based reports.
3. Click Business Point Reports, then click Next.
4. Select a boundary layer from the drop-down menu that includes your business points.

The <Create report for all records> option is the default. Using this will include your entire business point layer in your reports. To use the default, click Next.

**Note:** It is not recommended to use the default.

5. Select a boundary layer from the drop-down menu that includes your business points.
6. Complete the remaining drop-down menu options, including ID, Store ID, Ring ID, and Store Name fields, then click Next. ▶



## Tip

You can select how you want to summarize data for your reports. You can choose from:

- *For Individual Features:* A single report is created for all points within the selected trade area.

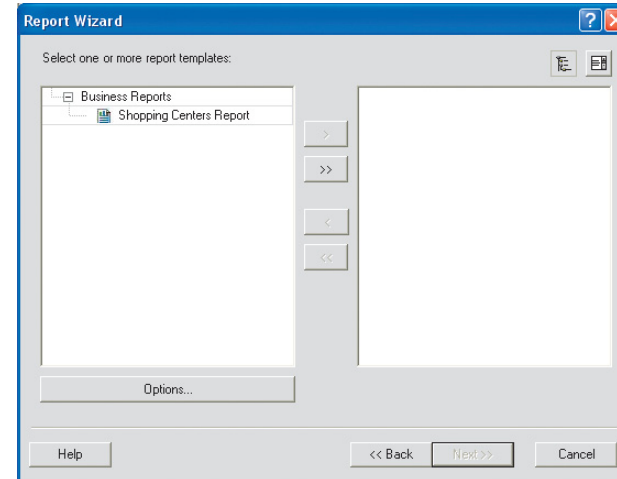
**Note:** The individual features option can result in duplicate point entries on reports where trade areas overlap occurs.

- *For the Whole Layer:* A single report is created for the outermost boundary of all trade areas in a single layer. All points within the selected trade areas are included.

**Note:** The whole layer approach will dissolve all polygons in the layer and create one report for all business points within the outermost boundary. Therefore, duplicate point entries are not returned in the report.

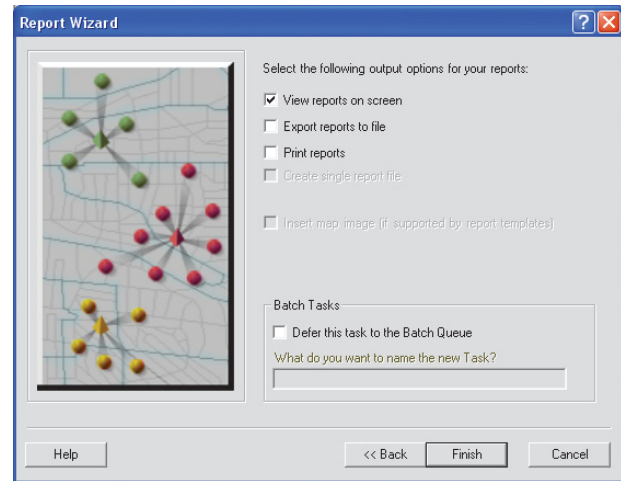
- *For both Individual Features and Whole Layer:* A report is created for both the Individual Features and Whole Layer as a combination of the two.

7. Select how you want to summarize data for your reports. You can choose from:
  - For Individual Features
  - For the Whole Layer
  - For both Individual Features and Whole Layer
8. Select the layer containing the business points for your Business Report from the drop-down menu, click Next.
9. Select the report templates. You can choose one or more. Click the buttons in the middle pane to navigate the variable from one side to the other. Click Next. ►





10. Select the output for your reports and click Finish.



## Running a map layout report

The map layout report allows you to easily export the area of the map that you are zoomed to into a predefined report template. Another option is to export the map from ArcGIS, but the formatting of the map layout report has the consistency of the other reports available in Business Analyst.

1. Click Run Reports.
2. Choose Create report from the current map layout and click Next.
3. Choose Use Current Map Extent or Create Series of Maps. If you choose Create Series of Maps continue to step 4.

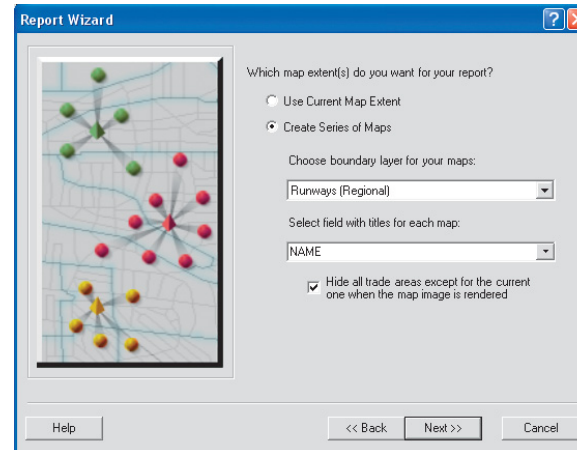
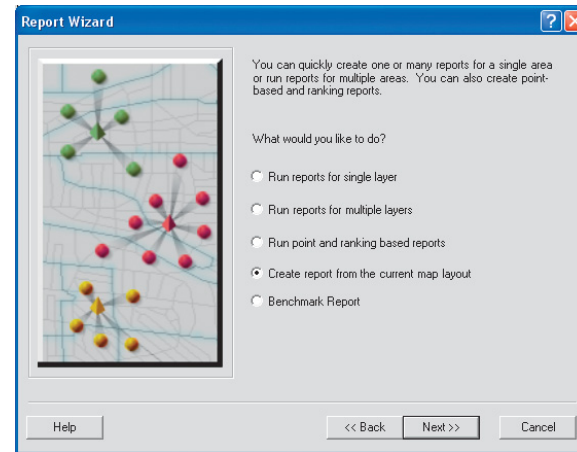
If you choose Use Current Map Extent, click Next.

Type a report name and click Finish.

4. Choose the boundary layer for your maps from the drop-down menu.

Select the field with the titles for each map from the drop-down menu.

5. Check Hide all trade areas except for the current one when the map image is rendered.
6. Click Next. ►

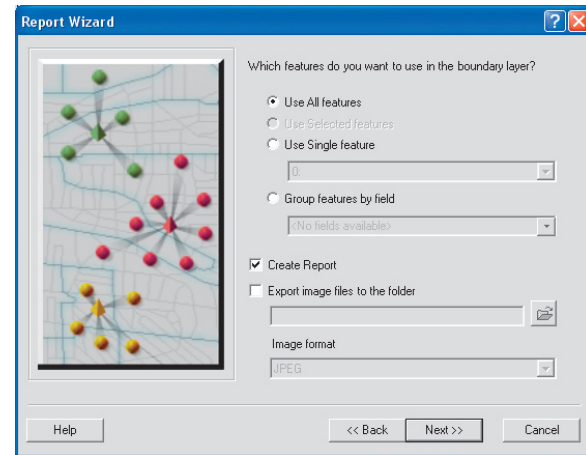



## Tip

*Use All features creates a map of each individual feature within your boundary layer—for example, if you have five 1-3-5 minute drive time trade areas, you will produce 15 total maps. A map is produced for each individual feature so this creates a map zoomed to the 1-minute drive time, a map zoomed to the 3-minute drive time, a map zoomed to the 5-minute drive time, and then on to the next set of 1-3-5 minute drive times.*

You will need to choose the features you want to use in the boundary layer. You can choose from Use All features, Use Selected features, Use Single feature, and Group features by field.

