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About Business Analyst

1

IN THIS CHAPTER

- **Introduction to Business Analyst 8 features**
- **How Business Analyst helps you make better business decisions**
- **Overview of the Business Analyst menu**
- **A short introduction to ArcGIS**
- **ArcGIS versus ArcView 3.x terminology**
- **Site Map versus Thematic Map layers**
- **Getting additional help for Business Analyst**

Welcome to ESRI® ArcGIS® Business Analyst. By linking information, such as demographics and sales, with specific locations, such as ZIP Codes and store locations, Business Analyst will enable you to make business decisions based on trends and patterns you've never been able to see before. Built around the set of tasks that are essential to most businesses, Business Analyst will change the way you do business by providing both the tools and the data you need to perform analysis. Business Analyst 8 works with ArcGIS to create powerful, yet easy-to-use, software.

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Introduction to Business Analyst 8 features

With Business Analyst 8, you can take advantage of the following features:

- All data is available on your map at startup. It is no longer necessary to extract geography and other data from CD before beginning your analysis.
- Analysis accuracy has been improved using a method of block point data retrieval. When an analysis cuts across a block group, Business Analyst considers the locations of the block points inside that block group and allocates accordingly.
- 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 if it is needed. With or without a study area, you will be able to 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, if desired.
- Business Analyst now 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, for example, to add your local school district boundaries or voting districts with data you have collected that is associated with those geographies.

The components included in the Business Analyst package are:

- ArcGIS—Provides base tools for mapping, analysis, and managing work
- Data from industry-leading vendors—Provides nationwide demographic, business listing, and shopping center data
- ArcGIS StreetMap™ USA—Provides nationwide street data
- Centrus™ geocoding technology from Sagent, Inc.—Takes your customer or store addresses and locates them on a map
- Crystal Reports™ from Crystal Decisions—Presents your analysis results or tables in a report form
- Household consumer data (using Experian data) from Hyphos 360—Provides household counts based on your criteria, then allows you to purchase mailing lists

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How Business Analyst helps you make better business decisions

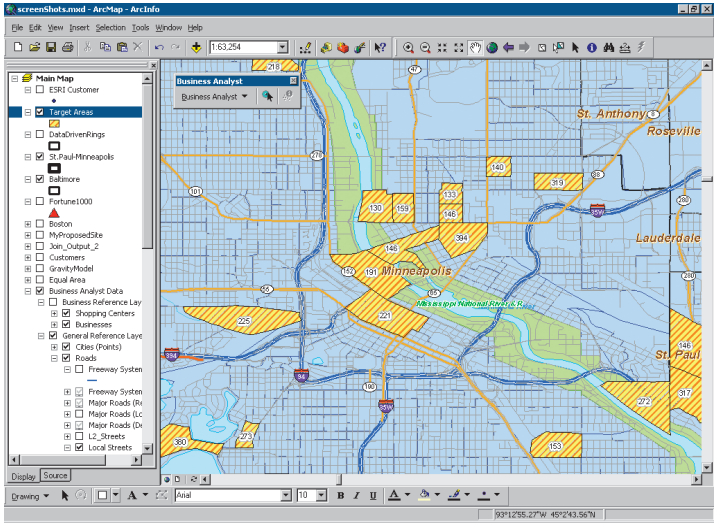
Geographic analysis links locations with the information associated with them and presents the results in the form of a map. Often, this provides such a new perspective that trends and patterns, previously unseen, become apparent.

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

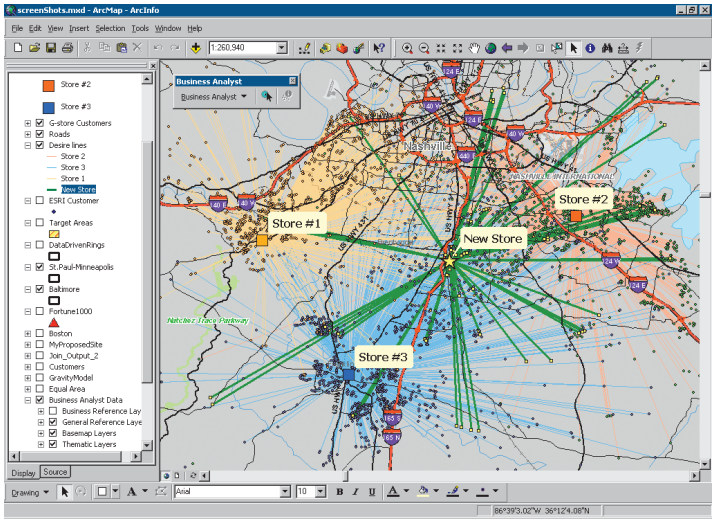
Using Business Analyst, you can look for block groups with a high percentage of women who live in households with an average income greater than $25,000 and are credit card users. You decide to focus your real estate search on properties near the east end of town because it has more block groups that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

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 each store's area of influence, you are surprised to see that the customers of your new store live nowhere near the store—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.



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



Desire lines showing each grocery store's area of influence

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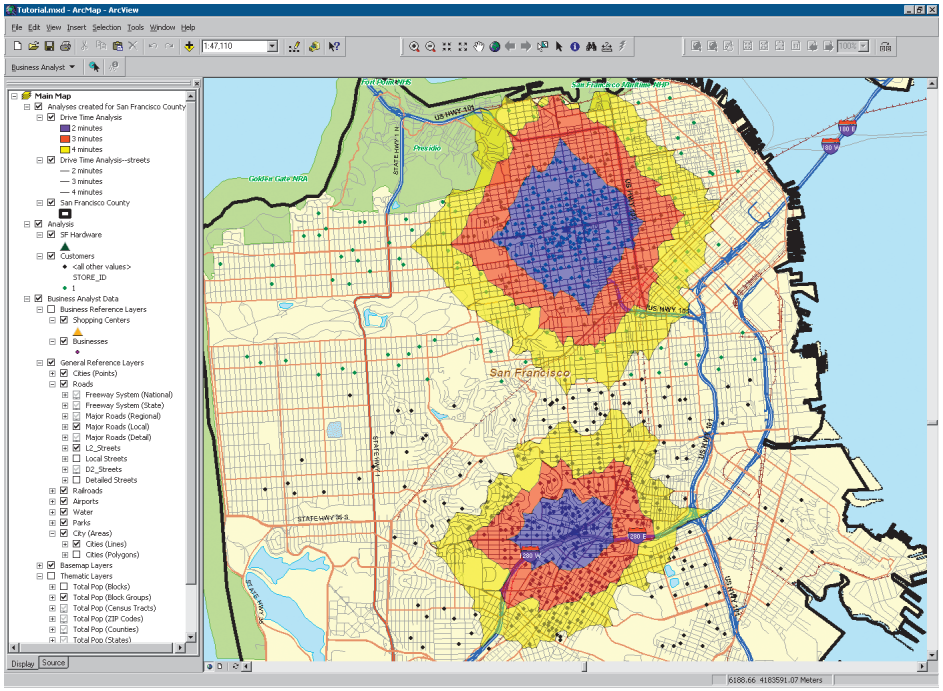
Or, suppose your chain of pizza stores is considering offering a money-back guarantee that deliveries will arrive in 30 minutes or less. It takes 20 minutes to prepare a pizza and between two and six minutes to get the delivery vehicle underway, so the customer must live within four minutes of one of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

Using Business Analyst, you create two-, three-, and four-minute drive-time rings around each of your stores. By looking at which ZIP Codes 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

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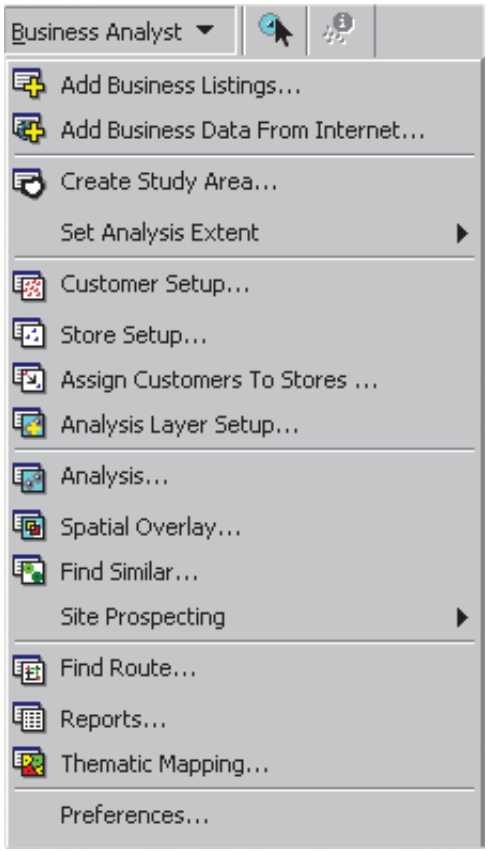
Overview of the Business Analyst menu

Business Analyst takes the power of one of the most popular desktop geographic information system (GIS) software products, ArcGIS, and makes it even easier for you 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. There are 14 wizards available, each covering a different set of tasks. 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 performing analysis, creating a report, or changing the way your map looks. You can also adjust various preferences by clicking Preferences.



Each Business Analyst wizard consists of a series of panels that guide you through the task you want to complete. Instead of learning how to ask the software to do the things you want, you can step through a wizard for the task you want to accomplish.

The next 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, located to the right of the Business Analyst toolbar. 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.

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A short introduction to ArcGIS

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

Features

In a GIS, every element in a map, except text, is represented as a geographic object—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 same things normally drawn as lines on a map, mainly roads and rivers. Point features represent specific locations. These 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.

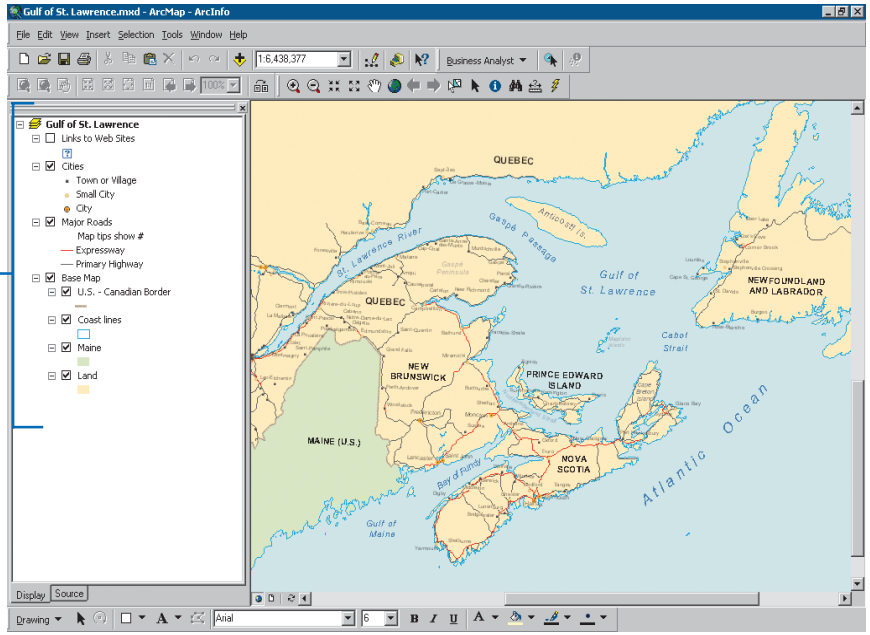
For instance, world cities are stored together in a single layer and U.S. lakes are stored together in another file. When such a file is brought into ArcGIS, it's called a *layer*. A layer was known as a *theme* in ArcView® 3.x.

Layers and maps

A *map* is an interactive area that lets you 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.

Layers in a map's table of contents



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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 was 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 would allow you to see through the Counties layer to view the City points. The ability to make layers transparent is a new feature in ArcGIS. 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™.

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 vast majority of users. Business Analyst has the flexibility to let you turn on and turn 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, simply 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.

Some geography layers may have their names 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 further 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 to not show the layer 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, though, it's best to control what layer is visible or not by checking or unchecking the layer in the table of contents.

Attributes and the power of a GIS

The information that ArcGIS stores about features is referred to as *attribute* information, or *attributes*. The attributes of a feature that represent a customer, for example, might include a name, an address, the number of visits per month, and the amount of sales per month. The attributes of a feature, which represent a shopping mall, for example, might include the name of the mall, its 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 simply clicking it using the Identify tool on the Tools toolbar.

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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, one of them is the active data frame. The *active data frame* is the one with which you're currently working. For example, when you add a new layer to a map, it is added to the active data frame. You can always tell which data frame is active because it is highlighted on the map and its name is shown in bold text in the table of contents.

ArcGIS has two primary components, ArcMap and ArcCatalog. During installation, the ArcGIS Business Analyst extension is added to ArcMap. To do your Business Analyst work, you launch ArcMap, choose a map, and use the Business Analyst dropdown list of wizards to guide you through your work. ArcCatalog will show up 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.

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

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ArcGIS versus ArcView 3.x terminology

The terminology presented for ArcGIS Business Analyst serves a similar purpose to that used in ArcView 3.x. In ArcView 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 simply a layer. What was a project is now a map document. In ArcGIS Business Analyst, you will work with a map document that will already contain 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 show up 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 simply 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 by using Set Analysis Extent on the 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 should help you to understand the basic layout and organization of work as you begin the exercises in the quick-start tutorial.

Terminology changes

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

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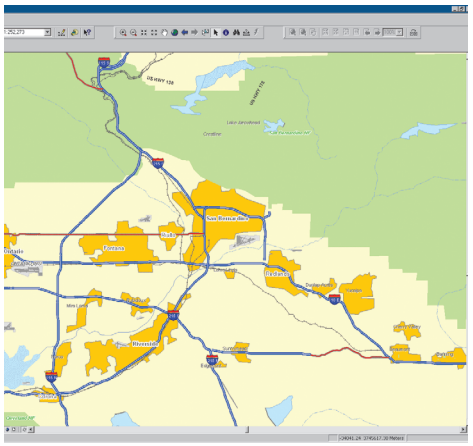
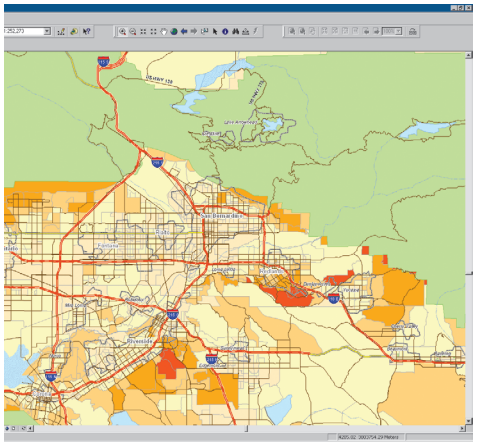
Site Map versus Thematic Map layers

When you look at your map's table of contents in Business Analyst, you will see a group layer called Site Map layers and a group layer called Thematic Map.

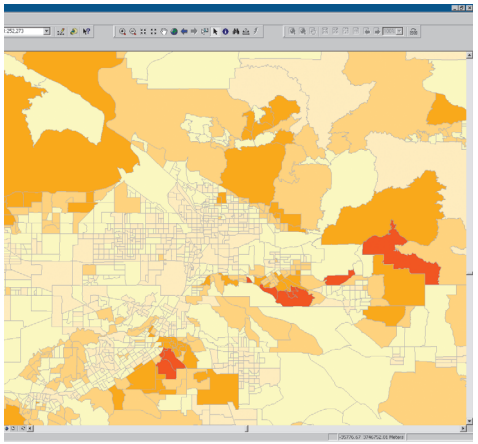
As the name suggests, Thematic Map layers center on a theme, for example, population in terms of ZIP Codes or block groups. Site Map layers, on the other hand, detail political and geographical boundaries and provide a reference backdrop for your map. The same geographic area is shown below with Site Map, Thematic Map with Basemap layers checked on, and Thematic Map with Basemap layers checked off. Layers can be easily checked on and off to change the map's appearance.



Site Map



Thematic Map with Basemap layers on



Thematic Map with Basemap layers off

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Getting additional help for Business Analyst

What to read next

A good place to begin learning about Business Analyst is Chapter 2, the 'Quick-start tutorial'. This lets you 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 online Help

To get help about a button, tool, or menu choice, click the What's This? button, then click the button, tool, or menu choice you want to get help about.

To get help about a wizard panel, you can also click the Help button located at the bottom of the wizard page. Click the What's This? button in the wizard, then click the area in the wizard panel about which you need additional information.

To browse the contents of the ArcGIS online Help, click the Help menu, click ArcGIS Desktop Help, then click the Contents tab.

To search the index of the ArcGIS online Help, click the Help menu, click ArcGIS Desktop Help, then click the Index tab.

To search the ArcGIS online Help for a particular word, click the Help menu, click ArcGIS Desktop Help, then click the Search tab.

Getting technical support from ESRI

Please see the product registration and support card that came with Business Analyst, or look at the 'ESRI Online Support Center' section of the ArcGIS online Help.

Visit ESRI on the Web

Find out everything you want to know about ESRI software and services. Visit ESRI's Web site at *www.esri.com*.

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Quick-start tutorial

2

IN THIS CHAPTER

- **Exercise 1: Selecting a geographic area and performing site prospecting**
- **Exercise 2: Where are my customers?**
- **Exercise 3: Where are my stores?**
- **Exercise 4: Assigning customers to stores**
- **Exercise 5: Determining trade areas around my stores**
- **Exercise 6: Determining market penetration**
- **Exercise 7: Where are my best customers? What are their characteristics? Where are other areas with people like them?**

Welcome to the Business Analyst quick-start tutorial. This chapter will take you through the process of analyzing your data—from creating a study area and adding your customers and stores to actually performing analysis. If you've installed Business Analyst, sample data for this tutorial has been placed in a folder on your computer for you (\arcgis\arcexe83\Business Analyst\Datasets\Tutorial*.dbf). Depending on the data option you've purchased, the data characteristics and results shown in the exercises will vary.

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 lately and you're thinking about opening one more store.

Business Analyst can help you answer questions such as:

- Where are my customers?
- Where are my stores?
- What are the trade areas of my stores?
- Where are my best customers?
- What are their characteristics?
- Where are other areas with people like them?
- Where are my competitors?

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

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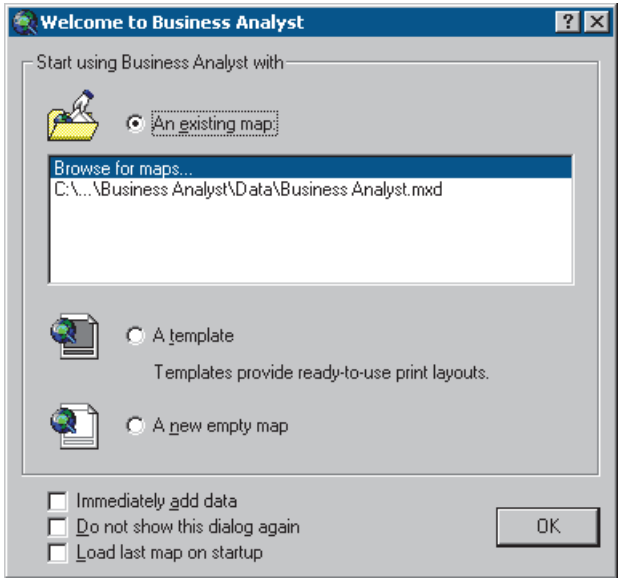
Exercise 1: Selecting a geographic area and performing site prospecting

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 in order 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 simply 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 will show a visible boundary on the map for the extent of your analysis and allow you to restrict analysis to data found within 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, this exercise will use the option to create a study area for the entire county of San Francisco. After creating the study area, you will perform a quick, simple, three-ring site prospecting analysis.

1. Click Start, point to Programs, point to ArcGIS, then click ArcMap. The Welcome to Business Analyst dialog box appears when ArcMap starts.



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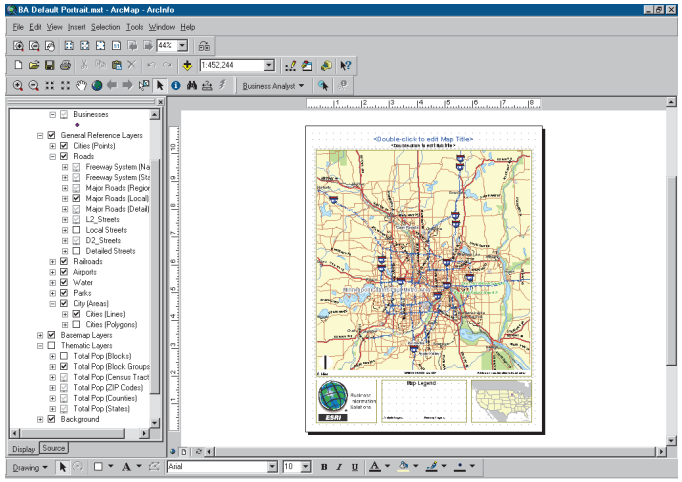
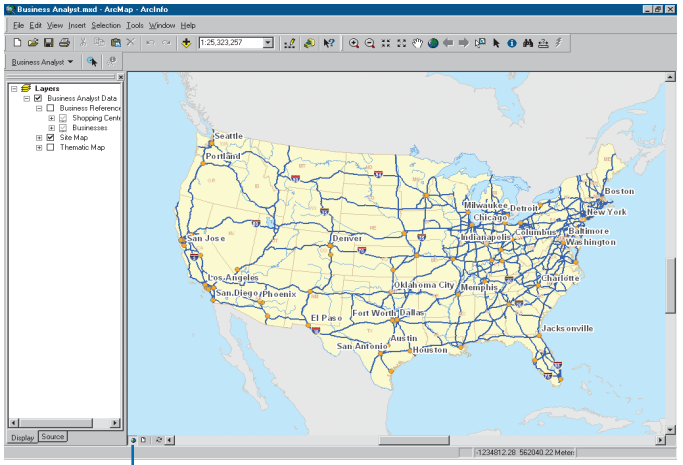
2. Click An existing map. Click the path containing the Business Analyst.mxd. This map document is provided for you and contains all the layers and datasets that are shipped with Business Analyst. Use the template option if you want to select a particular print layout to use in building your own map. The templates don't contain any Business Analyst data. You can easily change the print layout for the Business Analyst.mxd file by clicking the Change Layout button on the Layout toolbar.



The Refresh button can be used any time you want to refresh the drawing of your map. If you click the map while it is drawing, it will stop the draw process.

3. You can do your work within either the data or layout view and change back and forth at any time using the Data View or Layout View buttons located at the lower left of your map. The Data View enlarges your available map views.



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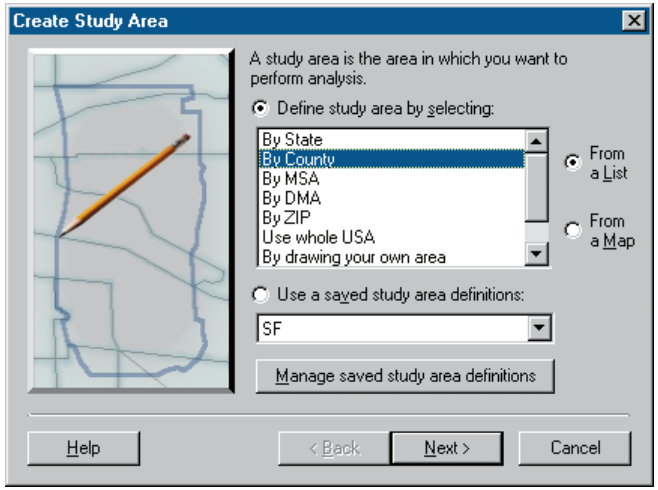
4. Click the File menu and click Save As to save your map document under a new name. Navigate to the My Output Data folder (the default is C:\My Output Data, but that can be changed in Preferences under the General tab), and save the map document as "Tutorial.mxd".

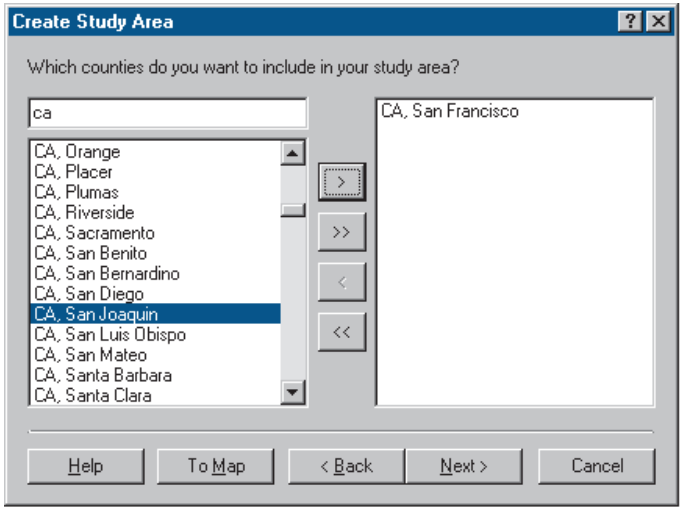
   The Business Analyst toolbar will be open, but you can turn it on or off at any time by clicking the View menu, pointing to Toolbars, and clicking Business Analyst. You can customize the toolbar by clicking its left edge and dragging it into the map area. Then, click the Tools menu, click Customize, and click the Commands tab. Click the category and command you would like to add and drag the command onto the Business Analyst toolbar.

5. Click the Business Analyst dropdown menu and click Create Study Area. The Create Study Area dialog box will appear. Click By County and From a List, then click Next.

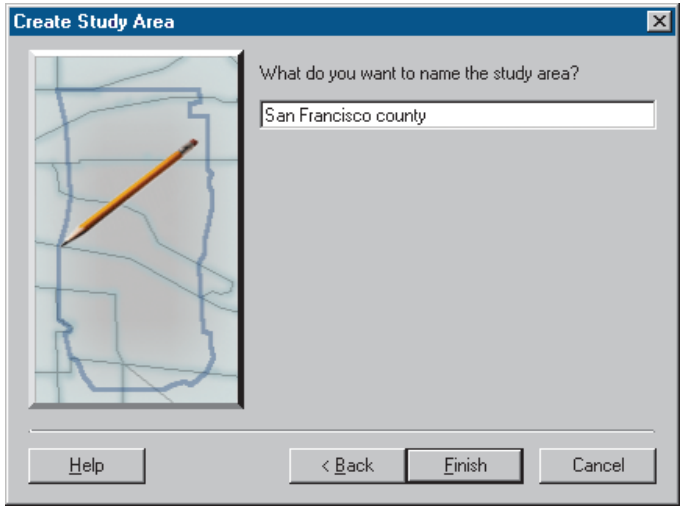


6. Scroll down to CA, San Francisco in the box on the left side.

7. Click the single right arrow to move CA, San Francisco to the right column, then click Next.

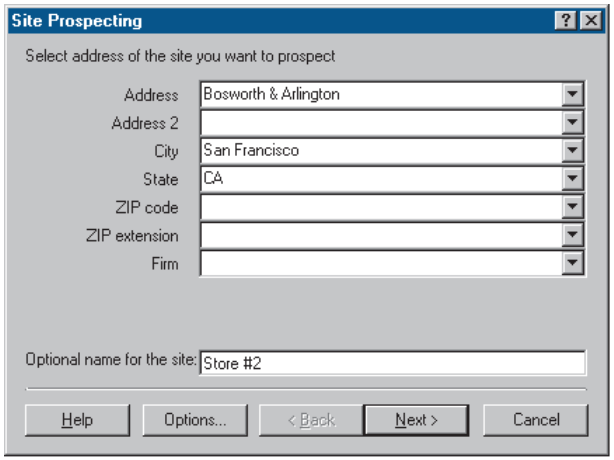


8. Type “San Francisco county” in the text box and click Finish.



9. Your study area layer is created, added to the table of contents, and shown on the map. An Analysis group layer is created that will contain any customer or store layer created or any analysis performed while the study area is the active analysis extent.

10. Before you begin analysis of your customers and stores, you would like to get a simple three-ring report of the area around your best store location. Your best store is located at the street intersection of Bosworth and Arlington in San Francisco, California. You would like 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 to do simple ring studies and drive-time analyses around a single location. Click the Site Prospecting tool on the Business Analyst toolbar, move the cursor over your map, and right-click. Click Find point by address in the context menu. Enter the address as shown and type “Store #2” as the optional name. If you’re using the Centrus geocoder that comes with Business Analyst, you can enter a street intersection on the first Address line in the format “Bosworth and Arlington”, “Bosworth & Arlington”, or “Bosworth + Arlington”. The Options button allows you to change geocoding preferences. Click Next to continue.



11. The Analysis dialog box will appear to offer you a choice of Simple Rings or Drive Time to define your prospecting area. Click Simple Ring and click Next.

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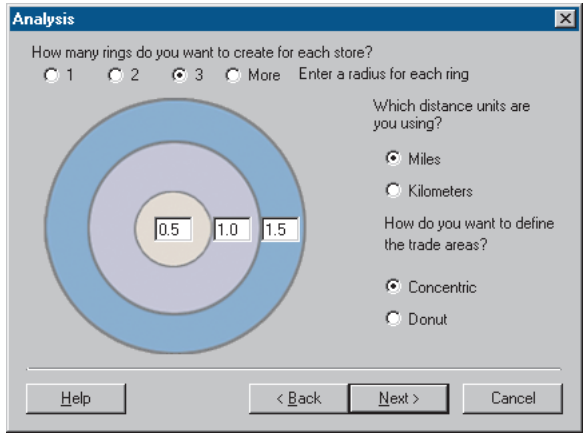
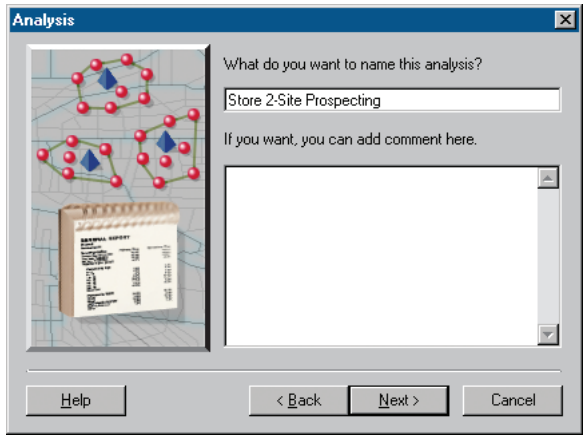
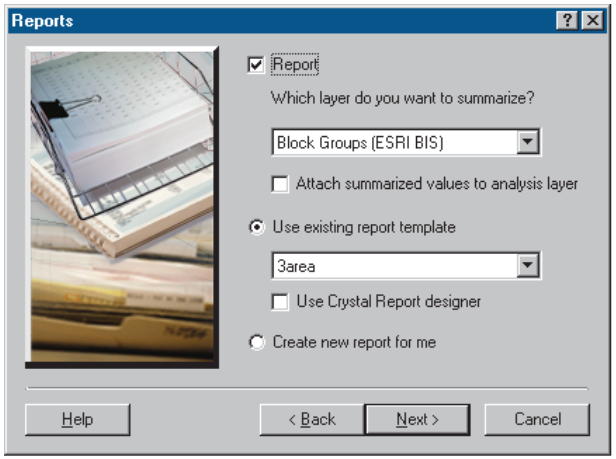
12. Click 3 as the number of rings you want to create. Type “0.5”, “1.0”, and “1.5” in the boxes. Click Miles and Concentric. Click Next to continue.



13. Type “Store 2-Site Prospecting” in the text box, then click Next.



14. Check the Report check box and click Block Groups (ESRI BIS) for the most detailed analysis calculation. Check the box to attach summarized values to the analysis layer. This will summarize the demographics by ring and join the results to the ring analysis layer when it’s created. Click 3area for the report template type, then click Next.



Block Groups (ESRI BIS) is the most detailed method of data apportionment. Every block group contains many block points that have associated values for population, households, and household units. When an analysis cuts across a block group, Business Analyst considers the locations of each block point inside that group and apportions data based on the points inside the analysis area.

15. Type “Store 2-Site Prospecting” as the report name, then click Finish.

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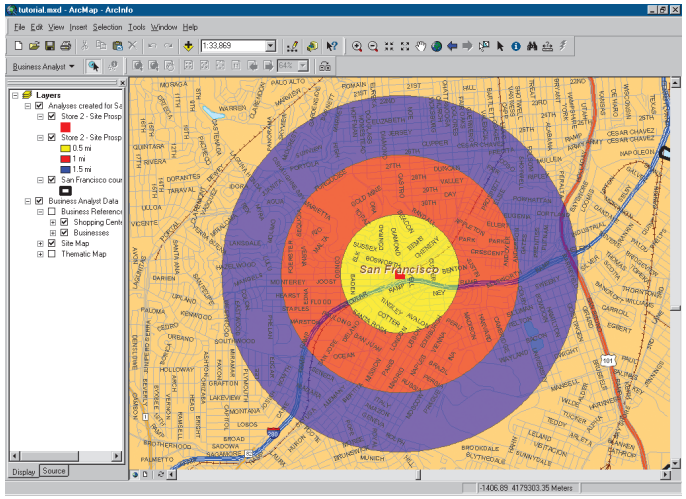
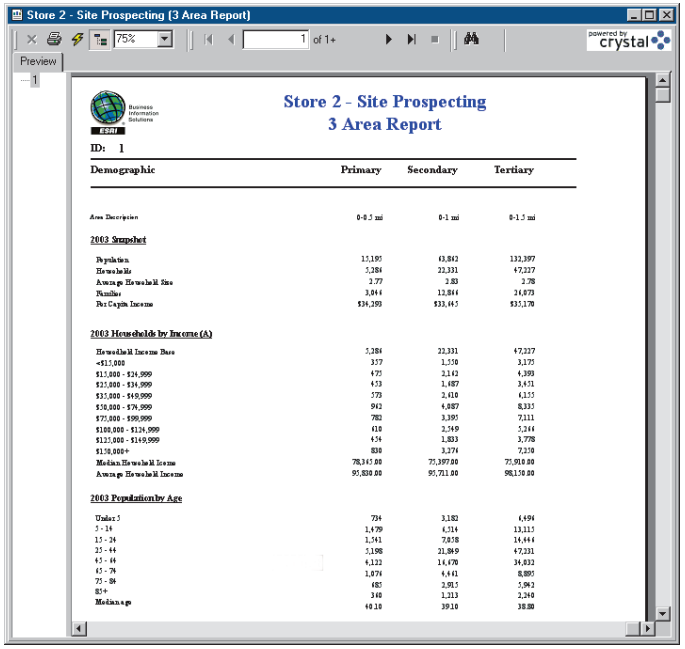
16. You will see the three radius rings appear on your map around the Store #2 location, and a report with data will appear ready for printing.





Before you continue to Exercise 2, resave your work to the Tutorial.mxd file.

17. Close the report, then click File and click Save in ArcMap.

Continue to Exercise 2 to add your customers to your study area.

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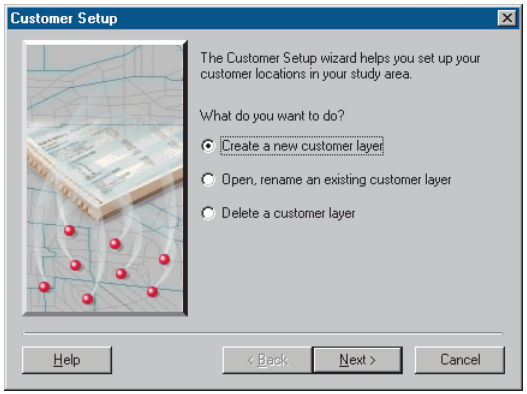
Exercise 2: Where are my customers?

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

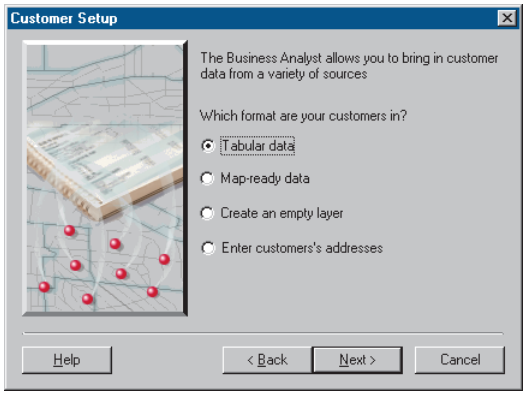
Your customer data has been organized in a table and saved as a dBASE® file. You'll use this file of tabular data to set up your customer locations. The Customer Setup wizard will place this data as points on a map.

If you're continuing directly from Exercise 1, go to step 2.

1. If you've shut down ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Welcome dialog box appears. Click An existing map, then double-click the path for Tutorial.mxd.
2. Uncheck the Store 2-Site prospecting point and analysis layers to turn them off.
3. Click the Business Analyst menu and click Customer Setup.
4. Click Create a new customer layer and click Next.



5. Click Tabular data and click Next.



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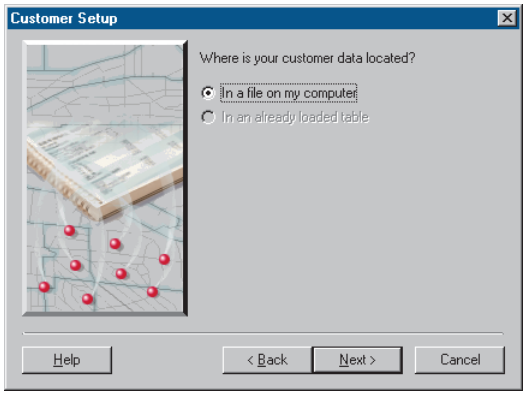
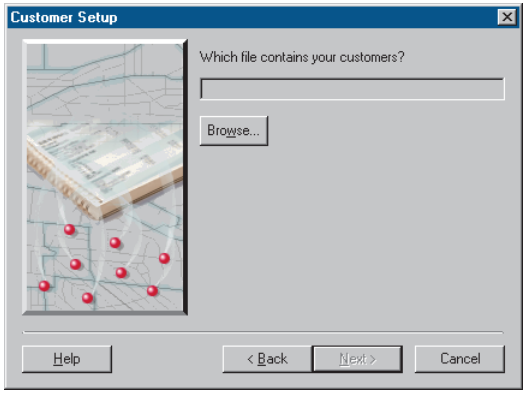
6. Click In a file on my computer, then click Next.

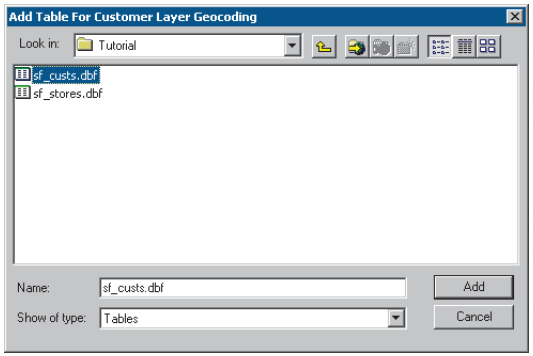


7. Click the Browse button.



8. Navigate to the drive where ArcGIS was installed, then to the Business Analyst folder at arcgis\arcexe83\Business Analyst Data\Dataset Files\Tutorial. This folder contains the Business Analyst tutorial data.

9. Double-click sf_custs.dbf.



10. Click Next to continue.

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 it with the proper location on the map.

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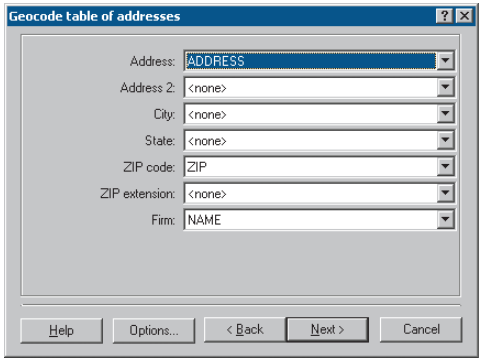
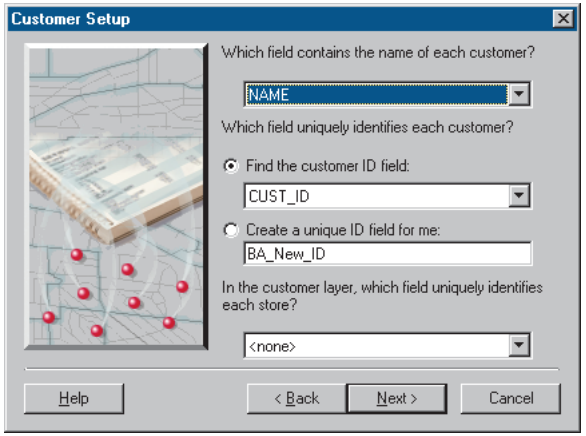
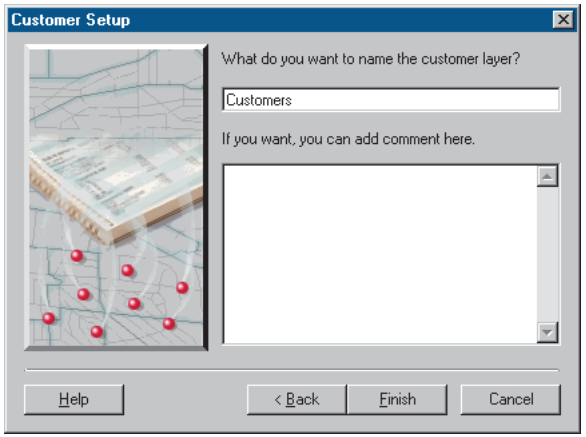
11. Click the Address dropdown arrow and click ADDRESS. Click ZIP for the ZIP code field. If you're using the Centrus geocoder that comes with Business Analyst, you can also enter a street intersection on the first Address line in the correct format (that is, "Bosworth + Arlington", "Bosworth & Arlington," or "Bosworth and Arlington"). The Options button allows you to change your geocoding preferences, including what fields from the geocoder you want joined to your database. Click Next to continue.



12. Click the dropdown arrow to choose the customer name field, then click NAME.
13. Click Find the customer ID field, then click the dropdown arrow to choose the field in the customer data that uniquely identifies each customer. Click CUST_ID. If you don't have a unique ID for each customer record in your database, Business Analyst can assign one.
14. For this example, assume you have no unique customer ID in your customer database. Click the last dropdown arrow and click <none>, then click Next.



15. Type "Customers" in the top text box.
16. Type any comments into the comment area provided.
17. Click Finish to begin geocoding the customer addresses.



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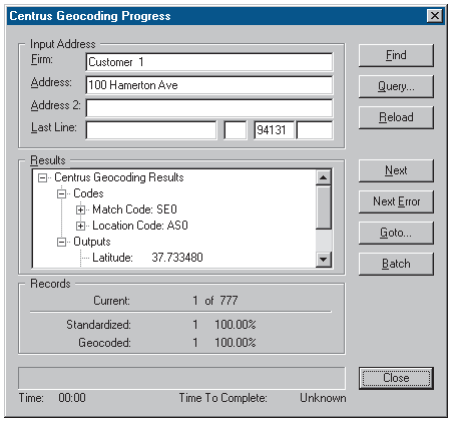
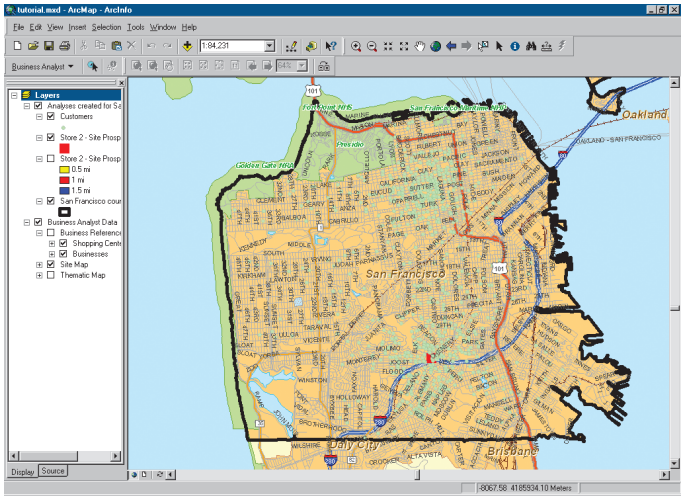
18. If you're using the Centrus geocoder, click Batch in the dialog box to process your records, then click Finish.



Your customers are visible in the San Francisco county study area. You can click the customer symbol in the table of contents and change the shape, size, or color anytime.



Note that if you ever want to delete a customer layer, you have two options. You can remove the layer from the map by right-clicking the layer in the table of contents and clicking Remove. This removes it from the map, but Business Analyst remembers it as a customer layer that can be opened at a later time or in another map document. You can also delete the layer by clicking the Business Analyst menu, clicking Customer Setup, then clicking 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.

19. Save your work by clicking the File menu and clicking Save.

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

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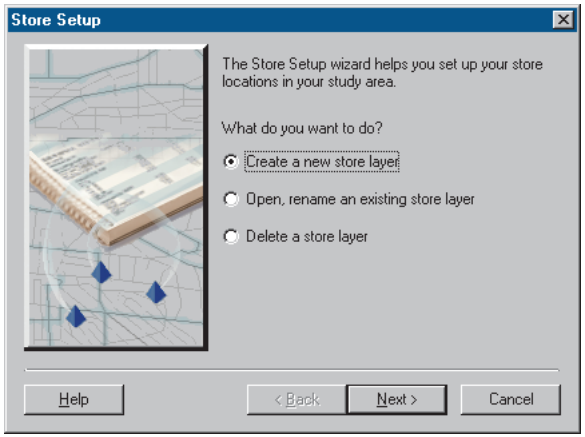
Exercise 3: Where are my stores?

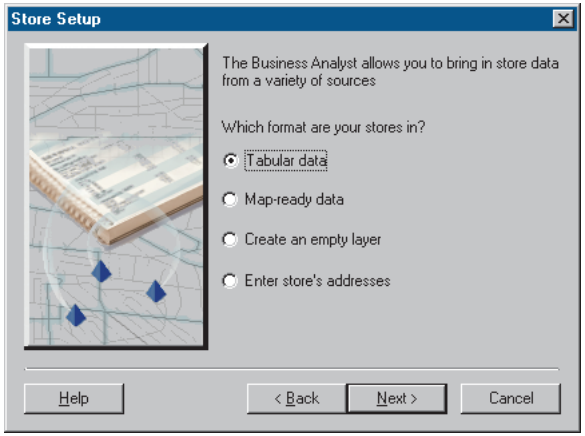
In this exercise, you'll add your stores to your study area the same way you added customers in Exercise 2. The tabular datafile of your stores has been placed in the Business Analyst Tutorial folder with the rest of the tutorial data. The Store Setup wizard geocodes your stores and places them as points on the study area.

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

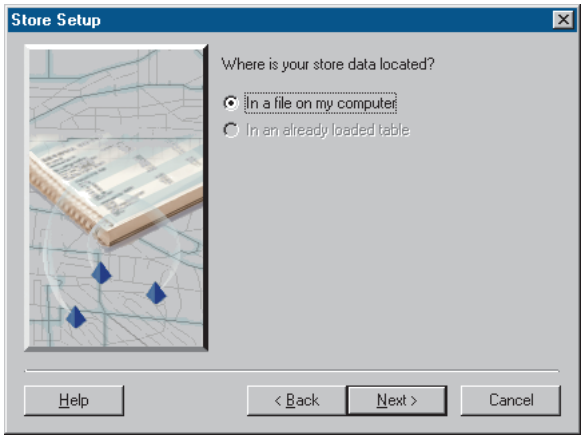
1. If you've shut down ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Welcome dialog box appears. Click An existing map, then double-click the path for Tutorial.mxd.
2. Click the Business Analyst menu and click Store Setup.
3. Click Create a new store layer, then click Next.



4. Click Tabular data, then click Next.



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



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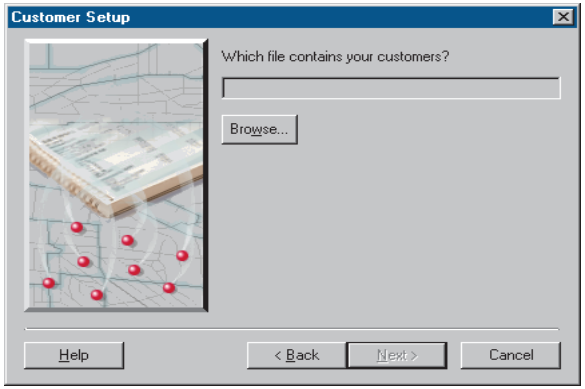
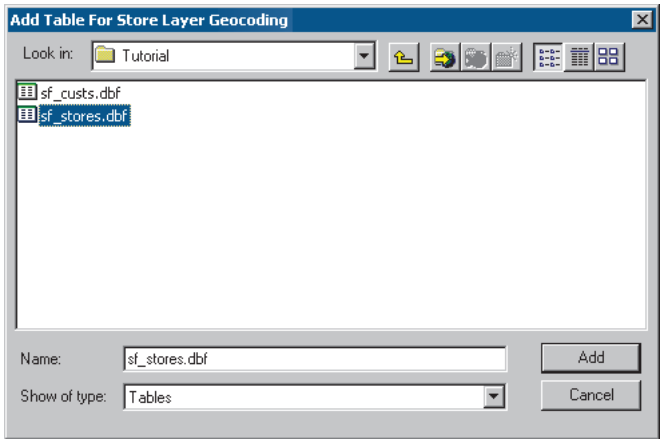
6. Click the Browse button.



7. Navigate to the drive where ArcGIS was installed, then navigate to the Business Analyst folder at arcgis\arcexe83\Business Analyst\Datasets\Tutorial. This folder contains Business Analyst tutorial data.
8. Double-click sf_stores.dbf.

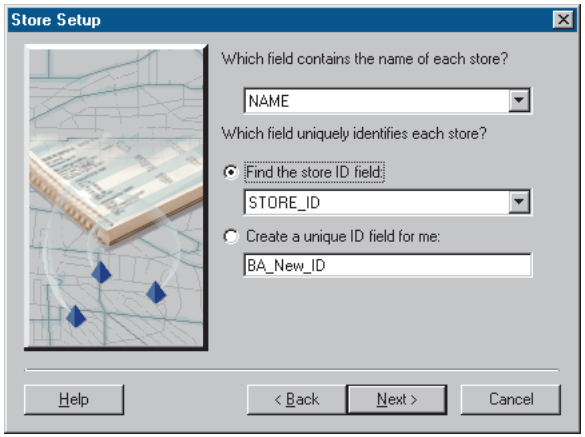


9. Click Next to continue.

   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 stores and matches it with the proper location on the map.

10. Click ADDRESS for the Address field and ZIP for the ZIP code field. The geocoding Options button described in Exercise 2 is also found here. It allows you to change your geocoding preferences. Click Next to continue.
11. Click the dropdown arrow to choose the store name field, then click NAME.
12. Click Find the store ID field, click the dropdown arrow to choose the field in the store data that uniquely identifies each store, and click STORE_ID.

    If you didn't have a unique ID for each record in your database, click the third option. You won't use that option in this exercise, however, because you have unique store IDs in the store database. Click Next to continue.



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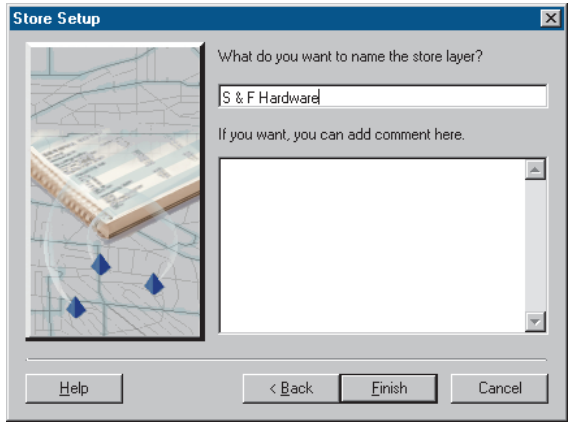
13. Type “S & F Hardware” in the text box.
14. Type any comments into the area provided.
15. Click Finish to begin geocoding the store addresses.



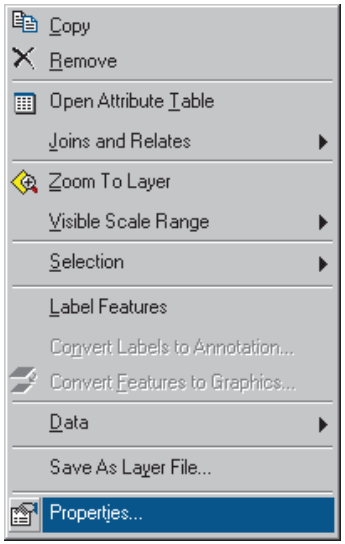
16. If you’re using the Centrus geocoder, a geocoding progress dialog box will appear. Click Batch to process all the records in your store database. When it completes, click Finish. You can then view the log file of the geocoding results. To close it, click the Close button.

Your two stores are now visible in your study area, along with the customers you added in Exercise 2. You can click the store symbol in the table of contents at any time to change the shape, size, or color.

Note that as with customer layers, store layers can be removed from the map by right-clicking them and clicking Remove or by using the Store Setup wizard to delete them. If the layer is only removed from the table of contents, it will no longer appear on the map, but it can be reopened or used in another map document at any time. If deleted through the Store Setup wizard, the layer must be set up again before it can be reused. Deleting the layer in Business Analyst won’t remove your original file from your computer.

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.



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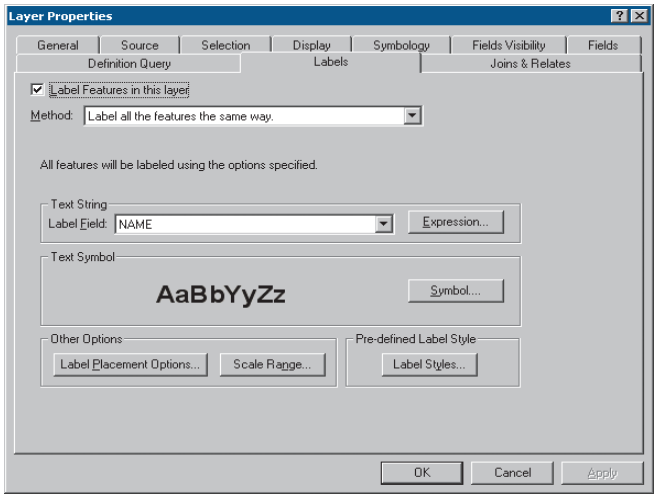
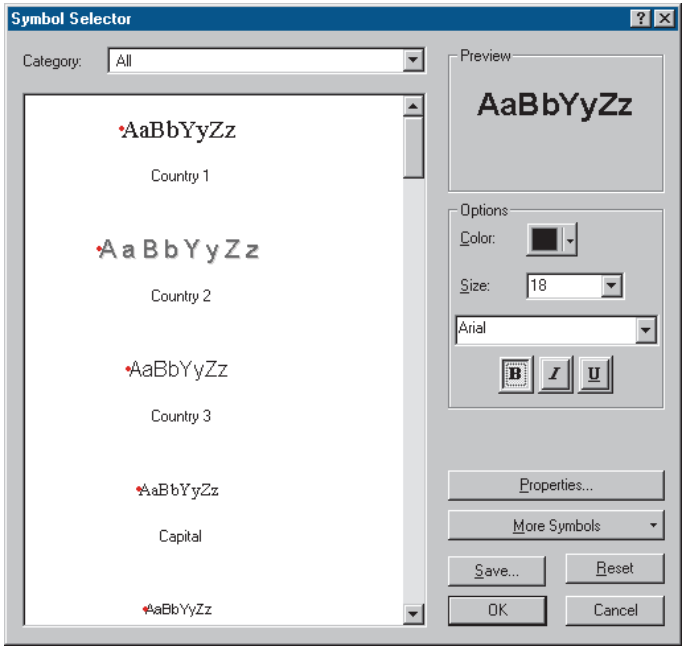
The Layer Properties dialog box appears.

2. Click the Labels tab.
3. Check the box to Label Features in this layer. Verify that the Label Field (under Text String) is set to NAME.
4. Click the Symbol button.



5. In the Symbol Selector dialog box, click the Size dropdown arrow and click 18. Click the button to make the font bold, then click OK.
6. Click OK in the Layer Properties dialog box.



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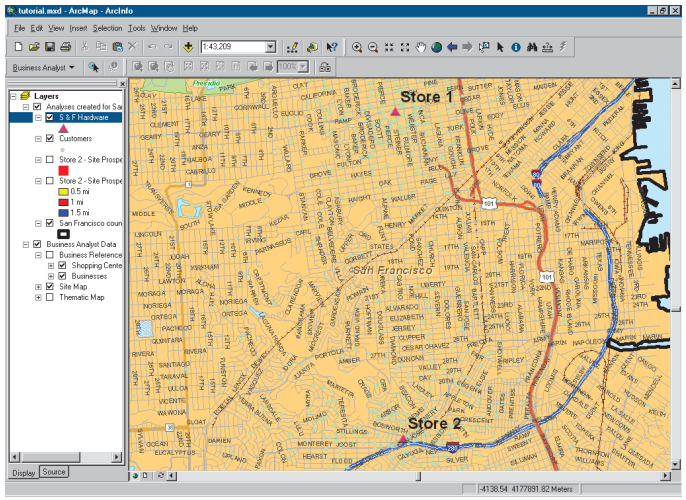
The names of the stores are added to your map.



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

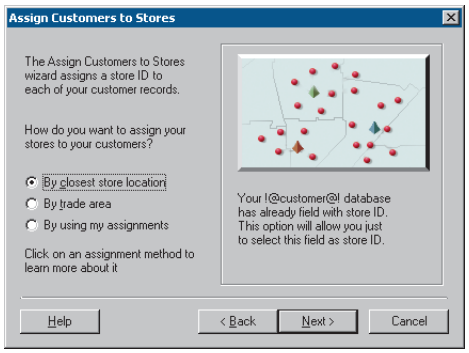
Continue to Exercise 4 to assign your customers to stores.

Exercise 4: Assigning customers to stores

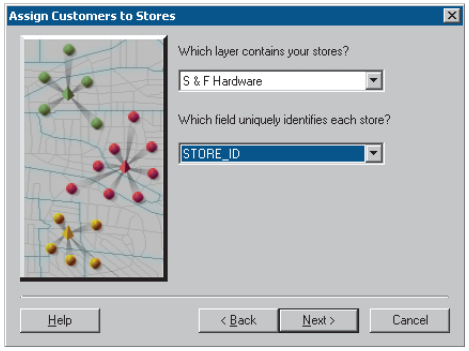
Now that you have your customers and stores added to the map, you will need to assign the customers to the stores. This does two things. First, the relationship between customers and stores must be established for later use in much of the analysis in Business Analyst. Second, this step is used if you do not already have a field in your customer database that assigns each customer to a store based on where the purchase was actually made. If you do not already have this store ID field in your customer database, you will need to use this wizard to create one based on either shortest straight-line distance, on a previously established store trade area boundary, or by using your assignments in your customer database. This last alternative would only be needed if you had unique store assignments in your customer database and had not identified the field when asked during setup of your customer layer. For this exercise, you will use the Assign Customers to Stores wizard to make the assignment based on closest store location. You will build on this in the analysis exercises that follow.

If you're continuing directly from Exercise 3, go to step 2.

1. If you've shut down ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Welcome dialog box appears. Click An existing map, then double-click the path for Tutorial.mxd.
2. Click the Business Analyst menu and click Assign Customers to Stores.
3. Click By closest store location, then click Next.



4. Click the first dropdown arrow and click S & F Hardware, which is the layer that contains your stores. Click the dropdown arrow for the field that contains the unique store ID in your store database, then click STORE_ID. Click Next to continue.



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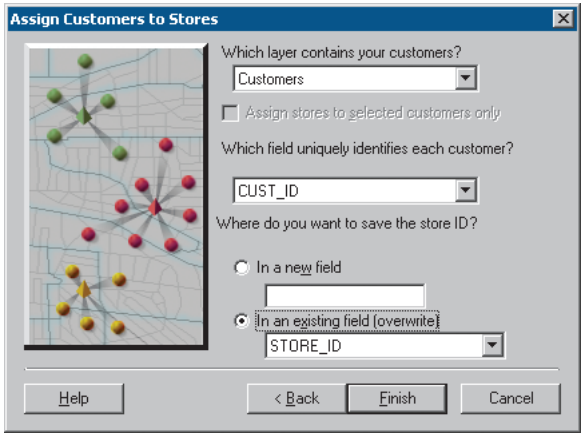
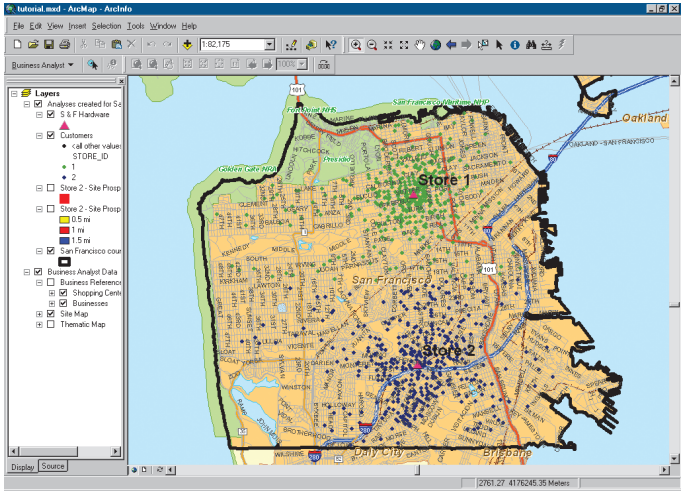
5. Click the first dropdown arrow and click Customers, which is the layer that contains your customers. Next, click the field that contains the unique customer ID for each customer in the Customer database by using the dropdown arrow. In this example, it is CUST_ID. You are then asked for a field name in which to place each customer's store assignment that will be calculated based on closest straight-line distance from store to customer. To do this, click In an existing field (overwrite) and click STORE_ID. If you don't have a store ID field in your Customer database to contain each customer's store assignment, you can use the In a new field option. When you use this option, Business Analyst creates a field for the assignments.
6. Click Finish to continue.



You will now see your customers in the map divided into two groups—those closer to Store 1 and those closer to Store 2. You can click the store or customer symbols at any time in the table of contents to change their shape, size, or color.



7. Save your work by clicking the File menu and clicking Save.

Continue to Exercise 5 to begin analysis.

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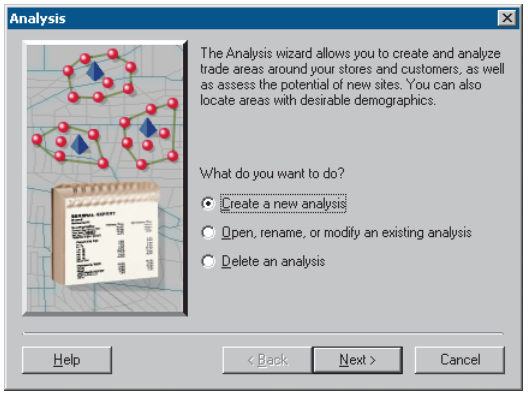
Exercise 5: Determining trade areas around my stores

In the previous exercises, you created a study area, added your customers and stores to the map, and completed all the setup tasks required. Now, you are ready to begin your analysis.

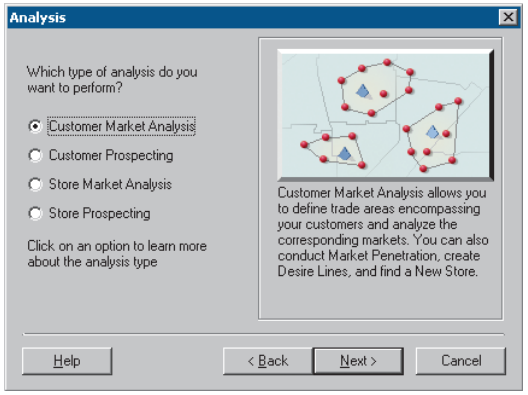
You'll create customer market areas around your stores that show where 40, 60, and 80 percent of your customers are located. Customer market areas are based on the actual locations of your customers, so they're a more precise definition of your stores' trade areas than a simple ring. You will compare the simple ring from Exercise 1 and a two-, three-, and four-minute drive time 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 4, go to step 2.

1. If you've shut down ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Welcome dialog box appears. Click An existing map, then double-click the path for Tutorial.mxd.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis, then click Next.



4. Click Customer Market Analysis. A description of the Customer Market Analysis appears to the right of the panel. Click Next to continue.



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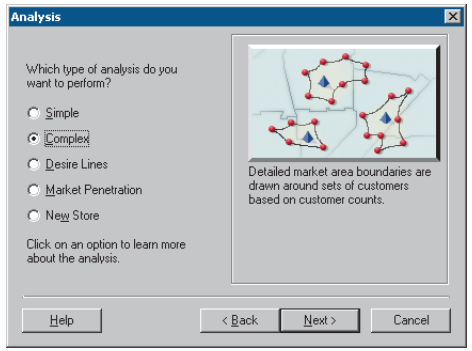
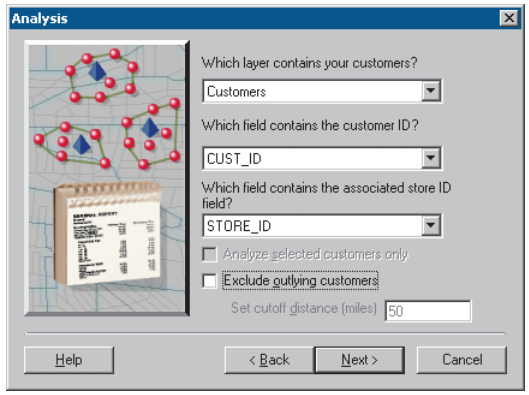
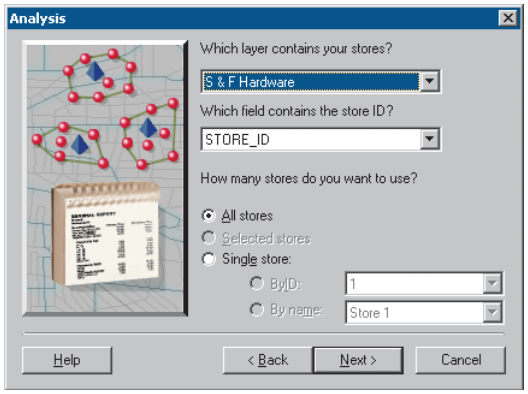
5. Click Complex. A description of a complex market area appears to the right of the panel. Click Next.



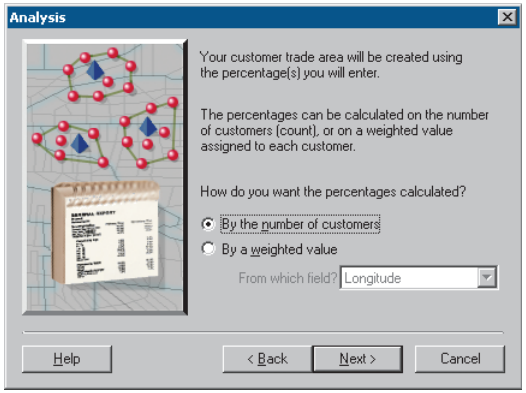
6. Click the dropdown arrow and click Customers, which is the layer that contains your customers.
7. Click the second dropdown arrow and click CUST_ID.
8. Click the third dropdown arrow and click STORE_ID.
9. Click Next to continue.



10. Click the dropdown arrow to choose the layer that contains your stores, then click S & F Hardware.
11. Click the second dropdown arrow and click STORE_ID. Click All stores and click Next.



12. Click By the number of customers and click Next.



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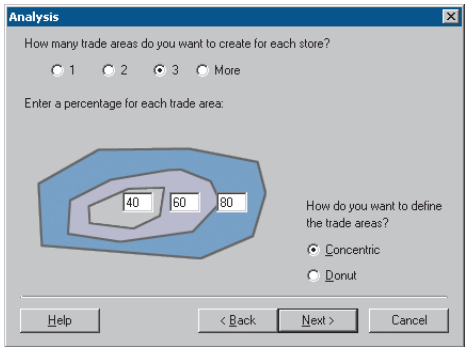
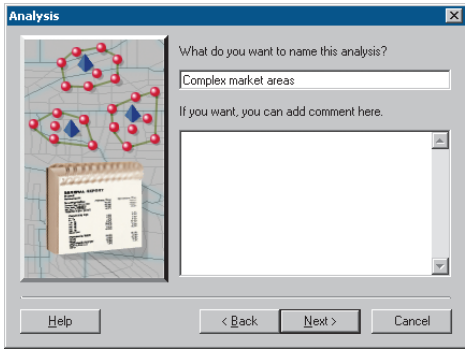
13. Click 3 as the number of trade areas you want to create around your store.
14. Type “40”, “60”, and “80” as the percentage of customers inside each ring, then click Concentric.

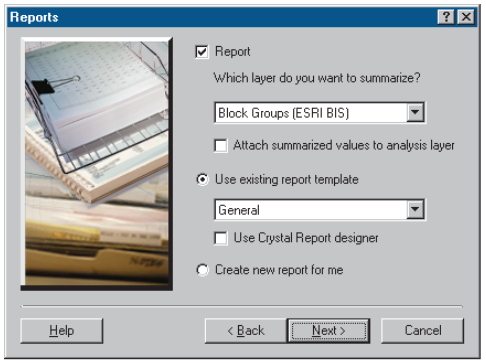
    Concentric is calculated from the center to the outside edge of each ring. Donut calculates between rings.
15. Click Next to continue.



16. Type “Complex market areas” in the text box. Click Next to continue.



17. Check the Report check box to create a report showing the demographics of your customers for each trade area. Click the dropdown arrow and click Block Groups (ESRI BIS), which is the most detailed method of summarizing the data.
18. Click the dropdown arrow to choose the template for your report and click General from the list of possible report templates, then click Next.



19. Name the report “Complex Market Areas”, then click Finish.

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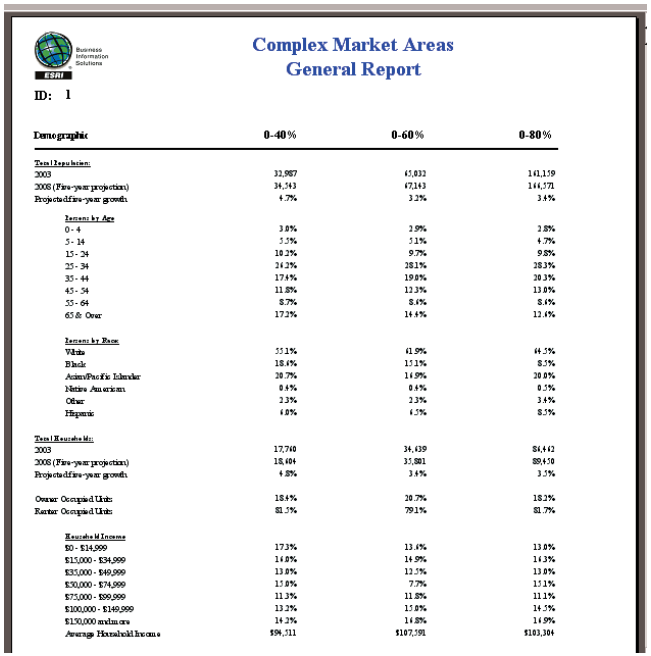
A report similar to the one below appears, showing the demographics for each of your stores' trade areas. You must have a printer installed for the Crystal Reports report writer to display your report.



Complex Market Areas
General Report

ID: 1

Demographic	0-40%	0-60%	0-80%
Total Population:			
2003	33,987	65,033	141,159
2008 (Five-year projection)	34,543	67,163	144,571
Projected five-year growth	1.7%	3.2%	2.4%
Persons by Age			
0 - 4	3.8%	3.9%	3.8%
5 - 14	5.5%	5.1%	4.7%
15 - 24	10.2%	9.7%	9.8%
25 - 34	24.2%	28.1%	28.3%
35 - 44	17.6%	19.8%	20.3%
45 - 54	11.8%	12.3%	13.0%
55 - 64	8.7%	8.4%	8.4%
65 & Over	17.2%	14.6%	12.4%
Persons by Race			
White	55.1%	61.9%	69.5%
Black	18.4%	13.1%	8.5%
Asian/Pacific Islander	20.7%	14.9%	20.0%
Native American	0.4%	0.4%	0.3%
Other	2.3%	2.3%	1.6%
Hispanic	6.0%	6.5%	8.5%
Total Households:			
2003	17,740	34,439	84,642
2008 (Five-year projection)	18,404	35,881	89,450
Projected five-year growth	4.0%	4.4%	5.7%
Owner Occupied Units:	18.4%	20.7%	18.2%
Renter Occupied Units:	81.5%	79.1%	81.7%
Household Income			
$0 - $14,999	17.3%	13.4%	13.0%
$15,000 - $34,999	14.8%	14.9%	14.3%
$35,000 - $49,999	13.8%	13.5%	13.0%
$50,000 - $74,999	15.8%	17.7%	17.1%
$75,000 - $99,999	11.3%	11.8%	11.1%
$100,000 - $149,999	13.2%	15.0%	14.5%
$150,000 and more	14.3%	14.8%	14.9%
Average Household Income	$94,311	$107,591	$103,304

20. Click Preview Choice 2 to see the report for Store 2. Compare the demographics of each store's trade area. Take note of these values in particular:

Total households

Store 1 = _____ _____ _____

Store 2 = _____ _____ _____

Average income

Store 1 = _____ _____ _____

Store 2 = _____ _____ _____

Owner occupancy

Store 1 = _____ _____ _____

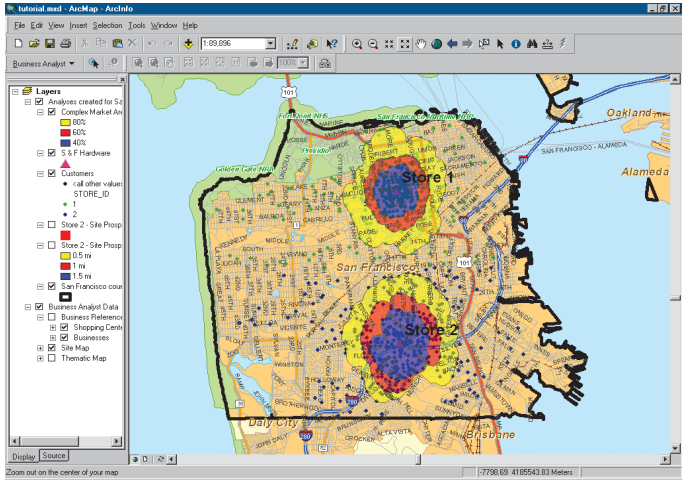
Store 2 = _____ _____ _____

It could be that Store 2 is doing better not because the average income of its customers is higher, but because people who own their homes are more likely to make larger purchases at a hardware store than people who rent.

21. If you want to print the report, click the Print button.

22. If you don't want to print the report, close the report to return to ArcMap.

The map of your study area with complex market areas becomes visible.



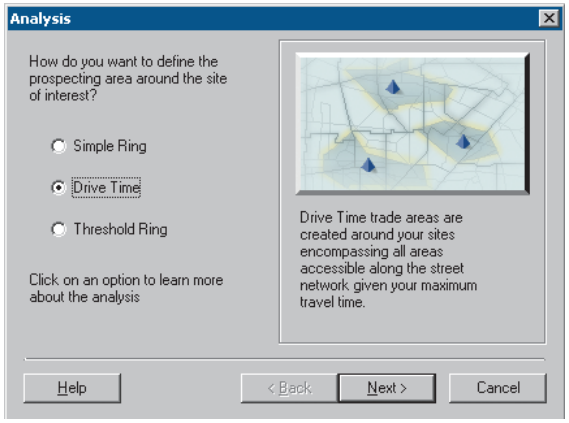
23. Save your work by clicking the File menu and clicking Save.

24. You now have complex market areas and simple ring analyses on your map for Store 2. Turn both layers on to see how they visibly compare around the Store 2 location. You should then turn both layers off by unchecking them in the table of contents.

Next, you will 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.

25. Click the Site Prospecting button on the Business Analyst toolbar, then click the symbol marking the Store 2 location on the map. Click Next to continue.

26. Click Drive Time as the method to create the trade area, then click Next.



27. Click Use minutes, then click Next. You have the option to show the streets traversed in the drive-time rings as a new layer. For this example, this box will remain unchecked.

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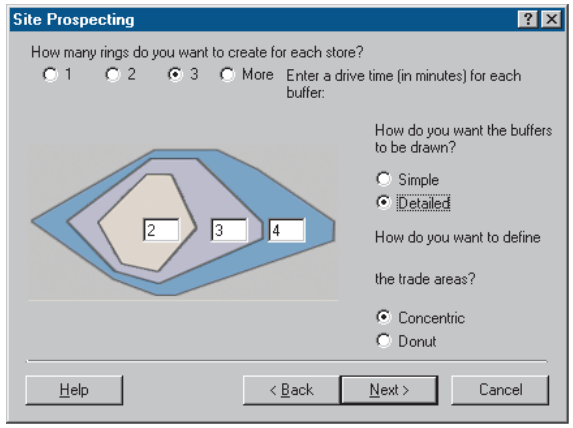
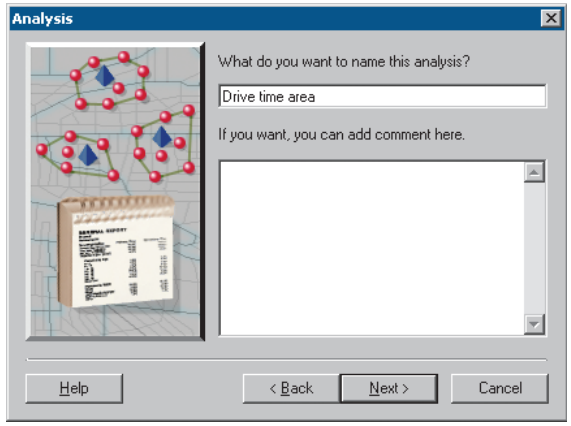
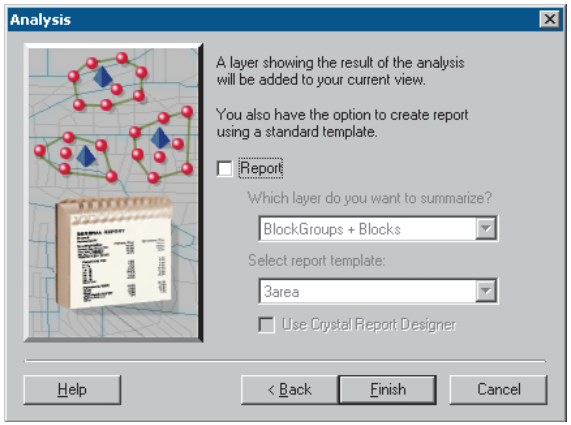
28. Click 3 and type “2”, “3”, and “4” as the ring size. Click Detailed and Concentric, then click Next.



29. Type “Drive time area” in the text box, then click Next.



30. Make sure the Report check box is unchecked, then click Finish.



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

31. Visually compare the three analyses around the Store 2 location by checking them on over each other. When finished, turn them off by unchecking them.

32. Save your work by clicking File and clicking Save.

Continue to Exercise 6 to determine your market penetration around each store.

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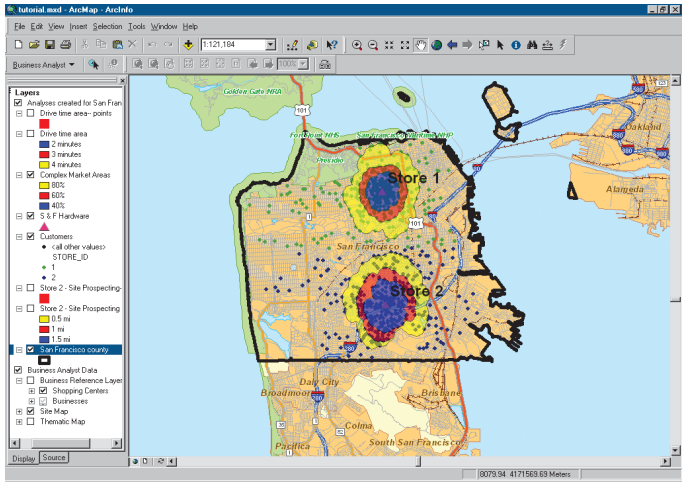
Exercise 6: Determining market penetration

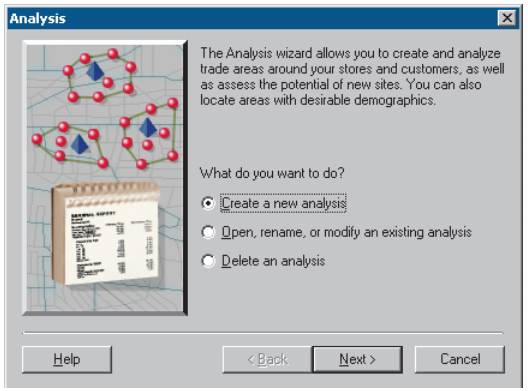
In the previous exercise, you determined complex market areas that display rings reflecting 40, 60, and 80 percent of the customers assigned to each of your stores. In this exercise, you will calculate market penetration by comparing the number of customers within each of those rings with the total population within each ring.

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

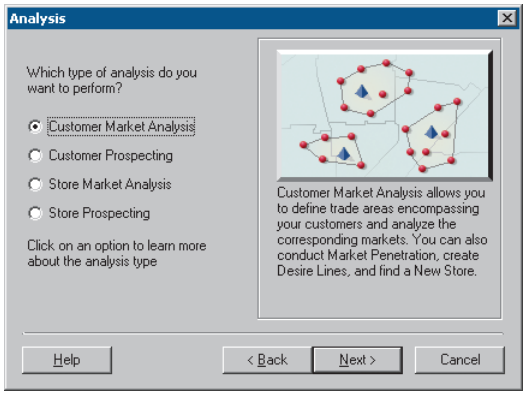
1. If you've shut down ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Welcome dialog box appears. Click An existing map, then double-click the path for Tutorial.mxd.
2. In the table of contents, click the layer for Complex market areas to make it visible. Verify that the layers for Drive time areas and Store 2-Site Prospecting are turned off by unchecking them.



3. Click the Business Analyst menu and click Analysis.
4. Click Create a new analysis, then click Next.



5. Click Customer Market Analysis, then click Next.



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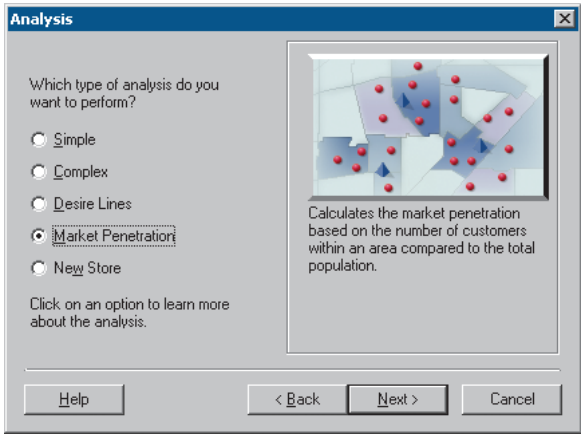
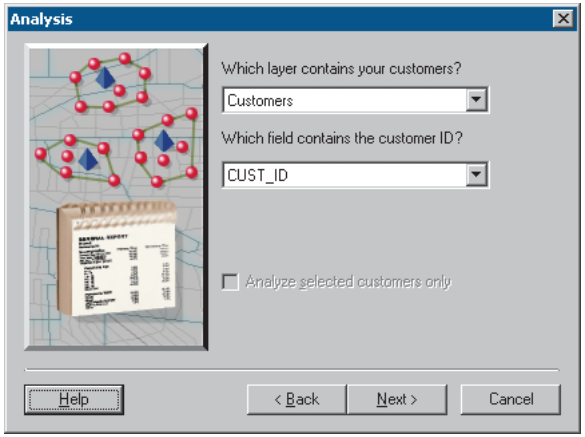
6. Click Market Penetration, then click Next.

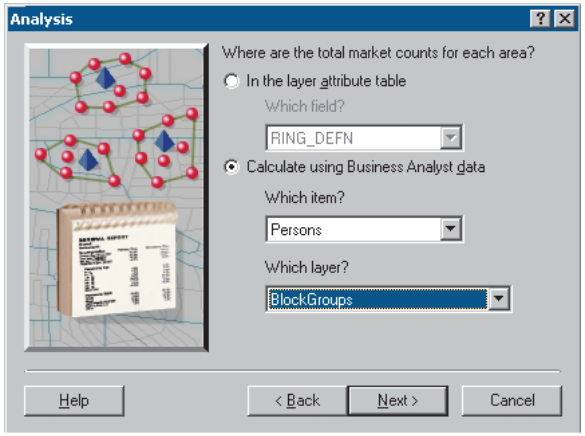


7. Click the first dropdown arrow and click Customers as your customer database. Click the second dropdown arrow and click CUST_ID as the unique field identifying each of your customers. Click Next to continue.



8. Click the first dropdown arrow and click Complex Market Areas. Then click the second dropdown arrow and click Analysis_AREA_ID. Click Next to continue.

9. The dialog box that appears will ask you to identify where to locate the total market counts for each area. In this example, you will use the second option by clicking Calculate using Business Analyst data, then choose Persons and BlockGroups using the dropdown arrows. This will use demographic data contained in Business Analyst and calculate the total population within each ring for comparison. Click Next to continue.



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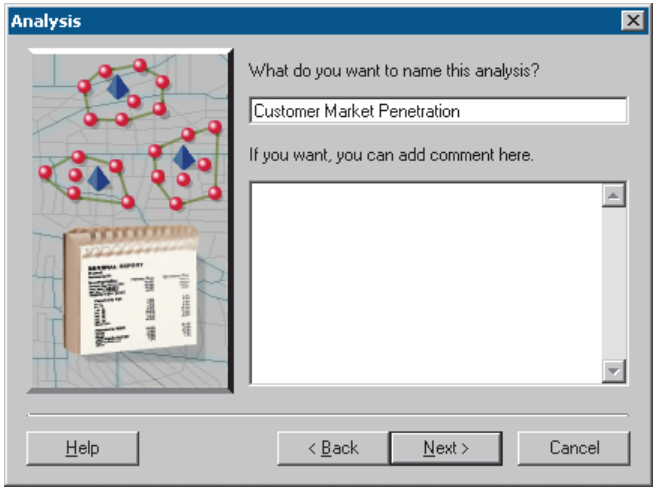
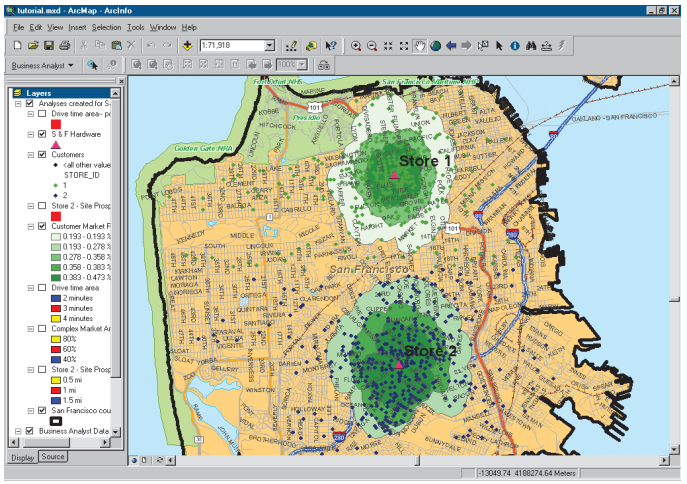
10. Type “Customer Market Penetration” in the text box, then click Next.



11. Make sure the Report check box is unchecked, then click Finish. Uncheck the customer Complex Market Areas layer to turn it off.

You will see the same shape in your Customer Market Penetration layer 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 could also use the Transparency tool to make this layer transparent, then graphically overlay it with another layer.



12. Save your work by clicking File and clicking Save.

Continue to Exercise 7 to find the location and characteristics of your best customers.

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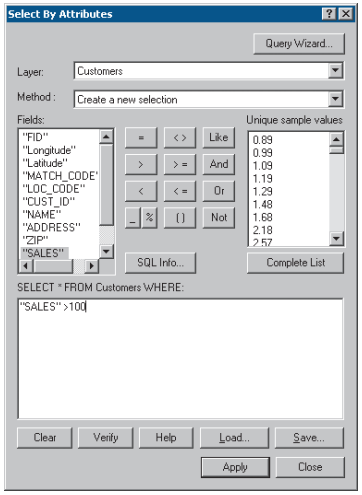
Exercise 7: Where are my best customers? What are their characteristics? Where are other areas with people like them?

Your customer data has sales records for each customer. In this task, you'll find who your best customers are, where they live, and if there are other areas with people like them.