- Use All features creates a map/report of each feature within your boundary layer. This option will create a map/report for every trade area boundary. If you have a 3-ring trade area, one map will be created showing each individual trade area.
- Use Selected feature to create a map/report of a feature you have previously selected.
- Use Single feature to create a map/report of only one feature within the overall boundary.
- Group features by field creates a map/report around the outermost trade area boundary. It is possible to have many internal boundaries associated within the larger boundary. An example is a 3-ring trade area. This option will create one map with all boundaries included.▶



- 
7. To create the report(s) now, check Create Report and then click Next.
  8. To send the reports to an image format, check Export to image files.
    - Specify the folder location where the images will be saved.
    - Specify the image format (JPEG, BMP, GIF, EMF, PNG, or TIFF).▶

## Tip

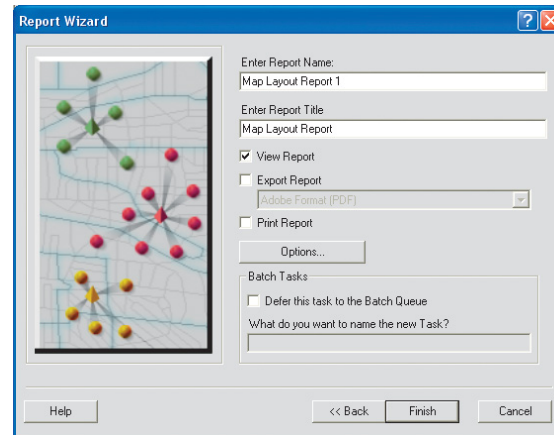
*The Report Name allows for easy retrieval in the Business Analyst Report Wizard.*

*The Report Title only appears on the actual report.*

- You can view, export, print, or run the report later.
- Check View Report to see the report on screen in the Crystal Reports viewer.
  - Check Export Report to send the report immediately to another format, such as PDF or Excel.
  - Check Print Report to send the report immediately to a printer.
  - Check Batch Tasks to run the report at a later time from the Batch Tasks dialog box.
9. Click Finish.

You can create reports and export image files at the same time. To do so, simply check both options.

**Note:** You can change your desired Map Series Report page orientation from Landscape to Portrait. Landscape is the default orientation. To modify this, in ArcMap go to File > Page and Print Setup and under the Map Page Size section select either Portrait or Landscape. Click OK to return to the Reports dialog box.



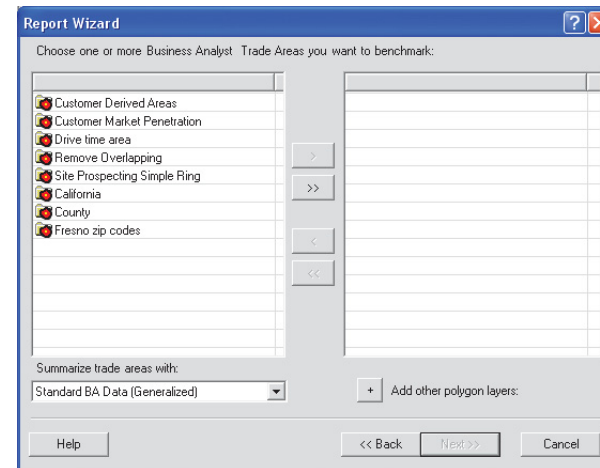
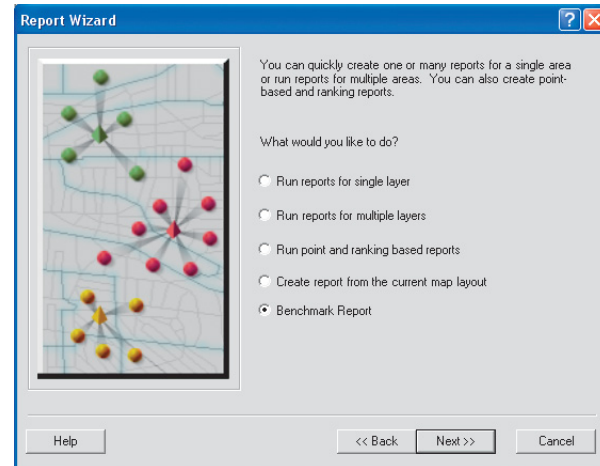
# Benchmark report

The Benchmark Report allows you to compare multiple trade areas against one another to decipher how different or similar one location is to the next. You can easily measure the demographic characteristics of one area versus all other areas. The report shows statistical differences in raw number, percent, and index values.

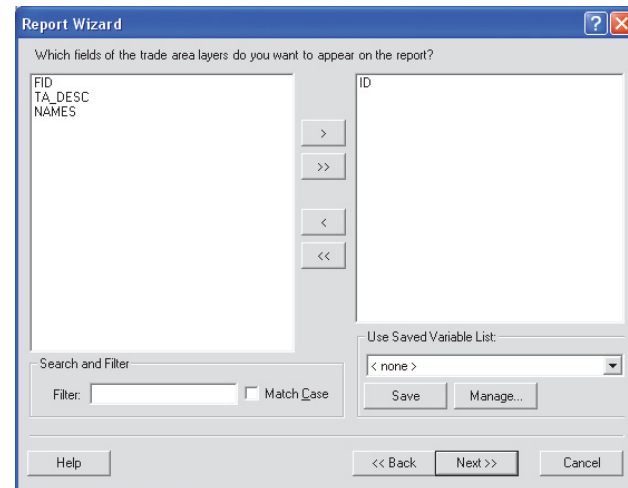
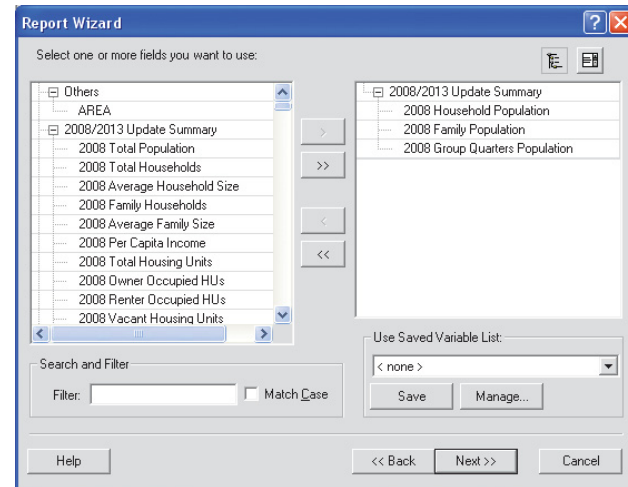
1. Click the Business Analyst drop-down menu and click Reports.
2. Click Run Reports, click Next.
3. Click Benchmark Report, click Next.
4. Choose the Business Analyst Trade Areas you want to include in your Benchmark Report. Use the arrows to add or remove the trade areas.

**Note:** The Summarize trade areas with: drop-down menu contains the layer that controls your data aggregation. By default, Standard BA Data is used; however, if you created your own BDS layers they appear in the drop-down menu.

5. Click plus to add other polygon layers, click Next. ►



6. Select the fields you want to see benchmarked, click Next.
7. Select any additional fields you want to appear in the report. These will not be benchmarked, but may be helpful when viewing the report—for example, you may benchmark a series of franchise locations and need to show the privately owned locations. This field will be associated with each record, but not benchmarked.
8. Click Next.
9. Select the fields of the trade area layers that you want to appear on the report, then click Next. ►



- To enable the benchmarking functionality, check Compare trade area values against a benchmark.

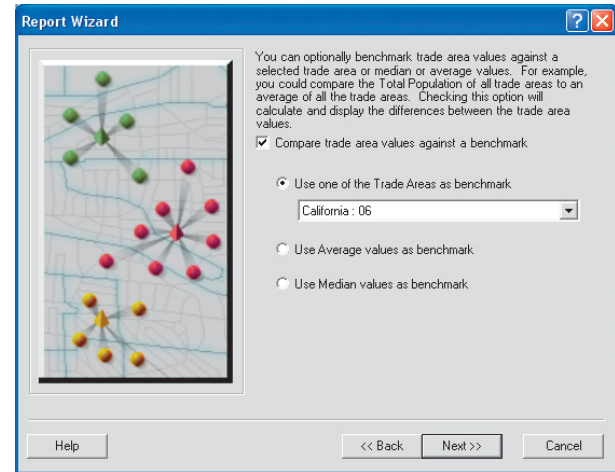
**Note:** If this option is unchecked, the Benchmark Report will only show a list of variables for each trade area. The raw number, percent, and index differences will not be included.

- Choose your benchmark type:

- Use a Trade Area: Uses an existing trade area polygon to compare against all other polygons.
- Use the Average of all values: Calculates the statistical average of all data variables in each trade area then shows the differences.
- Use the Median of all values: Calculates the statistical median of all variables in each trade area then shows the differences.