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

1. If you've shut down ArcMap, click Start, point to Programs, point to ArcGIS, then click ArcMap. The Welcome dialog box appears. Click An existing map, then double-click the path for Tutorial.mxd.
2. Turn off the customer market penetration layer by unchecking it.

   Next you'll perform a query on the customer database.
3. Click the Selection menu and click Select by Attributes.
4. Click the dropdown arrows and change Layer to Customers and Method to Create a new selection.
5. For Fields, double-click "SALES" so it's transferred to the large lower window.
6. Click the Greater Than button and type "100".
7. Click Apply, then click Close to close the Query Builder dialog box.



   The customers who purchased more than $100 worth of merchandise are highlighted on your map.
8. Next, click the Business Analyst menu and click Analysis.

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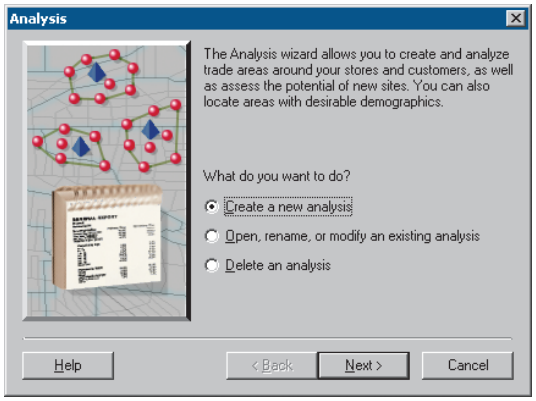
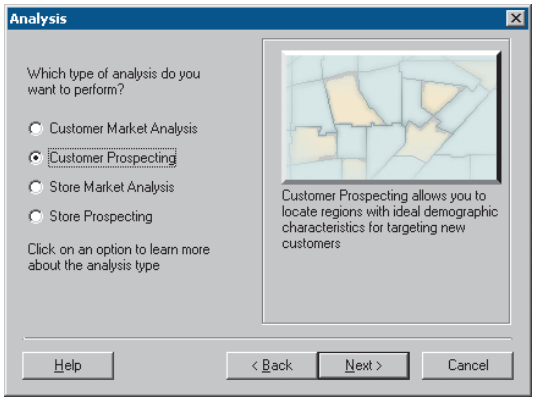
9. Click Create a new analysis, then click Next.

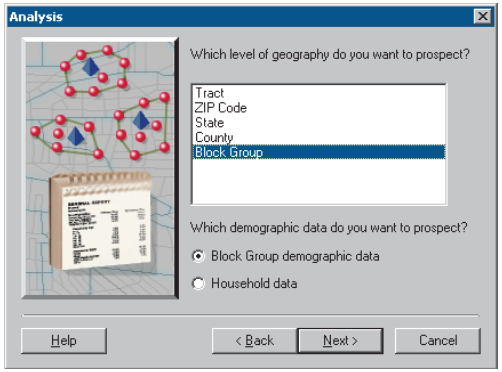


10. Click Customer Prospecting. A description of Customer Prospecting appears to the right of the panel. If Customer Prospecting is unavailable, click the Business Analyst menu, point to Analysis Extent, then click San Francisco County. Click Next to continue.



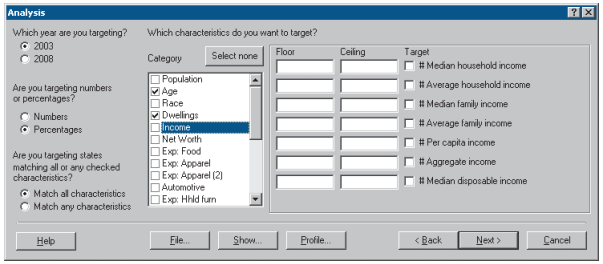
Next, you'll prospect Block Groups using Block Group demographic data.

11. Click Block Group, click Block Group demographic data, then click Next.



The Customer Prospecting panel appears. Before the wizard can find areas with the kinds of customers you want, you must specify the customer characteristics you're looking for. You have two ways to define the characteristics. The first is manually by highlighting the desired categories, clicking either the Numbers or Percentages button, then entering floor and ceiling values and checking the category. The second method is to create a profile based on your currently selected customers.

12. Click 2003 for the year of the demographic data you want to use, then click the Profile button.



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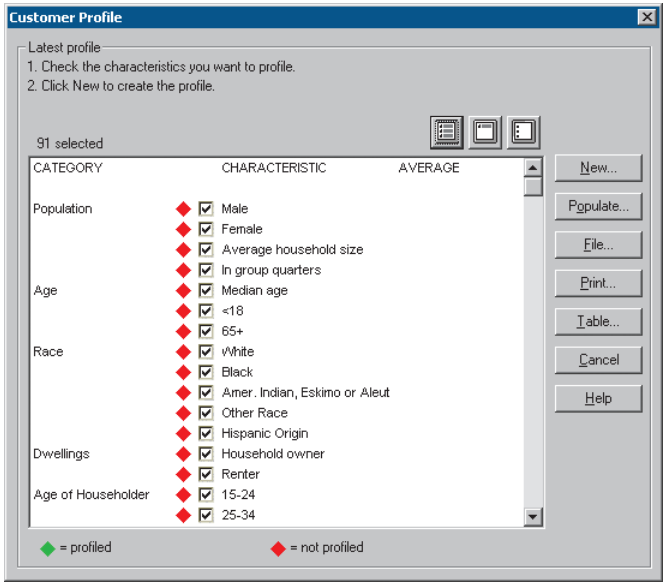
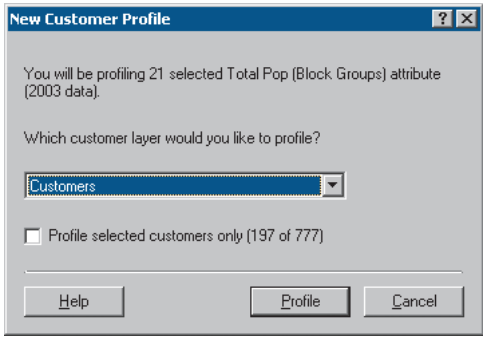
You'll now select the characteristics you're interested in and the set of customers you want to match with them. The Customer Profile dialog box tags each customer in the layer with the demographics of the areas they fall within (block groups, in this case). The average of those characteristics is assigned to your selected customers.

First, you'll look at the profile of your entire customer base.

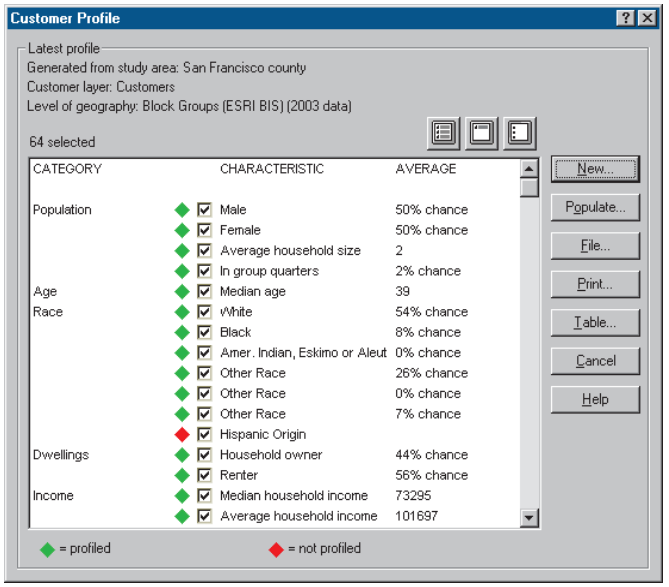
1. Click the Select All button and click New.



2. Click the dropdown arrow, click Customers, then click Profile. Do not check Profile selected customers only yet.



3. Examine the profile generated for all your customers.



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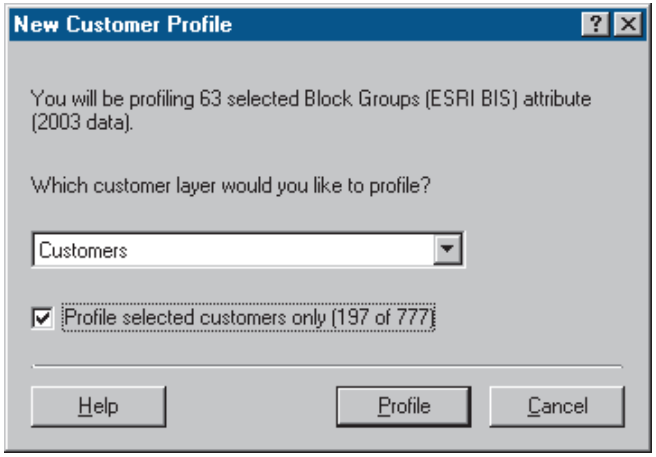
Note the averages for the important variables:

Average household income: _____
Household owner: _____

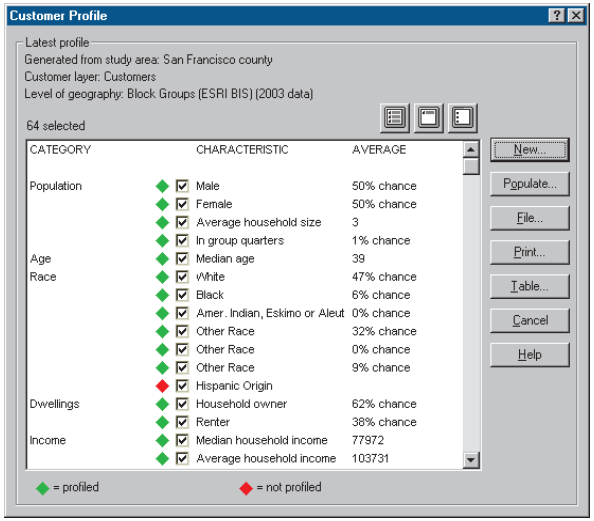
Now you'll create a profile of your higher-spending customers.

1. Click New, click Profile selected customers only, then click Profile.



2. Examine the profile generated for your selected customers.

Notice the differences between the profile of all your customers and the profile of the selected customers who spent more than $100—especially average household income and household owner.



Average household income
All = _____
Selected = _____

Household owner
All = _____
Selected = _____

This confirms that the type of prospective or potential customers you are looking for have an average household income of approximately $_____ and are more likely to

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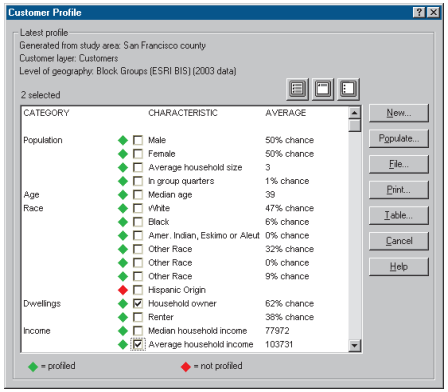
own their home. You'll select these characteristics for Customer Prospecting in the following steps.

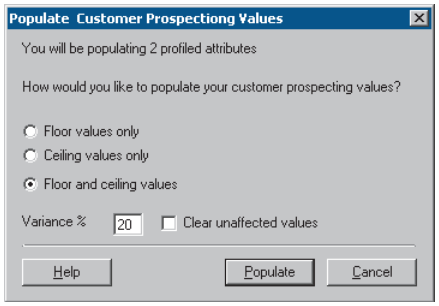
3. Click the Select None button.
4. Click the Household owner and Average household income check boxes.



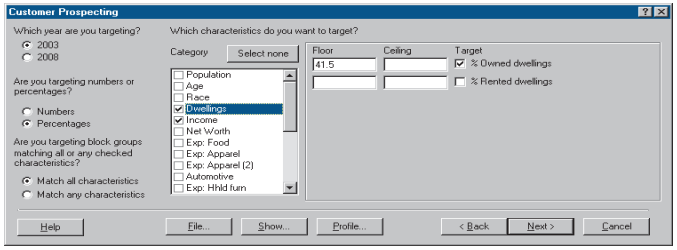
5. Click Populate.

For flexibility, you'll allow for values 20 percent higher and lower than the customer profile.

6. Click Floor and ceiling values, type "20" in the Variance % box, then click Populate.

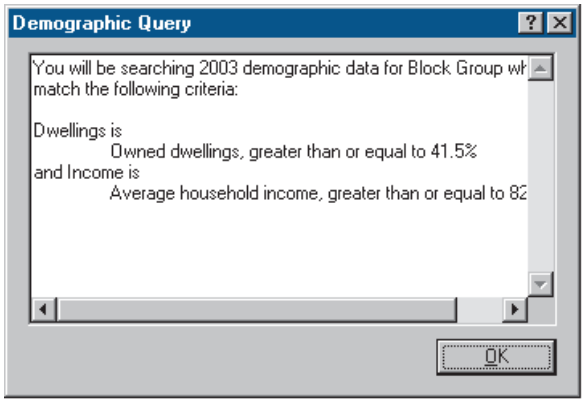


The Customer Prospecting panel is populated with the values of the customer profile you created.



7. Click Show to see what the Customer Prospecting wizard will be searching for.

You can copy and paste this information into your comments box in Step 9, if you choose.



8. Click OK on the message box and Next on the Customer Prospecting dialog box to continue.

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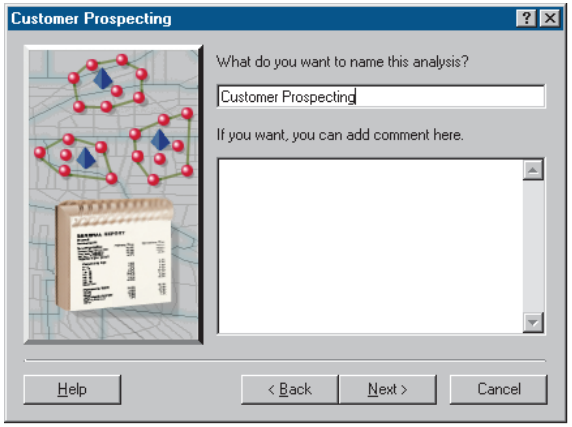
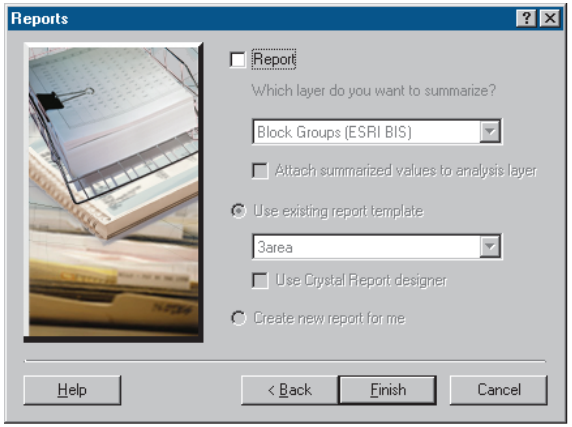
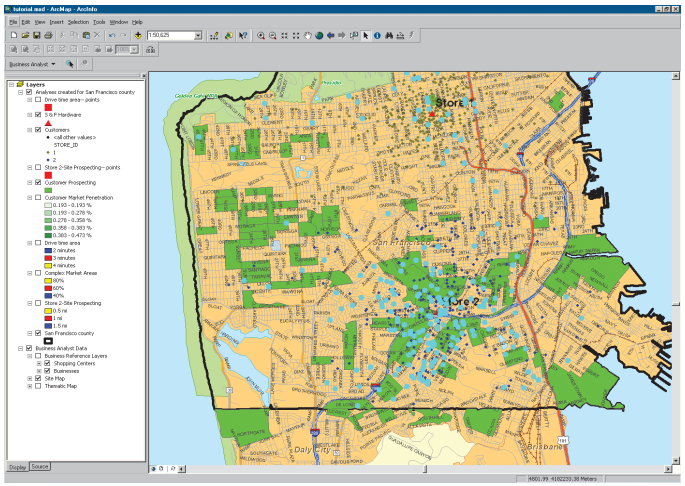
9. Type “Customer Prospecting” in the text box. Click Next to continue.



10. Make sure the Report check box is unchecked and click Finish.



The Customer Prospecting layer is added to your map. The block groups with an average household income between $_____ and $_____ and a homeowner’s rate between _____ and _____ percent are displayed in green.



11. Uncheck the check box next to the Customers layer name in the map’s table of contents to turn it off.

You expect to see the large number of ideal block groups surrounding Store 2, but you also discover a cluster in the west end of the county that looks promising. You might want to check available real estate for that area or purchase a mailing list for those block groups to try drawing new higher-spending customers to your existing stores.

12. Click the File menu and click Save.

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Now that you've completed all the tasks in the tutorial, you have a good idea of what's involved with using Business Analyst, from creating a study area to performing analyses. If you would like, you can enter the addresses of possible new store locations. Use 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 about other things you can do with Business Analyst or, if you'd prefer, use this book as a reference, reading the specific sections you need to complete your tasks.

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Site prospecting

3

IN THIS CHAPTER

- **Site prospecting on the map using the Site Prospecting tool**
- **Site prospecting using the Site Prospecting tool context menu**
- **Site prospecting using the Business Analyst menu**
- **Site prospecting using the Find tool**

This chapter shows you how to perform site prospecting a number of different ways, including using the Site Prospecting tool, performing site prospecting from the Business Analyst menu, and using the context menu to perform site prospecting.

You can perform *site prospecting* using the Site Prospecting tool, by clicking the Business Analyst menu and pointing to Site Prospecting, or by using the ArcMap Find tool and performing the site prospecting function for the location. When you point to Site Prospecting under the Business Analyst menu, you have the option to perform site prospecting by inputting coordinates, inputting an address, selecting a point on the map, or using a selected point. When you click the Site Prospecting tool, you can click directly on the map or you can right-click anywhere on the map to open a context menu with the options to perform site prospecting by using a selected point or by inputting an address or coordinates.

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Site prospecting on the map using the Site Prospecting tool

Tip

Site prospecting by simple ring, drive time, or threshold ring

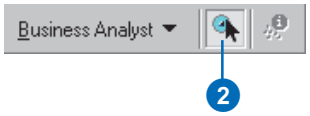
Business Analyst provides a quick tool on the Business Analyst toolbar to perform site prospecting by simple ring, drive time, or threshold ring analysis.

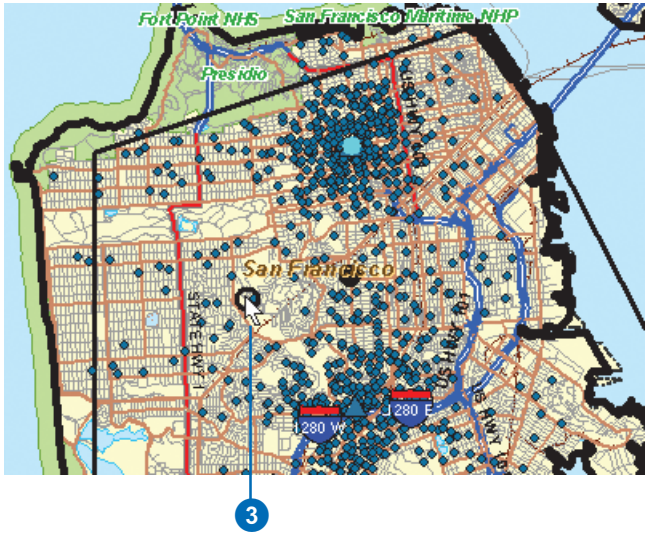
See Also

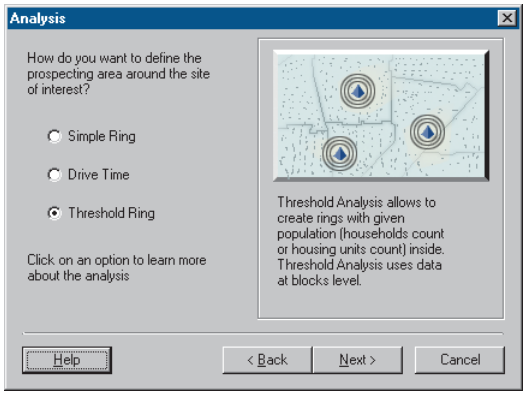
For more information about using the Analysis wizard, see Chapter 6, 'Customer analysis', and Chapter 8, 'Store analysis and prospecting'.

1. Open the study area in which you want to perform site prospecting.
2. Click the Site Prospecting tool.
3. Click where you want to perform site prospecting on the map.

   Using any of these options will produce the Analysis wizard, which will let you choose simple rings, drive time, or threshold rings. Each of these analyses is described in detail in Chapter 8, 'Store analysis and prospecting'.







The Analysis wizard appears.

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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 lets you choose the center point by entering an address or geographic coordinate or by using a selected point on the map.

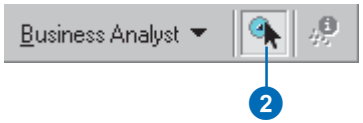
See Also

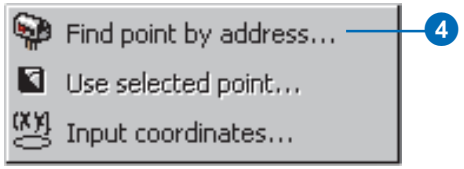
For more information about using the Analysis wizard, see Chapter 6, 'Customer analysis', and Chapter 8, 'Store analysis and prospecting'.

1. Open the study area in which you want to perform site prospecting.
2. Click the Site Prospecting tool.
3. Right-click anywhere on the map.

   The Site Prospecting tool context menu appears.
4. To perform site prospecting using an address, click Find point by address.

   Enter the address you wish to use in the text box, then press Enter. ▸





The Site Prospecting tool context menu appears.

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See Also

For more information about using the Analysis wizard, see Chapter 6, 'Customer analysis', and Chapter 8, 'Store analysis and prospecting'.

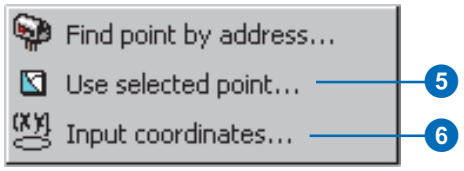
5. To perform site prospecting using the point feature that is currently selected, click Use selected point. This option is only active if a point is selected on the map.

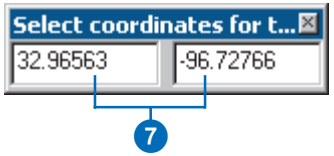
   The Analysis wizard appears. Choose the type of analysis you want to perform.

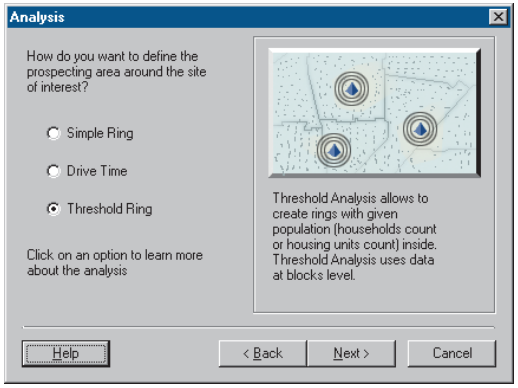
6. To perform site prospecting using coordinates, click Input coordinates.

7. Type the latitude/longitude coordinates you wish to use in the text box in decimal degrees, then press Enter.

   Using any of these options will produce the Analysis wizard, which will let you choose simple rings, drive time, or threshold rings. Each of these analyses is described in detail in Chapter 8, 'Store analysis and prospecting'.







The Analysis wizard appears.

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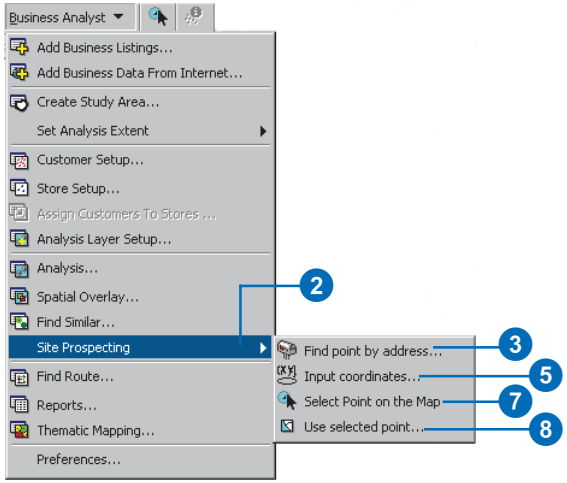
Site prospecting using the Business Analyst menu

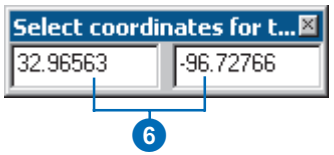
See Also

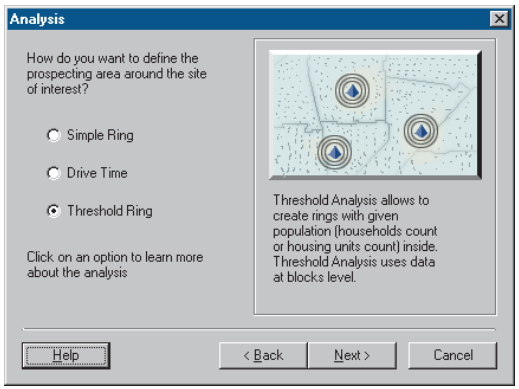
For more information about using the Analysis wizard, see Chapter 6, 'Customer analysis', and Chapter 8, 'Store analysis and prospecting'.

1. Open the study area in which you wish to perform site prospecting.
2. Click the Business Analyst menu and point to Site Prospecting.
3. To perform site prospecting using an address, click Find point by address.
4. Type the address in the text box and click OK.
5. To perform site prospecting using coordinates, click Input coordinates.
6. Type the latitude/longitude coordinates you want to use in the text boxes in decimal degrees, then press Enter.
7. To perform site prospecting using a point on the map, click Select Point on the Map, then click the point on the map for which you want to perform site prospecting.
8. To perform site prospecting using a selected point feature, click Use selected point. A point must be selected on the map for this option to be active.

   Using any of these options will produce the Analysis wizard, which will let you choose simple rings, drive time, or threshold rings. Each of these analyses is described in detail in Chapter 8, 'Store analysis and prospecting'.







The Analysis wizard appears.

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Site prospecting using the Find tool

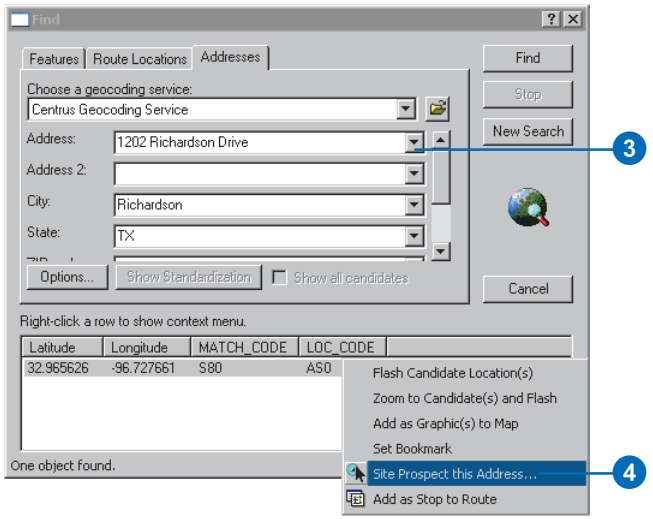
The ArcMap Find tool can be used to perform site prospecting. The found site context menu offers this additional capability.

See Also

For more information about using the Analysis wizard, see Chapter 6, 'Customer analysis', and Chapter 8, 'Store analysis and prospecting'.

1. Open the study area in which you wish to perform site prospecting.
2. Click the ArcMap Find tool on the Tools toolbar.
3. Enter an Address, ZIP code, or ZIP + 4 to use as the center point for site prospecting, then click Find.
4. Right-click the found location to show the Find context menu. Click Site Prospect this Address.

   Using any of these options will produce the Analysis wizard, which will let you choose simple rings, drive time, or threshold rings. Each of these analyses is described in detail in Chapter 8, 'Store analysis and prospecting'.



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Creating a study area

4

IN THIS CHAPTER

- Creating another My Output Data folder on a different drive
- Virtual versus defined study areas
- Using ZIP Codes
- Choosing states, counties, DMAs, or MSAs from a map
- Choosing states, counties, or MSAs from a list
- Using the entire United States
- Drawing a shape on a map
- Clipping data
- Drawing a shape on a study area
- Selecting shapes
- Opening a study area
- Renaming a study area
- Deleting a study area

In Chapter 2, the 'Quick-start tutorial', you learned that doing geographic analysis can begin with creating a study area, which you did by choosing from a list. This chapter shows you other ways to create a study area as well as other tasks you can complete using the Create Study Area wizard.

A *study area* is defined as the geographic area in which you do analysis. Customer points, store points, and analysis results that are added to the map while a study area is the active extent will be added both to the map and to 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, Metropolitan Statistical Areas (*MSAs*), 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 the first time Business Analyst was installed. You can create another My Output Data folder on another drive using the Business Analyst Preferences dialog box.

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The My Output Data folder contains:

- Study areas created using the Create 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 the Appendix.

Using map documents to manage your work

Even though Business Analyst automatically saves all 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. In this way, all your work is stored in one convenient map document that is defined with a .mxd extension.

There is a default Business Analyst map document prepared for your use called Business Analyst.mxd. You should use this .mxd file as a master document to save as your own .mxd file with which you'll do your work. The master document, Business Analyst.mxd, is a read-only file. This ensures that it is 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 what is easiest for you.

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. 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.

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Creating another My Output Data folder on a different drive

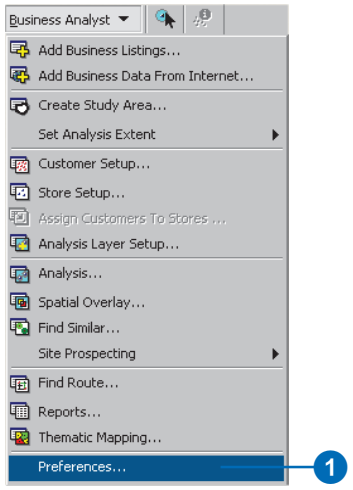
All Business Analyst information—for example, study areas you create and analysis results—is stored in the My Output Data folder.

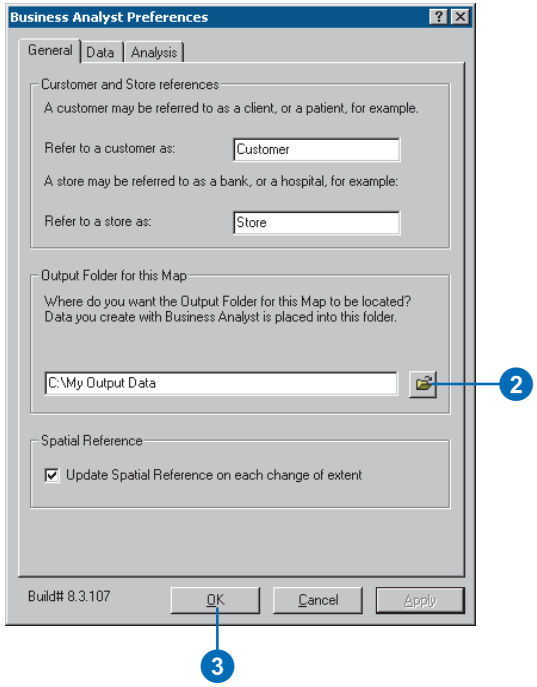
By default, the My Output Data folder is placed on the same drive where you installed ArcGIS. You can create another My Output Data folder on a different drive using the Preferences wizard.

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.

1. Click the Business Analyst menu and click Preferences.
2. In the Business Analyst Preferences dialog box under Output Folder for this Map, browse to or type the path where you want the My Output Data stored. The folder name can be changed from My Output Data to any name you choose.
3. Click Apply, then click OK.

   A My Output Data folder is created in the location you chose.





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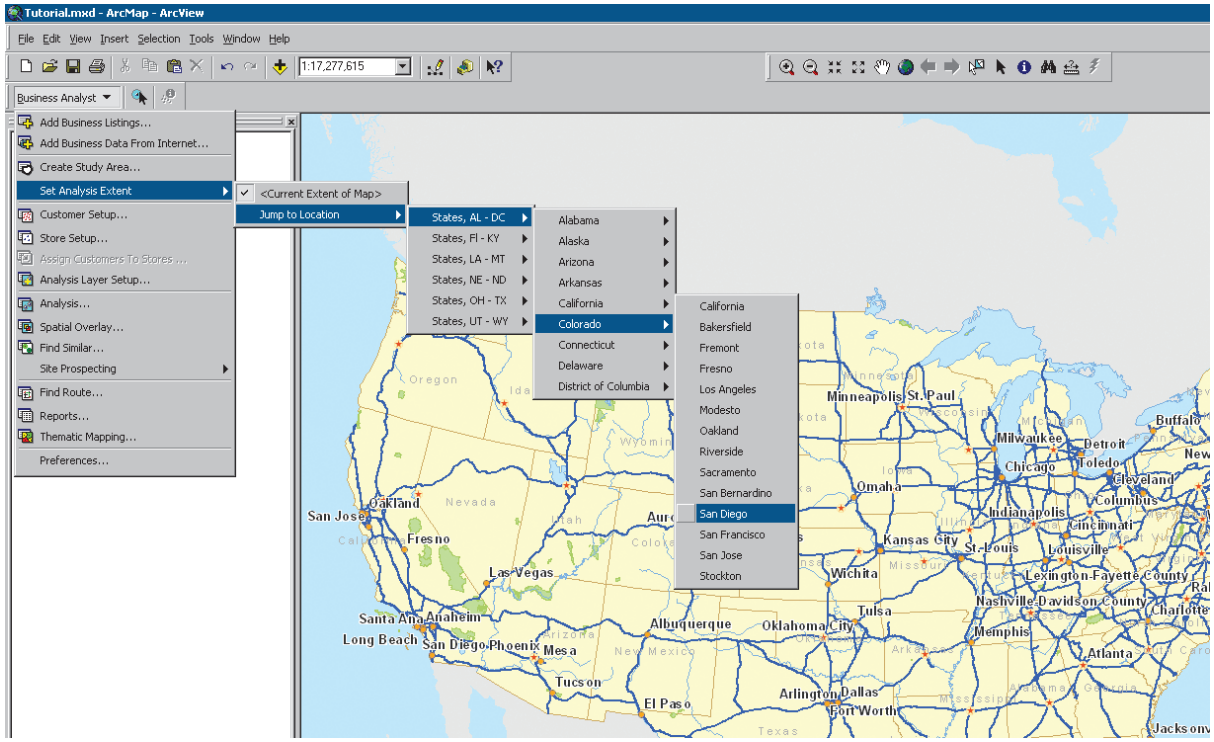
Virtual versus defined study areas

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 the Set Analysis Extent menu 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 San Diego, California, 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 the 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 MSA location and, at the same time, change the analysis extent to the area to which you are jumping.



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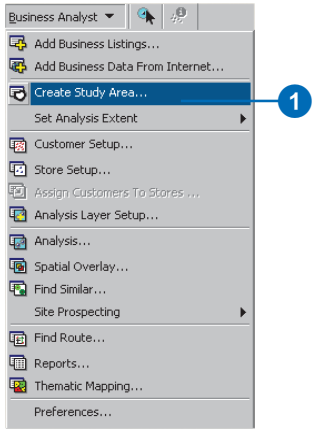
Using ZIP Codes

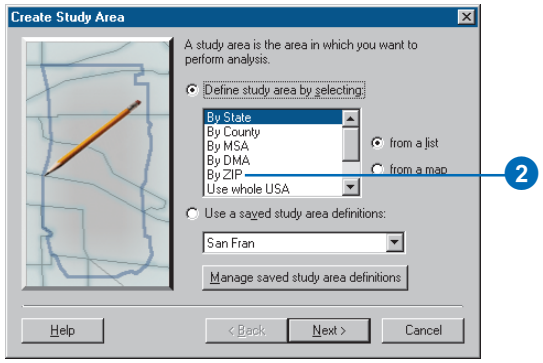
If you know the ZIP Codes where most of your customers and stores are located, this is an easy, accurate way to create a study area. For instance, if you send bulk mailings of advertising to a group of ZIP Codes, you might want to create a study area of those ZIP Codes.

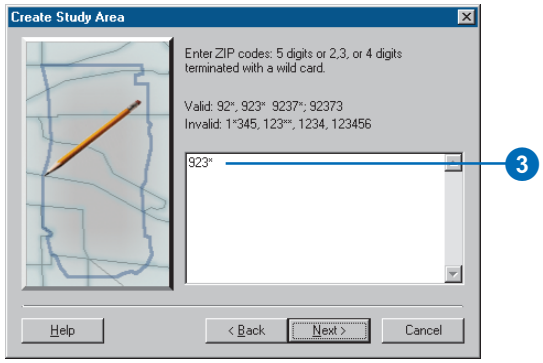
Type in the ZIP Codes you want to include in your study area or use a wildcard (*) after two, three, or four numbers to include all ZIP Codes with a certain number sequence.

1. Click the Business Analyst menu and click Create Study Area.
2. In the Create Study Area wizard, click Define study area by selecting, click By ZIP, then click Next.
3. Type the ZIP Codes you want to define your study area, then click Next.

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







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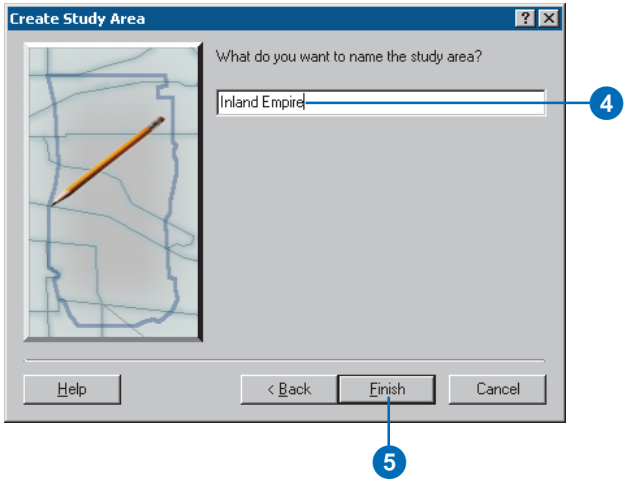
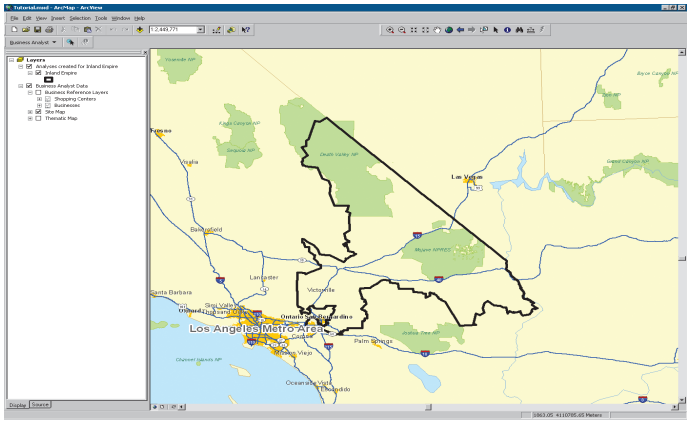
4. Type a name for the study area.

   You must provide a unique name but can use spaces or special characters.

5. Click Finish.

   A study area appears in black with the area defined by the ZIP Codes you entered.





A study area appears.

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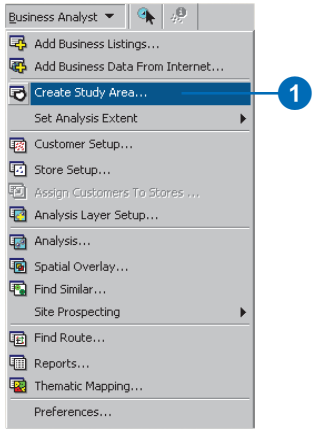
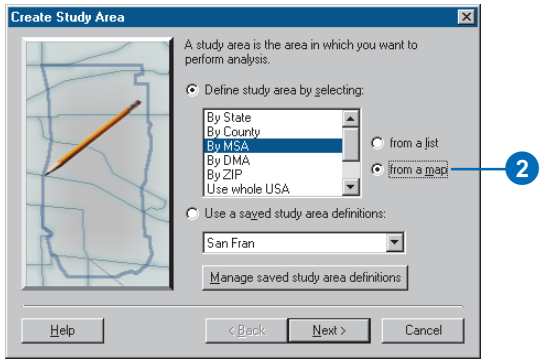
Choosing states, counties, DMAs, or MSAs from a map

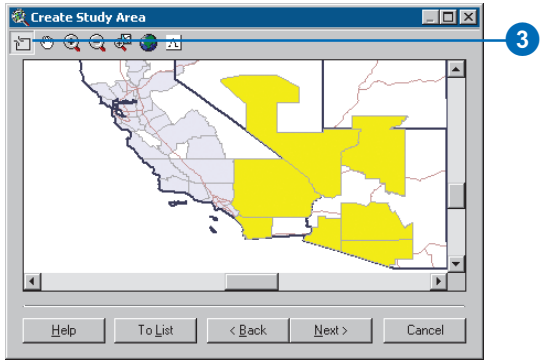
To create a study area from a map, choose what you want the map to show—counties, MSAs, DMAs, or states. Then, point and click or drag a box to select the study area.

1. Click the Business Analyst menu and click Create Study Area.
2. Click By State, By County, By DMA, or By MSA; click from a map; then click Next.
3. Click the Select Features tool, then click the county, MSA, or state you want to select.

   Selected features are highlighted yellow.
4. Optionally, you can use the Zoom In tool to see the area you want more clearly. ►







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Select Features button

Pan tool

Zoom In button

Zoom Out button

Zooms Selected Features button

Full Extent button

Show/Hide Labels button

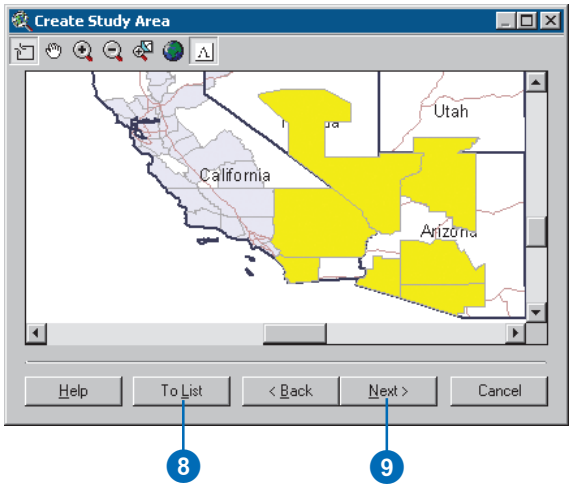
Buttons on the Create Study Area dialog box from a map

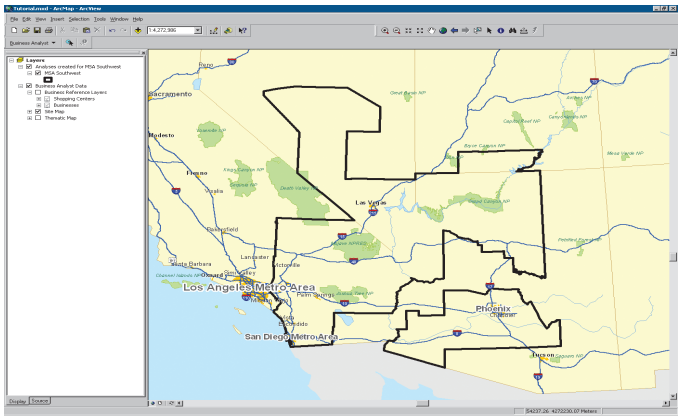
5. Optionally, click the Show/Hide Labels button to see names of counties, MSAs, or states.
6. Optionally, click and drag a box around the areas to select more than one county, MSA, or state. Alternatively, you can hold the Shift key down and click them.
7. To deselect a feature, hold the Shift key down and click the selected feature with the Select Features tool on the map.

   Features remain highlighted until you make a different selection or deselect them.
8. Optionally, click the To List button to see the names of the features you've chosen in a list.
9. Add or remove features from the list as desired by clicking the arrow buttons. Click the To Map button to look at your study area again on the map, or click Next to continue.
10. Type a name for your study area.

    You must provide a unique name but can use spaces or special characters.
11. Click Finish.

    The study area you chose appears.