- Click Next.

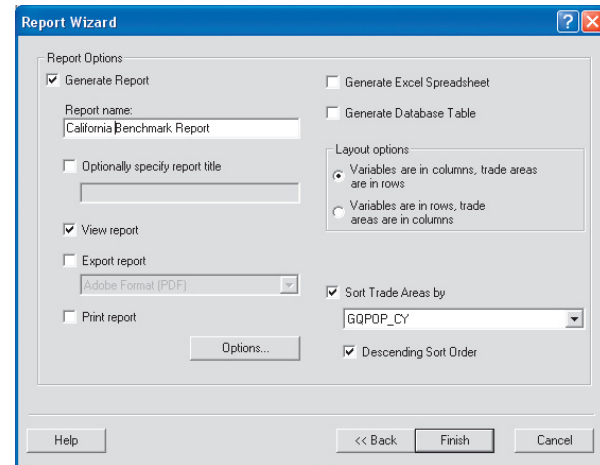
- A preview window appears that gives you an idea of the output that appears before permanently exporting to a report format. Click Next. ▶



2008 Family Population	Difference	Percent %	2008 Group Quarters Pop...	Difference	Percent %
30864080	0	0	863969	0	0
686392	-30177688	-97.78	36512	-827457	-95.77
12300	-30851780	-99.96	5671	-858298	-99.34
2979	-30861101	-99.99	3125	-860844	-99.64
22579	-30841501	-99.93	1385	-862584	-99.84
56009	-30808071	-99.82	1031	-862938	-99.88
43925	-30820155	-99.86	866	-863103	-99.9
32989	-30831491	-99.89	754	-863215	-99.91
9654	-30855416	-99.97	704	-863285	-99.92
42254	-30821826	-99.86	645	-863324	-99.93
28527	-30835553	-99.91	539	-863430	-99.94
26130	-30837950	-99.92	457	-863512	-99.95
42364	-30821716	-99.86	367	-863602	-99.96
21226	-30842854	-99.93	340	-863629	-99.96
32260	-30831820	-99.9	315	-863654	-99.96
27379	-30836701	-99.91	281	-863688	-99.97
32653	-30831427	-99.89	278	-863691	-99.97
12568	-30851522	-99.96	251	-863718	-99.97
25322	-30838758	-99.92	251	-863718	-99.97
33502	-30830578	-99.89	234	-863735	-99.97
13431	-30850649	-99.96	197	-863772	-99.98



14. Review the report options and name your report. You can create a Crystal Reports file, export to numerous format options (such as PDF, CSV, and so on), or export directly to tables.
  - Check on Generate Excel Spreadsheet to export your information into a .xls file.
  - Check Generate Database Table to export your information into a .dbf file
15. Choose the layout orientation and initial sorting options, then click Finish.
16. Depending on the options you choose, the Benchmark Report will export to a file or immediately appears.



## Managing existing reports

Business Analyst gives you the opportunity to manage any of the reports you have run in the past. You can view the reports, delete a report from your project files, and rename a report and/or title.

### Tip

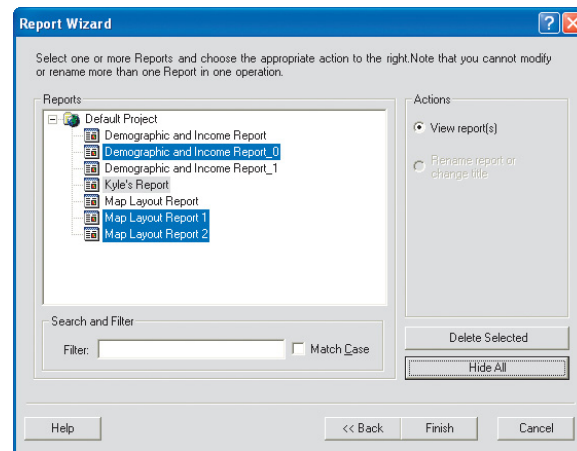
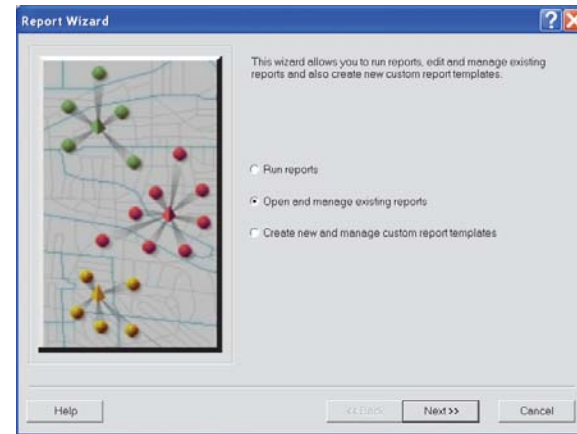
#### Using the different managing views

*You can view the reports you are managing in two different ways, Show All and Hide All.*

*Clicking the Show All button will display reports grouped by individual Projects in a tree view.*

*Clicking the Hide All button will display all reports for the active Project only.*

1. Choose to Open and manage existing reports and click Next.
2. Choose to view, delete, or rename a report.



# Creating custom report templates using the Advanced Editor

Business Analyst gives you the opportunity to create custom report templates to run using your custom data or Business Analyst data. The template can be saved and used just like any other template using the advanced reports editor.

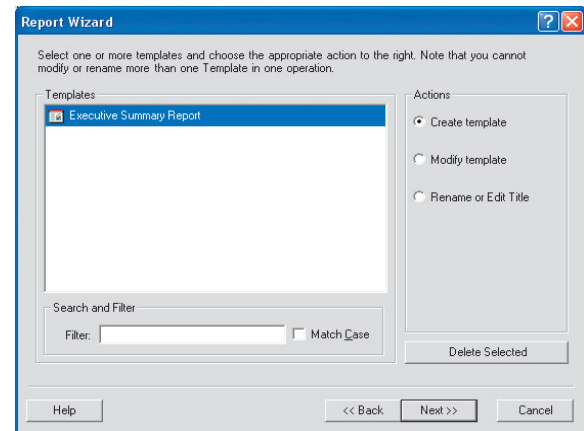
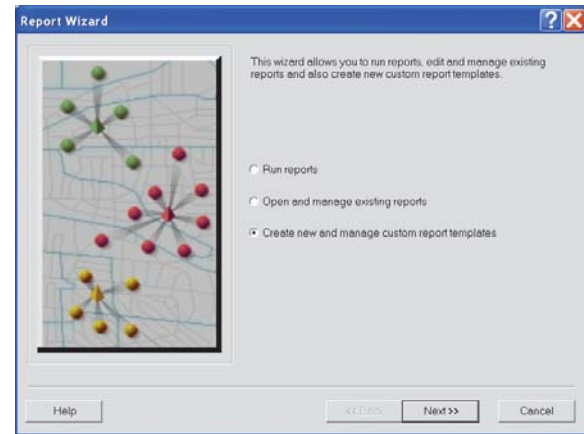
## Tip

### Custom Reporting tool

*The Advanced Report Editor allows you to create custom reports without having to open and edit templates in the Crystal Reports software.*

1. Choose Create new and manage a custom report template and click Next.
2. Choose Create template and click Next.

If you have already created customer report templates, they will appear in the dialog box list and the options to modify or rename them are activated. ►



## Tip

### Advanced Editor field types

There are three types of cells in the patterns supported by Advanced Editor:

- static cells
- header cells
- value cells

Static cells (black):

1. They contain text showing that their placeholders are designed for automatic values (AREA\_ID, STORE\_ID, and so on). These cannot be altered by the user, but they are presented in the report.
2. They are used to provide ability to collapse/expand sections in Advanced Editor.