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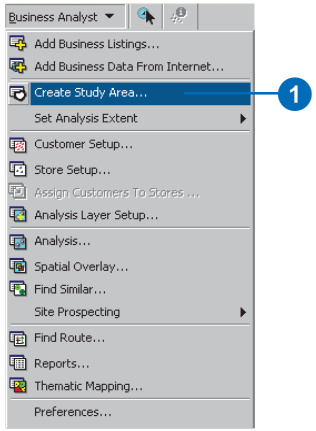
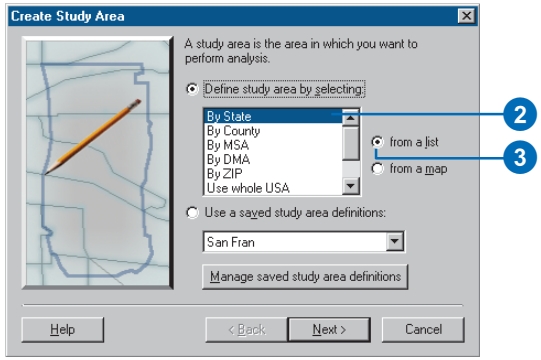
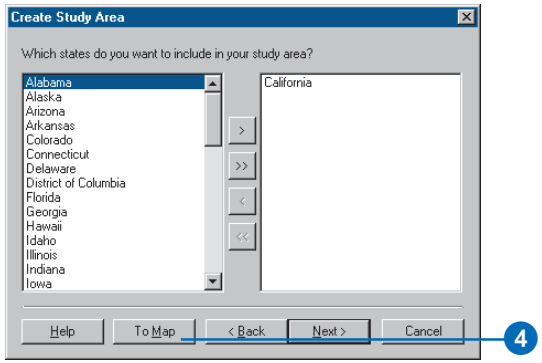
Choosing states, counties, or MSAs from a list

To define your study area using a list, choose what you want the list to show—counties, MSAs, or states—then select what you want to include in your study area.

1. Click the Business Analyst menu and click Create Study Area.
2. In the Create Study Area dialog box, click By County, By State, or By MSA.
3. Click from a list, then click Next.
4. Click the state you would like to define for your study area, then click To Map. ►







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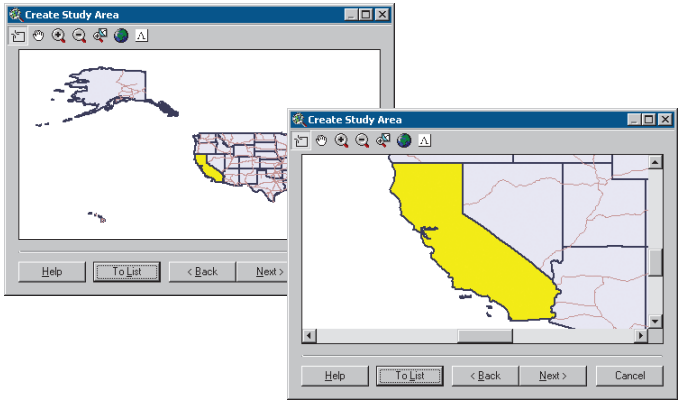
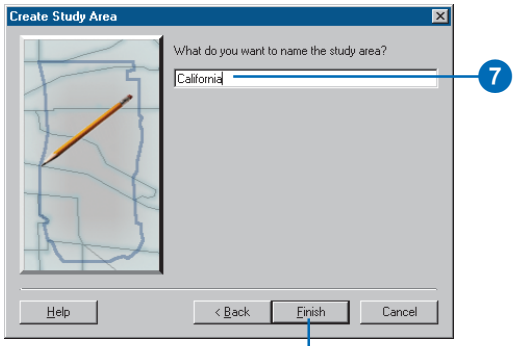
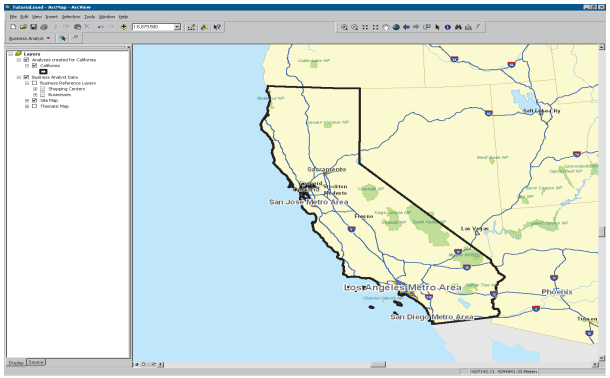
5. Click the Zooms Selected Features tool to zoom to the area you've selected from the list.
6. Use the Select Features tool to make changes by selecting or deselecting areas. After you are finished, you can either look at the list of features in your study area again or click Next to continue.
7. Type a name for your study area.

   You must provide a unique name but can use spaces or special characters.
8. Click Finish.

   The study area you chose appears.







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Using the entire United States

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

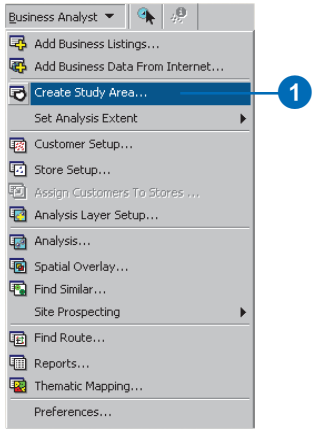
If you know that your customer base is nationwide, using the entire United States is a good way to create a study area. You can also use this option if you don't know exactly where your customers are located. After you geocode them and can see their location, you can create a more specific study area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

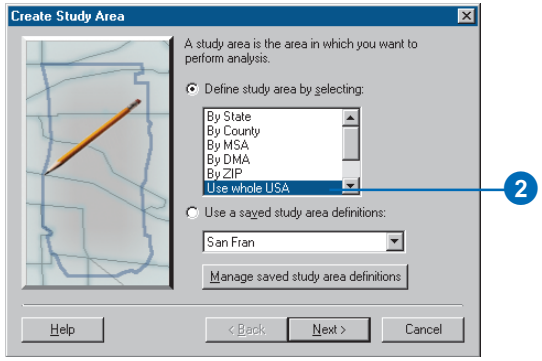
When you create a study area using the entire United States, drive time will be calculated from the compressed data, even for multiple store locations across the United States. However, it is recommended that you use no more than 10 store locations at a time to perform drive-time analysis.

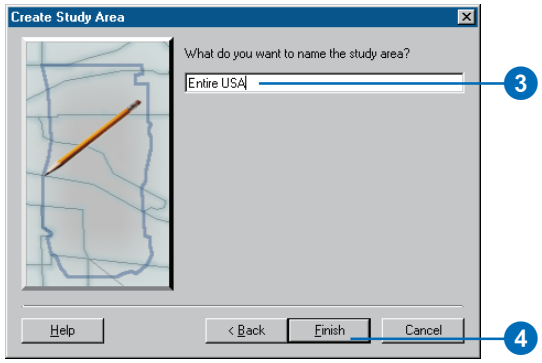
1. Click the Business Analyst menu and click Create Study Area.
2. Click Use whole USA, then click Next.
3. Type a name for your study area.

   You must provide a unique name but can use spaces or special characters.
4. Click Finish.

   A study area of the United States appears. You can then 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.







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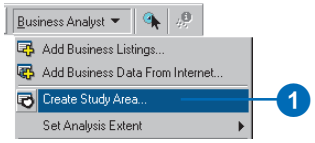
Drawing a shape on a map

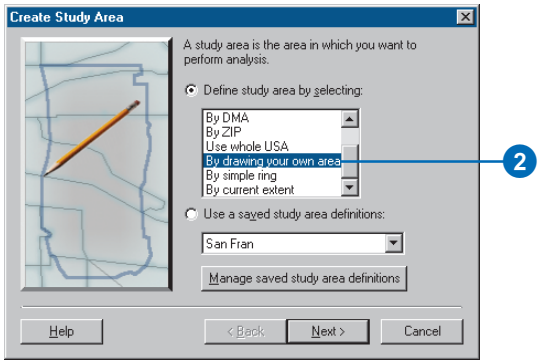
You can define your study area as a shape other than a state, county, or MSA. Choose a drawing tool (rectangle, circle, or polygon) and define the boundary of your study area by drawing a shape on a map.

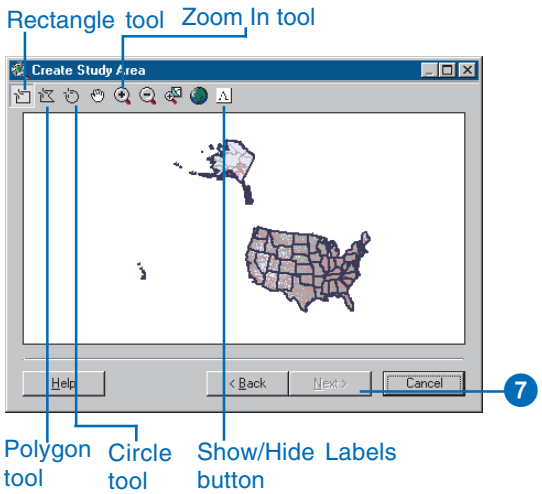
1. Click the Business Analyst menu and click Create Study Area.
2. Click By drawing your own area, then click Next.
3. To create a rectangle on the display, click the Rectangle tool, then click and drag a box over the area that you want to include in your study area.

   To create a circle on the display, click the Circle tool, then click and drag a circle over the desired area. The crosshairs indicate the center of the circle.

   To create a polygon on the display, click the Polygon tool, then click once on each vertex of the shape you want to draw. Double-click to finish.
4. To more clearly see the desired area before you begin drawing, use the Zoom In tool.
5. To see names of counties or states, click the Show/Hide Labels button.
6. If you make a mistake while drawing your shape, draw another. The first shape will disappear.
7. When you are finished creating a shape on the display, click Next. ▸





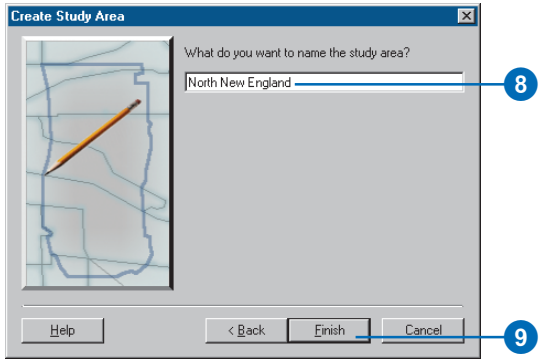


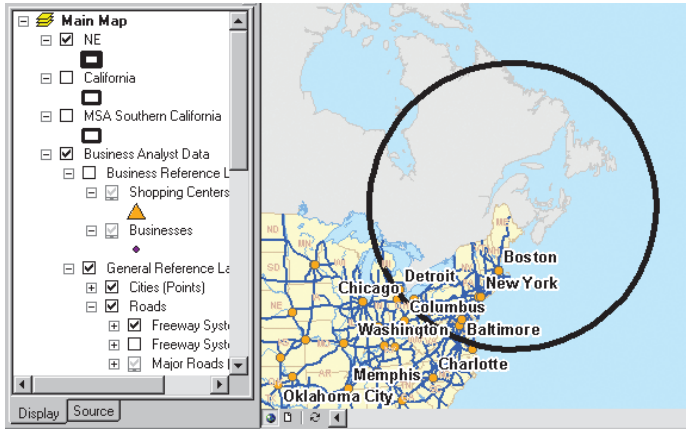
8. Type a name for your study area.

   You must provide a unique name but can use spaces or special characters.

9. Click Finish.

   The study area you chose appears.





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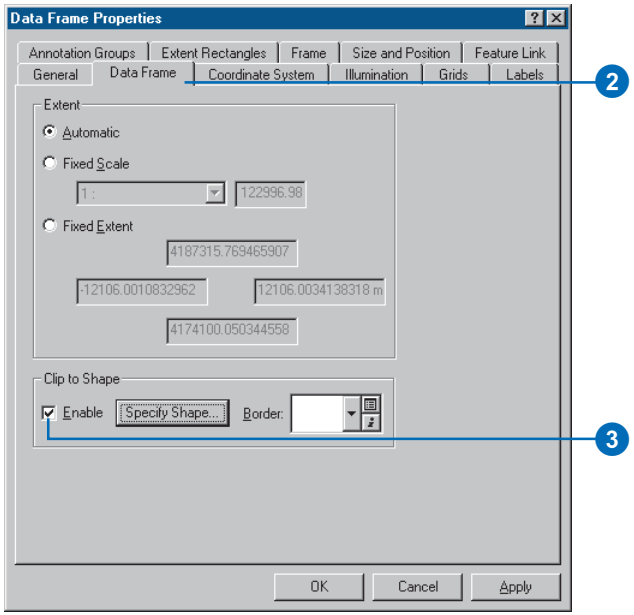
Clipping all your data so it only includes the study area

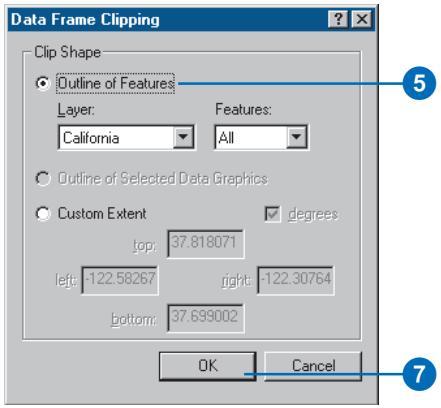
When you create a study area, you can set the properties in the layer's data frame to clip all data just to the study area shape.

1. Right-click the data frame (the top level of the table of contents hierarchy) or your map area and click Properties.

   The Data Frame Properties dialog box appears.
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.
5. To outline the features, click Outline of Features, click the dropdown arrow and specify the layer you want to use, then click the dropdown arrow and specify the features you want to use.
6. To set a custom extent, click Custom Extent and type the information in the text boxes.
7. Click OK in the Data Frame Clipping dialog box.
8. Click Apply in the Data Frame Properties dialog box.
9. Optionally, you can change the background color by using the Frame tab, then clicking the Background dropdown arrow and selecting a color.
10. Click OK to finish the process.

    The data clipping process may take several minutes.





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Drawing a shape on a study area

You can create a study area by drawing a shape on an existing study area. 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 could also use this option to expand your study area if your customer set extends beyond the outline of your study area.

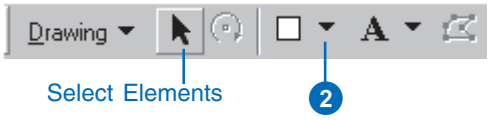
1. In ArcMap, open the study area you want to use to create a new study area.
2. On the Drawing toolbar, click the Shape dropdown arrow and click the shape you want to draw.

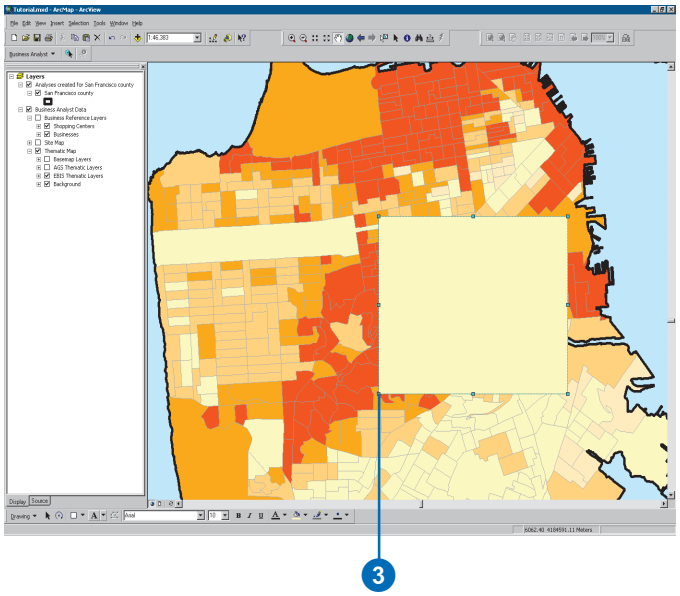
   To draw a rectangle, click and drag a box over the area that you want to include in your study area.

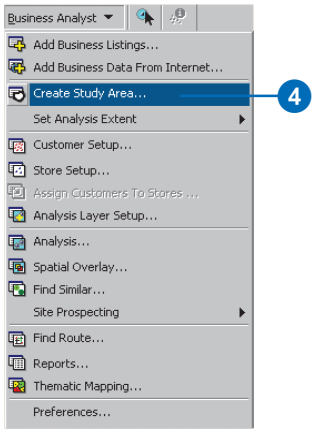
   To draw a circle, click and drag a circle over the desired area. The crosshairs indicate the center of the circle.

   To draw a polygon, click once on each vertex of the shape you want to draw and double-click to finish.
3. 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).
4. Click the Business Analyst menu and click Create Study Area. ▶







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5. Click Define study area by selecting, click By currently selected shapes, then click Next.

   The wizard displays a summary of the selected shapes.

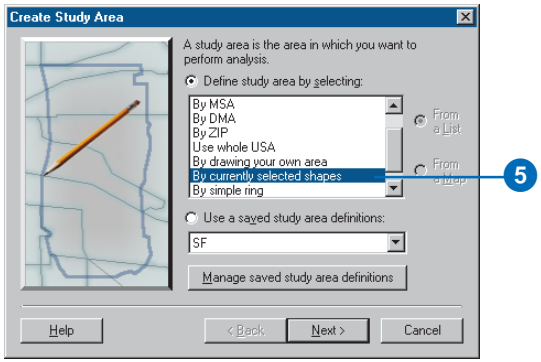
6. Click Next.

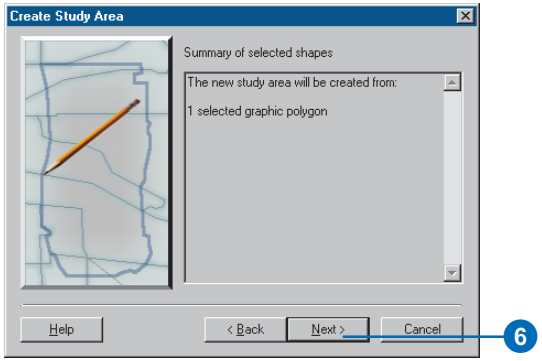
7. Type a name for your study area.

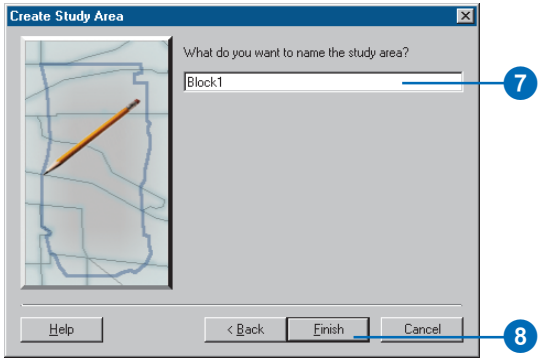
   You must provide a unique name but can use spaces or special characters.

8. Click Finish.

   The study area appears. ►







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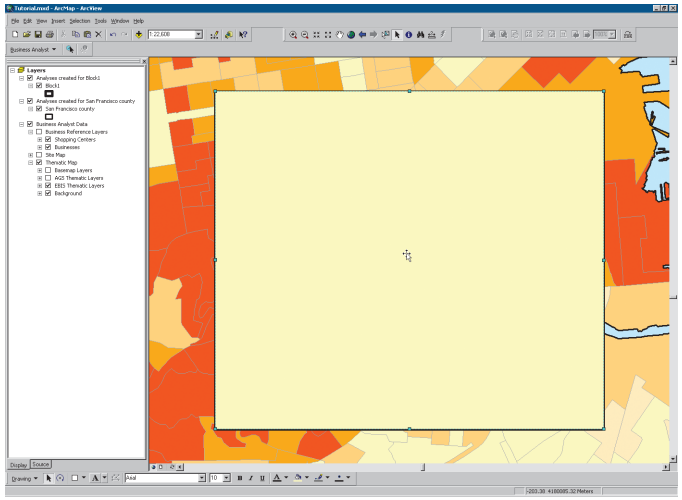
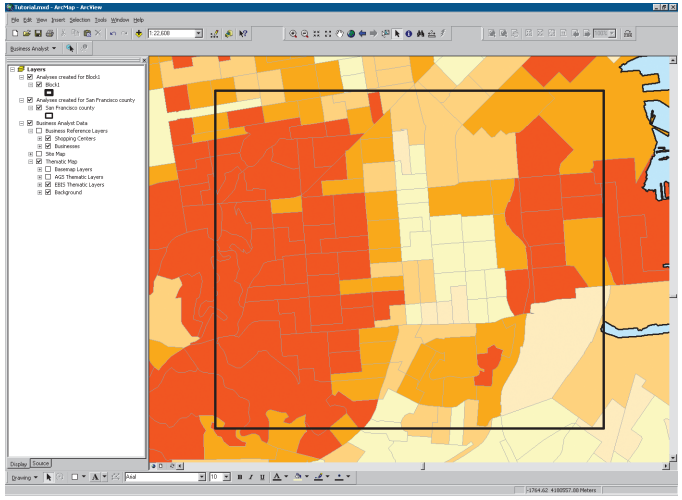
9. You can now remove the shape by clicking its center to select it (the graphic handles should be visible) and pressing Delete.

   The new study area will now be visible.





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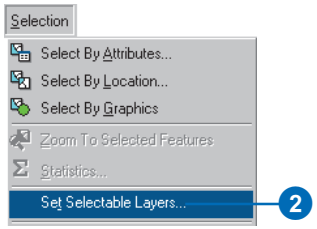
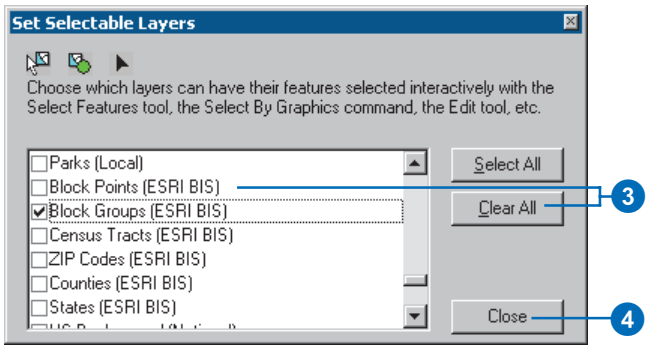
Selecting shapes from a study area

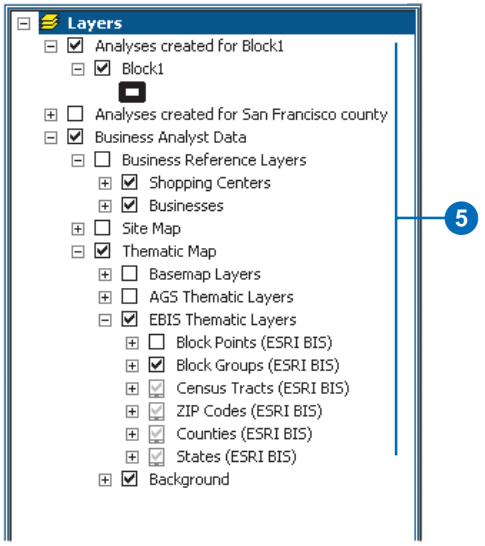
You can create a study area by selecting shapes from an existing study area. For example, suppose you've created a study area of 100 block groups where you send bulk mailings. After adding customers to your study area and performing analysis, you find that the majority of your sales come from 16 of those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

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

1. Open the study area you want to use to create a new study area.
2. Click the Selection menu and click Set Selectable Layers.
3. Click the Clear All button, then scroll down to Block Groups (ESRI BIS) and check the check box.
4. Click Close.
5. In the table of contents, check the Thematic Map layer on and check the Site Map layer off as well as any other layers that may obscure your selection of block group shapes. ▸







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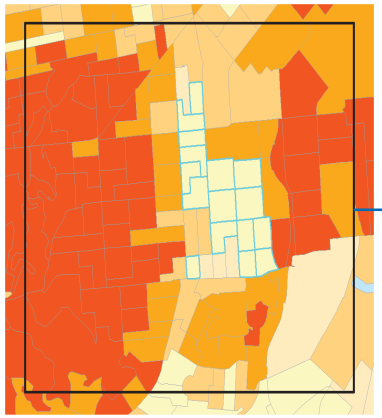
6. Click the Select Features tool on the Tools toolbar and click the block groups you want.

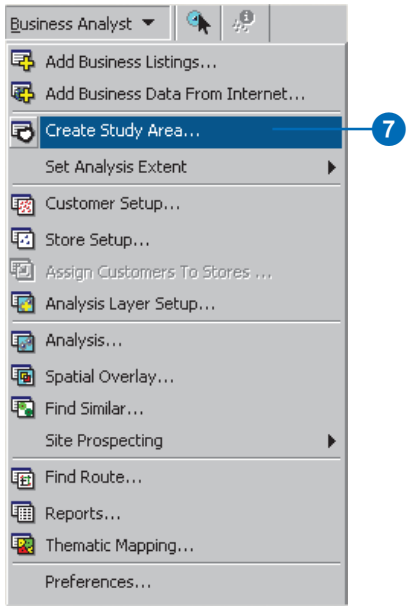
   To select more than one shape, hold down the Shift key as you click.

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

7. Leaving the features selected, click the Business Analyst menu and click Create Study Area. ▸



Selected block groups are highlighted in blue.



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8. Click Define study area by selecting, click By currently selected shapes, then click Next.

   The wizard panel gives a summary of the shapes that you've selected to define your study area.

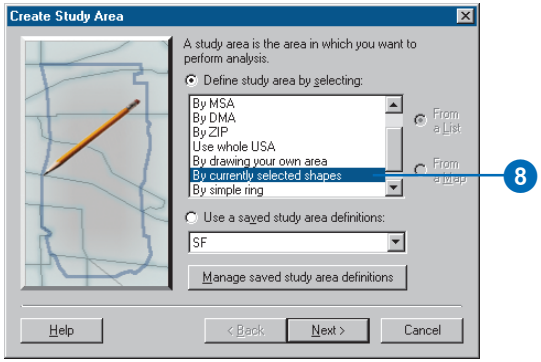
9. Click Next.

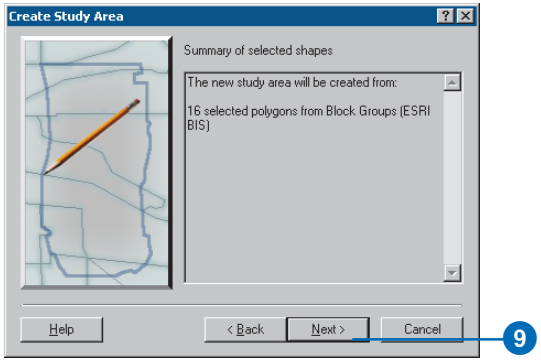
10. Type a name for your study area.

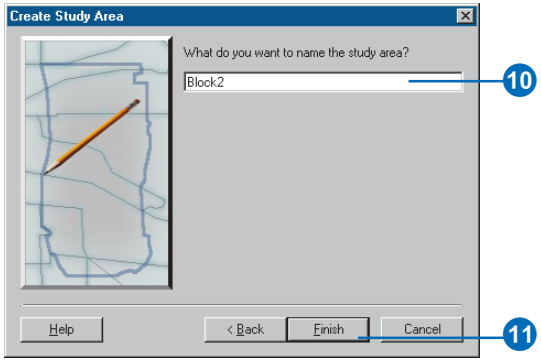
    You must provide a unique name but can use spaces or special characters.

11. Click Finish.

12. You need to deselect the block group shapes by going to the Selection menu and clicking Clear Selected Features. The new study area will then be visible.







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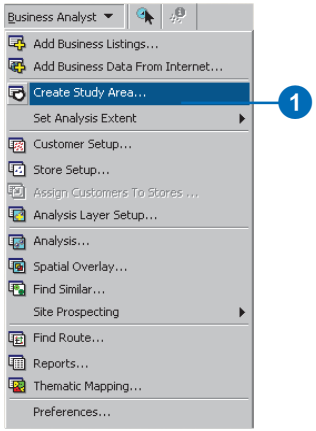
Opening a study area

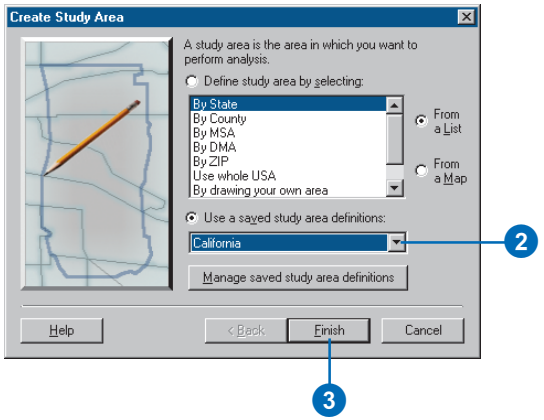
You can use the Create Study Area wizard to open a study area you've already created. If you saved the map document that the study area is in before exiting ArcGIS, the study area map will be exactly as you left it.

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.

1. Click the Business Analyst menu and click Create Study Area.
2. Click the Use a saved study area definitions button, then click the dropdown arrow to select the study area you want to open.
3. Click Finish.

   The study area opens into the application window and is added to the map document.





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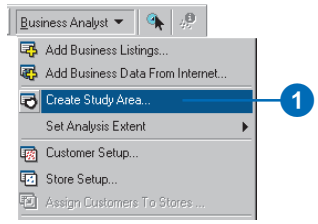
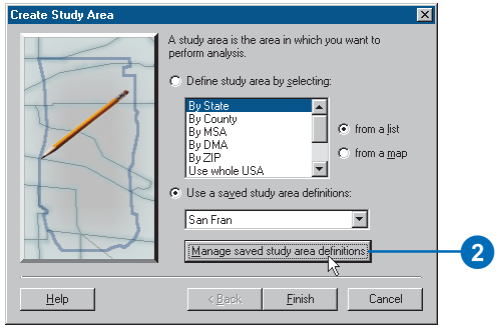
Renaming or modifying a study area

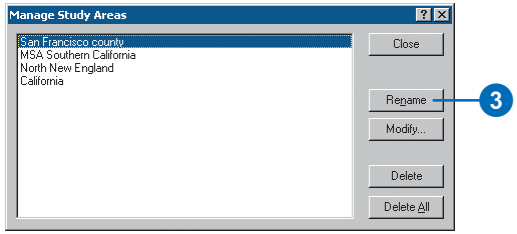
To change the name of or modify an existing study area, use the Manage saved study area definitions button on the Create Study Area wizard. When you're done with your changes, you can open the study area or cancel the wizard.

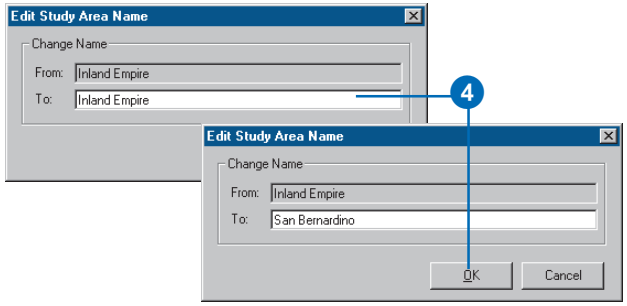
1. Click the Business Analyst menu and click Create Study Area.
2. Click the Manage saved study area definitions button.
3. Click the study area you want to edit, then click Rename or Modify.
4. In the Edit Study Area Name window, type the new name of the study area, then click OK.

   The study area is renamed.
5. To modify the study area, use any of the Create Study Area tools to revise the study area, either by using a list method or the map selection tools. This window can be resized by clicking and dragging its corner. Click OK when you're finished modifying the study area.
6. After making your changes, close the Manage Study Areas dialog box, then click Cancel in the Create Study Area dialog box.









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Deleting a study area

You can delete a study area by using the Create 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

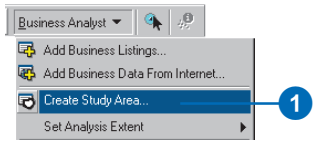
Removing a study area from the visible legend

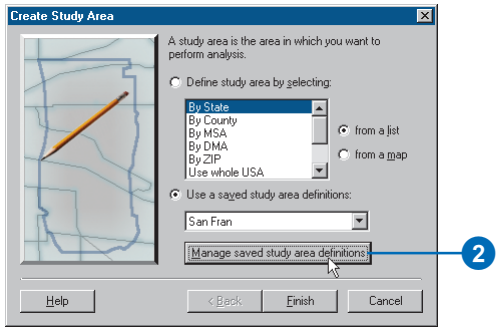
To remove a study area from the visible legend, right-click the layer and click Remove. Your study area remains in your .mxd file for future use but is no longer in your table of contents or visible on your map. If you go to the Create Study Area dialog box and choose to Use a saved study area definitions,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

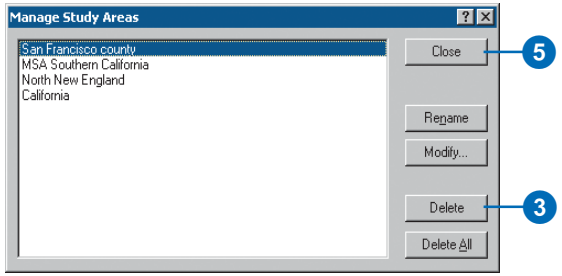
1. Click the Business Analyst menu and click Create Study Area.
2. Click the Manage saved study area definitions button.
3. Click the study area you want to delete, then click Delete.

   Optionally, to delete all study areas, click Delete All.
4. Click Yes or Yes to All in the Delete Study Area window.

   The selected study areas are permanently deleted from Business Analyst.
5. Click Close to exit the Manage Study Areas dialog box.







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Adding data to Business Analyst 5

IN THIS CHAPTER

- Adding data to your map
- Adding customers and stores as tabular data to your study area
- Adding customers or stores from a shapefile
- Analysis layer setup
- Adding business listings and business data from the Internet
- Setting field visibility
- Opening a customer or store layer
- Opening an existing analysis in a new map document
- Renaming or deleting a customer or store layer
- Substituting your own terms for "customers" and "stores"
- Setting preferences

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 turn *tabular data* (.dbf, .txt, or relational database management system [RDBMS] format) into points on a map or geocode them using a geocoding engine by Sagent Technologies. 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 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 "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—for example, representatives and contacts, clubs and members, agents and prospects, or doctors and patients.

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Adding customers or stores as tabular data to your map

You can add 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's 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.

Your tabular data can be in the form of a .dbf file, a comma- or tab-delimited .txt file, or an RDBMS. If it's in an RDBMS, you must first bring the data into ArcGIS before you can set it up with a wizard. To do this, click the Add Data button, click the Look in dropdown arrow, then click Database Connections. You can then choose the database connection you desire and proceed with the wizard to finish adding the database to ArcMap. Only stores that fall in your study area will be analyzed if you have set up a study area using the Create Study Area wizard and that study area is set as the analysis extent.

The Customer Setup and Store Setup wizards are identical for this task. The Customer Setup wizard will be used here to illustrate the steps.

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 (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 dropdown menu and the ZIP dropdown 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 Tools menu on the ArcMap menu and click Add XY data to add the database to the map by latitude/longitude. You can then step through either the Customer Setup or Store Setup wizard using the Map-ready data option.

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 in 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 on 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.

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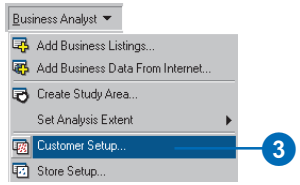
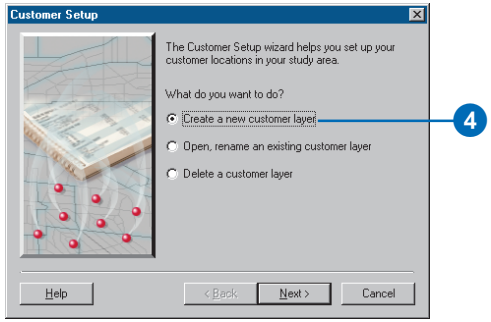
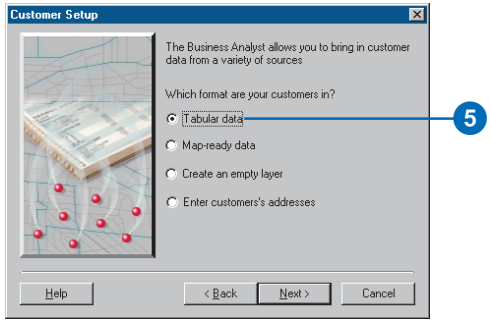
Adding customers as tabular data to your study area

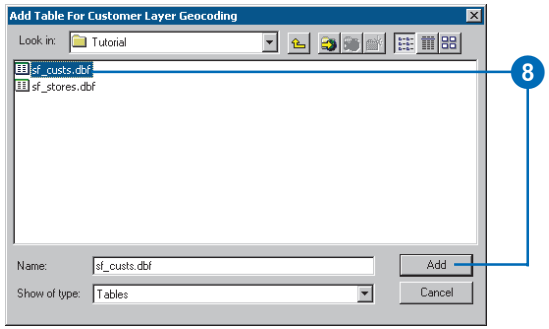
The following task shows you how to add customers to your study areas using the Customer Setup wizard. In this task, you'll add the customers to your study area as tabular data.

1. In ArcMap, open the map to 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. Confirm the analysis extent is set as you desire. Any layer added to the map while an extent is active will be associated with that analysis extent.
3. Click the Business Analyst menu and click Customer Setup.
4. Click Create a new customer layer, then click Next.
5. Click Tabular data, then click Next.
6. Click In a file on my computer, then click Next.
7. Click the Browse button and navigate to the file on your computer that contains your customer data.
8. Click the file that contains the customer data you want to use, then click Add. ▶









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Tip

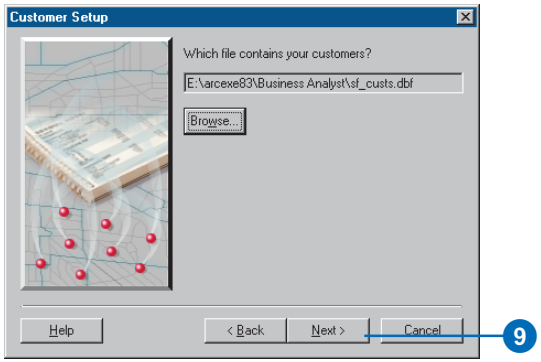
Analyzing customers

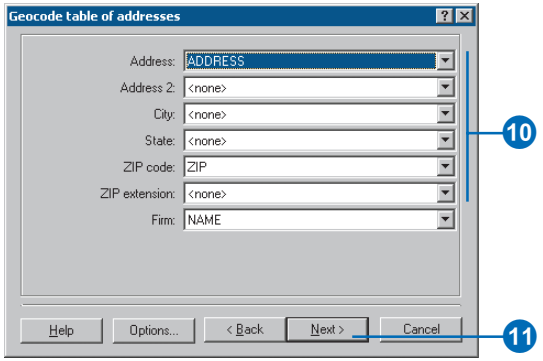
It is important to note that for Business Analyst to analyze each of your customers, each one must be uniquely identified. You need to have a field in your Customer database that has a unique name or number for each customer, or you can let Business Analyst create one for you.

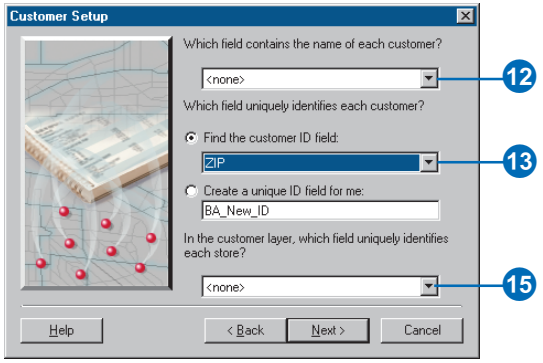
9. Click Next.
10. In the Geocode table of addresses dialog box, click the dropdown arrows to define your customers' locations.

    If you don't have the information for a specific field, click the dropdown arrow for that field and click <none>.
11. Click Next.
12. Click the first dropdown arrow and click the field that contains the name of each customer. If you don't have one, click <none>.
13. If you have a customer ID field, click Find the customer ID field and click the dropdown arrow to choose it.
14. If you don't have a customer 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.

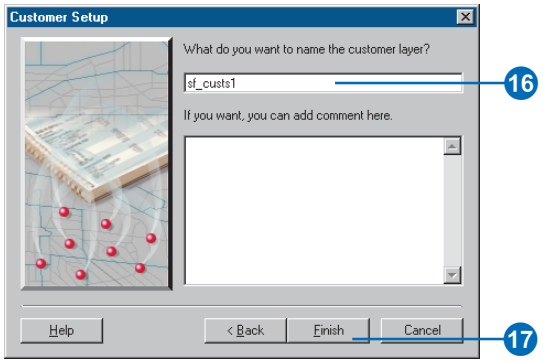
    For Business Analyst to analyze each of your customers, each one must be uniquely identified.
15. If you have a field identifying the store associated with each customer, select it using the last dropdown arrow. If not, click <none> and Business Analyst will create one for you. ►

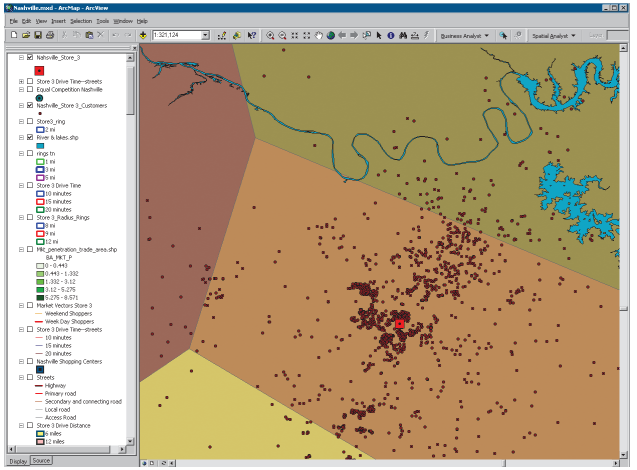


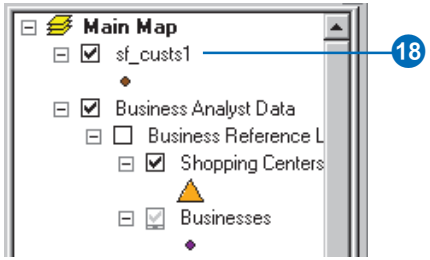




16. Type the name of the customer layer in the text box. Optionally, you can type a comment in the comments text box.
17. Click Finish.
18. Your customer points appear as a layer in your map. A shapefile (map-ready) version of your data is created and stored in the My Output Data\Cust Layers folder.







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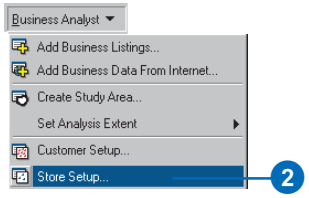
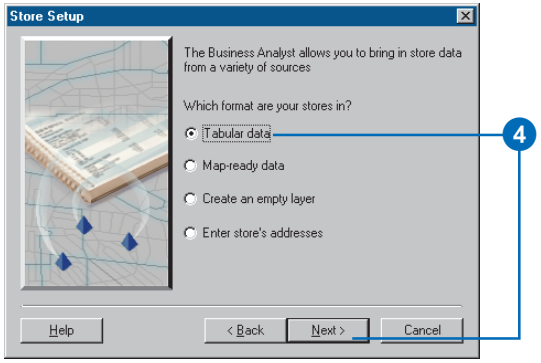
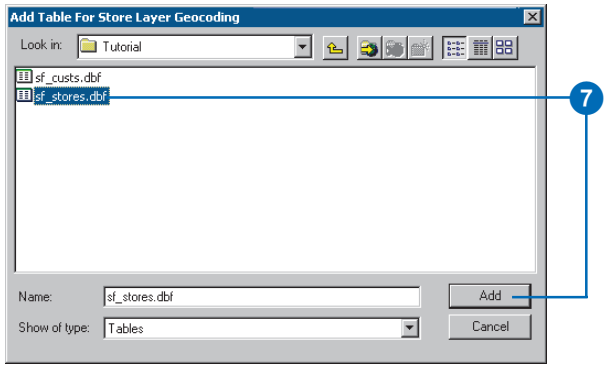
Adding stores as tabular data to your study area

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.

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 menu and click Store Setup.
3. Click Create a new store layer, then click Next.
4. Click Tabular data, then click Next.
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.
7. In the Add Table For Store Layer Geocoding dialog box, click the file that contains your store data, then click Add.
8. Click Next. ▸







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Tip

Analyzing stores

It is important to note that for Business Analyst to analyze each of your stores, each one must be uniquely identified. If you don't have the field in your database, Business Analyst can create it for you.