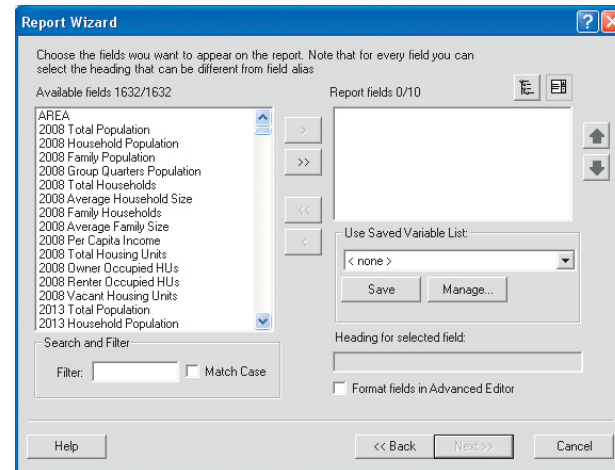
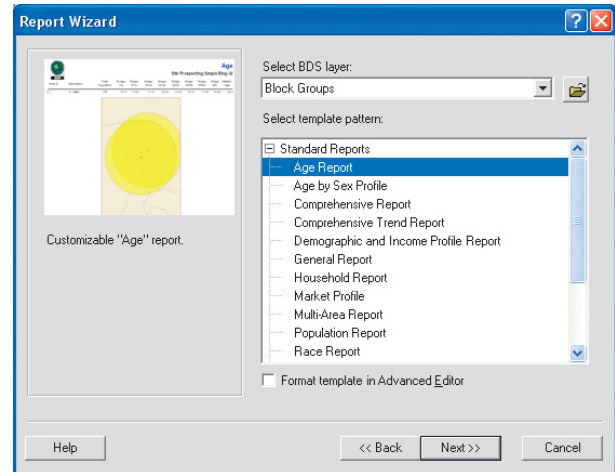
Header cells (blue):

These can be edited by the user. Pattern format supports automatic filling for headers when they are associated with row/column of value cells.

Value cells (green):

Accepts only summarizations dragged and dropped from summarizations tree/list and can be formatted by the user as calculations of certain types.

3. Choose the level of geography you want to base your custom report on from the drop-down menu.
4. Choose a template pattern. You can choose from Standard Reports and Blank Templates.
5. Check Format template in Advanced Editor to begin modifying the report. Or leave unchecked and modify later.
6. Click Next. ►



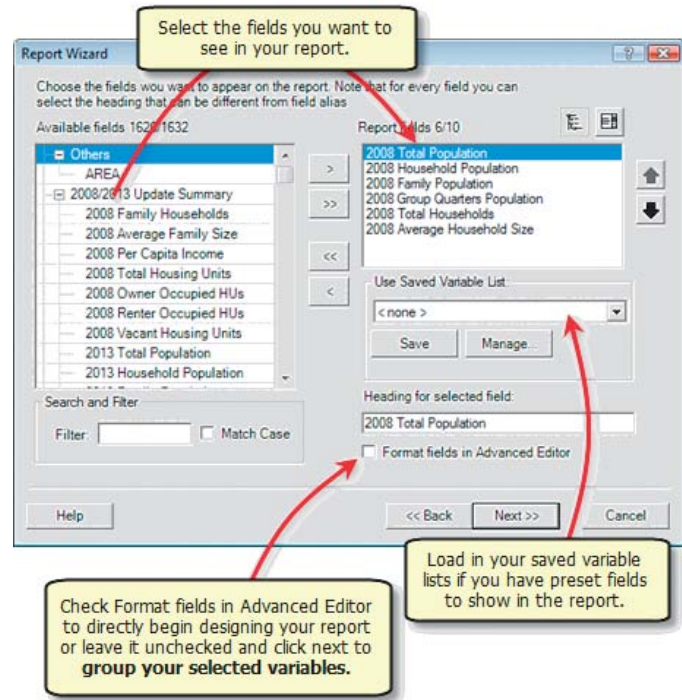
- The report template opens in the Advanced Editor. The editor allows you to customize the report template without accessing Crystal Reports. This example shows the Demographic and Income Report within the editor. ►

The screenshot displays the Crystal Reports Advanced Editor interface. The main window shows a report titled "2008 Owner Occupied HUs" with a table of data. The table has columns for "2000" and "2008" and rows for various demographic and income categories. A "Custom Report" button is visible in the top right corner. Several callout boxes provide instructions:

- Calculated Field Setup:** A dialog box is open, showing the "Field Name" as "OWNER\_CY\_P" and the "Calculation type" as "Percentage". A callout explains: "The Calculated Field Setup automatically knows the base variable if it is a percent. The numerator/denominator is identified if it is an average." An arrow points from this callout to the "Field Name" field.
- ESRI Globe:** A callout says: "Double-click the ESRI globe to add your own logo. Square files work best." An arrow points to the globe icon in the report header.
- Format Styles:** A callout says: "Select cells and change their format styles." An arrow points to a cell in the table.
- Calculation:** A callout says: "Select a field in the report and click Calculation. This allows you to change between percent, avg, create an index, or produce a custom field." An arrow points to the "Calculation" button in the top right.
- Custom Report Title:** A callout says: "Double-click to type your own title." An arrow points to the "Custom Report" button.
- Demographic BDS Layers:** A callout says: "The demographic BDS layers are listed here. Click and drag one or many fields into the predefined report cells." An arrow points to the list of fields on the left side of the editor.
- Summary Report Fields:** A callout says: "Delete existing summary report fields and add your own. The overall structure is maintained." An arrow points to the table structure.

8. If you chose a report template type, but did not initially select Format template in Advanced Editor, you will be brought to the next dialog box.

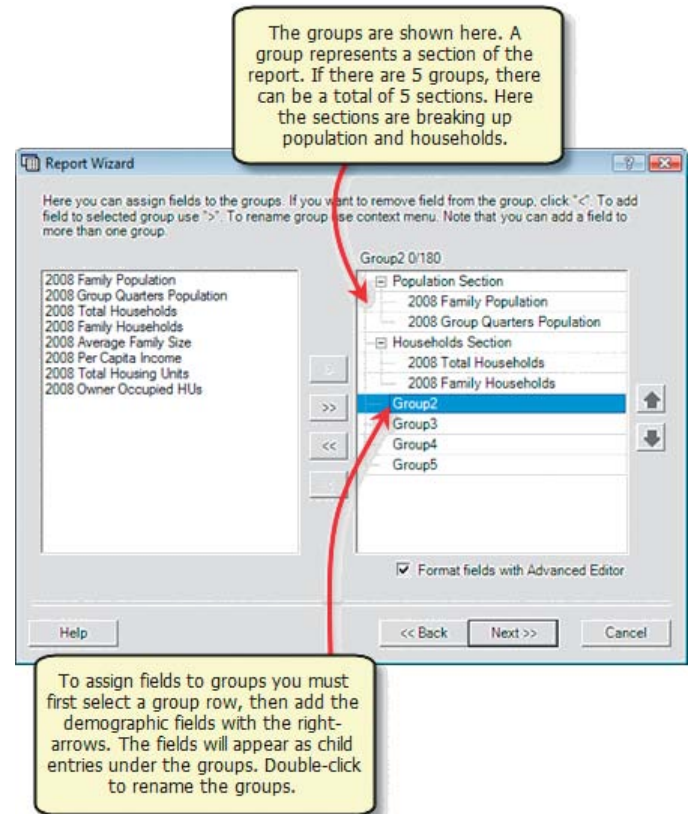
In this dialog box, you can choose any field you want to add to the report. You can also bring in your own custom lists to view in the report. Here, you can choose to open the report in the editor or click Next to apply a group structure to the variables. When you create a group, the variables you add will reside in their own section of the report. ►



9. If you selected the fields you want to add to the report, such as in the graphic shown here, you can choose to open the report editor or click Next to apply a group structure to the variables. When you create a group, the variables you add to the group will reside in their own section of the report. This dialog box shows how to create groups.
  10. You can now choose the Format fields with the Advanced Editor option to modify the report or click Next to leave the default report structure.
  11. Assuming you do not open the editor, click Next.
  12. Type a name for the report and title.
 

The report name will appear in the custom report template lists and will be used to retrieve your custom reports.

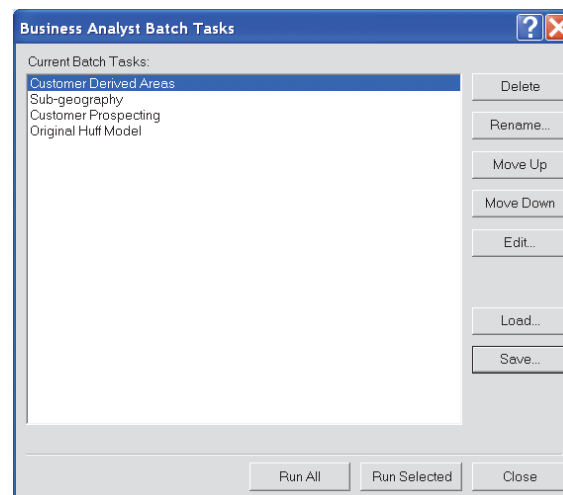
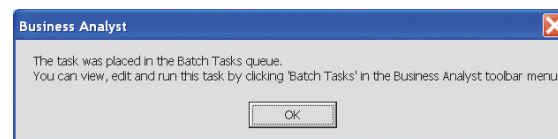
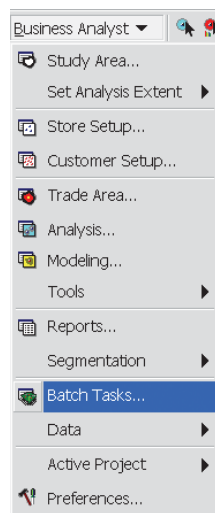
The report title appears on the report.
  13. A dialog box appears when the report is created successfully. An .rpt report template is added to your system. Click OK and you can access the new template from the Reports Wizard.



## Running and managing batch tasks

Business Analyst allows you to run your entire batch tasks all at once or one at a time. Suppose you have to run a large geocoding job as well as create 50 or so report templates and export them to PDF. Set these up as a batch process and run this when you leave for lunch or for the night. You will be able to work on other things during the day and not have your machine tied up while processing data.

1. Click the Business Analyst menu and click Batch Tasks. Whenever you choose to set up a process to run as a batch task, a pop-up message appears regarding the Batch Tasks queue. Click OK. This is only for your reference.
2. The Business Analyst Batch Tasks dialog box allows you to delete, rename, reorder, and edit your batch tasks. You can also load a batch task from another computer or export a batch task to use in ModelBuilder.
3. You have the option to run one or all batch tasks.





# Setting Business Analyst preferences **15**

## IN THIS CHAPTER

- **General tab**
- **Dataset tab**
- **Analyses tab**
- **Misc tab**
- **Data tab**
- **Drive Time tab**
- **Segmentation tab**

The Business Analyst Preferences dialog box is accessed from the Business Analyst drop-down menu. It can be used to change a variety of settings that define the general state of working with the software. You can change the terminology used for customers and stores within the context of your own business, the default distance units, and the active datasets. Many other default values are also available for change.

You will find it helpful to look through each of the Preferences tabs to see what is available. You may find that changing items will make your work easier while you can always find items that increase your knowledge of Business Analyst flexibility and functionality.

## General tab

Use the General tab to view and edit customer and store references, set the output data folder location to place the data you create, define distance units, and determine if you want to show the Business Analyst Assistant when you open the program.

### Substituting your own terms for customers and stores

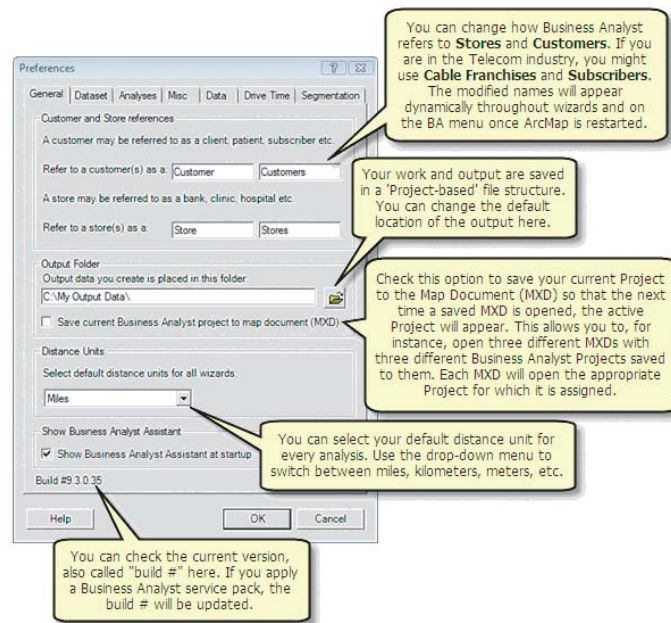
You can substitute other terms for “customers” and “stores” using the Preferences General tab, for example, banks and clients, hospitals and patients, or preschools and children—whatever fits your line of work. The Preferences dialog box customizes Business Analyst for you, using the terms you choose.

#### Tip

*All of your store layers, customer layers, and analyses are stored and organized in this output data folder. See the appendix for more details about the My Output Data folder and use of projects to organize your work.*

## Setting Business Analyst preferences on the General tab

1. To set Customer and Store references, type the name you want to use to refer to a customer in the first text box (Customer), then type the plural of the name in the second text box (Customers). In the second set of text boxes, type the name you want to use to refer to a store in the first text box (Store), then type the plural of the name in the second text box (Stores).
2. To change the location of the output data folder, click the Browse icon and browse to the location of the output folder.
3. To set the default Distance Units for all wizards, click the drop-down menu and select a unit from the list.
4. If you want the Business Analyst Assistant to launch at startup, check the check box.
5. Click OK to save your preferences or click a different tab to set other preferences.



## Dataset tab

Use the Dataset tab to select the current dataset, view data component locations, set the geocoding service, and choose the street network you want to use.

The Dataset tab is used to set locations for major data components that come with the product—that is, ESRI demographic data, *infoUSA* business listings, Tele Atlas Street data, and so on—as well as your preferences for address locator (geocoder). In most cases, you will be using the USA Geocoding Service provided with Business Analyst.

## Setting Business Analyst preferences on the Dataset tab

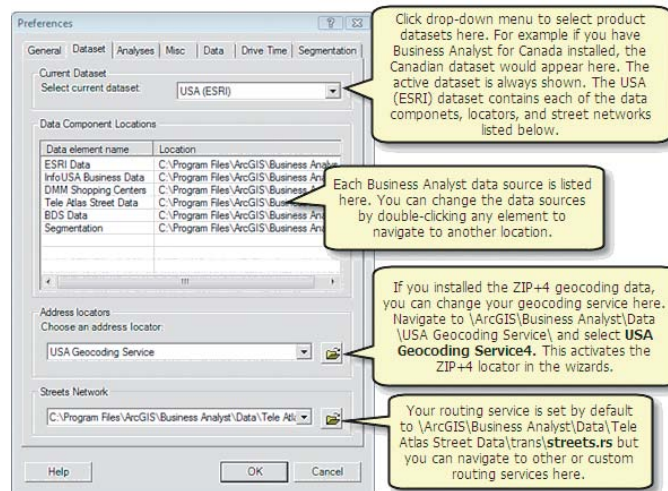
1. Click the Select current dataset drop-down menu to change the current dataset.

The Data Component Locations are listed.

**Note:** If you have Business Analyst and Business Analyst for Canada installed, use the Select current dataset drop-down menu to select the national datasets. The data elements, geocoding service, and streets network automatically point to the appropriate folder locations. You will need to restart ArcMap to apply the settings.

2. Click Choose an address locator drop-down menu to select a geocoding service, or click the folder icon and browse to the location of the service.

Business Analyst comes with two geocoding services: USA Geocoding Service and USA Geocoding Service4. The first contains the Address Points, Street Address Ranges, and ZIP Code locators. The second contains the locators mentioned above in addition to a ZIP+4 locator. This ►



## Tip

*A routing service called connectorsrte is provided with Business Analyst at the following location: C:\Program Files\ArcGIS\Business Analyst\Data\Tele Atlas Street Data\trans\connectorsrte.rs. The connectorsrte routing service is most often used in larger drive time or routing analyses to ease processing time. Major routes and highways are traversed whereas local street networks are avoided. To activate this routing service, you must navigate to the connectorsrte.rs file in the Streets Network drop-down menu within the Business Analyst Preferences Dataset tab.*

option is ideal if you already have a ZIP+4 on your address files for geocoding.