9. In the Geocode table of addresses dialog box, click the dropdown arrows to define your store locations.

   If you don't have the information for a specific field, click the dropdown arrow for that field and click <none>.

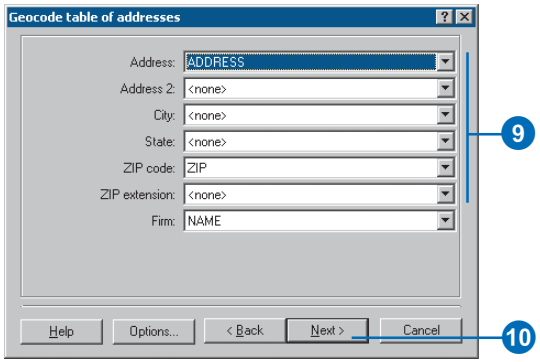
10. Click Next.

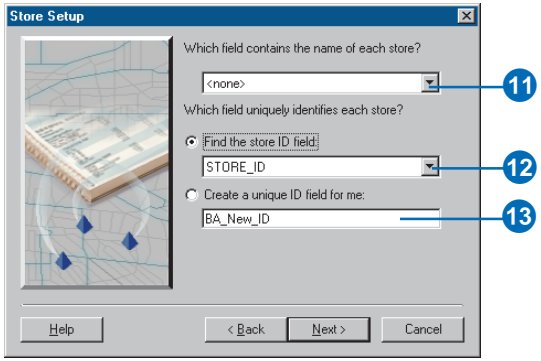
11. Click the first dropdown arrow and click the field that contains the name or store number of each store. If you don't have one, click <none>.

12. If you have a store ID field, click Find the store ID field, then click the dropdown arrow to choose it.

13. 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. ▶





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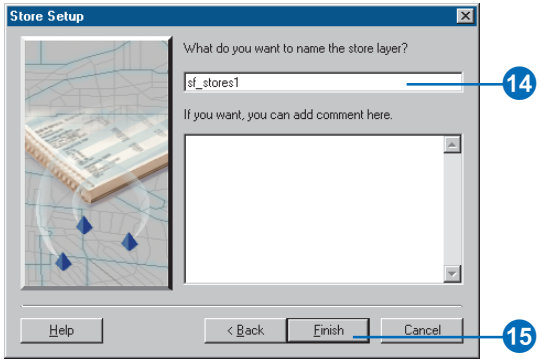
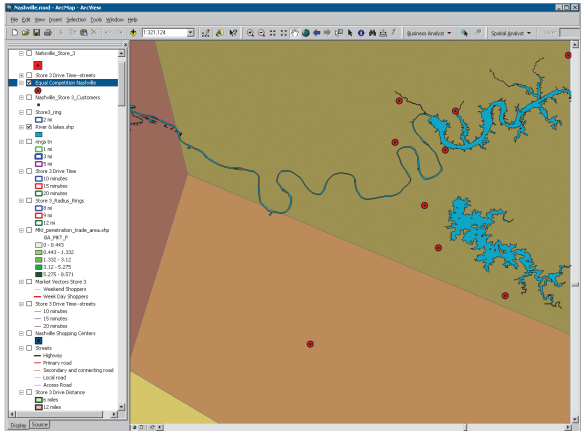
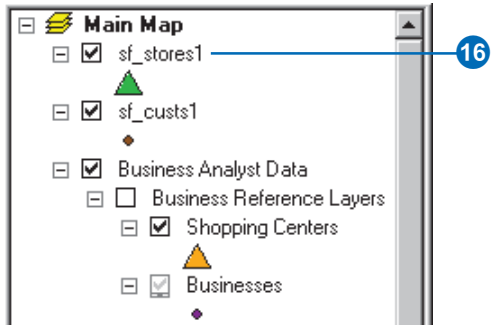
14. Type the name of the store layer in the text box. Optionally, you can type a comment in the comments text box.
15. Click Finish.

    Business Analyst geocodes your data.
16. 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 Output Data\StoreLayers folder.







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Adding customers or stores from a shapefile

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.

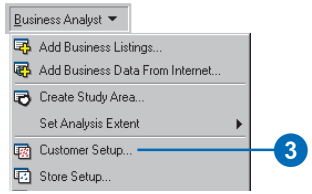
If your customers or stores are in a shapefile, this means they've already been geocoded—the shapefile just needs to be added to the study area and identified as a customer or store layer. Shapefiles have a .shp extension.

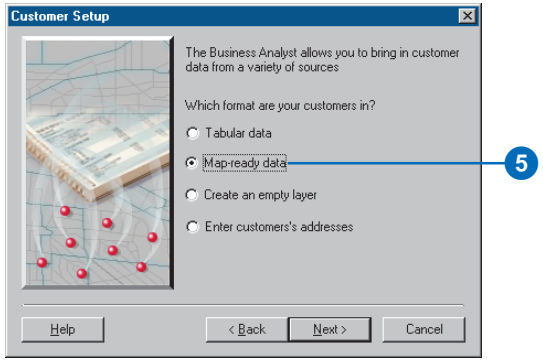
Tip

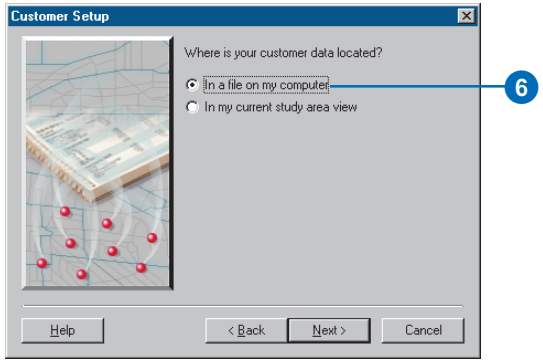
Using the Store Setup wizard for this task

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.

1. In ArcMap, open the map document to which you want to add customers.
2. Click the Business Analyst 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 and placed in its group layer.
3. Click the Business Analyst menu and click Customer Setup.
4. Click Create a new customer layer, then click Next.
5. Click Map-ready data, then click Next.
6. Click the option that describes where your customer data is located, then click Next. ▸







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7. If your shapefile is on your computer, click the Browse button. The Add Customer Layer dialog box appears. Navigate to and double-click your file, then click Next on the Customer Setup wizard. Skip to step 9.

8. If your shapefile has been added as a layer to your current study area, click the dropdown arrow to choose the layer, then click Next.

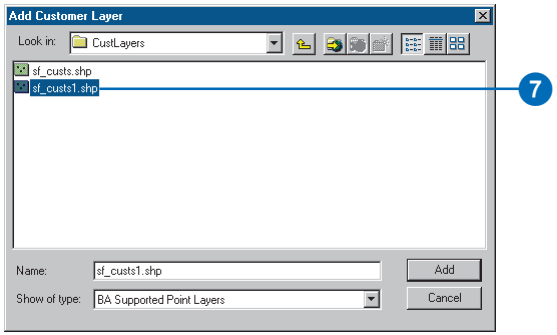
   If the shapefile isn't in the list, click Back and click In a file on my computer.

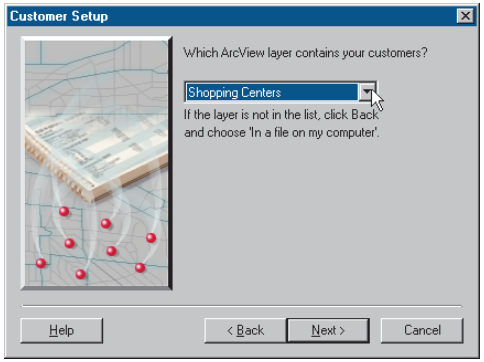
9. Click the dropdown arrow to choose the field that contains the name of each customer or store. If you don't have a name field, click <none>. Click Next to continue.

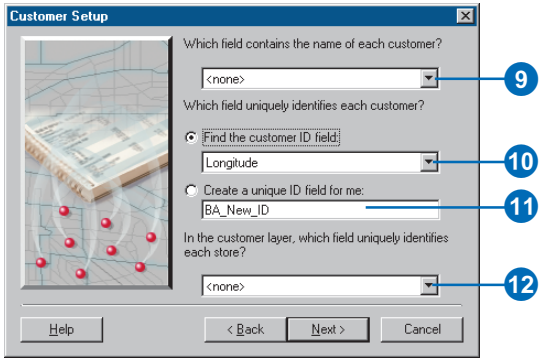
10. If you have a customer ID field, click Find the customer ID field, then click the dropdown arrow to choose it.

11. If you don't have a customer 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.

12. Click the dropdown arrow to choose the field in the customer layer that contains a unique identifier for each store. ▶







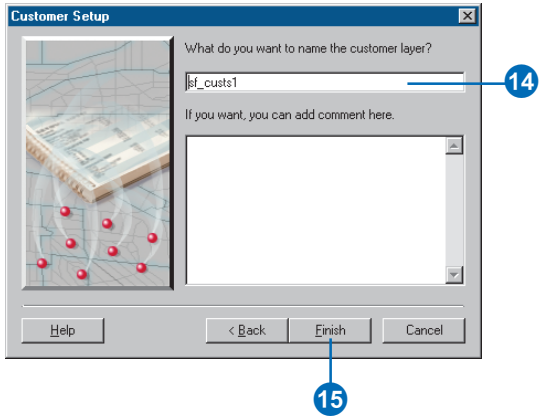
You may not have a store ID for each of your customers. In this case, click <none>. To do simple or complex customer market analyses or create desire lines, you'll need to assign each customer a store ID. You can do this after you finish the wizard by using the Assign Customers to Stores wizard in the Business Analyst menu.

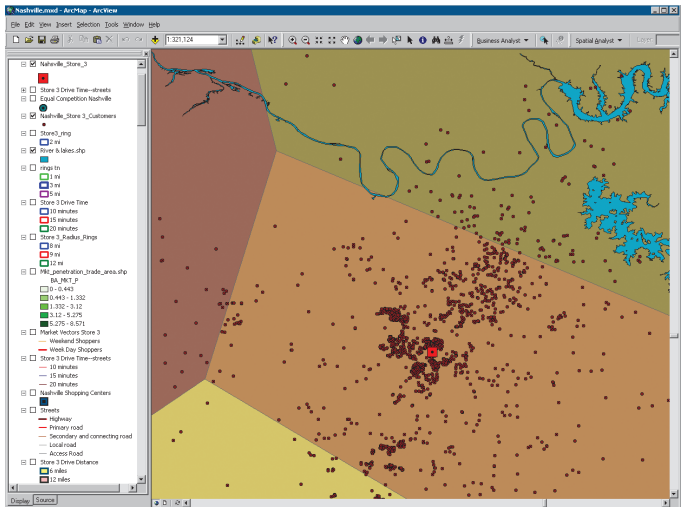
Note that you will not perform this step if you are using the Store Setup wizard.

13. Click Next.
14. Type a name and comments for your customer layer.

    You must provide a unique name but can use spaces or special characters.
15. Click Finish.

    Your customer points appear as a layer in your map.





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Analysis layer setup

Business Analyst provides a powerful tool for you to set up a layer you've added to your table of contents so it can be used in analysis. All layers that come with Business Analyst are already set up for you. However, you can revise setup on these or any other layer on your map using this wizard.

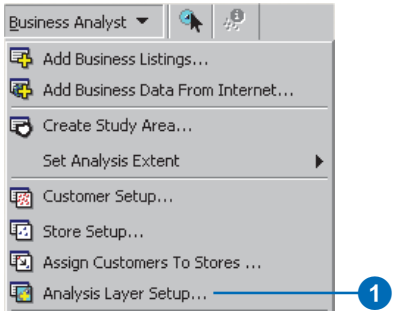
Analysis layer setup is often used for Customer or Store layers but can be used for any layer, including point and polygon layers. An example of use is setting up your sales data for analysis after joining it to a geography polygon using Spatial Overlay. You could also use your own demographic data, estimates, projections, business statistics, or consumer expenditure information.

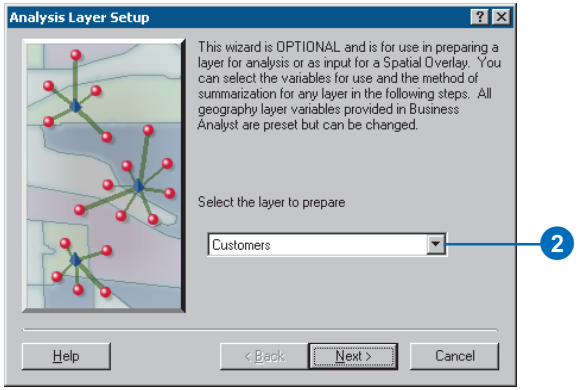
If you are setting up a point layer, you can choose the variable aggregation method and whether to weight the variable during analysis. Setting up a geographic layer (polygon) also offers a choice of apportionment method.

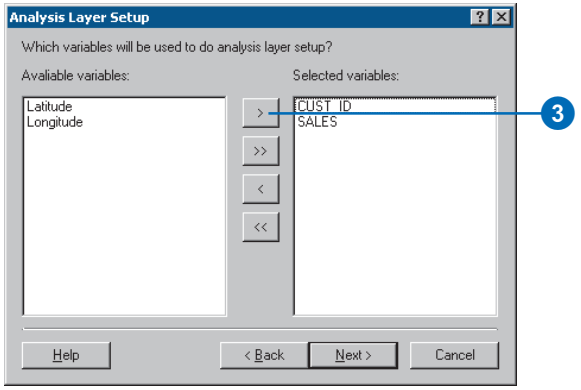
Field descriptions

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

1. Click the Business Analyst menu and click Analysis Layer Setup.
2. Click the dropdown arrow and click the layer you want to set up, then click Next.
3. Click the variable or variables with which you wish to perform the analysis layer setup and click the arrow buttons to move them over. All variables in the layer will show up here for setup, even though you may have changed the field visibility property of the layer. When you perform an analysis, the field visibility settings will be used. Click Next to continue. ►







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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 would provide you with the amount spent per household on furniture in a trade area.

Apportionment method: Used 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, HOUSING UNITS).

Tip

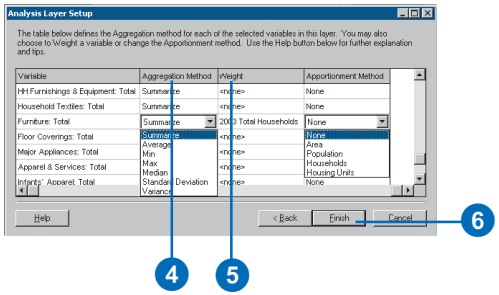
Layer variables

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.

4. Click the Aggregation Method text box, click the dropdown arrow, and click the Aggregation method you wish to use.
5. Click the Weight text box, click the dropdown arrow, and click the weight you wish to use.
6. Click Finish.

   Your analysis layer is set up.

   Note that 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.



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Adding business listings

Business Analyst provides access to the infoUSA, Inc., database of 12,000 U.S. businesses. It can be used to identify customers or competitors and includes data by industry, company name, location, sales volume, and employees.

Tip

Restricting the Business Analyst search

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

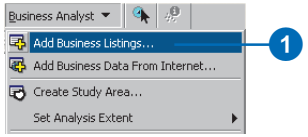
Tip

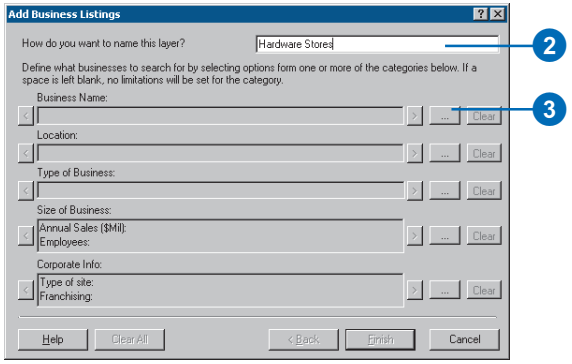
The Identify Business tool

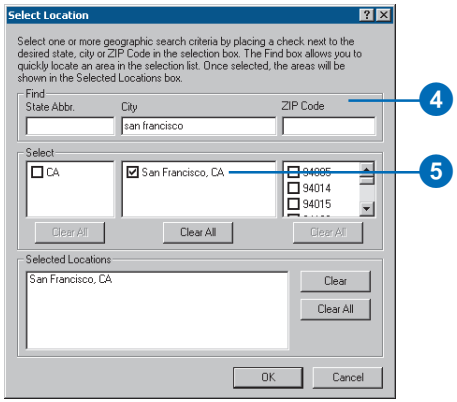
Once your business layer is added to the map, you can use the Identify Business tool on the Business Analyst toolbar. Simply click the tool and click the business point on the map to show address, telephone number, sales volume, and employee range for that individual business.

1. Click the Business Analyst menu and click Add Business Listings.
2. Type a name for the new layer of businesses in the text box.
3. Define your business search by clicking the Search definition button to the right of the desired search category. Click the Location Search definition button.

   The Select Location dialog box appears.
4. Use the Find boxes or browse the list of states, cities, or ZIP Codes.
5. Check the box that appears next to one or more geographies, then click OK to continue.
6. Click the Type of Business Search definition button. ▶







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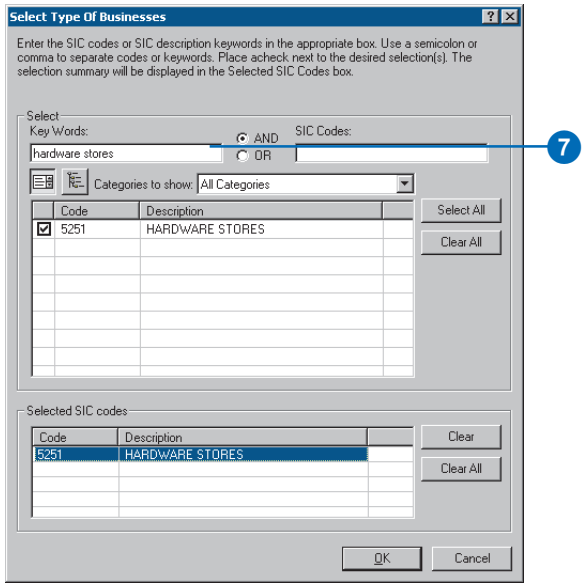
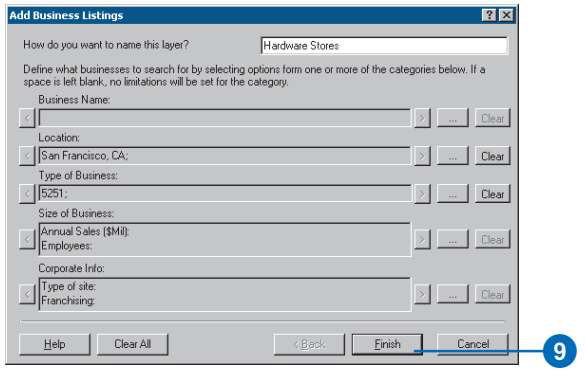
7. Enter a keyword or SIC code to search for the desired business category and check the box next to those which are desired. You also have the option of browsing the lists of SIC codes and descriptions or using the SIC tree to find your desired business category.
8. Click OK to continue.
9. Click Finish to execute your search, add the new layer to the table of contents, and plot the points on the map.





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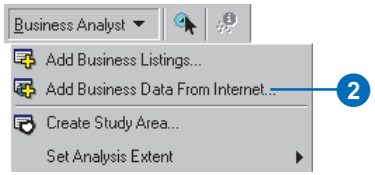
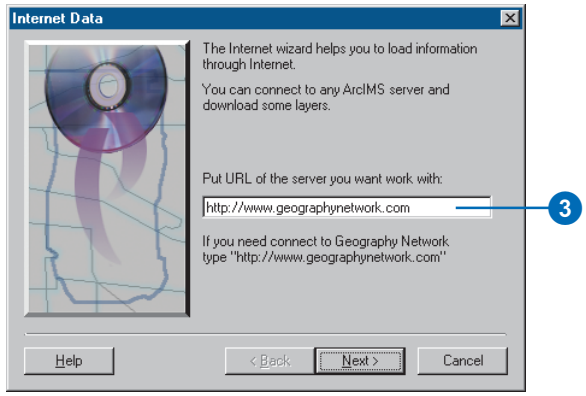
Adding business data from the Internet

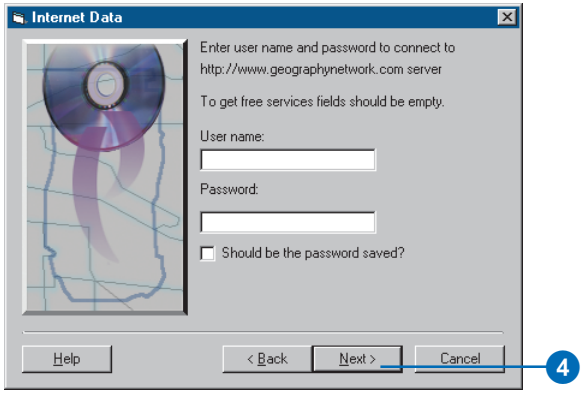
Business Analyst has a wizard that lets you add data from the Internet. Using this wizard, you can access the Web service of your choice, for example, the Geography Network℠.

1. Set the analysis extent to the study area to which you want to add Internet data.
2. Click the Business Analyst menu and click Add Business Data From Internet.
3. Type the URL of the server with which you want to work in the text box, then click Next.
4. If you have a User name and Password, type them in the text boxes. Otherwise, leave the text boxes empty and click Next.

   Business Analyst connects to the server. ▸







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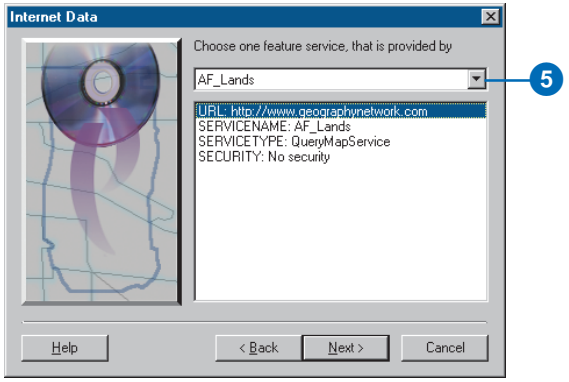
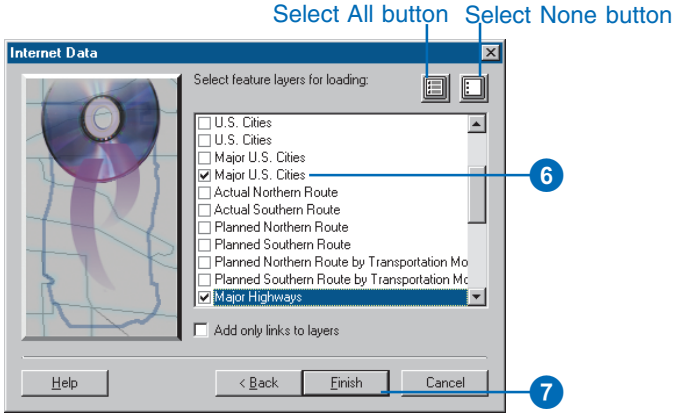
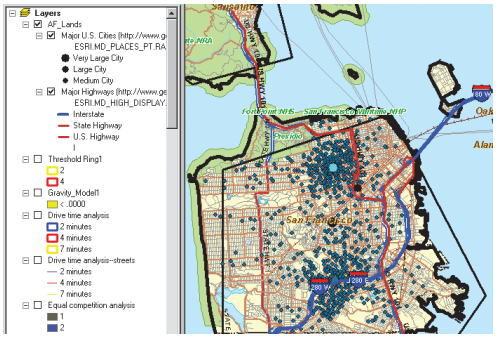
5. Click a feature service or map service and click Next.
6. Check the check box of each feature layer you want to load. To select all the feature layers, click the Select All button. To clear your selection, click the Select None button.
7. Click Finish.

   The layers you selected are added to your map.







The layers you selected are added to your map.

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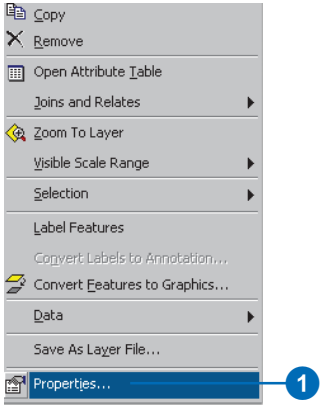
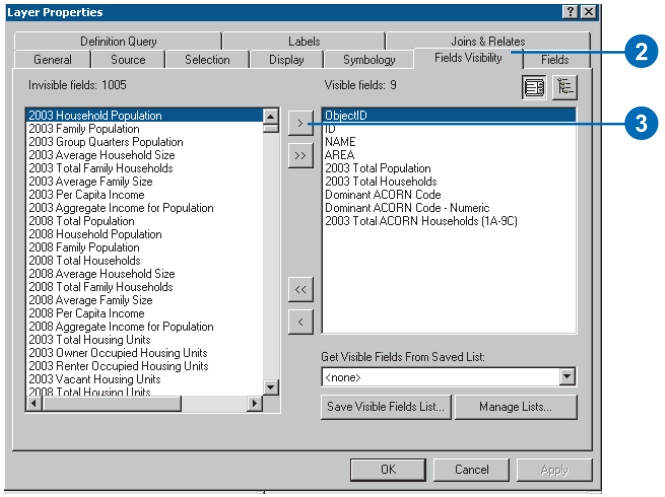
Setting field visibility

You can control which fields are visible in each layer using the Fields Visibility tab in 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 you want to change the visible fields for and click Properties.
2. Click the Fields Visibility tab and use the arrow keys to move fields you select 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 selecting one from the 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 icon. You can then browse the categories to find your desired fields.
5. Click Apply, then click OK to activate your selection.





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Opening a customer or store layer

You can add customer or store layers you've already created to a study area using the Customer Setup or Store Setup wizards. Use this if you want to add customer or store layers to a different study area from the one where they were created or if you've deleted a layer from a map (but not from Business Analyst) and want to add it again.

Tip

Using the Store Setup wizard for this task

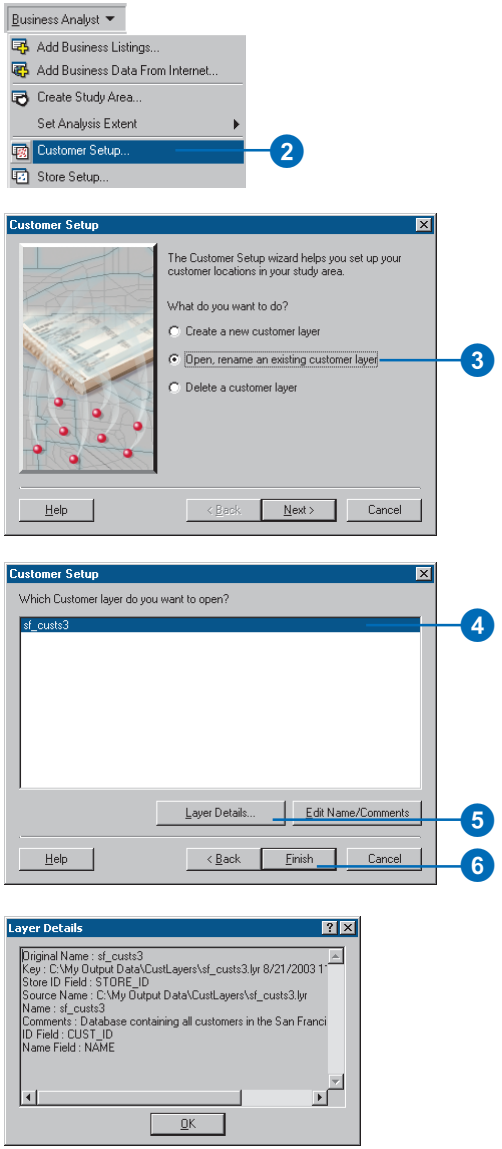
The Customer Setup and Store Setup wizards are identical for this task. You can follow the same steps using the Store Setup wizard to accomplish this with a store layer.

1. In ArcMap, open the study area to which you want to add an existing customer or store layer.
2. Click the Business Analyst menu and click Customer Setup.
3. Click Open, rename an existing customer layer, then click Next.
4. Click the layer you want to open.
5. Optionally, click the Layer Details button to see details about your customer (or store) layer. When you are finished, click OK.

   Details include:

   - Name when initially created
   - Date created
   - Store ID field
   - Directory location
   - Current name
   - Comments
   - Customer ID field (customer layer only)
   - Name field
6. Click Finish.

   The layer is opened in your study area.



The Layer Details dialog box opens when you click the Layer Details button.

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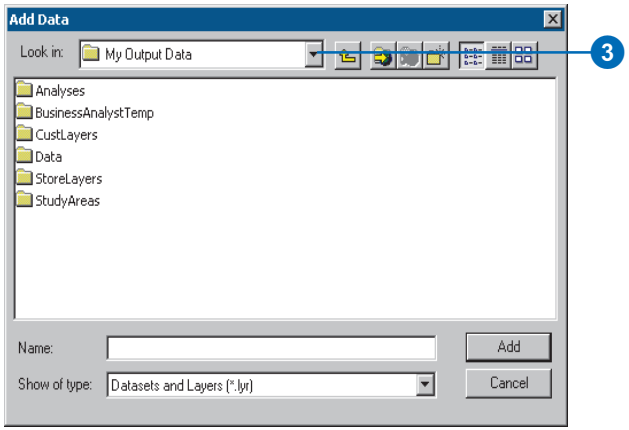
Opening an existing analysis in a new map document

You can open an existing analysis in a new map document in Business Analyst. This can save you time by preventing you from having to redo an analysis time and again.

The My Output Data folder contains subfolders for all previously performed analyses, as well as all customer layers, store layers, and study areas you have used in Business Analyst. Analyses that are associated with a particular study area are contained in that study area's subfolder in the Study Areas folder. You can click any of the .lyr files under the My Output Data folder and click Add to bring that layer into your new map document. The layer will retain its previous setup and be ready for use.

1. In ArcMap, open the map document to which you'd like to add your analysis.
2. Click the Add Data button.
3. In the Add Data dialog box, click the Look in dropdown arrow and navigate to your My Output Data folder.
4. Click the .lyr file that contains the analysis you want to use, then click Add.

   The existing analysis is added to your map.



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Renaming a customer or store layer or adding comments

You can change the name of an existing customer or store layer or add comments by using the Customer Setup or Store Setup wizard.

Tip

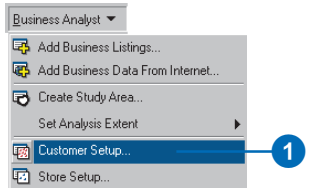
Using the Store Setup wizard for this task

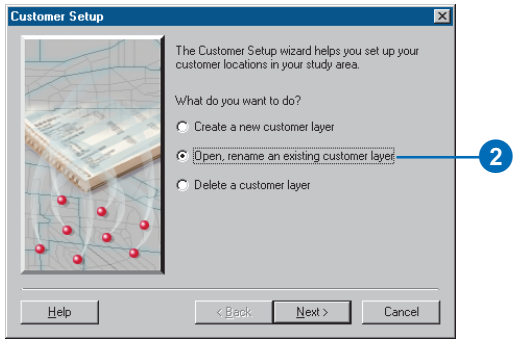
The Customer Setup and Store Setup wizards are identical for this task. You can follow the same steps using the Store Setup wizard to accomplish this with a store layer.

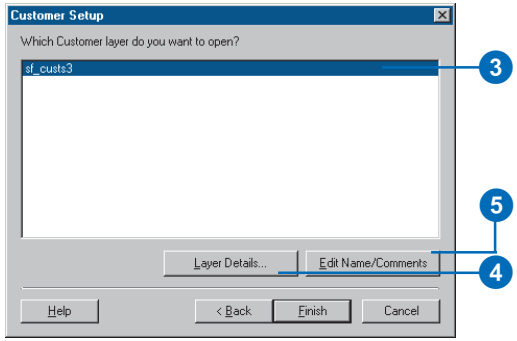
1. Click the Business Analyst menu and click Customer Setup.
2. Click Open, rename an existing customer layer, then click Next.
3. Click the name of the layer whose name or comments you want to edit.
4. Click the Layer Details button to see details about your customer or layer. Click OK when you're finished.

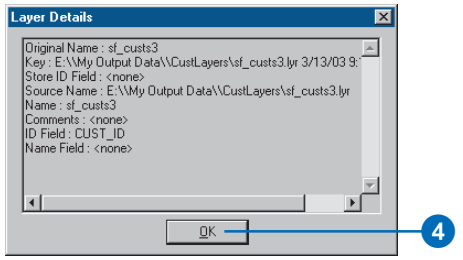
   Details:

   - Name when initially created
   - Date created
   - Store ID field
   - Directory location
   - Current name
   - Comments
   - Customer ID field (customer layer only)
   - Name field
5. Click the Edit Name/Comments button to edit the layer name or add comments about it. ▶









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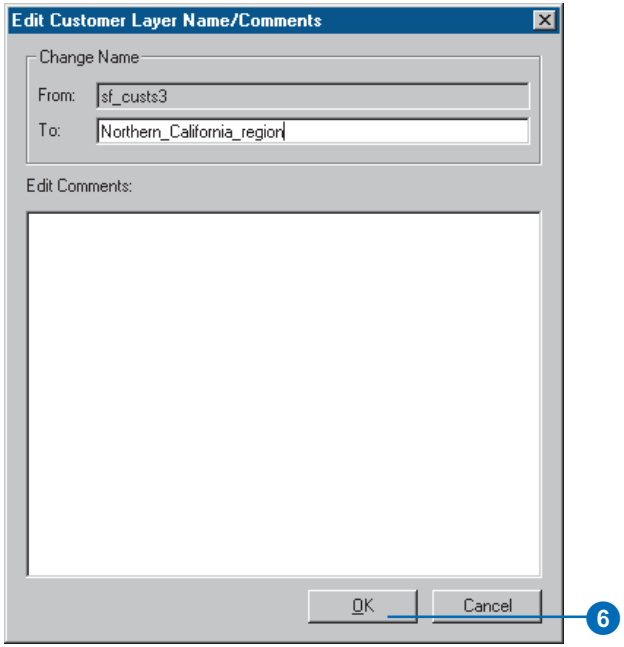
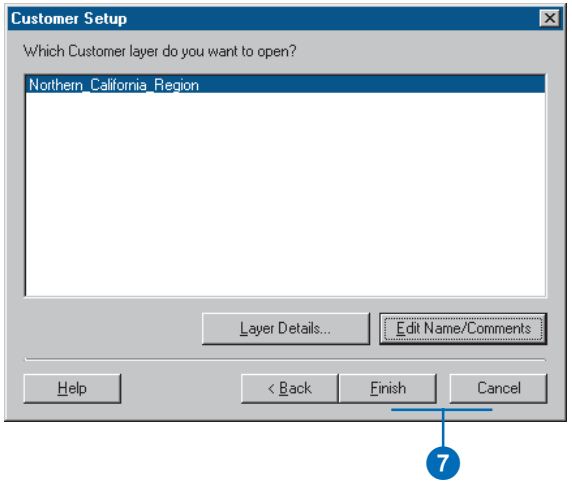
6. When you are finished editing the name and adding comments, click OK to commit the changes.
7. If you want to open the layer into the study area that's open, click Finish on the Customer Setup wizard. If not, click Cancel on the Customer Setup wizard. Your changes will still be implemented.





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Deleting a customer or store layer

To permanently delete a customer or store layer from your current map and from Business Analyst, use the Customer Setup or Store Setup wizard.

Tip

Removing a layer from your current map without permanently deleting it from Business Analyst

You can use ArcGIS to remove a layer from your current map without permanently deleting it. To do this, right-click the name of the layer in the map's table of contents, click Remove, and the layer is removed. You can add it again using the Customer Setup or Store Setup wizard or by using the Add Data button.

Tip

Using the Store Setup wizard 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.

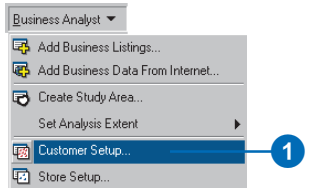
1. Click the Business Analyst menu and click Customer Setup.
2. Click Delete a customer layer, then click Next.
3. Check the box next to each layer you wish to delete.

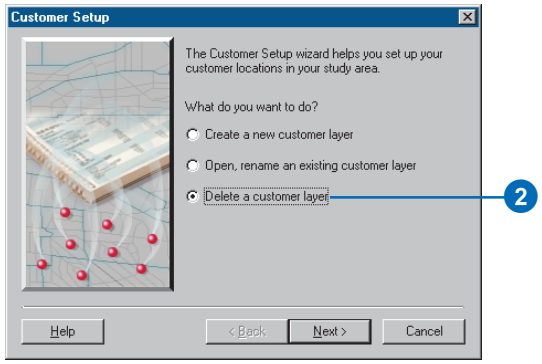
   To select all layers for deletion, click the Select All button. To clear your selection, click the Select None button.
4. Optionally, click a layer and click the Layer Details button to see details about the selected layer. When you are finished, click OK.

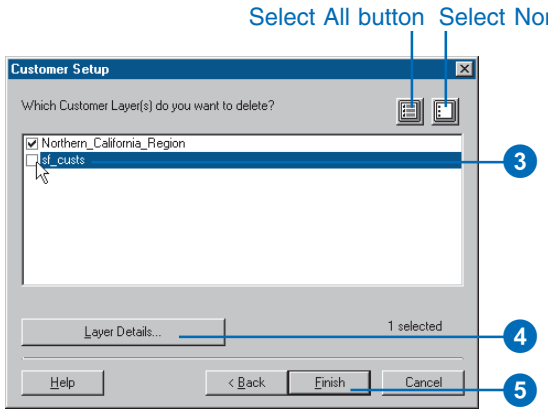
   Details:

   - Name when initially created
   - Date created
   - Store ID field
   - Directory location
   - Current name
   - Comments
   - Customer ID field (customer layer only)
   - Name field
5. Click Finish.

   The checked layers are permanently deleted from your map and from Business Analyst.







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Substituting your own terms for “customers” and “stores”

You can substitute other terms for “customers” and “stores” using the Preferences wizard, for example, banks and clients, hospitals and patients, or preschools and children—whatever fits your line of work. The Preferences wizard customizes Business Analyst for you, using the terms you choose on all the wizard panels.

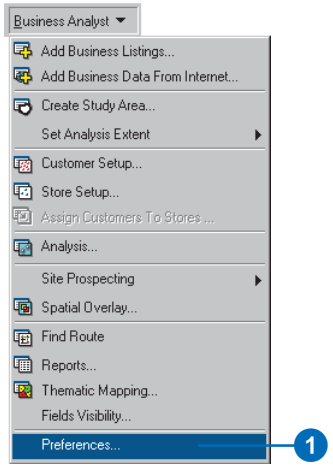
Tip

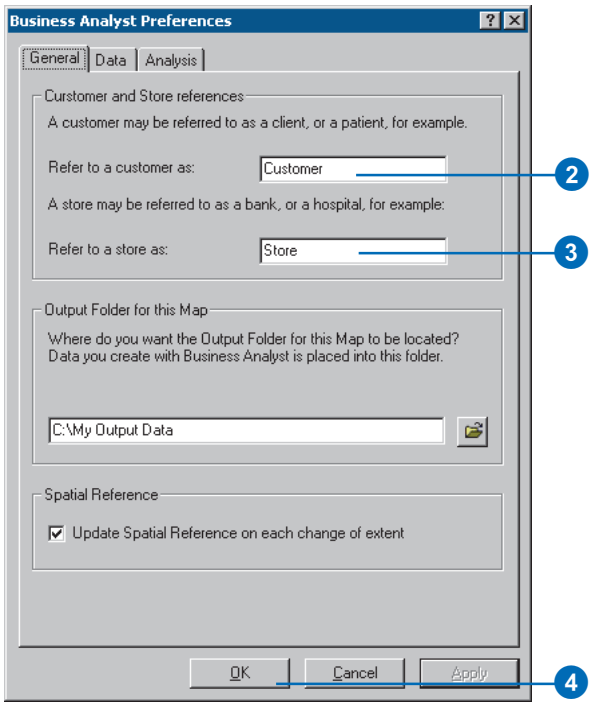
The Preferences dialog box

The Preferences dialog box lets you 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 how rings and group layers are displayed and named (using the Analysis tab). The General tab lets you specify the location of the Output folder to store data, analyses, and study areas for your maps as well as turning 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 menu and click Preferences.
2. On the General tab, type the term you want to use to refer to customers.
3. On the General tab, type the term you want to use to refer to stores.
4. Click Apply, then click OK.

   Your preferences will be used throughout the Business Analyst wizards.





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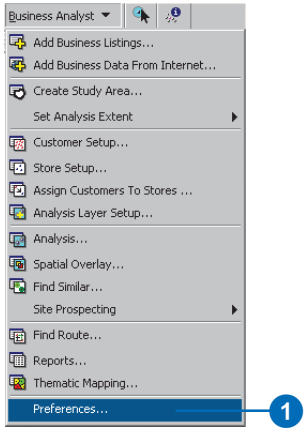
Setting preferences for working with data

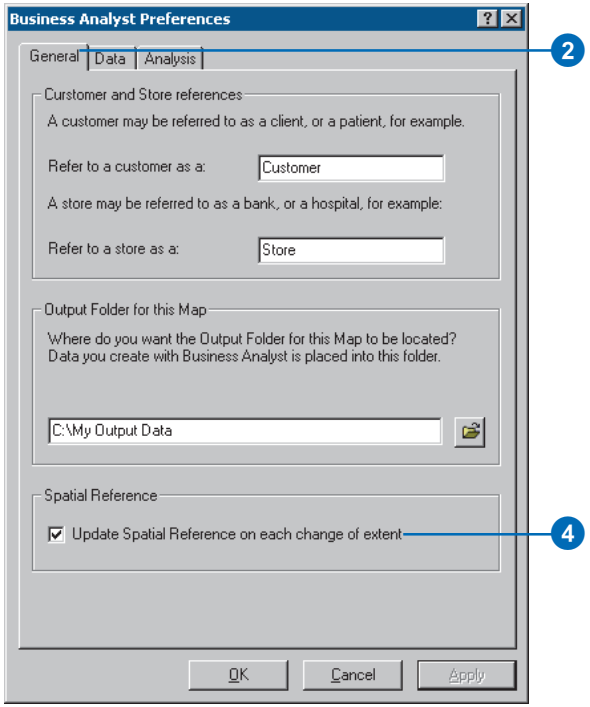
The Preferences dialog box in Business Analyst is used to set locations for major data components that come with the product (that is, ESRI Business Information Solutions [ESRI BIS] demographic data, infoUSA business listings, StreetMap USA, and so on) as well as your preferences for data output locations. It also lets you organize the analyses you create.

The Preferences dialog box has three tabs: General, Data, and Analysis. This section explains how to use each tab.

The General tab

1. In ArcMap, click the Business Analyst menu and click Preferences.
2. Click the General tab.
3. In addition to allowing you to change the reference words for customers and stores, the General tab lets you define the name and location for the My Output Data folder. This folder contains the customers, stores, analyses, and study areas associated with the map document.
4. The General tab also contains a check box that lets you turn an automatic Spatial Reference update on and off. This 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 update check box is 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.





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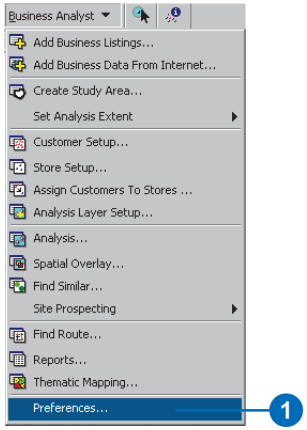
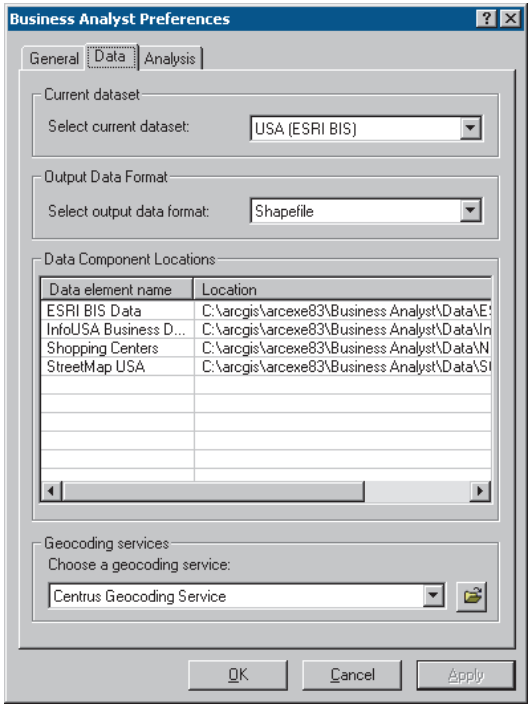
The Data tab

The Data tab lets you set the current dataset and locations for major datasets that are provided with Business Analyst.

1. In ArcMap, click the Business Analyst menu and click Preferences.
2. Click the Data tab.
3. The Data tab has several purposes. If you have more than one primary demographic dataset (for example, ESRI BIS and AGS), you can choose the current dataset using the first dropdown arrow.
4. In the Output Data Format box, you can define whether or not output data is stored in shapefile or personal geodatabase format.
5. The Data Component Locations box defines where each of the primary Business Analyst data products can be found. This permits you to locate data in different places on your hard drive or to refer to your DVD drive to access data.

   Note that accessing large amounts of data from a DVD will decrease the performance of Business Analyst.
6. The Geocoding services box lets you select your desired geocoder if you have more than one.





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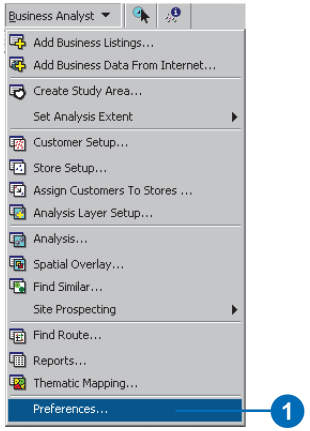
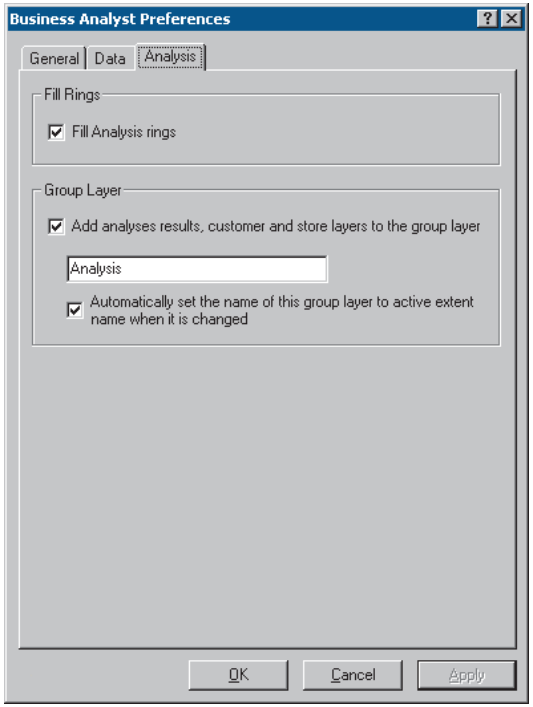
The Analysis tab

The Analysis tab lets you 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.

1. In ArcMap, click the Business Analyst menu and click Preferences.
2. Click the Analysis tab.
3. The Analysis tab contains a Fill Rings box that lets you 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. If you want color, check the 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).
4. The Group Layer box lets you choose whether or not customer layers, store layers, and analysis layers are added to the map inside a defined group layer. You can also name the group layer in this text box.
5. Optionally, you can check the box to automatically set the name of the group layer to be that of the active analysis extent at the time the layer (customer, store, or analysis) is added to the map document.





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Customer analysis

6

IN THIS CHAPTER

- Assigning a store ID to your customers by closest store, trade area, or database assignments
- Creating simple and complex market areas
- Creating market areas around your customers
- Desire lines
- Calculating market penetration
- Potential sites
- Opening an analysis
- Renaming an analysis or adding comments
- Modifying an analysis
- Permanently deleting an analysis

Businesses spend millions of dollars annually on focus groups, market surveys, and other instruments to find out where people shop and why they shop where they do.

Creating market areas

Though *market areas* can be defined by drawing a simple ring around a store, the more precise the market area, the better the analysis. The better the analysis, the better the plans to manage, improve, and expand business within each market area.

With a precisely defined market area, you can target your advertising to efficiently reach your customers exactly where they are. With a precisely defined market area, you can locate a new store in an area with the same demographics as your most successful store and get the most out of your marketing dollars.

Only stores that fall within your study area will be analyzed if a study area has been defined.

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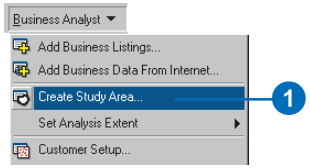
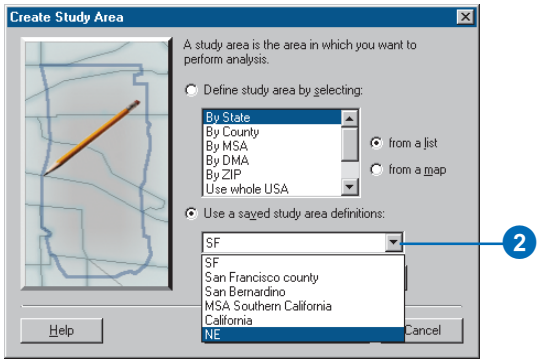
Assigning a store ID to your customers by closest store

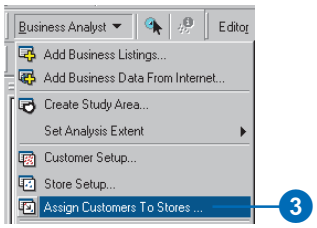
To create market areas around your customers or to create desire lines, your customer data must contain a field that associates each customer with a particular store. If you don't have such a field, you can create one using the Assign Customers to Stores wizard.

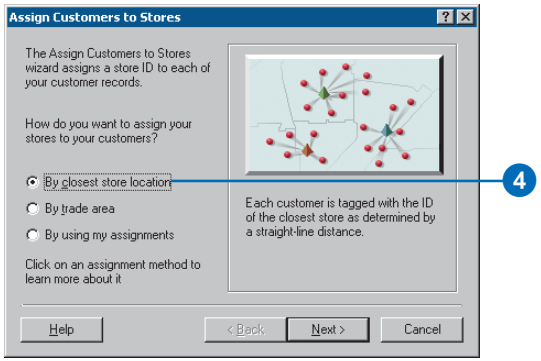
This method assigns each customer the ID of the store that is closest—by straight-line distance.

1. In ArcMap, click the Business Analyst menu and click Create Study Area.
2. Click Use a saved study area definitions, then click the dropdown arrow and click the study area with which you want to work.
3. Click the Business Analyst menu and click Assign Customers To Stores.
4. Click By closest store location, then click Next. ▶









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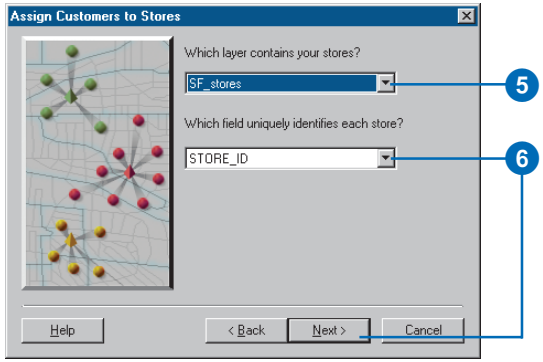
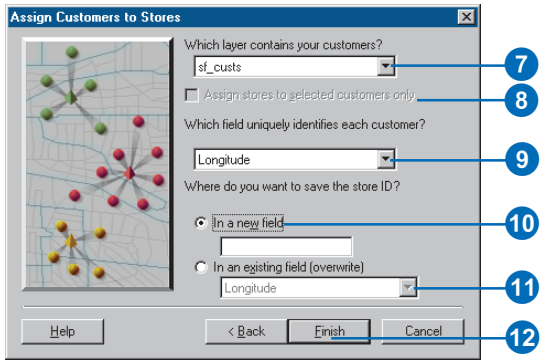
5. Click the dropdown arrow to choose the layer that contains your stores.
6. Click the dropdown arrow to choose the field in the store data that uniquely identifies each store, then click Next.
7. Click the dropdown arrow to choose the layer that contains your customers.
8. If you want to assign stores to only selected customers, you need to select a subset of customers prior to using this wizard, then return here and check the check box.
9. Click the dropdown arrow to choose the field that contains each customer's ID.
10. Click In a new field and type a name for the field if you want to save the store ID in a new field.
11. Click the dropdown arrow to choose the field you want overwritten if you want to overwrite an existing field in your customer data.
12. Click Finish.

    A store ID field is added to the customer data, and the customer points are displayed as different colors for each store.





CITY_NAME	ST_CODE	PSTL_CODE	LTD_PURCH_	STORE_ID
BELL BUCKLE	TN	37020-4838	300.15	3
FRANKLIN	TN	37064-5443	554.47	3
FRANKLIN	TN	37064-5127	203.84	3
FRANKLIN	TN	37064-5552	90.75	3
FRANKLIN	TN	37064-6712	18.85	3
FRANKLIN	TN	37064-0753	74.68	3
BRENTWOOD	TN	37027-8521	6.95	3
SPRING HILL	TN	37174-1004	81.85	3

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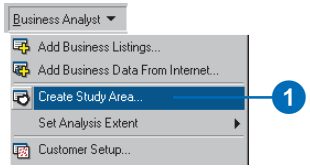
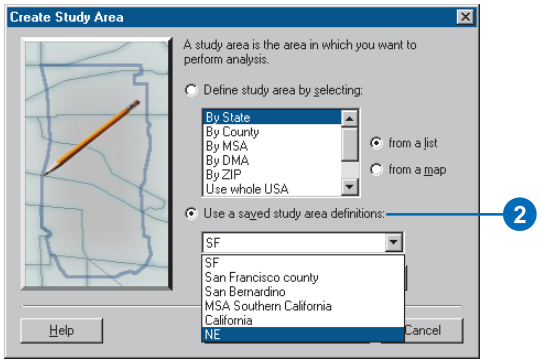
Assigning a store ID to your customers by trade area

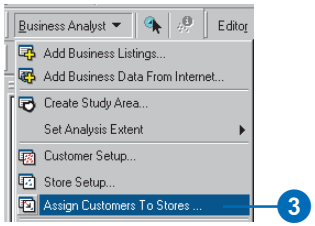
You can assign your customers a store ID based on a store market analysis trade area you've created (simple ring, data-driven ring, equal competition, or drive time). Each trade area has a store ID associated with it, so the wizard assigns that ID to the customers that fall within the trade area.

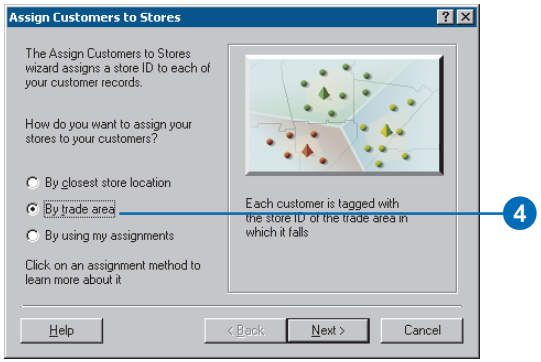
If any of the trade areas are overlapping, you may have to edit the customer data for those that fall within the overlap.

1. In ArcMap, click the Business Analyst menu and click Create Study Area.
2. Click Use a saved study area definitions, then click the dropdown arrow and click the study area with which you want to work.
3. Click the Business Analyst menu and click Assign Customers To Stores.
4. Click By trade area, then click Next. ►









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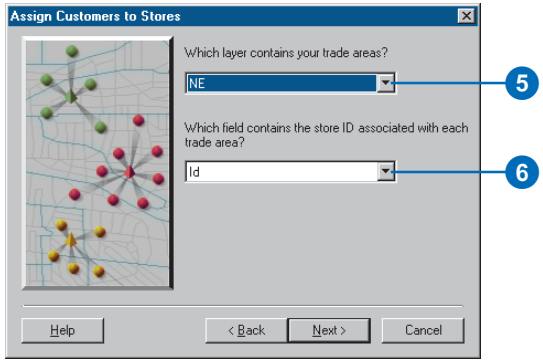
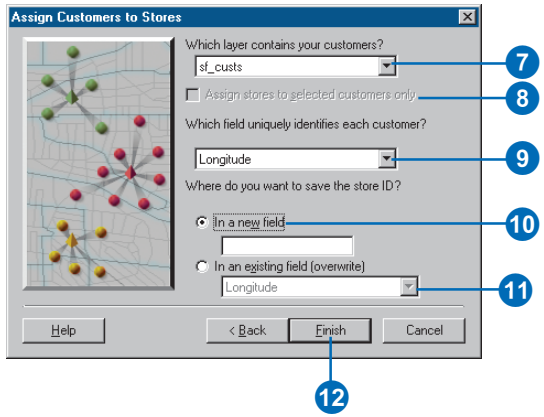
5. Click the dropdown arrow to choose the layer that contains your trade areas.
6. Click the dropdown arrow to choose the field that contains the store ID for each trade area, then click Next.
7. Click the dropdown arrow to choose the layer that contains your customers.
8. If you want to assign stores only to selected customers, click the check box.
9. Click the dropdown arrow to choose the field that contains each customer's ID.
10. Click In a new field and type a name for the field if you want to save the store ID in a new field.
11. Click the dropdown arrow and click the field you want overwritten if you want to overwrite an existing field in your customer data.
12. Click Finish.

    A store ID field is added to the customer data, and the customer points are displayed as different colors for each trade area. If your trade area is on top of your customer layer, you may have to uncheck the trade area to see the coloring.





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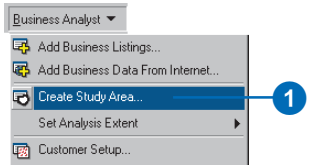
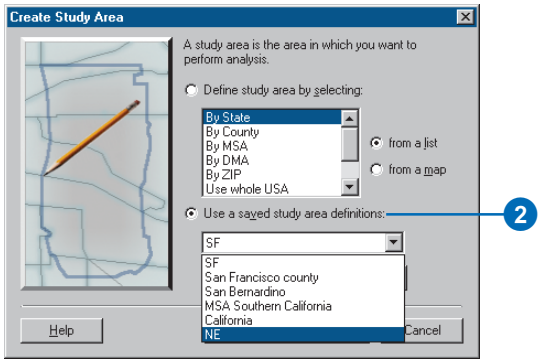
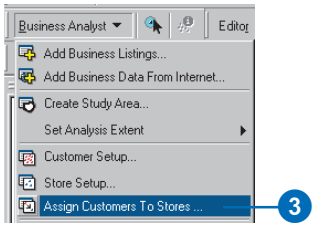
Assigning a store ID to your customers using your database assignments

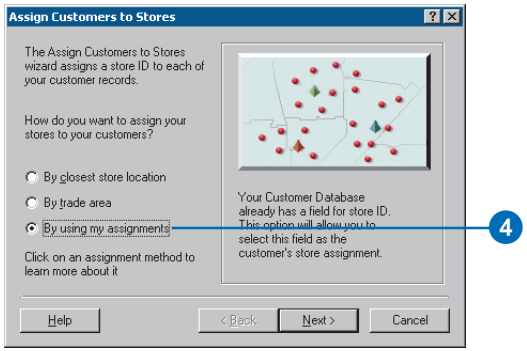
If you already have a field in your database to assign a store ID to each customer, this method will alert Business Analyst to make use of that field for the assignment. Perhaps you have coded each customer record in the database based on the store they actually visited.

1. In ArcMap, click the Business Analyst menu and click Create Study Area.
2. Click Use a saved study area definitions, then click the dropdown arrow and click the study area with which you want to work.
3. Click the Business Analyst menu and click Assign Customers To Stores.
4. Click By using my assignments. ►









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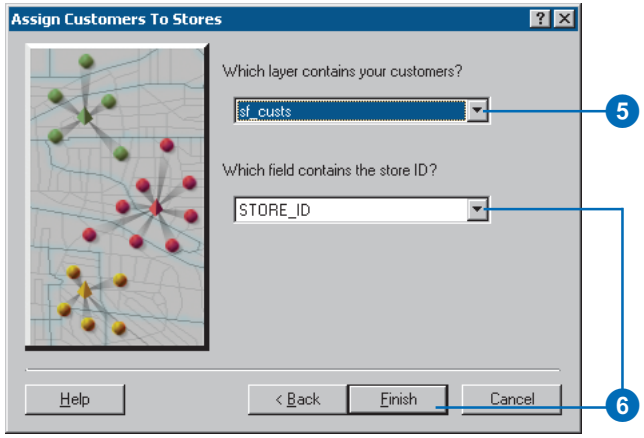
5. Click the dropdown arrow to choose the layer that contains your customers.
6. Click the dropdown arrow to choose the field in the customer data that uniquely identifies each store, then click Finish.



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Creating simple and complex market areas

Simple market areas

One of the most commonly used customer market areas is a simple market area. Simple market areas are easy to calculate, require less processing time, and give an acceptable, initial estimate of the size and shape of the market area. This method accurately represents each store's actual area of influence but not to the same level of detail as a complex market area.

Primary, secondary, and tertiary markets

Business Analyst lets you create one, two, or three market areas around your store (called primary, secondary, and tertiary markets). More than three are not often used but are possible with ArcGIS Business Analyst.

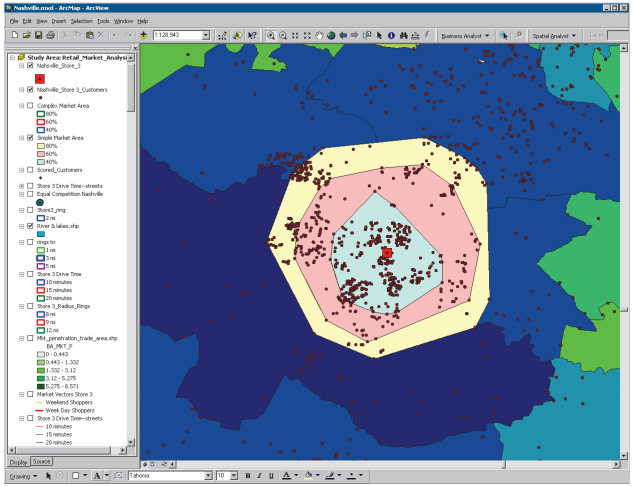
These market areas can be determined by:

- Number of customers
- Weighted value (any numerical information in the customer database, such as sales, visits, or any numeric value)

Business Analyst creates a boundary around the outermost set of customer points that meet the specified criteria. This is the most accurate method of defining a market area.

Creating simple market areas by number of customers

If you define your market areas by number of customers, Business Analyst uses the customer points around each store to create areas that include the percentage of customers nearest to the store that you've specified. This is shown in the following graphic.



In the graphic above, the market areas drawn around each store include 40, 60, and 80 percent of the store's customers. You can see that although the primary market area (40 percent of customers) of Store #3 is small, it encompasses roughly the same number of customer points as the combined secondary and tertiary market areas.

Example: Simple customer market area by number of customers

Suppose you own several stores in a small area. You want to make sure that you don't have more than one store serving any particular group of customers. By creating simple market areas around each store, you can see where the market overlap

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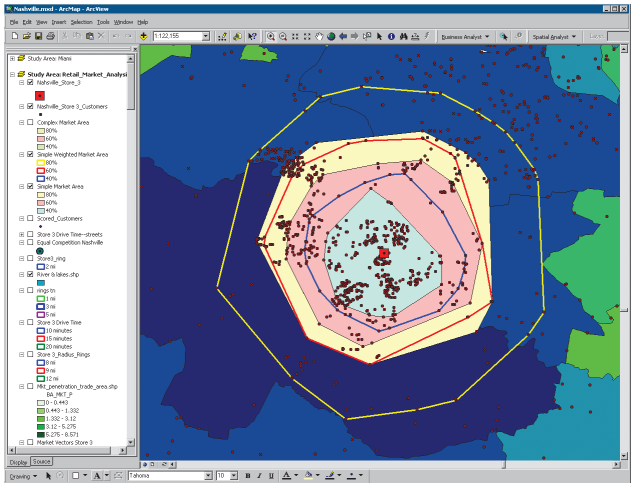
becomes apparent, which will help you avoid stores that serve the same group of customers.

Creating simple market areas by weighted value

When creating simple market areas by number of customers, each customer is considered equally when the boundary of each area is calculated. When using a weighted value to define your market areas, however, each customer represents an individual value. When defined by a weighted value (sales), the primary market areas below look different from the graphic where they were defined by number of customers. The following graphic shows the comparison of the two approaches.



Instead of calculating the primary market area as 40 percent of a store's total customers, it's now calculated as the set of customers that account for 40 percent of the store's sales. The customer points remain the same, but the boundaries shift according to spending.

Example: Simple customer market area by weighted value

Suppose your business wants to cut advertising costs. Normally, you send mail to everyone in the ZIP Code areas around your store. Now, you can use Business Analyst to create a simple market area defined by a weighted value (sales). By mailing only to the customers who buy the most, you can save on printing and postage costs. By profiling your customers, you can identify what your best customers look like, prospect for more households that look like the best customers, then order a mailing list for those households. This will reduce mailing costs because you are only mailing to selected households, not saturation mailing to everyone in a ZIP Code.

Some other examples of ways simple customer-based market analyses are used include:

- A public golf course maps weekday and weekend customers and modifies its cable television advertising to attract new customers in target areas.
- A bank uses primary market demographics to fine-tune personnel assignments. More loan processors are needed in areas with young, expanding families, and additional investment officers are assigned to older, high-income neighborhoods.
- An HMO with branch clinics assesses medical specialization visits in each location's primary market area. Staffing assignments are adjusted accordingly to improve efficiency.
- A major insurance company maps the primary market area of every agent in each MSA. Agent penetration rates can then be calculated by dividing agent households by census households.

Because they reflect actual consumer patterns, simple, customer-based market areas can tell you a great deal about market overlap,

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market cannibalization, and other factors that affect stores serving the same general market.

Defining the outer market areas

When you create more than one market area, you can also choose whether you want the market area rings defined as overlapping or donut. Overlapping rings are inclusive; donut rings are exclusive.

If the rings of the graphic on the following page were defined as donut rings, the primary market area would consist of only ring 1, the secondary market of only ring 2, and the tertiary market of only ring 3.

An income report for donut rings might look like this:

Market	Total households	Average income
Primary	13,316	$48,961
Secondary	12,015	$65,783
Tertiary	47,207	$53,631

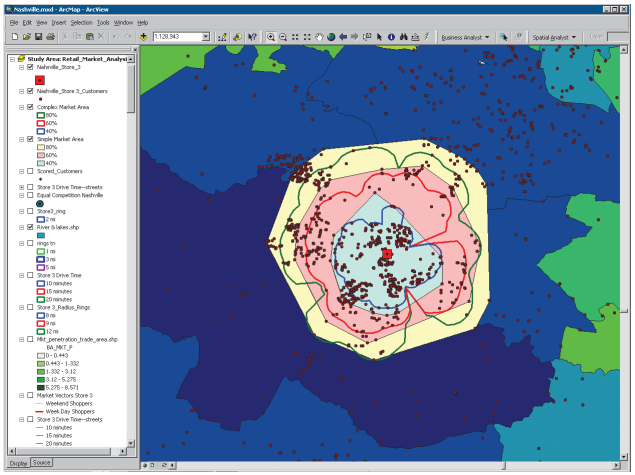
If the outer rings were defined as overlapping, the primary market area would consist of ring 1, the secondary market area of rings 1 and 2, and the tertiary market of rings 1, 2, and 3.

An income report for overlapping rings might look like this:

Market	Total households	Average income
Primary	13,316	$48,961
Secondary	25,331	$56,940
Tertiary	72,538	$54,786

Complex market areas

Complex customer-based market areas, often called *amoebas* because of their shape, are calculated by finding the outermost customers of a store. The market area created defines peaks and valleys of the customers and is the most accurate method of defining a market area. These customer points are then connected to draw the market area. While simple customer-based market areas are primarily circular in shape, complex market areas have irregular shapes. These irregular shapes reflect your true customer base by excluding areas without customers. *Complex market areas* are more accurate than simple because they respond to physical and cultural barriers, revealing nuances in the market area size and shape that may not be apparent in simple market areas, as shown in the following graphic.



Just like simple market areas, complex market areas can be primary, secondary, or tertiary and can be calculated by the number of customers or by weighted value (such as sales or visits).

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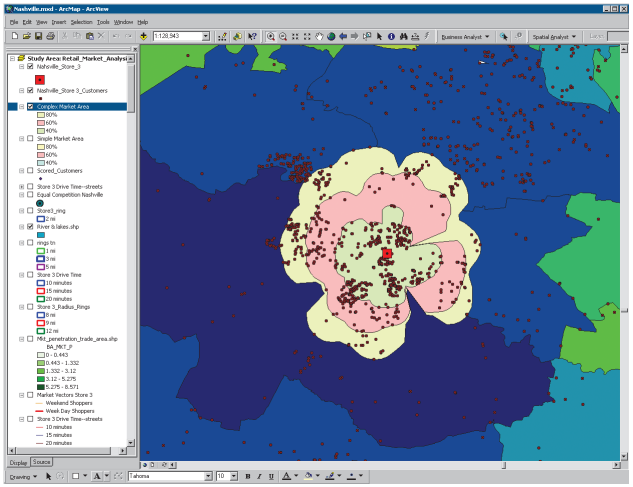
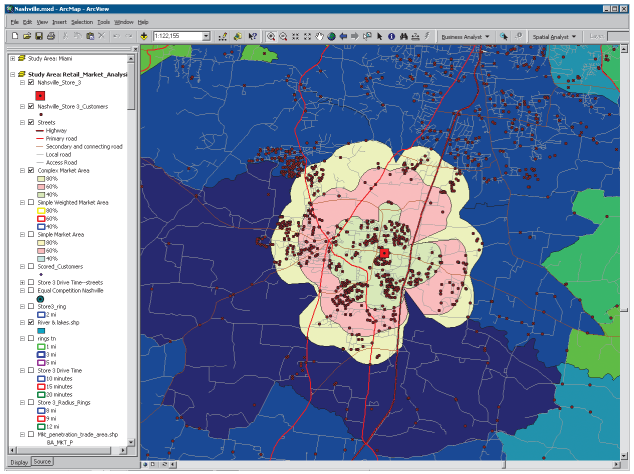
Creating complex market areas by number of customers

The graphic below shows complex market areas calculated by number of customers. When compared with the simple market areas for the same customer set, it is apparent that the complex areas are a much more detailed representation of the actual customer points, as shown in the following graphic:



Example: Complex customer market area by number of customers

Complex customer market areas are an excellent way to estimate the impact of physical barriers or things that limit accessibility to your business. The graphic below shows how the market area of the store is cut off by the river and the highway. There are some customers on the other side of the freeway, but they have to make a greater effort to shop at the store. Most consumers will simply choose a more convenient location. This is shown in the following graphic:



Creating complex market areas by weighted value

As with simple market areas, the boundaries of the market area will change when the database contains a weighted value such as the number of store visits or total purchases. Here, the same customer set is used to create complex market areas, this time weighted by sales.

Example: Complex customer market area by weighted value

Amoeba customer-based market areas are also used to analyze the impact of underlying cultural, demographic, and socioeconomic differences. A store's market area may penetrate a white, English-speaking area quite well, but have a small presence in a Spanish-speaking neighborhood in another direction.

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Advertising in Spanish sent to those neighborhoods results in increased sales.

Some other examples of ways complex customer-based market analyses are used include:

- A large retail chain uses complex customer market areas to measure and plan for the economic impact of an 18-month bridge closing that will cut off an important sector of one of its major store's market areas.
- A women's clothing chain compares the demographics of the complex market containing the top 30 percent of sales to one capturing the bottom 30 percent of sales. Newspaper advertising is adjusted accordingly in the two markets.
- An insurance company compares the complex market areas weighted by auto policies to those weighted by homeowner policies. The comparisons help them decide whether or not the variations make sense, given underlying market area demographics (such as more apartments in one area and fewer automobiles per household in another).

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Creating market areas around your customers

Use the Customer Market Analysis option of the Analysis wizard to create market areas around your stores based on the number of customers or some other characteristic of the customers. You have the option of using only selected records, so two options for doing this selection are shown in this section.

Complex market areas are calculated by finding the most distant customer in each of 360 "imaginary" sectors drawn out from the associated store location in 1 degree radial increments. If the customer set for a store is larger than 100,000 records, Business Analyst will take a longer time to process the analysis results.

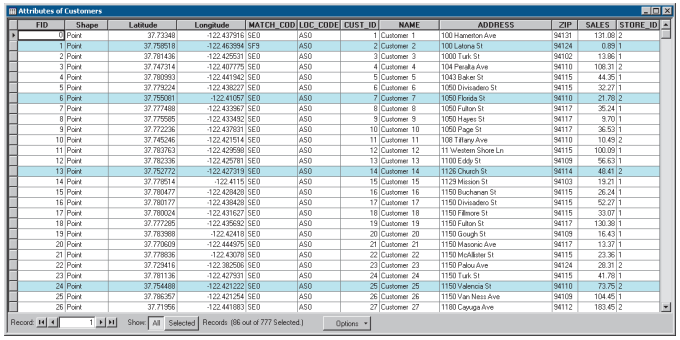
Selecting features by clicking the map

1. On the ArcMap menu, click Selection and click Set Selectable Layers. Click Clear All, then check the desired layer from which you want to select. Click Close to continue.
2. Click the Select Features tool and click the feature. To select more than one feature, hold down Shift when you use the tool.

   You can also use this tool to drag a box over a group of features you want to select. Features that are selected will be highlighted blue.
3. To deselect a feature that's already selected, hold down Shift and click the feature using the Select Features tool.
4. Right-click the layer in the table of contents and click Open Attribute Table.

   The attribute table appears.

Selected features are highlighted in blue.



The attribute table appears.

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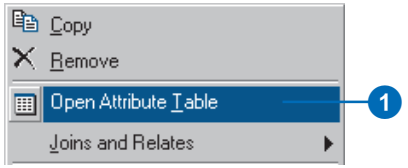
Tip

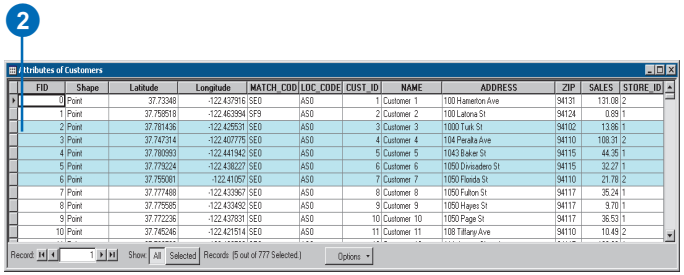
Selecting multiple records

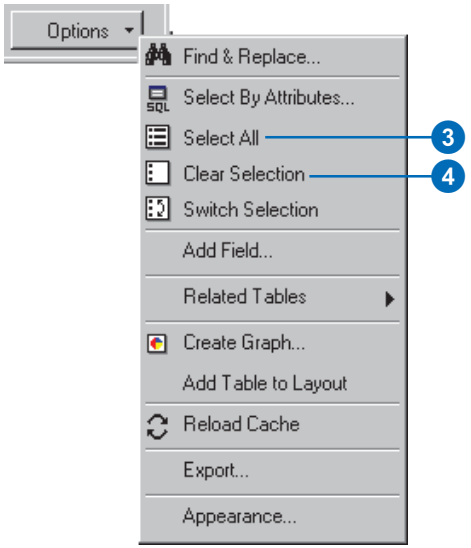
You can also select multiple records in the attribute table by clicking next to a record and dragging down over all the records until you have selected all the records you want.

Selecting features by clicking the record in the attribute table

1. Right-click the layer in the table of contents that contains the feature or features you want to select, then click Open Attribute Table.
2. In the attribute table, click next to the record you want to select.
3. To select all the records, click the Options button and click Select All.
4. To deselect all the records, click the Options button and click Clear Selection.







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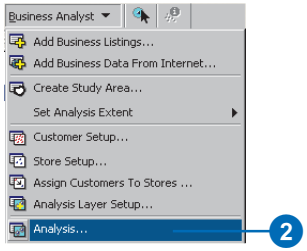
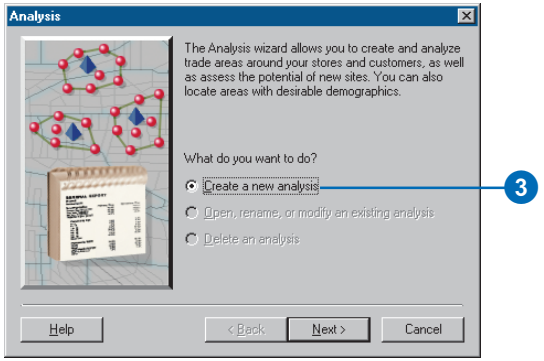
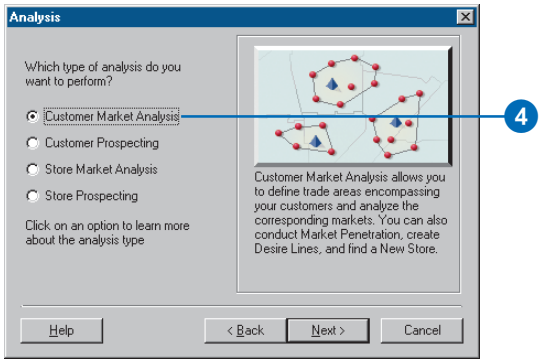
Creating market areas around your customers

1. Open ArcMap and open the study area that contains the data you want to analyze.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis, then click Next.
4. Click Customer Market Analysis, then click Next. ►







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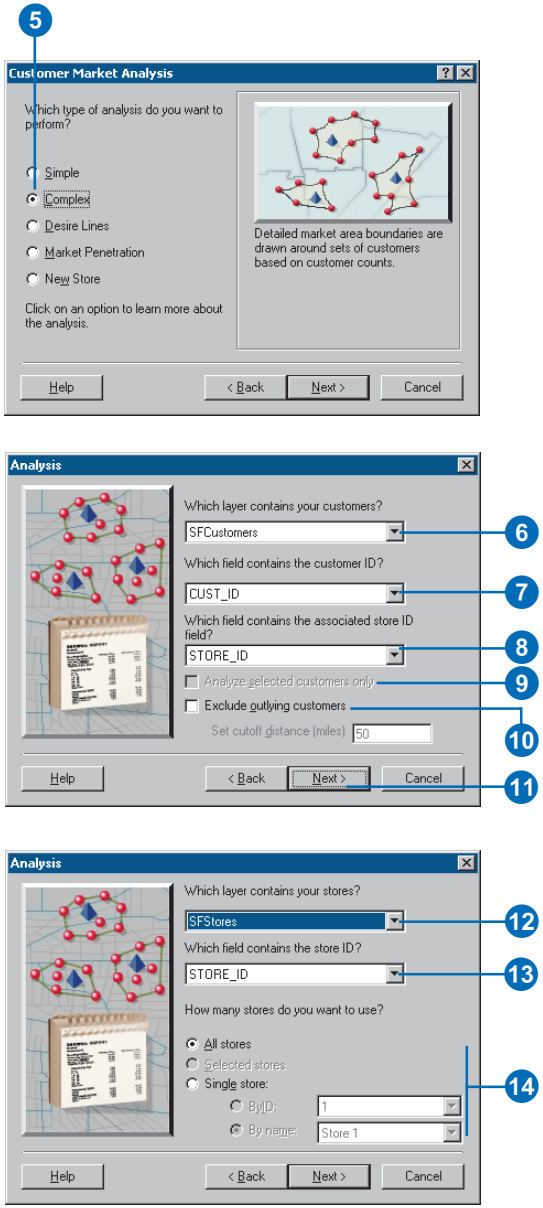
5. Click either Simple or Complex, then click Next.
6. Click the dropdown arrow to choose the layer that contains your customers.
7. Click the dropdown arrow to choose the field that contains each customer's ID.
8. Click the dropdown arrow to choose the field in the customer data that contains the store ID associated with each customer.
9. Optionally, click Analyze selected customers only to create market areas using only certain customers. A selection must have been previously made for this option to be available.
10. Optionally, click Exclude outlying customers to ignore customer points a certain distance past each store. Type the cutoff distance in the text box.
11. Click Next.
12. Click the dropdown arrow and click the layer that contains your stores.
13. Click the dropdown arrow and click the field that contains the store ID.
14. Click to select the number of stores you want to create customer market areas around, then click Next. ▸



15. Click the option that describes how you want the percentages calculated.

    If you click By a weighted value, click the dropdown arrow to choose the numeric field that contains the value.

16. Click Next.

17. Click the number of trade areas you want to create around each store.

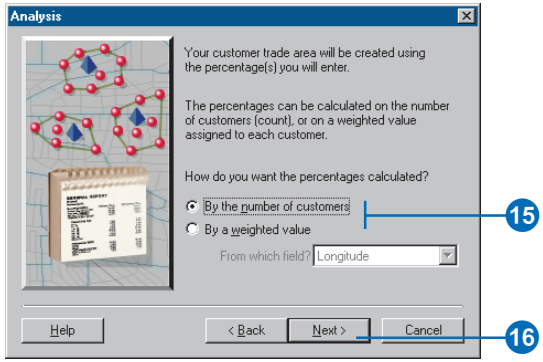
18. Type a percentage for each trade area.

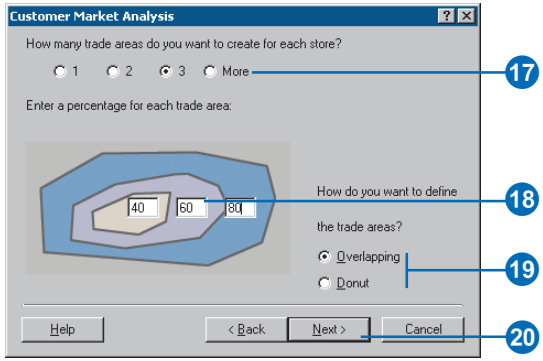
    If you're creating multiple rings, the outer rings must be a higher percentage than the inner rings. For example, 50%, 70%, and 75% is acceptable. 50%, 70%, and 60% is not.

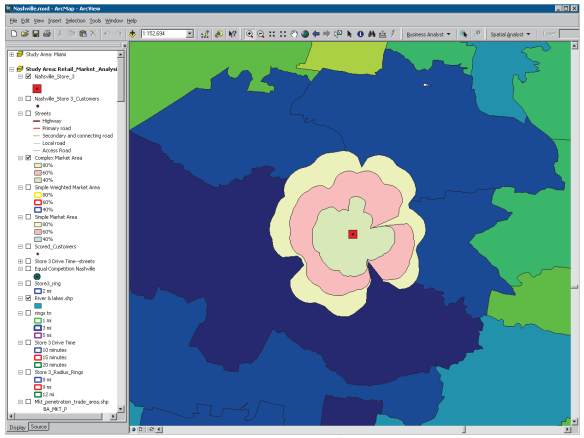
    These percentages represent either the number of customers or a weighted value—depending on what you chose on the previous panel.

19. Click the option that describes how you want to define the outer rings, as overlapping rings or donuts.

20. Click Next. ▶







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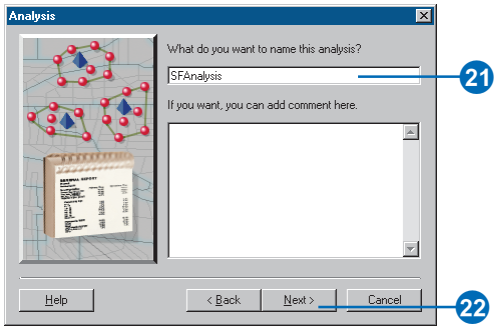
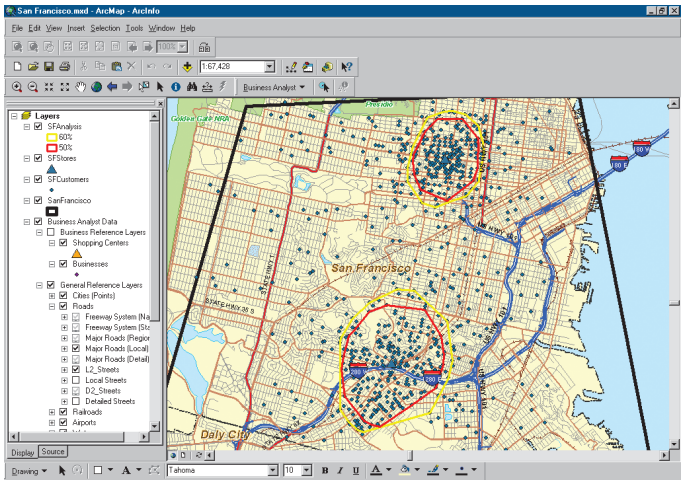
21. Type a name and comments for your analysis. You must provide a unique name but can use spaces or special characters.
22. Click Next.
23. Optionally, click the Report check box to create a report of your analysis.
24. If you're creating a report, click the dropdown arrows to choose the templates.
25. Click Finish.

    A layer containing customer market areas is added to your map. If you're creating a map or report, the report or ArcGIS Layout windows appear.

    To print your report, click the Print button on the report's application window. See the Crystal Reports online Help for more information.

    To print your map layout, make it active by clicking the title bar. Click the File menu and click Print.

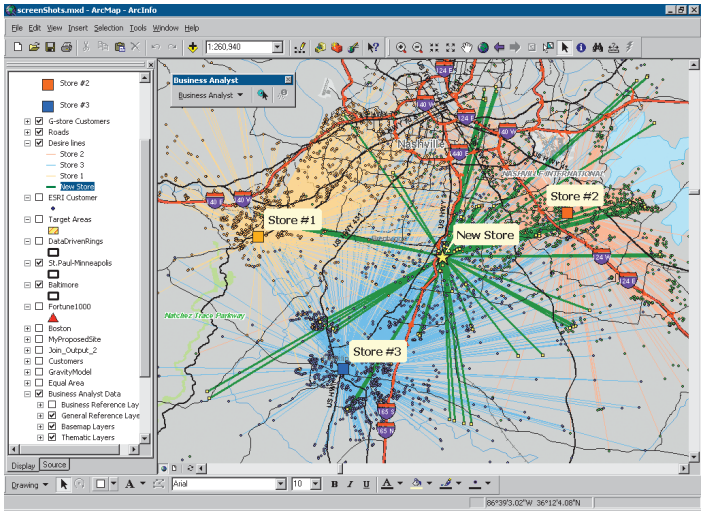




Desire lines

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 like sales or visits). Desire lines graphically illustrate the direction or 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/builder's supply operation maps weekday and weekend desire lines to better understand variations in these market segments.
- A convenience store/gas 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 drycleaning/laundry operation uses customer addresses and time-of-day to visualize 'going-to-work' vs. 'going home' customer travel patterns.
- 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 vs. weekend shoppers. The resulting analysis can then be used to identify consumer behavior and shopping patterns. For example, weekday shoppers travel less distance than weekend shoppers.

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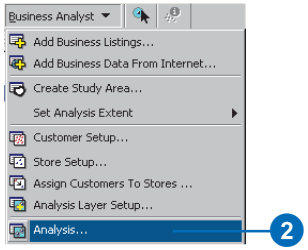
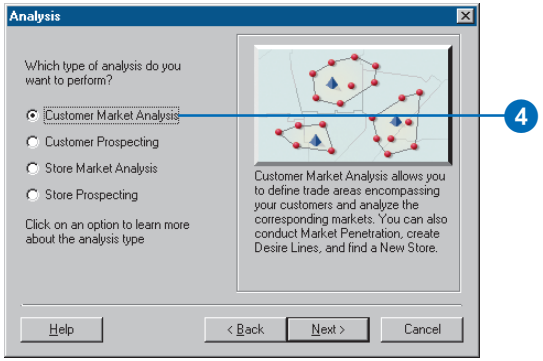
Creating desire lines

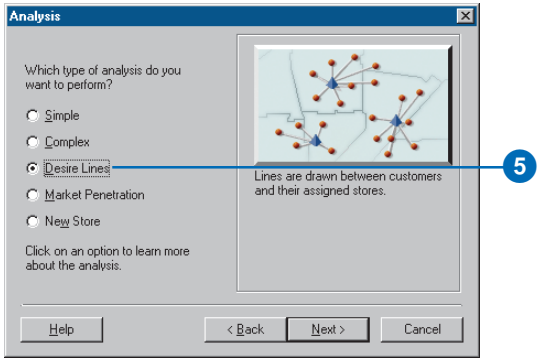
Desire lines show which customers visit which stores. A line is drawn from each customer point to its associated store point, making it easy to see the actual area of influence of each store.