Both services are located in the \ArcGIS\Business Analyst\Data\USA Geocoding Service folder.

3. Click the Streets Network drop-down menu to change the street network used in routing and drive times.

Business Analyst provides two routing services, these are called streets.rs and connectorsrte.rs. Both are located in the \ArcGIS\Business Analyst\Data\Tele Atlas Street Data\trans folder.

4. Click OK to save your preferences or click a different tab to set other preferences.



## Analyses tab

Use the Analyses tab to select the trade area output style and group layer and set the market penetration ratio multiplier and geoprocessing options.

The Analyses tab allows you to set defaults for trade area appearance and specify group layer naming for organization of customer, store, and analysis layers that are added to the map document.

Options are also provided that affect market penetration and geoprocessing.

### Tip

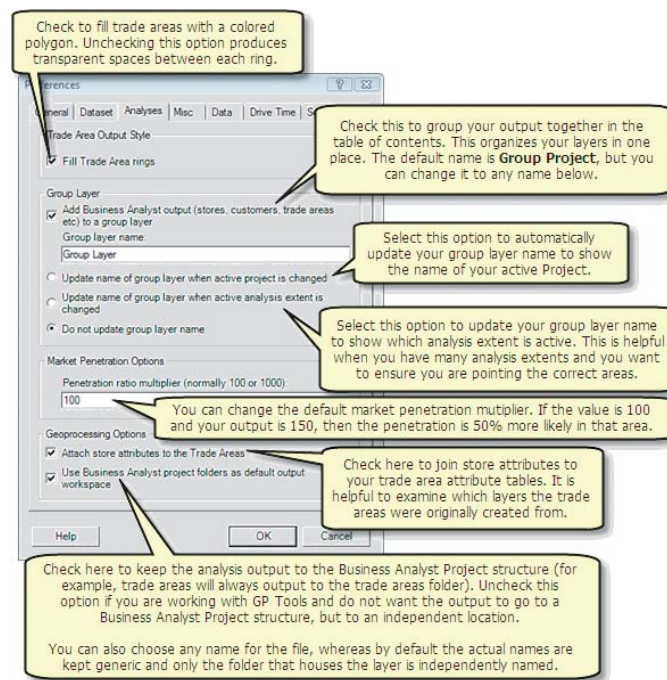
*The default market penetration figure of 100 works well because the results are shown as a percentage—for example, if you have 500 customers within an area containing 1,700 people, with the ratio set to 100, the market penetration rate is 29.4%.*

## Setting Business Analyst preferences on the Analyses tab

1. In Trade Area Output Style, check the Fill Trade Area rings box.

The Fill Rings box allows you to turn the color fill inside trade areas on and off. By default, these areas are filled with transparent color. If you don't want any color, uncheck the Fill Analysis rings box. You can change the amount of transparency or make the colors opaque by right-clicking the layer, clicking Properties, and clicking the Display tab. You can vary the transparency from 0 percent (opaque) to 100 percent (invisible).

2. To add Business Analyst output to a group layer, check the check box.  
Select whether or not to update the name of the group layer.
3. To set market penetration, type a value in the Penetration ratio multiplier text box.
4. Set the geoprocessing options as needed.
5. Click OK to save your preferences or click a different tab to set other preferences.



## Misc tab

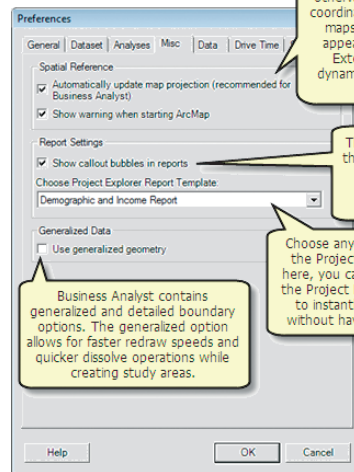
This tab contains a check box that allows you to automatically update the map projection. There are also check boxes to manage items for Reports and creating study areas.

The Automatically update map projection option automatically adjusts the map projection so that local maps on the east and west coasts of the United States maintain the north orientation up, even when you zoom in. If the Spatial Reference check boxes are unchecked, the projection that's being used at that time remains regardless of how far you zoom in or out. This will result in the north direction moving left or right of vertical on your map.

For work in ArcMap, you may want to uncheck this box; however, for Business Analyst work, you will want to leave this on or your rings may look like ellipses. The Warning Dialog Help button contains more detail about how this automatic projection works.

## Setting Business Analyst preferences on the Misc tab

1. Spatial Reference options include:
  - Automatically update map projection (recommended for Business Analyst)
  - Show warning when starting ArcMap
2. Check Show callout bubbles in reports if you want to see the informative callouts in segmentation reports.
3. Check Use generalized geometry to build study area shapes if you want fast drawing, but more general geographic boundaries. This will increase the report generating time in certain analyses.
4. Click OK to save your preferences or click a different tab to set other preferences.

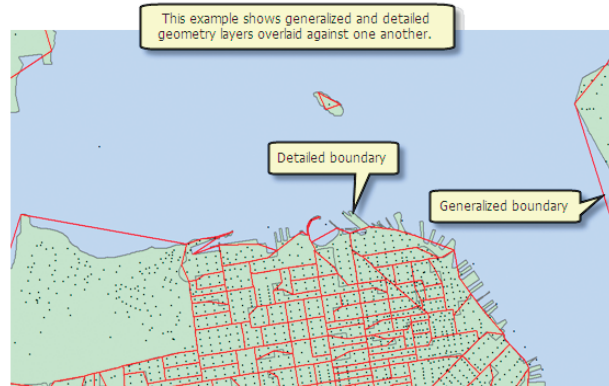


The spatial reference is a **dynamically updating projection** that changes when zooming or panning around the map. This on-the-fly method eliminates the need to alter data frame projections, which may otherwise be the case if individual State Plane or UTM coordinate systems are used. This is helpful for creating maps or view areas in multiple locations. A warning appears when ArcMap starts if the Business Analyst Extension is installed. This reminds you that the dynamic projection is enabled and may interfere with other work.

The callout bubbles are the circles-with-arrows that link report content to a section containing information about the report content. This helps guide you through the output of Segmentation reports.

Choose any default summary report for use in the Project Explorer. Once the report is set here, you can right-click on a trade area within the Project Explorer and choose Create Report to instantly produce a demographic report without having to access the Report wizards.

Business Analyst contains generalized and detailed boundary options. The generalized option allows for faster redraw speeds and quicker dissolve operations while creating study areas.



This example shows generalized and detailed geometry layers overlaid against one another.

Detailed boundary

Generalized boundary

## Data tab

Use the Data tab to select the output data format and the data apportionment method.

### Tip

*You can select from three data apportionment options to balance differing needs for performance and accuracy.*

*Hybrid: Recommended to provide a combination of each method for most scenarios.*

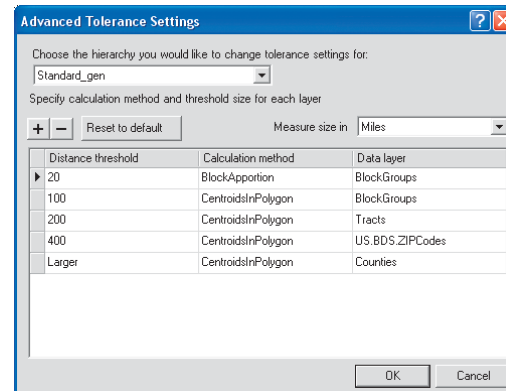
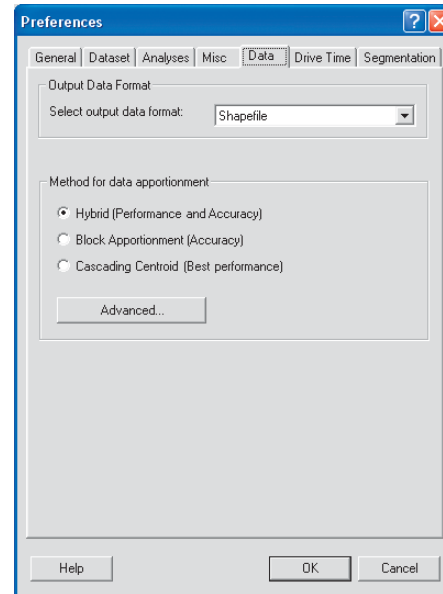
*Block Apportionment: This gives the highest degree of accuracy, but slower overall performance.*

*Cascading Centroid: Fastest method for large datasets, but sacrifices precision.*

**Note:** See *Setting Business Analyst preferences in the Desktop Help* for more information about the *Advanced* option. Also examine the context help by clicking the ? button in the *Data* tab, then click on any one of the data apportionment methods.