To represent your data even more accurately on the map, use the Thematic Mapping wizard to display the lines as different colors or widths based on other fields in the database. For more information, see Chapter 12, 'Working with maps'.

1. In ArcMap, open the study area that contains the data you want to analyze.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis, then click Next.
4. Click Customer Market Analysis, then click Next.
5. Click Desire Lines, then click Next. ►







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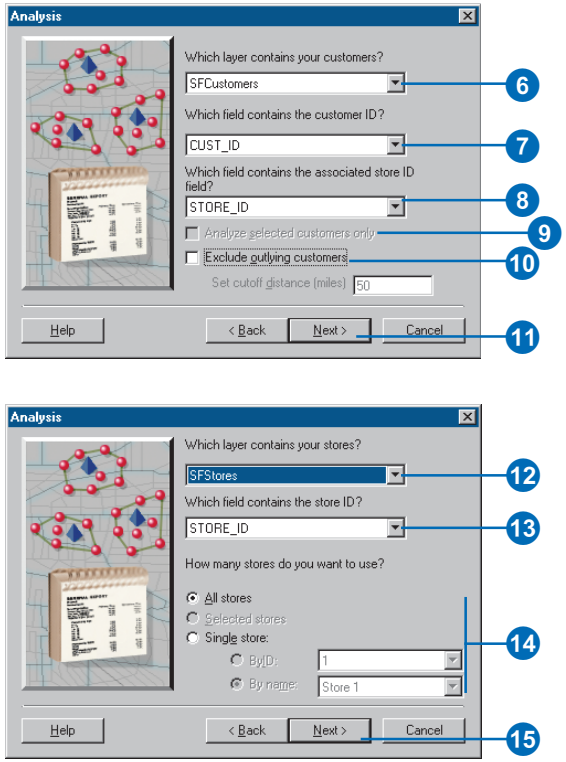
6. Click the dropdown arrow to choose the layer that contains your customers.
7. Click the dropdown arrow to choose the field in the customer data that contains each customer's ID.
8. Click the dropdown list to choose the field in the customer data that contains the store ID associated with each customer.
9. Optionally, click Analyze selected customers only to draw desire lines using only certain customers.
10. Optionally, click Exclude outlying customers to ignore customer points that are a certain distance past each store, then type the distance.
11. Click Next.
12. Click the dropdown list to choose the layer that contains your stores.
13. Click the dropdown list to choose the field in the store data that contains each store's ID.
14. Click the option that describes the number of stores you want to create desire lines around.
15. Click Next. ▸



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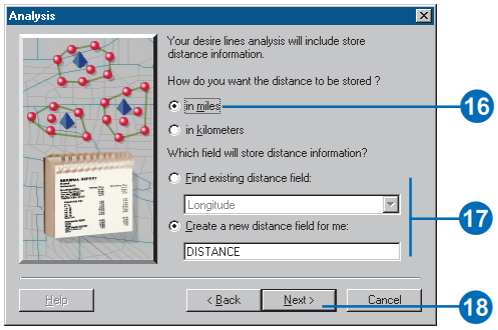
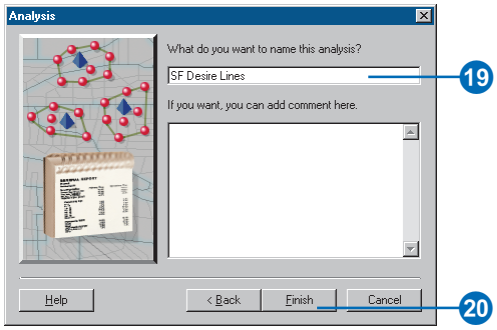
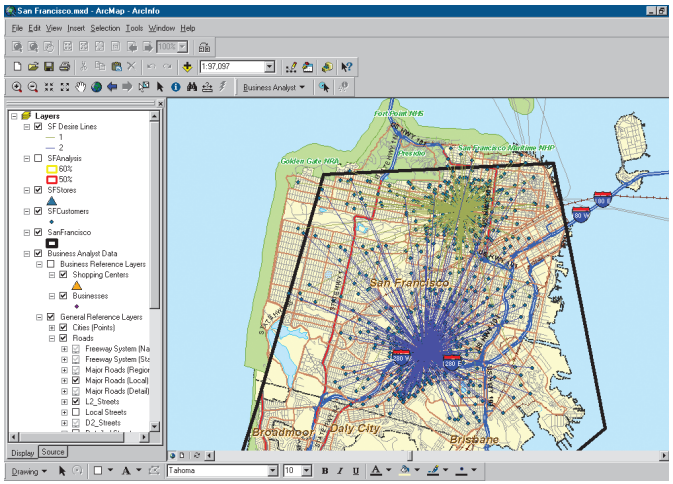
16. Click the option to specify how you want the distance stored.
17. Click the option to indicate which field will store distance information. If you want to create a new distance field, click Create a new distance field for me and type the name of the field in the text box.
18. Click Next.
19. Type a name and comments for your analysis into the text box. You must provide a unique name but can use spaces or special characters.
20. Click Finish.

    A layer showing desire lines is added to your map. If you're creating a map, the ArcGIS Layout window appears.

    To print your map layout, make it active by clicking the title bar. Click the File menu and click Print.







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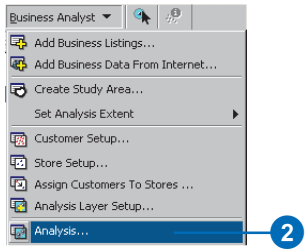
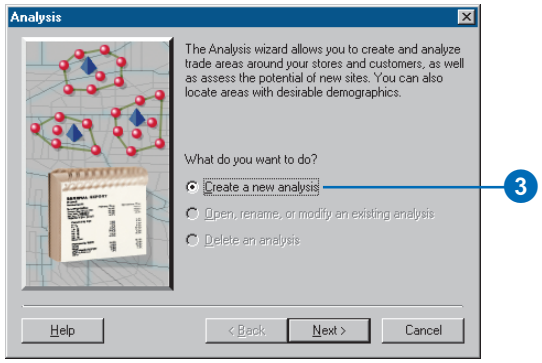
Calculating market penetration

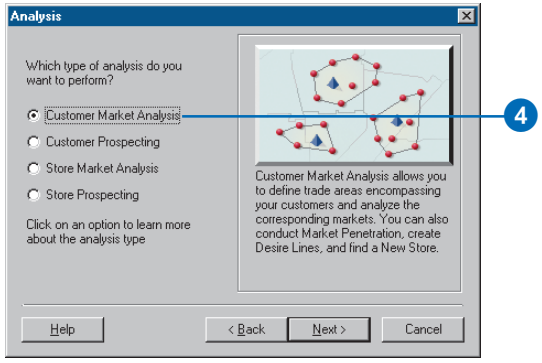
Market penetration provides a simple way to see how well you're reaching your market areas. Market penetration takes the number of customers in each area and divides it by the total number of people in each area to give a percentage of how well you're penetrating your market.

Market penetration gives you a percentage rating of how well you're reaching your markets. Either persons or households can be used to calculate market penetration.

1. In ArcMap, open the study area that contains the data you want to analyze.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis, then click Next.
4. Click Customer Market Analysis, then click Next. ►







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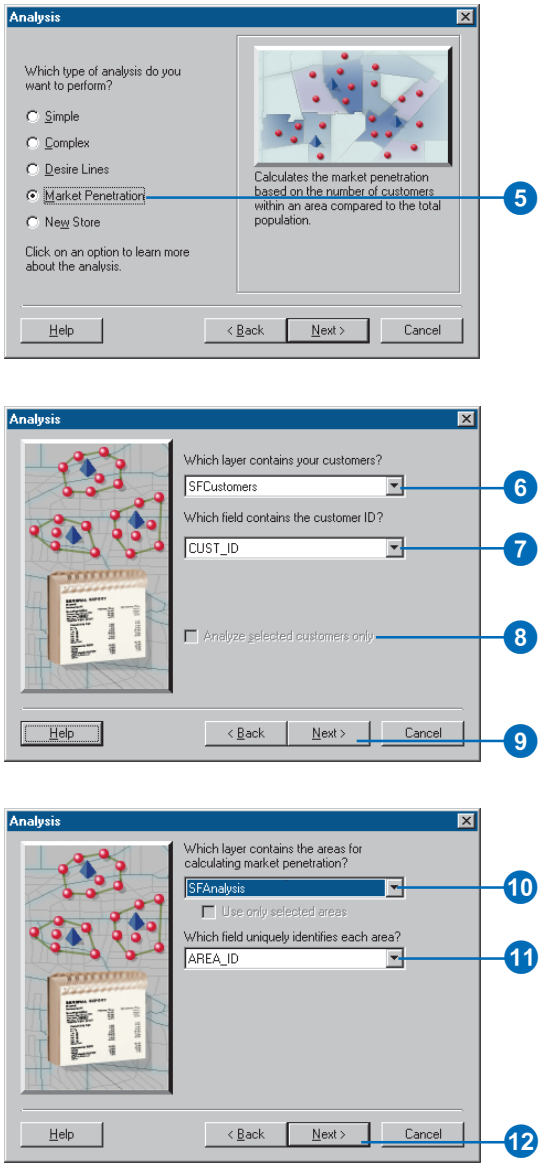
5. Click Market Penetration, then click Next.
6. Click the dropdown arrow to choose the layer that contains your customers.
7. Click the dropdown arrow to choose the field in the customer data that contains each customer's ID.
8. Optionally, click Analyze selected customers only to limit the analysis to certain customers. The selection must be in place before initiating this wizard.
9. Click Next.
10. Click the dropdown arrow and click the layer that contains the areas for calculating market penetration.

    Optionally, click Use only selected areas to calculate market penetration using certain areas.
11. Click the dropdown arrow and click the field that uniquely identifies each area.
12. Click Next. ▸



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13. Click the option to specify where the total market counts for each area are.

    If the total market counts for each area are in the layer attribute table, click that option, then click the dropdown arrow to choose the field that uniquely identifies each area.

    If your market counts are in Business Analyst data, click that option, then click the dropdown arrow to choose the field that contains the market counts.

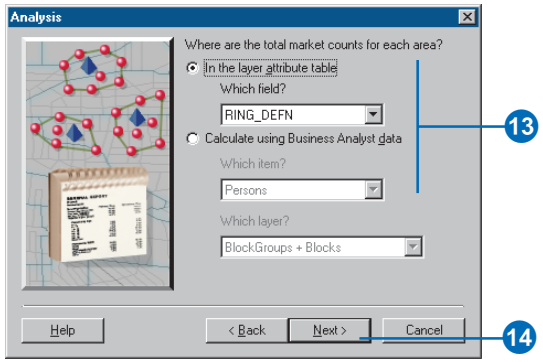
14. Click Next.

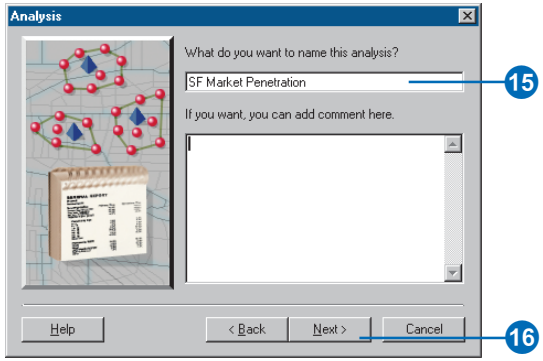
15. Type a name and comments for your analysis. You must provide a unique name, but you can use spaces or special characters.

16. Click Next.

17. Optionally, check the Report check box to create a report. If you're creating a report, click the dropdown arrows to choose the templates.

18. Click Finish. ►





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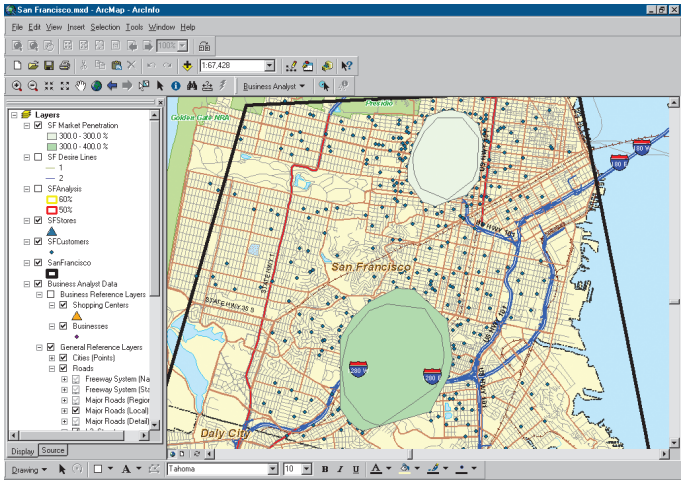
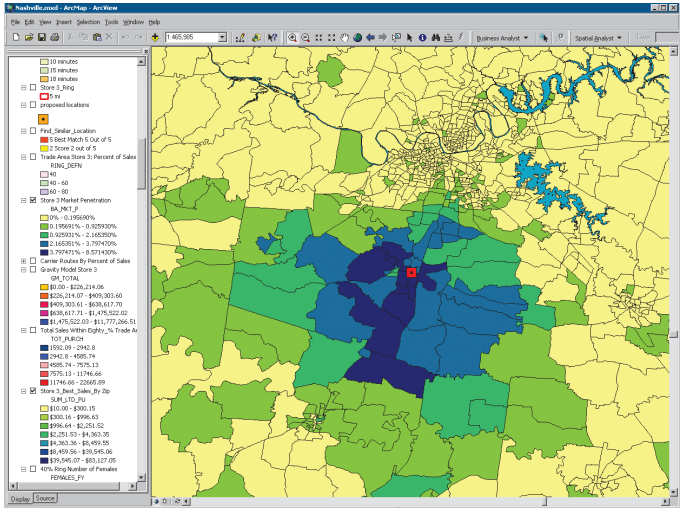
A layer containing market penetration is added to your map. If you're creating a map or report, the report or ArcGIS Layout windows appear.

19. To print your report, click the Print button on the report's application window. See the Crystal Reports online Help for more information.

20. To print your map layout, make it active by clicking the title bar. Click the File menu and click Print.





Potential sites

When considering sites for a new store, potential customers are your first concern—their location and their demographics. The New Store option of Customer Market 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)

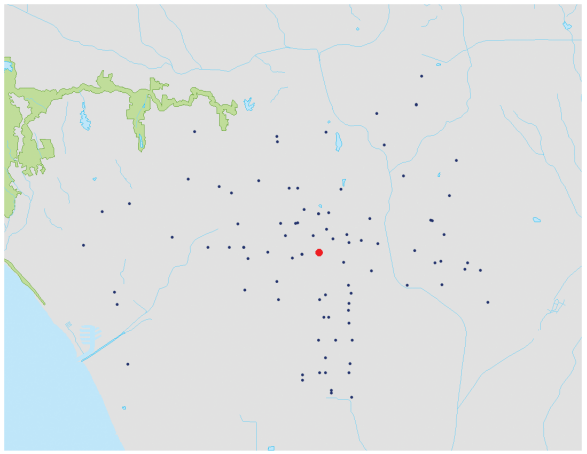
Calculating the centroid by number of customers

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: New store by number of customers

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—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 place to start looking for a new location.



Calculating the centroid by weighted value

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.

Notice the location of the centroid in the following graphic when calculated by a weighted value, in this case, sales. No longer is

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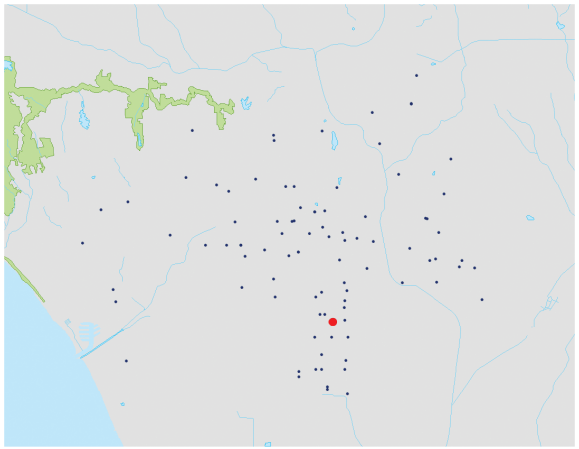
the centroid in the center of the customer points, but it has shifted toward the customers who spend more money.



Example: New store by weighted value

Suppose the building leases for two of your bank's 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 then compare the resulting centroids with where the actual branches are. If a branch is fairly 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 in its 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 equity loans, auto loans, CDs, investments, and so on) and assigns the branch closest to each centroid to specialize in that product.

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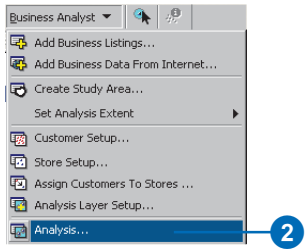
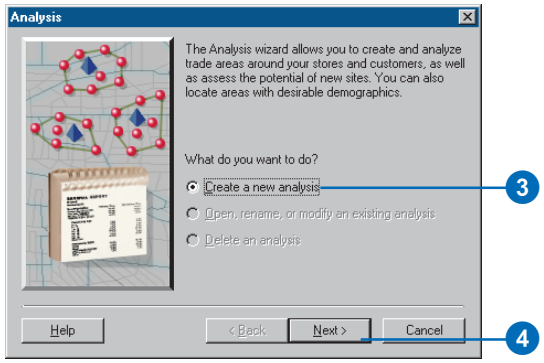
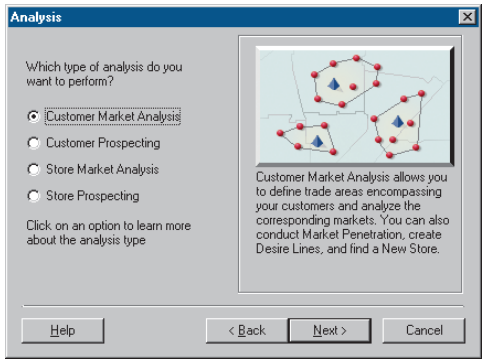
Locating a potential site

The geographic centerpoint of your customer market is calculated either by considering all of your customers equally or by weighting them according to a numeric value that you specify, such as sales or visits.

1. In ArcMap, open the study area that contains the data you want to analyze.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis and click Next.
4. Click Customer Market Analysis and click Next. ►







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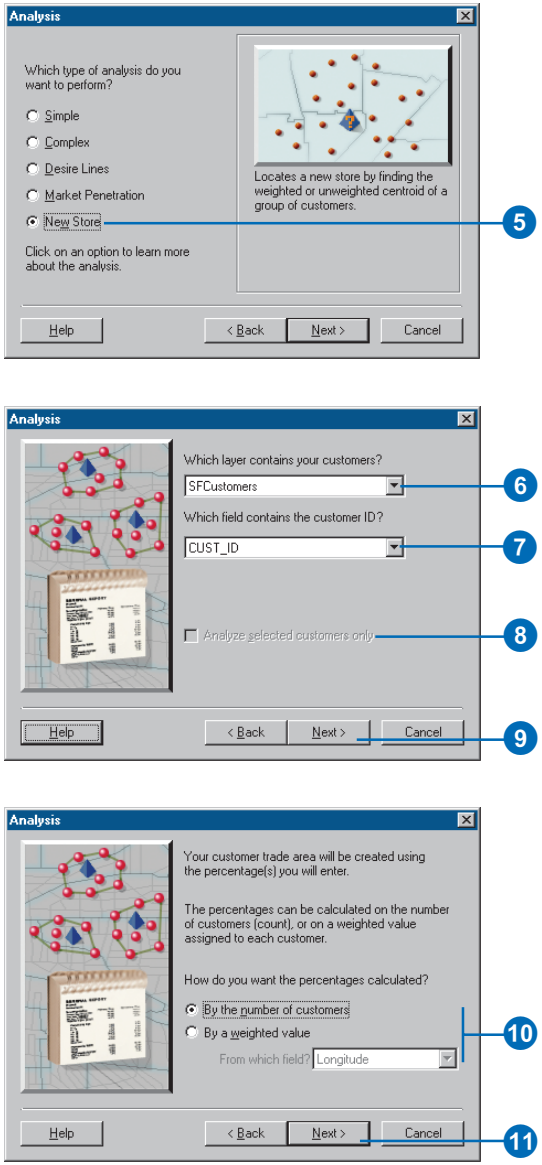
5. Click New Store and click Next.
6. Click the dropdown arrow to choose the layer that contains your customers.
7. Click the dropdown arrow to choose the field in the customer data that contains each customer's ID.
8. Optionally, click Analyze selected customers only if you want to calculate the centroid using only certain customers.
9. Click Next.
10. Click the option that describes how you want the percentages calculated.

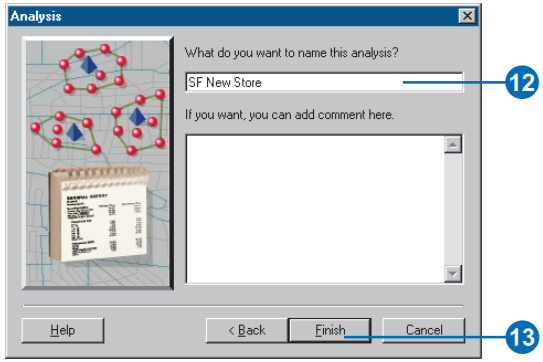
    If you chose By a weighted value, click the dropdown arrow to choose the field that contains the numeric value.
11. Click Next. ▸

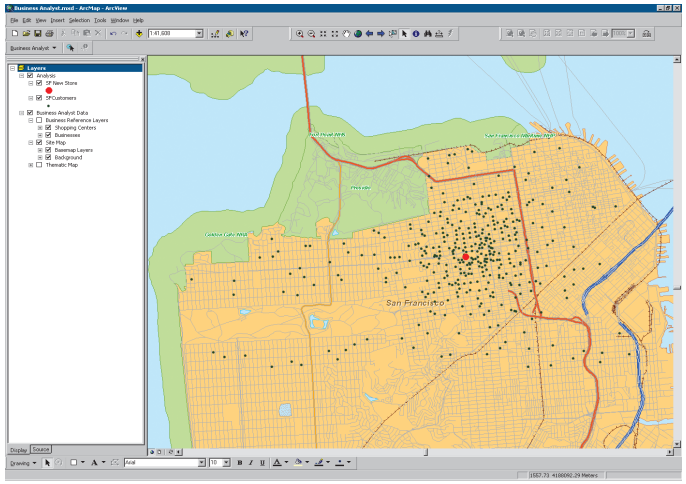


12. Type a name and comments for your analysis. You must provide a unique name, but can use spaces or special characters.
13. Click Finish.

    A layer showing the new store centroid is added to your map. If you're creating a map, the ArcGIS Layout window appears.

    To print your map layout, make it active by clicking the title bar. Click the File menu and click Print.





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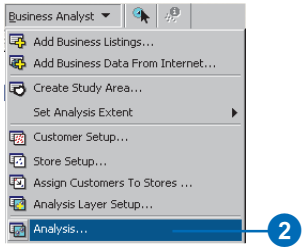
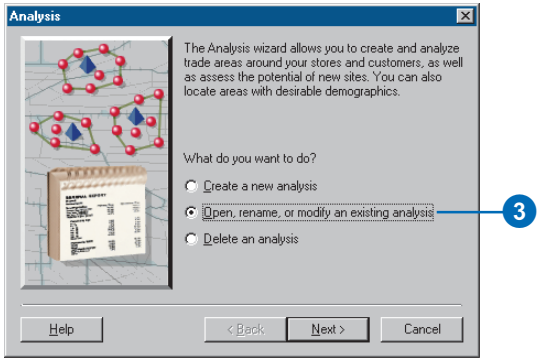
Opening an analysis

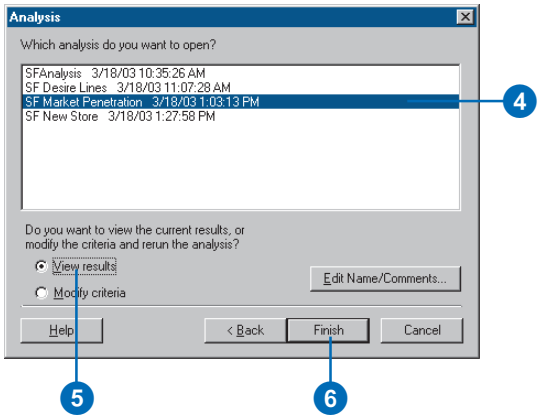
The Analysis wizard allows you to add an analysis layer you've created in one study area to the study area you're working in now. You can also add an analysis layer if you've deleted it from your map but not from your study area folder.

1. In ArcMap, open the study area to which you want to add an existing analysis.
2. Click the Business Analyst menu and click Analysis.
3. Click Open, rename, or modify an existing analysis, then click Next.
4. Click the analysis that you want to open.
5. Click View results.
6. Click Finish.

   The analysis layer is added to your study area. If you're creating a map, the ArcGIS Layout window appears.







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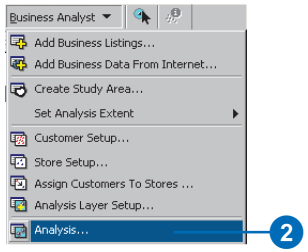
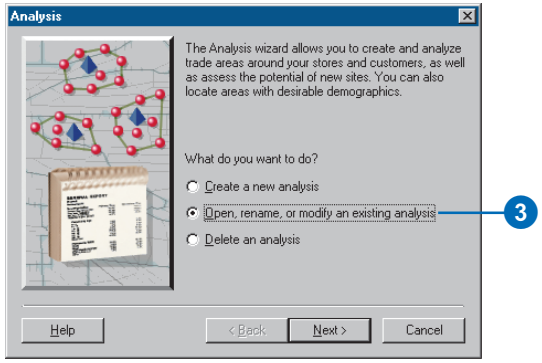
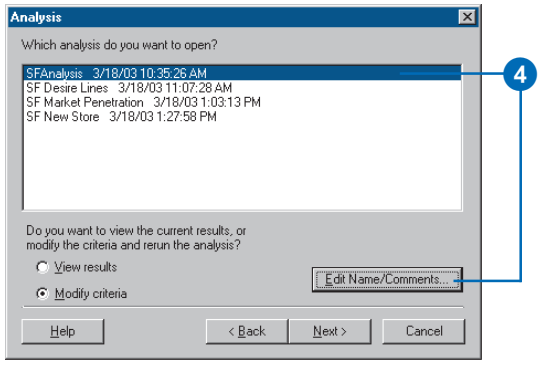
Renaming an analysis or adding comments

Use the Analysis wizard to change the name of an analysis or add comments.

1. In ArcMap, open the map document that contains the analysis you wish to rename.
2. Click the Business Analyst menu and click Analysis.
3. Click Open, rename, or modify an existing analysis, then click Next.
4. Click the analysis that you want to rename, then click the Edit Name/Comments button. ▶







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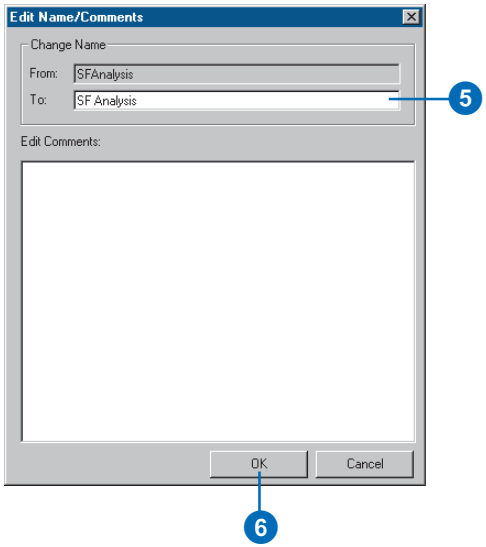
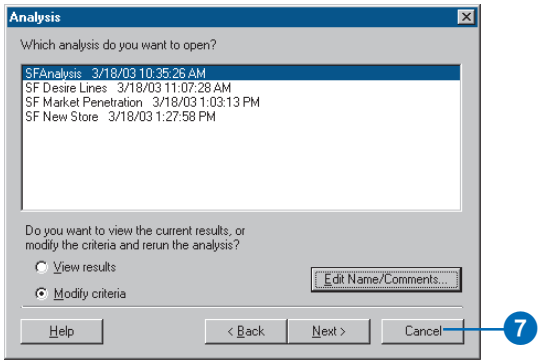
5. Type changes into the text boxes.
6. Click OK to commit the changes.
7. If you don't want to open the analysis into your study area, you can cancel the Analysis wizard now. Your changes will be implemented.





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Modifying an analysis

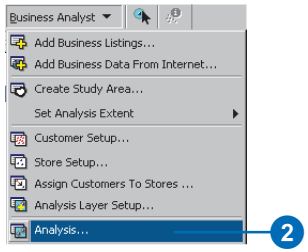
You can make changes to an analysis you've already created (such as performing the same analysis using different customer or store data or using the same data with a different analysis type). The Modify criteria option on the Analysis wizard presents you with the series of panels used to create the original analysis. Your original choices for dropdown lists, radio buttons, and check boxes will already be selected.

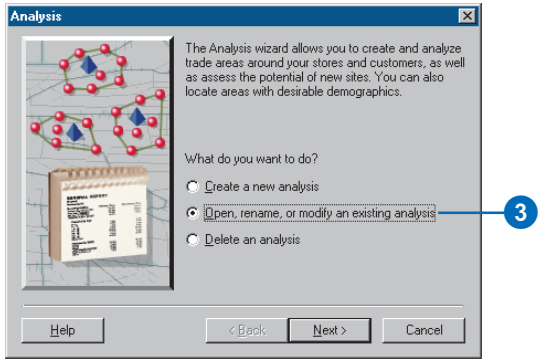
After you've made any changes, the wizard performs the analysis again. The modified analysis layer is added to the map of your study area. If the Analysis name remains the same, the modified layer will replace the original layer in the map. You can choose to create a report or map of the modified analysis.

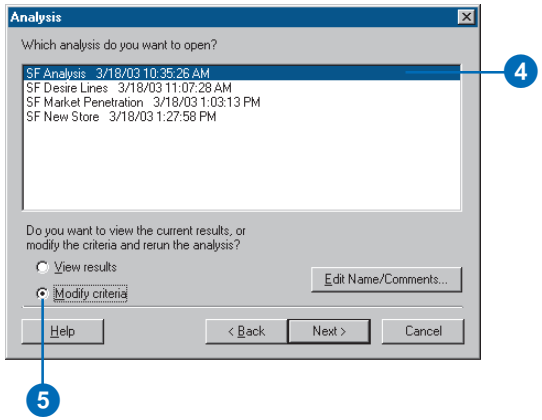
1. In ArcMap, open the map document that contains the analysis you wish to modify.
2. Click the Business Analyst menu and click Analysis.
3. Click Open, rename, or modify an existing analysis, then click Next.
4. Click the analysis that you want to modify.
5. Click Modify criteria, then click Next.

   You'll be presented with the panels used to create the original analysis. Make any desired changes. If you don't rename the analysis, the existing one will be overwritten.
6. When you reach the last panel, click the appropriate check boxes if you want to create a map or report of the analysis.
7. If you're creating a map or report, click the dropdown arrows to choose the templates.
8. Click Finish.

   The modified analysis layer is added to your study area. If you're creating a map or report, the report and ArcGIS Layout windows appear.







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Permanently deleting an analysis

Deleting an analysis removes it permanently from both your study area and your My Output Data folder.

You can also remove an analysis from your map without permanently deleting it from your study area.

Tip

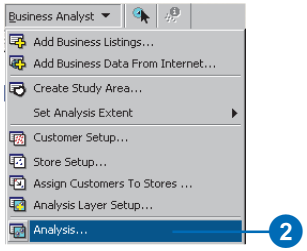
Deleting an analysis from your map only

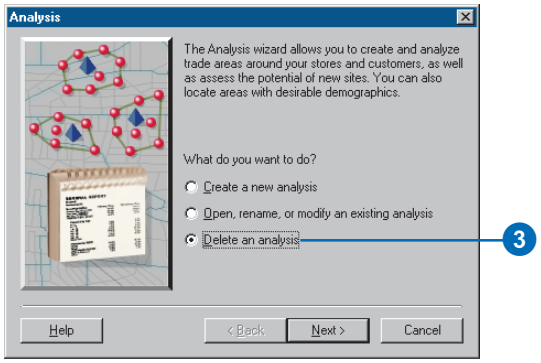
You can remove an analysis from your map without permanently deleting it from your study area.

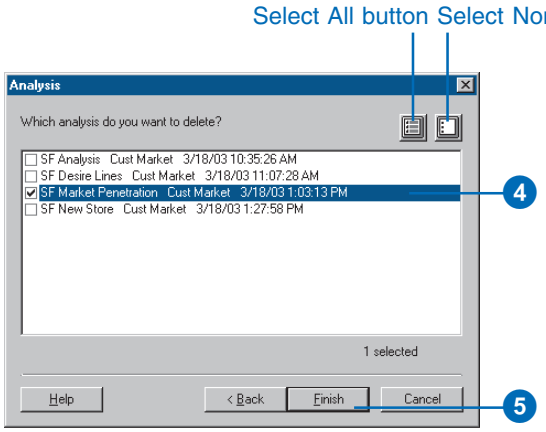
Right-click the name of the layer in the map's table of contents. Click Remove, and the analysis layer disappears from the map but can be reopened any time using the Analysis wizard.

1. In ArcMap, open the map document that contains the analysis you wish to delete.
2. Click the Business Analyst menu and click Analysis.
3. Click Delete an analysis, then click Next.
4. Check the box next to each analysis you want to delete. To select all the analyses, click the Select All button. To clear all your selections, click the Select None button.
5. Click Finish.

   The selected analyses are permanently deleted from both your study area and your My Output Data folder.







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Customer profiling and prospecting

7

IN THIS CHAPTER

- **Customer profiling**
- **Creating a new customer profile**
- **Customer prospecting**
- **Customer prospecting with demographic data**
- **Customer prospecting with household data**

Customer prospecting is based on two important questions:

- What are the demographic characteristics of my best customers?
- Where are areas with customers with the same or similar demographics?

If you know what kind of customers you're looking for, you can enter them directly into the Customer Prospecting wizard. If you want to look at an existing set of customers (perhaps those in your most successful market areas) and determine their profile, you can use Customer Profiling to do so.

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Customer profiling

What are the demographic characteristics of my customers?

To use the Customer Prospecting wizard, you must know what type of customers to tell the Customer Prospecting wizard to look for. You may not be sure what the profile of your best customers is. You can use *Customer Profiling* to find the demographic profile of a set of customers.

Customer profiling works this way: every area—ZIP Codes, block groups, tracts—has demographic data associated with it. The example below shows each block group with an average household income.

In this example, four customers living in different block groups are being 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	/	4	=	$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 quite 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 lifestyle segmentation data in the Household data option will provide a profile of customers based on the dominant lifestyle segmentation data code. You can then identify how many customers you have in each segment. The lifestyle segmentation data descriptions provide detailed profiles of each segment. They can be used to find other segments nationwide at the census tract level in order to locate more areas that look like your existing customers. Lifestyle segmentation data is only available in the ESRI BIS demographic dataset. The detailed segmentation descriptions are found in the ArcGIS Desktop help under Extensions: Business Analyst.

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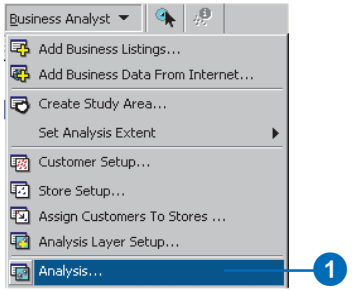
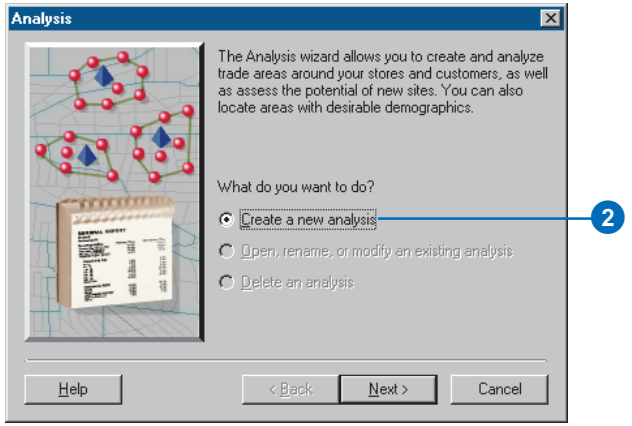
Creating a new customer profile

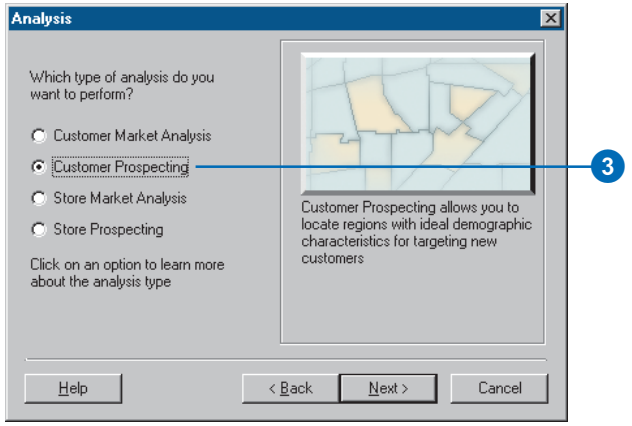
Customer profiling is available only for demographic data. Customers that fall outside the study area will not be included in the profile.

Note that if you are using census tract or block group geography, you will want to restrict your analysis extent by creating a study area or zooming to your area of general interest. Make certain to use Set Analysis Extent to set your desired area for analysis.

1. Click the Business Analyst menu and click Analysis.
2. Click Create a new analysis, then click Next.
3. Click Customer Prospecting, then click Next. ▸







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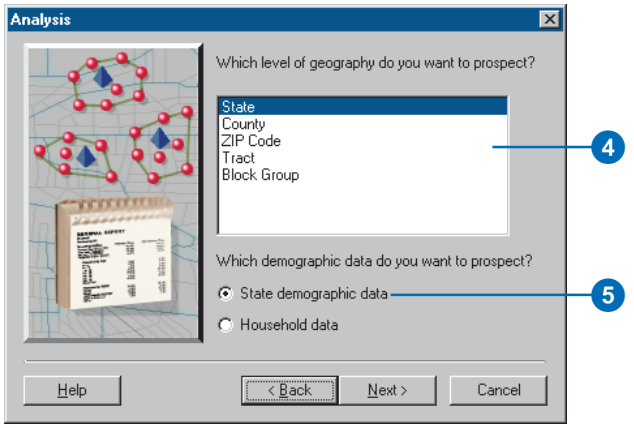
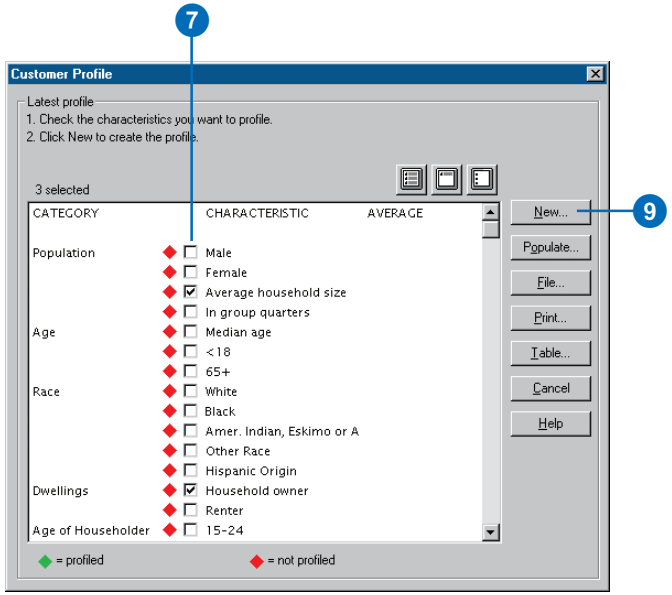
4. Click the level of geography you want to prospect.
5. Click State demographic data, then click Next.

   The Customer Prospecting panel appears. Before the wizard can find areas with the kinds of customers you want, you must specify the characteristics you're looking for.
6. Click Profile.

   The Customer Profile panel appears.
7. Click the characteristics that you want to look for in your customers.
8. To select all characteristics, click the Select All button. To select all characteristics that are profiled, click the Select All Profiled button. To clear all selected characteristics, click the Select None button.
9. Click New. ►





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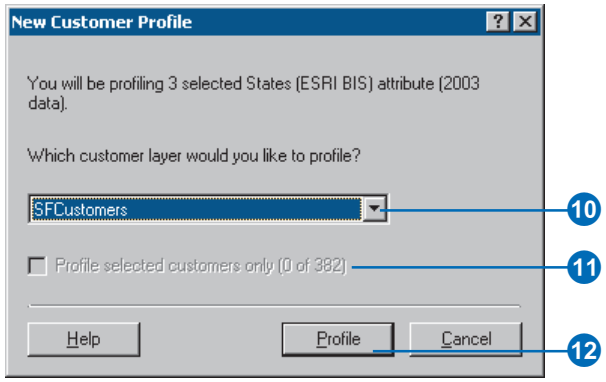
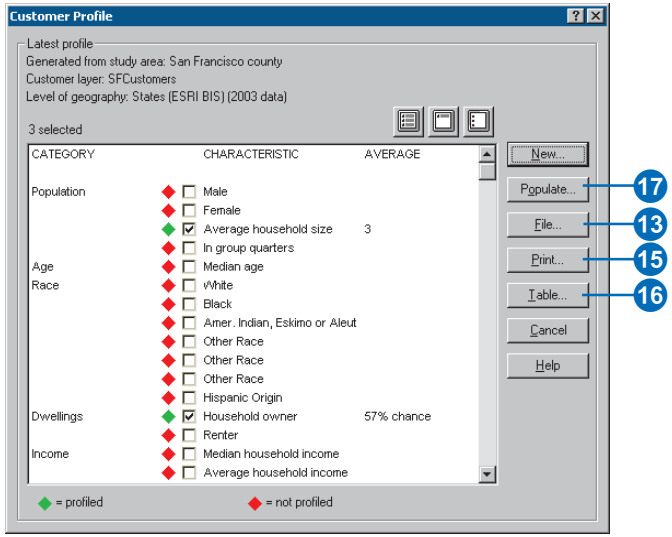
10. Click the dropdown list to choose the customer layer.
11. Optionally, click Profile selected customers only if you only want to include certain customers in your profile that were selected before starting this wizard.
12. Click Profile.

    A profile is generated with averages for all the characteristics you picked.
13. To save the demographic characteristics and values you've chosen to a customer profile file (.cpf), click the File button and click Save As. Type a filename and click OK.
14. You can select the same characteristics the next time you use Customer Profiling by opening the customer profile file. Click the File button and click Open.
15. To print out the profile, click Print.
16. To save the profile to a dBASE table for further use in other applications, click Table.
17. To transfer the values in your customer profile to the Customer Prospecting panel, click the characteristics of your customer profile that you want to transfer, then click Populate. ►





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18. Click how you want to populate your customer prospecting values. Only characteristics that have been profiled can be used.

    To use floor values, click Floor values only.

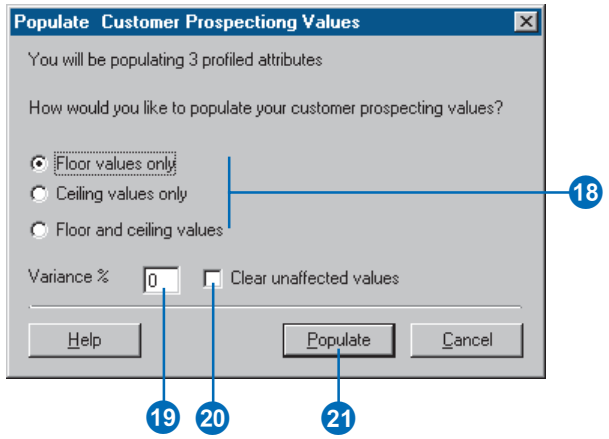
    To use ceiling values, click Ceiling values only.

    To use both, click Floor and ceiling values.

19. Type a percent variance to create a range above or below the profile value.

20. Check Clear unaffected values to clear all existing values from the Customer Prospecting panel. If you don't check this box, any values that you specified on the panel will remain except those that you are currently populating. These values will be overwritten.