## Setting Business Analyst preferences on the Data tab

1. Click the drop-down menu to select the output data format, shapefile, personal geodatabase or file geodatabase.
2. Click the Method for data apportionment that you want to use in your analysis.
3. Click the Advanced button to further adjust the threshold values, calculation methods, and data layers.
4. Click OK to save your preferences or click a different tab to set other preferences.



## Drive Time tab

Use the Drive Time tab to select the speed limits template.

You have choices for using traffic volume templates for light traffic, normal traffic, or rush hour. You can also modify speeds in any template and the template name will change to a custom template.

The Name field displays normal posted speed limits to help in comparison with streets, roads, and major highways in your area.

### Tip

*Modifying any of the values in either Light, Normal, or Rush Hour will automatically create a Custom speed limits table.*

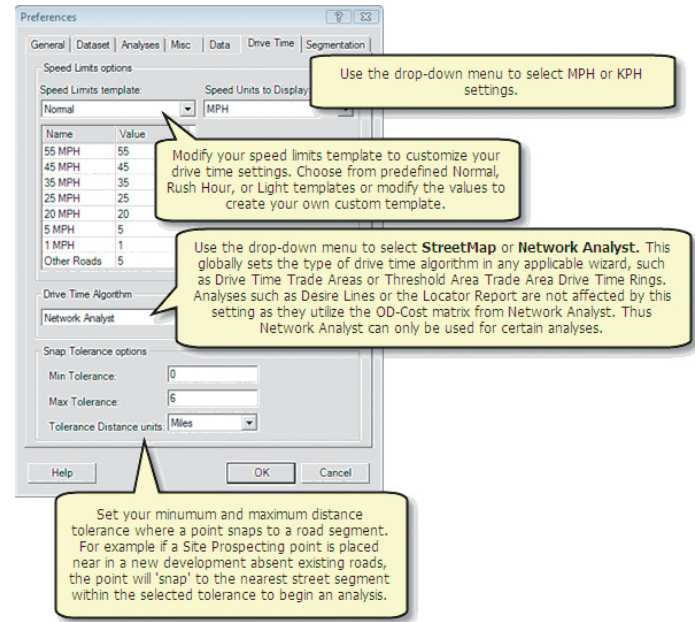
## Setting Business Analyst preferences on the Drive Time tab

1. To set the speed limit options, click the drop-down menu to select the speed limits template.

To modify the speed units, click the drop-down menu and select KPH or MPH.

To modify the values to create a custom speed limit table, click the value and type the value you want to use.

2. To modify the Drive Time Algorithm, click the drop-down menu and select Network Analyst or StreetMap.
3. Modify your street network snap tolerances, if necessary.
4. Click OK to save your preferences or click a different tab to set other preferences.



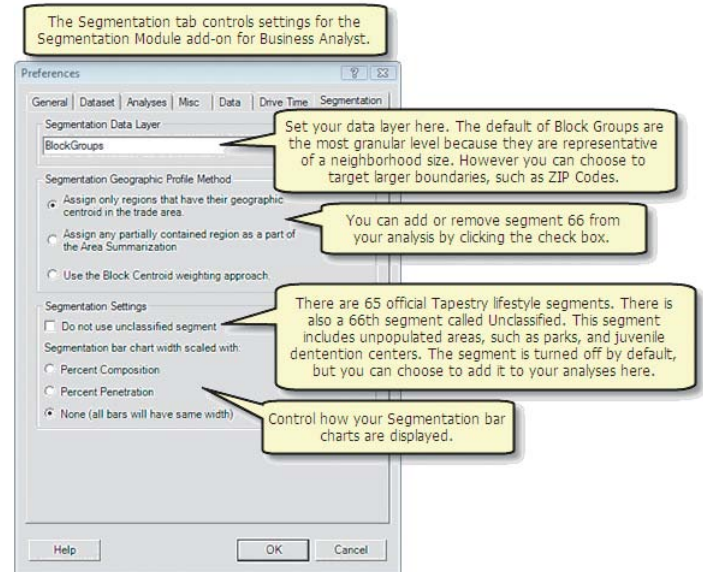


## Segmentation tab

Use the Segmentation tab to set Segmentation Module geographic profile methods, settings, and report options. Consult the *Using ArcGIS BA Segmentation Module* user guide for more information.

### Setting Business Analyst preferences on the Segmentation tab

1. Click the drop-down menu to select which demographic geography layer you want to use in segmentation analyses.
2. Within Segmentation Geographic Profile Method, choose the method you want to use in your analysis.
3. Under Segmentation Settings choose whether or not to use the unclassified segment, which is Tapestry Segment #66.
4. Choose how the Segmentation bar chart widths are scaled.





# Glossary

## **active data frame**

The data frame with which you're currently working, if your map contains more than one data frame. The active data frame is highlighted on the map, and its name is shown in bold text in the table of contents.

## **amoeba**

An approach for forming a ring boundary by joining extreme points using elliptical arcs. They are often called amoebas because of their shape.

## **attractiveness**

One number that combines all the factors that make a center attractive. For example, the attractiveness of an office building could be a function of how many offices are currently located within it.

## **attribute**

A piece of information describing a map feature. The attributes of a ZIP Code, for example, might include its area, population, and average per-capita income.

## **block group**

A combination of census blocks that is a subdivision of a census tract. A block group is the smallest unit for which the Census Bureau reports a full range of demographic statistics (about 700 residents per block group). See also tract.

## **buffer**

A zone around a map feature measured in units of distance or time—for example, a store's 15-minute drive-time buffer defines the area in which drivers can reach the store in 15 minutes or less.

## **classification**

A scheme for dividing map features into a specified number of classes according to selected attribute values. Sales territories, for example, might be divided into five classes according to the number of accounts they contain. Each class is then assigned a unique symbol to create a thematic map.

## **complex market area**

An area calculated by finding the outermost customers of a store and connecting them. Complex market areas are more accurate than simple because they respond to physical and cultural barriers.

## **Core Based Statistical Area (CBSA)**

An urbanized area as defined by the U.S. Office of Management and Budget, consisting of a core area containing a large population nucleus, together with adjacent communities having a high degree of economic and social integration with that core. Normally, a CBSA includes at least one city of 50,000 or more inhabitants or an urbanized area of at least 50,000 inhabitants with a total metropolitan population of at least 100,000.

## **customer market analysis**

A type of analysis that uses mostly customer data. Simple and Complex Desire Lines, Market Penetration, and New Store are examples of customer market analysis.

## **customer profiling**

A process that establishes a demographic profile for a set of customers by tagging them with demographic values of the geographic area they fall within.

## **customer prospecting**

A type of analysis that locates regions with ideal demographic characteristics for targeting new customers.

## **data-driven ring analysis**

A store market analysis that is primarily used to look at your competition. You can also use it to analyze potential new locations.

## **data frame**

Groups the layers that you want to display together into a separate frame. Layers in the table of contents can be organized into data frames.

## **dBASE file**

A file format native to dBASE database management software. Business Analyst can geocode address files in dBASE format.

## **decimal degrees**

Degrees of latitude and longitude expressed as a decimal rather than in degrees, minutes, and seconds.

## **defined study area**

A study area with a defined boundary, for example, a city.

## **demographics**

The statistical characteristics of a population—for example, income, education, race, and home ownership.

## **desire lines**

A type of analysis that associates a set of geocoded points (usually customers) with a single central point (usually a store). Lines are drawn from the customers to the store. Desire lines can be weighted or unweighted. See also spider diagrams.

## **Designated Market Area (DMA)**

A Designated Market Area is a television and radio market defined by Nielsen Media Research. The population within each of these regions receive similar media content.

## **donut rings**

A method of defining the rings in an analysis so that the values inside the rings are exclusive. For example, if you had an analysis with three donut rings and 10 households in each, the total number of households for each ring would be 10.

## **dot density map**

A map in which dots are used to represent the density of an attribute—for instance, population.

## **drive-time area**

A zone around a map feature measured in units of time. For example, a store's 10-minute drive-time area defines the area in which drivers can reach the store in 10 minutes or less.

## **equal competition area**

A type of analysis that creates trade area boundaries halfway between each store and its neighboring stores. See also Thiessen polygon.

## **equal interval classification method**

A classification method in which each class has an equal range of values. Use this if your data is evenly distributed and you want to emphasize the difference in values between the features.

## **extension**

An optional ArcGIS module that performs a specialized function. Network Analyst, Spatial Analyst, and Business Analyst are a few of the many ArcGIS software extensions.

## **feature**

A map representation of a geographic object. Store sites, customer locations, streets, census tracts, and ZIP Codes are examples of map features. Features are drawn as points, lines, and areas (polygons) in ArcGIS.

## **field**

A column in a table, containing the values for a single attribute.

## **Find Route wizard**

A wizard in Business Analyst that allows you to find the shortest way to get somewhere or the shortest way to visit several locations, determine the best sequence to visit a set of stops, make a map showing the shortest travel route, and create a list of travel directions to use when driving a route.

## **find similar analysis**

An analysis that allows you to seek out and analyze new market areas based on the characteristics for an existing market area.

## **geocoding**

The process of converting tabular location data, for instance, a database of customer addresses, into accurately placed features in a map file.

## **geographic information system (GIS)**

A configuration of computer hardware and software that stores, displays, and analyzes geographic data.

## **global positioning system (GPS)**

A radio-navigation technology that uses satellite signals to calculate the position of objects on the earth's surface, along with their speed and direction.

## **graduated color map**

A map that has a series of symbols whose colors change according to the values of a particular attribute.

## **graduated symbol map**

A map that has a series of symbols whose size changes according to the values of a particular attribute.

## **group layer**

Several layers that appear and act as a single layer in the table of contents in ArcMap.

## **Huff model**

A sales forecasting tool based on the idea that the probability of a given consumer visiting and purchasing at a given site is some function of the distance to that site, the site's attractiveness, and the distance and attractiveness of competing sites. See also attractiveness.

## **image data**

Data in raster format, produced by an optical or electronic device. Satellite data, scanned data, and photographs are common forms of image data.

## **image file**

In a GIS, a file of image data.

## **index of attractiveness**

The one number describing the factors that make something attractive to customers. See also attractiveness.

## **layer**

A set of features of the same type stored together in a single file in ArcGIS.

## **layout**

In ArcGIS, a presentation document incorporating maps, charts, tables, text, and images.

## **map**

Interactive area that allows you to display, explore, query, and analyze geographic data in ArcGIS.

## **map document**

An ArcGIS file that contains all the maps, tables, charts, layouts, and reports that you use for a particular application or set of related applications. Map document files have a .mxd extension.

## **market area**

A geographic zone containing the people who are likely to purchase a firm's goods or services. Market areas can be determined by the number of customers and by weighted value (any numerical information in the customer database, such as sales or visits). Business Analyst allows you to create one, two, or three rings around your store, known as primary, secondary, or tertiary markets.

## **market penetration**

A type of analysis that determines the percentage of a market area being reached based on the number of customers within an area compared to the total population. Market penetration takes the number of customers in each area and divides it by the total number of people in each area to give you an idea of how well you're penetrating your market.

## **master site**

A known, well-performing site.

## **mean store center analysis**

A type of analysis that locates a new store by calculating the centroid of a group of customers.

## **My Output Data folder**

A folder on your computer that contains all the work done in Business Analyst (study areas, analyses, data—customer, store, extracted). The default location is C:/My Output Data, but you can change it on the Business Analyst Preferences dialog box.

## **natural breaks classification method**

A classification method in which data values that cluster are placed into a single class. Use this method if your data is unevenly distributed.

## **normalization**

The process of dividing one numeric attribute value by another to minimize differences in values based on the size of areas or the number of features in each area.

## **overlapping rings**

A method of defining the rings in an analysis so that the values inside the rings are cumulative. For example, if you had an analysis with three overlapping rings and 10 households in each, the total number of households for ring 1 would be 10, the total for ring 2 would be 20 (ring 1 + ring 2), and the total for ring 3 would be 30 (ring 1 + ring 2 + ring 3).

## **quantile classification method**

A classification method in which each class has roughly the same number of features. Use this method if your data is evenly distributed and you want to emphasize the difference in relative position between features.

## **raster format**

In a GIS, a cell-based representation of map features. Each cell in the structure has a value; a group of cells with the same value represents a feature. Images are stored in raster format.

## **record**

A row in an ArcView table. If the table is a layer table, each record corresponds to a map feature.

## **ring studies**

The most simple and widely used type of market area analysis. A simple ring is generated, then the underlying demographics are extracted. Generally, simple ring studies generate a rough visualization of the market areas around points.

## **route**

In a GIS, a path through a network. (In ArcGIS, a network is an interconnected set of lines representing possible paths from one location to another. A city streets layer is an example of a network.)

## **shapefile**

A file that contains the geographic location of your customers or stores and the attributes behind them. Shapefiles have a .shp extension.

## **simple market area**

An area defined by generalized boundaries drawn around outer customer points.

## **site prospecting**

You can prospect for sites by inputting coordinates, inputting an address, selecting a point on the map, or using a selected point. You can then conduct an analysis of the site you are prospecting.

## **spatial overlay analysis**

A type of analysis that allows you to extract data from one layer—such as block groups—to an overlay layer—such as a trade area.

## **Spatial Overlay wizard**

A wizard in Business Analyst that walks you through the steps necessary to extract underlying data to your overlay layer.

## **spider diagrams**

Another name for desire lines. See desire lines.

## **standard deviation classification method**

A classification method in which class breaks are placed above and below the mean value at intervals of 1, 0.5, or 0.25 standard deviations until all the data values are included in a class.

## **standard industrial classification (SIC) codes**

The federal classification system that is the national standard used to classify, sort, and categorize every industry. It is also used as an identifying system in business directories, publications, and statistical sources.

## **store prospecting**

A type of analysis that assesses the potential of a site by performing simple ring or drive-time analysis.

## **study area**

The geographic area in which analysis takes place.

## **table**

A data structure that stores attributes in rows and columns. Also called an attribute table.

## **tabular data**

Data in the form of a .dbf file, a comma- or tab-delimited .txt file, or a relational database management system (RDBMS). In Business Analyst, you can add both customers and stores as tabular data to your map.

## **thematic map**

A map that symbolizes features according to a particular attribute. Examples are a map displaying businesses as dots of different sizes according to number of employees or a map displaying census tracts in different colors according to median household income.

## **Thiessen polygon**

A type of analysis that creates trade area boundaries halfway between each store and its neighboring stores. See also equal competition area.

## **threshold ring analysis**

A type of analysis that allows you to create rings around your stores with a given data value inside. This analysis uses data at the block level.

## **tract**

A small, relatively permanent statistical subdivision of a county. Census tract boundaries normally follow visible features but may follow governmental unit boundaries or other nonvisible features. A census tract may contain between 2,500 and 8,000 people.

## **virtual study area**

The current extent of your map document. The virtual study area never has a boundary.

## **wizard**

In a software program, a series of panels that guides you through a task or set of tasks.

## **ZIP+4**

An enhanced ZIP Code that consists of the five-digit ZIP Codes and four additional digits that identify a specific range of delivery addresses.



**zone improvement plan code (ZIP Code)**

A system of five-digit codes that identifies the individual post office or metropolitan area delivery station associated with an address.



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Zone improvement plan code (ZIP Code)

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