21. Click Populate. The characteristics you selected are populated with the average values for the level of geography you chose. Clicking on each category will show the target characteristics and values that will be used in that category for customer prospecting areas that have similar characteristics.



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Customer prospecting

The Customer Prospecting wizard allows you to search for areas that contain a certain type of customer.

After you set the values you're interested in (such as at which level of geography you want to prospect, which demographic data you want to prospect, and what characteristics you want to target), the Customer Prospecting wizard finds the areas that contain customers that match your criteria.

Some examples of how businesses can use customer prospecting include:

- A regional retailer finds ZIP Codes with similar customer profiles in other areas of the country as a prelude to national expansion.
- A bank uses the profile of its most profitable branch to search for similar demographics as it expands to new branches.

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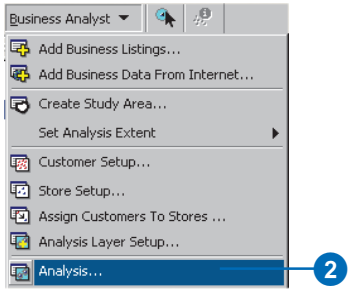
Customer prospecting with demographic data

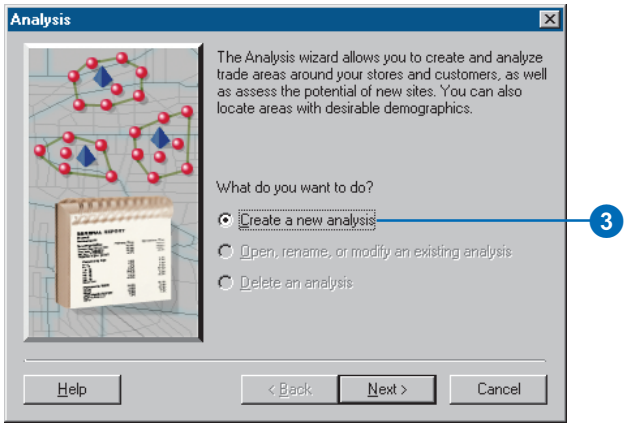
Use Customer Prospecting to find areas with a particular type of customer.

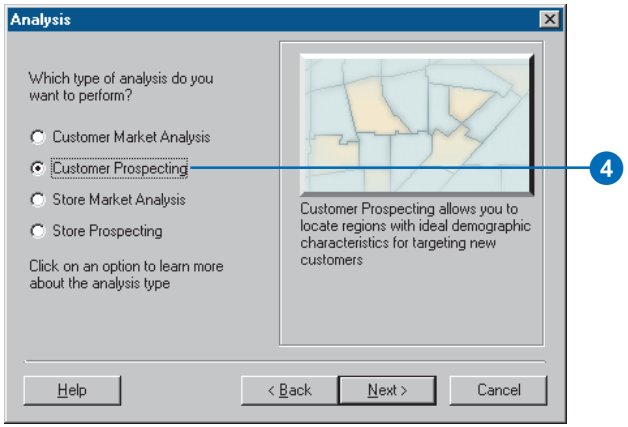
You can create a profile of your customers first and use the values you find to prospect.

Note that if you are using census tract or block group geography, you will want to restrict your analysis extent by creating a study area or zooming to your area of interest. Make certain to use Set Analysis Extent to set your desired area for analysis.

1. In ArcMap, open the study area you want to use for Customer Prospecting.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis, then click Next.
4. Click Customer Prospecting and click Next. ▸







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Tip

Selecting a level of geography

When you are selecting the level of geography, it is important to remember that the smaller the unit of geography you use, the more detailed your analysis will be. Demographics in a ZIP Code can vary significantly, while demographics in a block group are typically much more homogenous. For example, the typical number of households (across the United States) for various levels of geography are as follows:

ZIP Code: 3,222

Census tract: 1,639

Block groups: 513

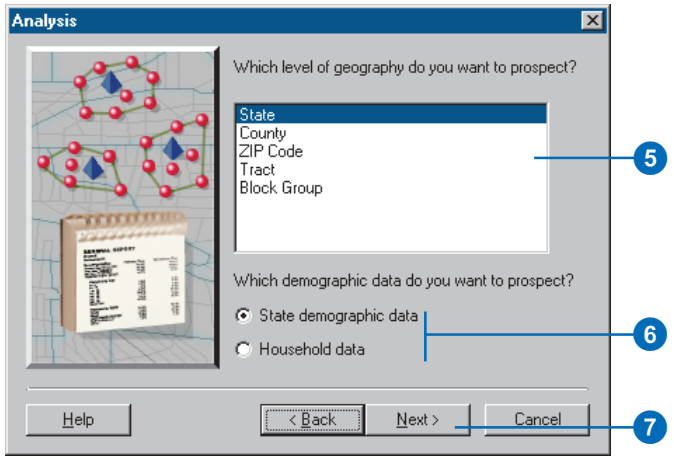
Tip

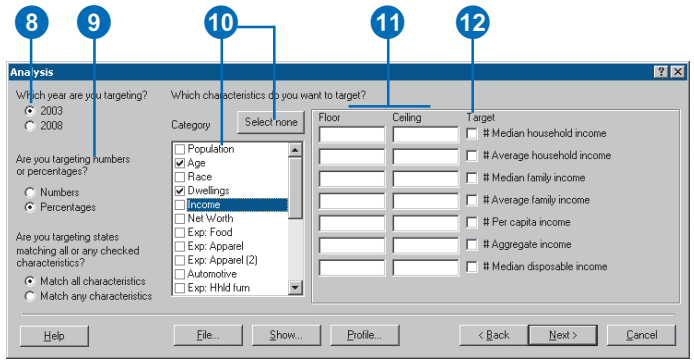
Target characteristics

Some target characteristics are only available with numbers. You can see this if you change from Numbers to Percentages and observe the target characteristic descriptions.

5. Click the level of geography you want to prospect.
6. Click the option to specify which demographic data you want to prospect.
7. Click Next.
8. Click the year of the demographic data that you want to use.
9. Click Numbers or Percentages.

   If you're targeting block groups for people over 65 years of age, for example, click Numbers to look for a certain number of people over 65, or click Percentages to look for a certain percentage of people over 65 in each block group.
10. Click the demographic category of interest to highlight it, then check the target characteristic in which you are interested. To clear all selected categories, click the Select none button.
11. Type Floor or Ceiling values or both (numbers or percentages) for each target value. Do not enter commas or dollar signs.
12. Select all the categories you want to find in your customers, choosing target values and floor and ceiling values. ▶





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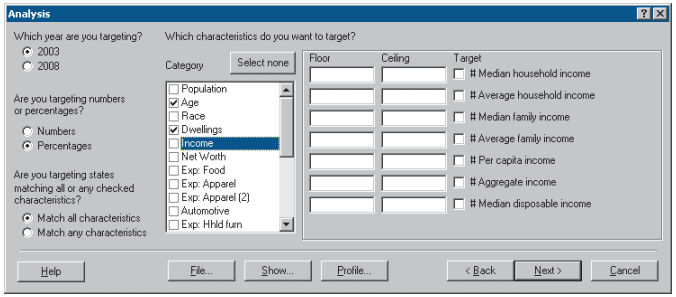
13. Click the option that describes whether you want to match all or any of the categories. This option applies globally to all categories and characteristics. For example, if you're targeting tracts for people with an average household income over $35,000 and over 50 percent home owners, choosing Match all characteristics would find tracts that fit both these requirements. Choosing Match any characteristics would find tracts with people who had either an income over $35,000 *or* had over 50 percent home owners, not necessarily both.
14. To see a summary of all selected categories, target values, and floor and ceiling values, click Show.
15. To save the demographic categories and values you've chosen to a demographic query file (.dmq), click the File button. Type a filename and click OK. You can select the same categories and values the next time you use the Customer Prospecting wizard by opening the demographic query file. Click the File button and click Open.
16. Click Next. ▸



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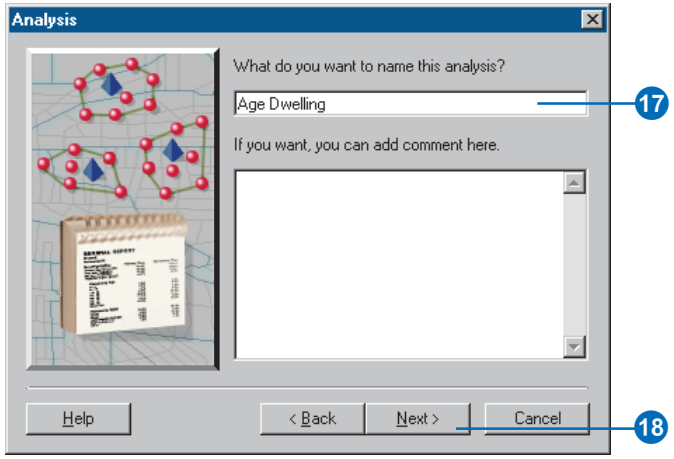
17. Type a name and comments for your analysis. You must provide a unique name but can use spaces or special characters.
18. Click Next.
19. Click the appropriate check boxes to create a report of your analysis.
20. If you're creating a report, click the dropdown arrows to choose the templates.
21. If using a report template, click Next to continue to the next dialog box to name the report before finishing. If creating a new report, click Finish to perform customer prospecting and initiate the Crystal Reports Report wizard.

    A layer showing the areas that match your target values and categories is added to the study area. If you're creating a map and report, the report and ArcView Layout windows appear.

    To print your report, click the Print button on the report's application window.

    To print your map layout, make it active by clicking the title bar. Click the File menu and click Print.



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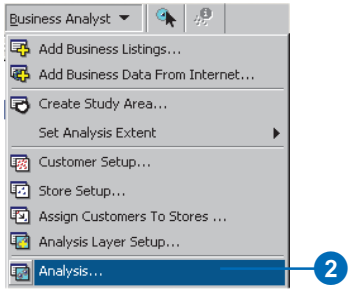
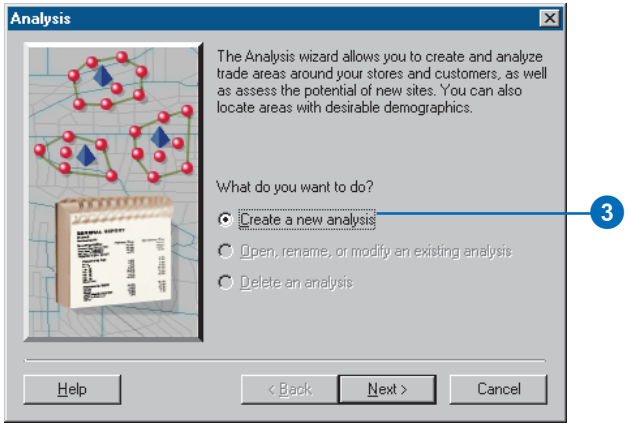
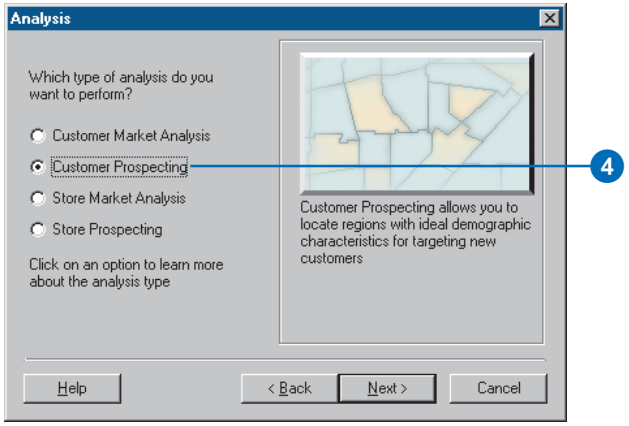
Customer prospecting with household data

When performing customer prospecting with household data, the following variables are available: head of household age, household composition, lifestyle segmentation data, household income, current home value, purchasing method, wealth rating, length of residence, and dwelling unit size.

1. Open the study area you want to use for Customer Prospecting.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis and click Next.
4. Click Customer Prospecting and click Next. ▸







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Tip

Registering at Hyphos360

It is important to be aware that when you register with Hyphos360, you can't immediately access the system. Your username and password will be e-mailed to you within 24 business hours, at which time you can proceed.

5. Click the areas where you want to target customers.

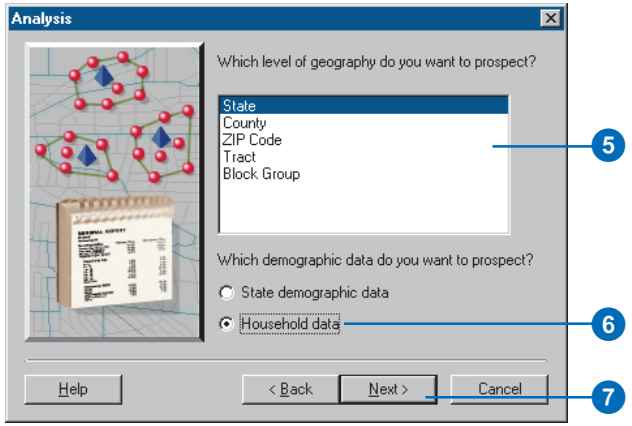
   While the list shows many levels of geography, only map data is necessary and the layers need not be in the map of your study area.

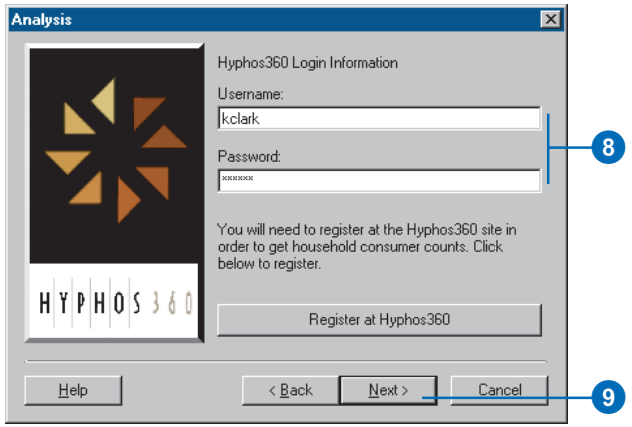
6. Click Household data.

7. Click Next.

8. Enter your Hyphos360 Username and Password. If you don't have one, click the Register at Hyphos360 button to register.

9. Click Next. ▶





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Tip

Choosing whether or not you want to wait for results

When you perform this analysis, you are making a query against the Experian household consumer file.

It contains approximately 112 million household files.

Use the Wait for results option if you are prospecting for a geographic area of a county or smaller.

Use the Don't wait option if you are prospecting for a geographic area larger than a county.

Limit your prospecting to only the specific areas of interest. Prospecting for all consumer files for a state (or larger) may take a significant amount of time. For this reason, you shouldn't prospect nationwide.

If you created a study area, your query will be limited to the study area only. If you used the default Business Analyst.mxd to create your study area, the prospecting query will be nationwide against all 112 million records by default, unless you zoom in to create a study area.

Your query is sent via the Internet. The larger the query and the more variables selected, the longer the wait.

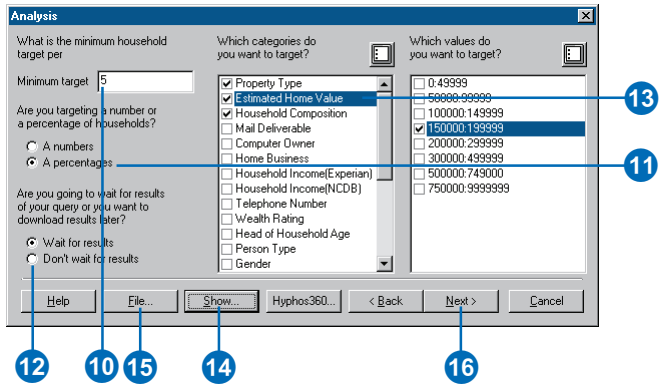
Tip

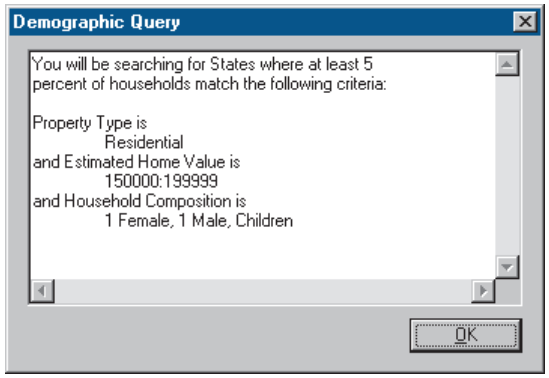
Using the Wait for results option

When you click the Wait for results option, a shapefile is automatically returned and added to your legend.

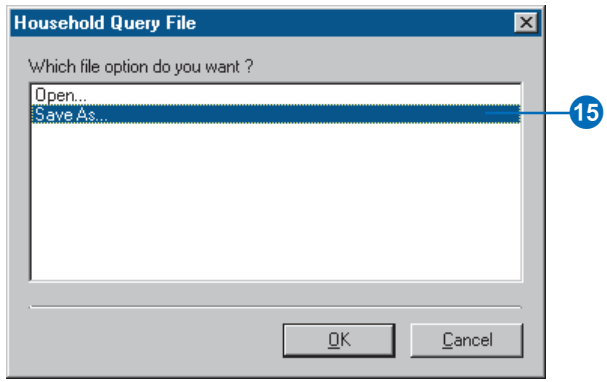
10. Type the minimum household target.
11. Click A numbers or A percentages.
12. Click the option to specify whether or not you want to wait for results.
13. Click the desired category to highlight it. Check the appropriate characteristic in the target values box on the right.
14. To see a summary of all selected categories and target values, click Show.
15. To save the demographic categories and values you've chosen to a household query file (.hhq), click File. Then click Save As, click OK, navigate to where you want to save the file, type the filename, and click Save.

    You can select the same categories and values the next time you use the Customer Prospecting wizard by opening the household query file. Click the File button and click Open.
16. Click Next. ▸





When you click Show, the Demographic Query dialog box appears.



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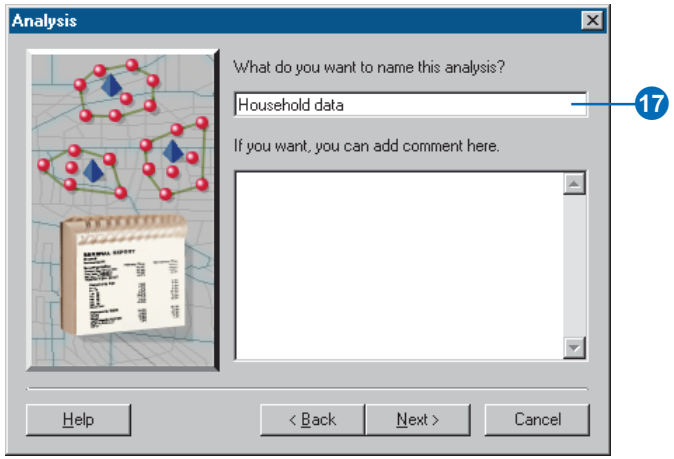
17. Type a name and comments for your analysis. You must provide a unique name but can use spaces or special characters. Click Next to continue.
18. Click the Report check box to create a report.
19. If you're creating a report, click the dropdown arrows to choose the templates.
20. Click Finish.

    A layer showing the areas that match your target values and categories is added to the study area. If you're creating a report, the report and ArcView Layout windows appear.

    To print your report, click the Print button on the report's application window. See the Crystal Reports online Help for more information.

    To print your map layout, make it active by clicking the title bar. Click the File menu, then click Print.



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Store analysis and prospecting

8

IN THIS CHAPTER

- Simple ring analysis
- Data-driven ring analysis
- Equal competition areas
- Drive-time and drive-distance analyses
- Creating market areas around your stores based on drive time or drive distance
- The Gravity Model
- Threshold ring analysis
- Store prospecting: simple ring, drive time, and threshold ring

Customer-based market analysis requires geocoded customer data. Often such data is not available—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.

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Simple ring analysis

Ring studies are the most simple and widely used type of market area analysis. The concept of a simple ring is easily understood. 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 quickly and easily 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 for comparison.

Other examples of simple ring store-based analysis include:

- A commercial real estate company calculates underlying demographics for five- and 10-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 10 miles of each of its branch clinics as part of its proposal to potential clients.

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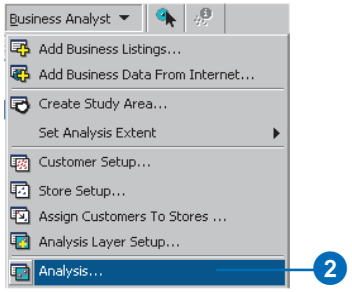
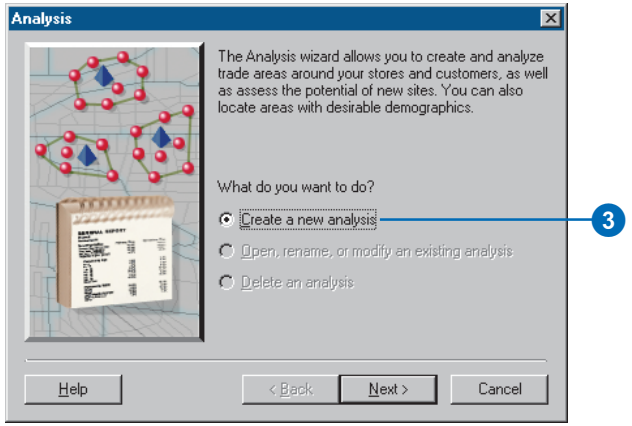
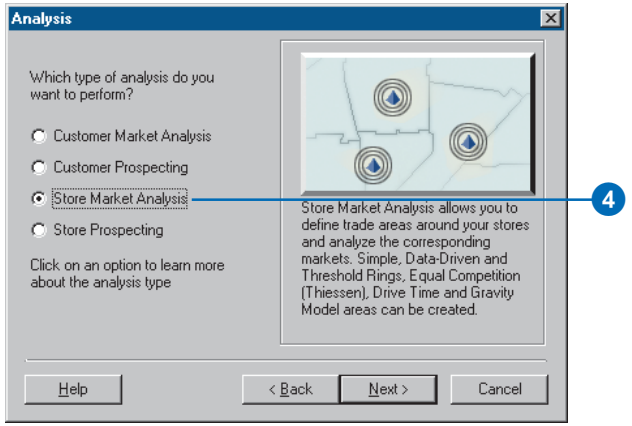
Performing simple ring analysis

Use the Simple Ring option on the Analysis wizard to create market areas around your stores based on a straightforward distance.

1. In ArcMap, open the study area that contains the data you want to analyze.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis, then click Next.
4. Click Store Market Analysis, then click Next. ▶







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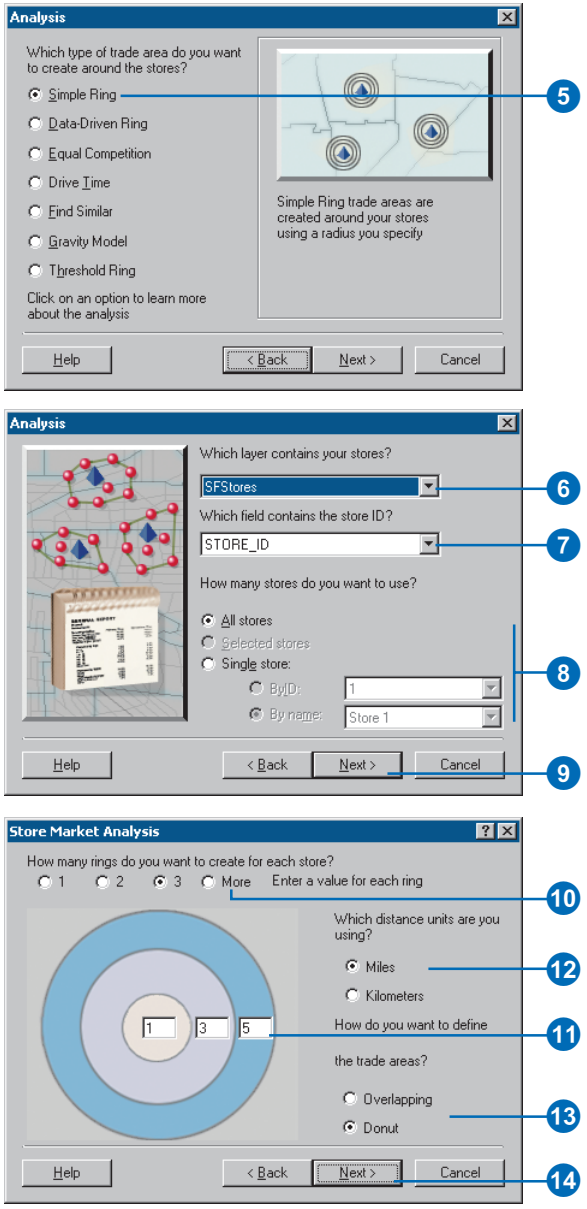
5. Click Simple Ring and click Next.
6. Click the first dropdown arrow and click the layer that contains your stores.
7. Click the second dropdown arrow and click the field that contains the store ID.
8. Click the option that describes the number of stores you want to create store market areas around.

   To use all stores, click the first option.

   To use only certain stores, click Selected stores.

   To use a single store, click ByID or By name, then click the dropdown arrow to choose the ID or name of that store.
9. Click Next.
10. Click the number of rings you want around each store.
11. Type a radius for each ring.

    For multiple rings, the outer rings must be a higher number than the inner rings.
12. Click the unit of distance you want to use.
13. Click the option that describes how you want to define the outer rings.
14. Click Next. ▸



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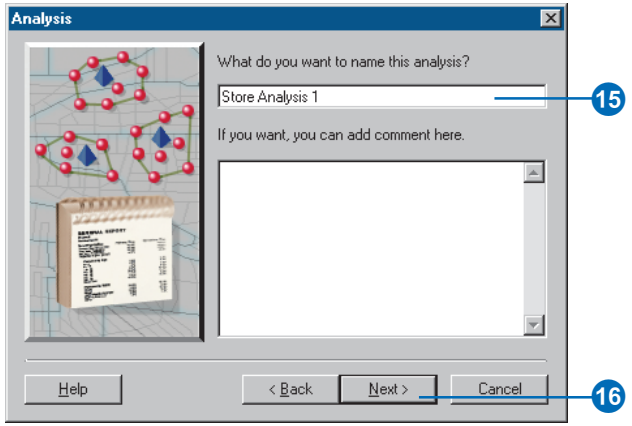
15. Type a name and comments for your analysis. You must provide a unique name, but can use spaces or special characters.
16. Click Next.
17. Optionally, check the Report check box to create a report of your analysis.
18. If you're creating a report, click the dropdown arrows to choose the templates.
19. Click Finish. ▶



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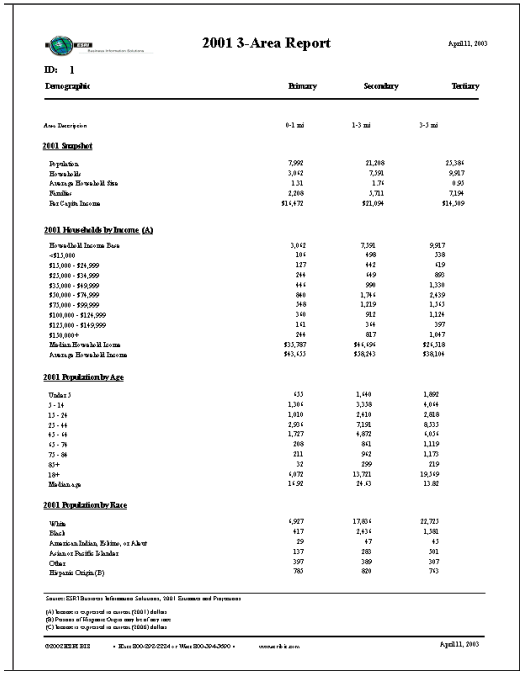
A layer containing simple rings is added to your map. If you're creating a map or report, the report or ArcView Layout windows appear.

To print your report, click the Print button on the report's application window.

To print your map layout, make it active by clicking the title bar. Click the File menu and click Print.



2001 3-Area Report

April11, 2003

ID: 1

Demographic	Primary	Secondary	Tertiary
Area Description	0-1 mi	1-3 mi	3-5 mi
2001 Snapshot			
Population	7,992	21,288	35,384
Households	3,042	7,591	9,917
Average Household Size	1.31	1.74	1.93
Families	2,098	5,711	7,194
Per Capita Income	$14,472	$21,694	$24,349
2001 Households by Income (A)			
Household Income Base	3,042	7,591	9,917
<$15,000	194	498	538
$15,000 - $24,999	127	442	619
$25,000 - $34,999	244	449	895
$35,000 - $49,999	444	999	1,338
$50,000 - $74,999	868	1,764	2,439
$75,000 - $99,999	348	1,219	1,243
$100,000 - $124,999	348	912	1,124
$125,000 - $149,999	141	344	397
$150,000+	284	817	1,047
Median Household Income	$52,787	$44,496	$44,318
Average Household Income	$63,433	$58,243	$58,104
2001 Population by Age			
Under 5	435	1,449	1,892
5 - 14	1,304	3,338	4,644
15 - 24	1,010	2,430	2,818
25 - 44	2,904	7,191	8,353
45 - 64	1,727	4,872	6,034
65 - 74	268	841	1,119
75 - 84	211	942	1,175
85+	32	299	219
18+	6,072	15,721	19,349
Median age	34.92	34.45	33.82
2001 Population by Race			
White	4,907	17,804	22,723
Black	417	2,434	1,381
American Indian, Eskimo, or Aleut	29	47	63
Asian or Pacific Islander	127	283	391
Other	397	389	367
Hispanic Origin (H)	783	829	743

Source: ESRI Business Information Solutions, 2001 Estimates and Projections

(A) Income is expressed in current dollars.
(B) Persons of Hispanic Origin may be of any race.
(C) Income is expressed in current dollars.

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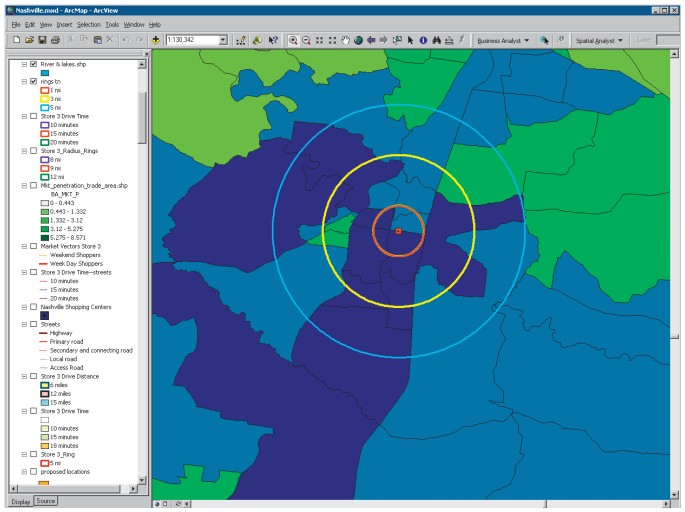
April11, 2003



Data-driven ring analysis

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 (square feet). For health care, for example, 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.
- Store managers can use rings driven by total sales to justify higher real estate costs in larger power centers.

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Performing data-driven ring analysis

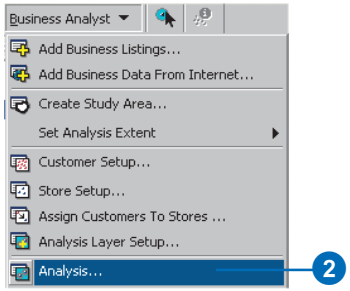
Data-driven rings can be created around your stores when you specify a value in the store data. This value is set equal to a distance and the rings are calculated in this way.

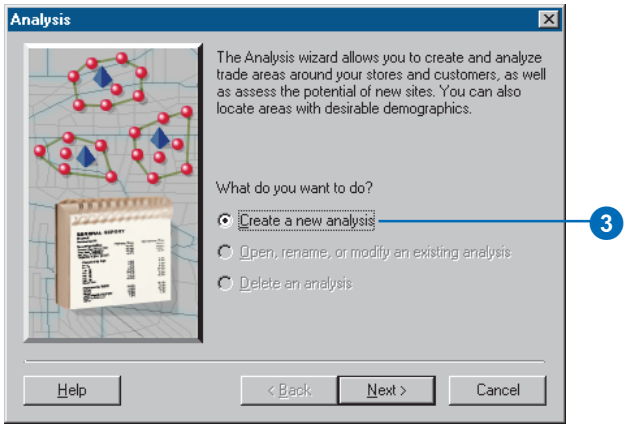
This is typically used to create radius trade areas for competitors so that a store owner can see if a store is being cannibalized by the competition. It can also be used to look for gaps in the market area.

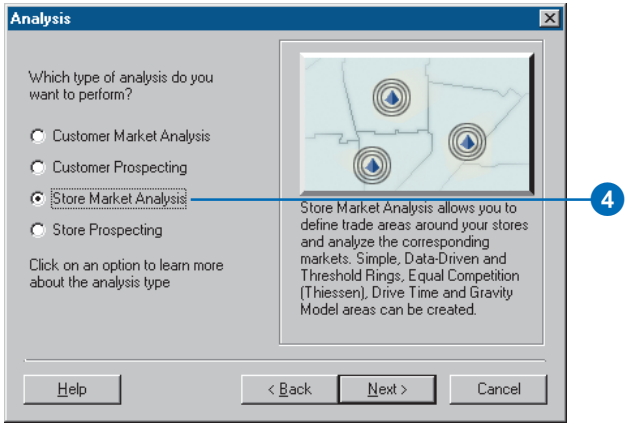
To determine what value you want to use, select the field that determines the size of the trade area. If you already know what value you want to use, type it in the text box. If you aren't sure what value you want to use, click Field Statistics. The minimum, maximum, and mean values appear on the left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

If you pick your stores' total sales field and specify $100,000, for example, 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 steps you through this process.

1. Open the study area that contains the data you want to analyze.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis and click Next.
4. Click Store Market Analysis and click Next. ▸







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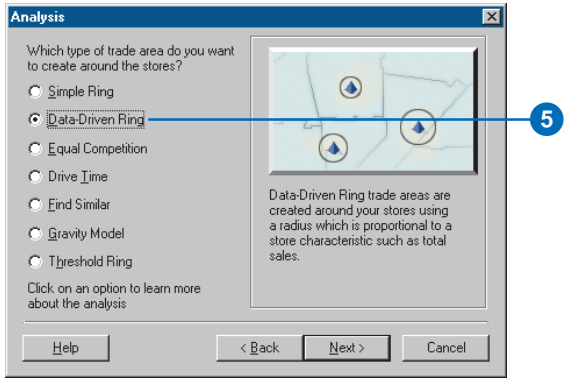
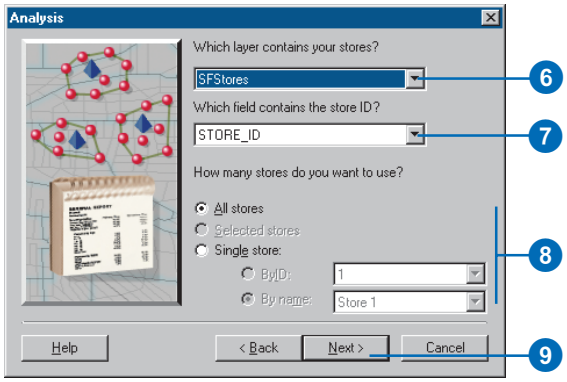
5. Click Data-Driven Ring and click Next.
6. Click the first dropdown arrow and click the layer that contains your stores.
7. Click the second dropdown arrow and click the field that contains the store ID.
8. Click the option that describes the number of stores you want to create customer market areas around.

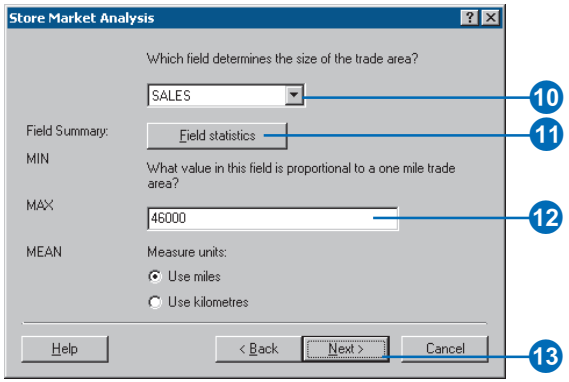
   To use all stores, click the first option.

   To use only certain stores, click Selected stores.

   To use a single store, click ByID or By name, then click the dropdown arrow to choose the ID or name of that store.
9. Click Next.
10. Click the dropdown arrow and click the field you want to determine the size of the trade area.
11. Click Field statistics to see minimum, maximum, and mean values for the field you chose.
12. Enter a value proportional to a one-mile trade area.
13. The base trade area radius can be one mile or one kilometer. Click the desired distance units, then click Next. ▶







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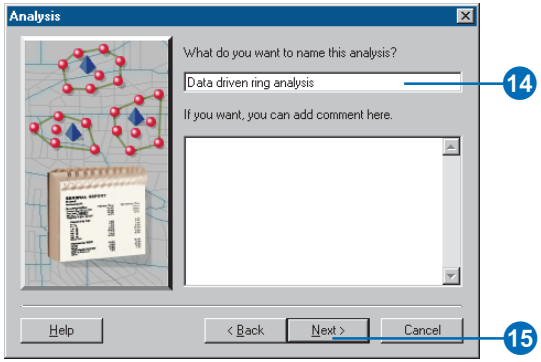
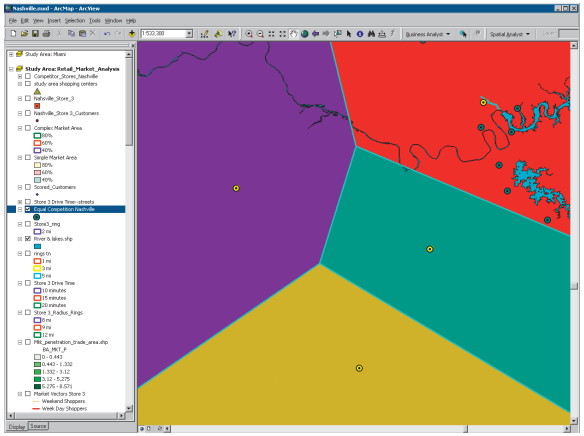
14. Type a name and comments for your analysis. You must provide a unique name but can use spaces or special characters.
15. Click Next.
16. Click the appropriate check boxes to create a report of your analysis.
17. If you're creating a report, click the dropdown arrows to choose the templates.
18. Click Finish.

    A layer containing data-driven rings is added to your map. If you're creating a report, the report window appears.

    To print your report, click the Print button on the report's application window.

    To print your map layout, make it active by clicking the title bar. Click the File menu and click Print.





A layer containing data-driven rings is added to your map.

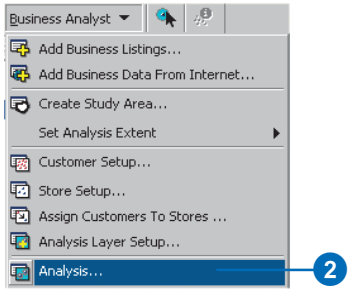
Equal competition areas

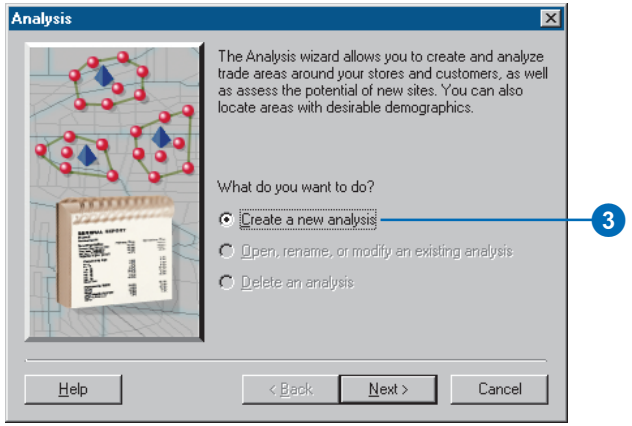
Another type of store-based market area is called *equal competition* (also called *Thiessen polygons*). This type of market area assumes that consumers will travel to the closest store or facility. A line is drawn exactly halfway between two competing centers.

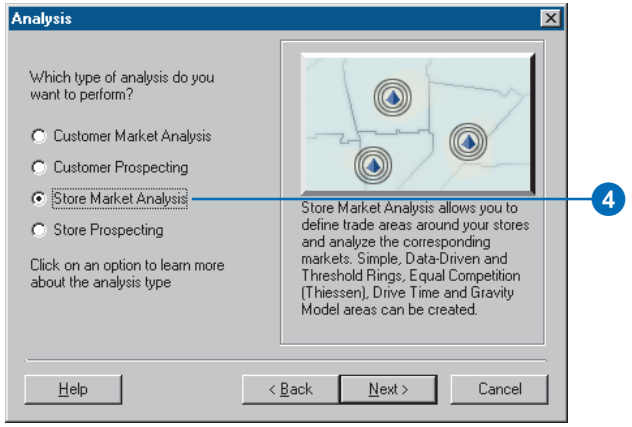
Equal competition areas can give a better understanding of the natural market areas of a facility. This is the best type of market area to use for store-specific direct mail. Each customer gets advertising geared toward a specific store location. There are no multiple mailings, and the customer is directed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

Home delivery pizza stores have used equal competition areas to define delivery markets. The order is directed to the outlet closest to the customer, and there is no competing overlap. All locations in each equal competition area can be geocoded by street address or by telephone and street address. Each incoming call can be automatically routed to the proper store either by phone ▸

1. Open the study area that contains the data you want to analyze.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis and click Next.
4. Click Store Market Analysis and click Next. ▸







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number caller ID or by asking the customer for a street address.

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

Equal competition areas are a good way to estimate market areas without a customer set.

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

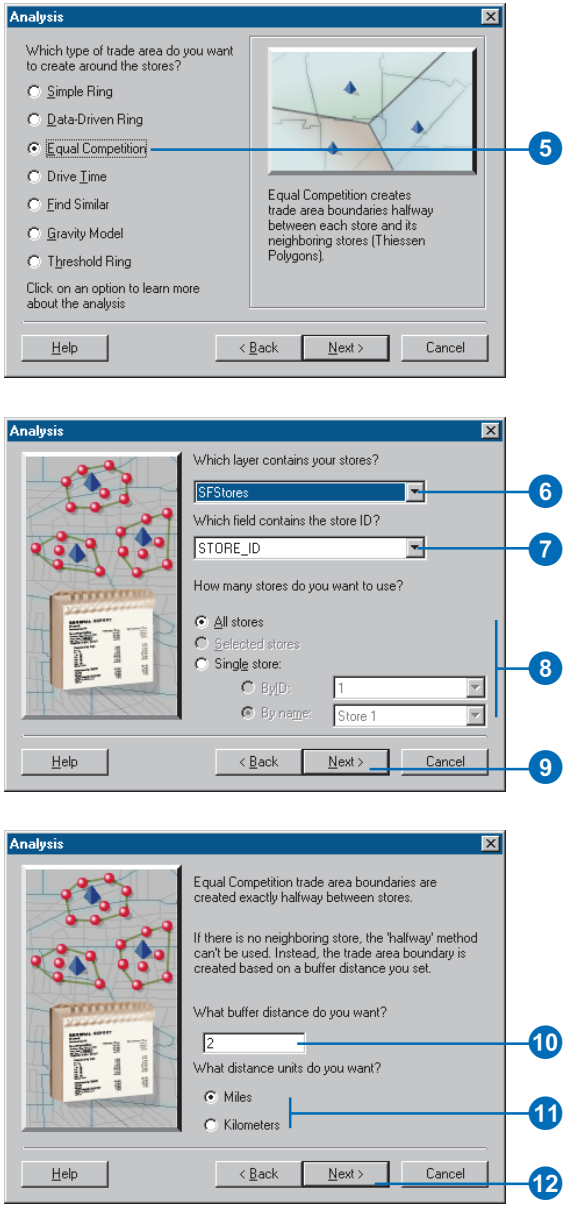
5. Click Equal Competition, then click Next.
6. Click the first dropdown arrow and click the layer that contains your stores.
7. Click the second dropdown arrow and click the field that contains the store ID.
8. Click the option that describes the number of stores you want to create store market areas around.

   To use all stores, click the first option.

   To use only certain stores, click Selected stores.

   To use a single store, click ByID or By name, then click the dropdown arrow to choose the ID or name of that store.
9. Click Next.
10. Enter the buffer distance.

    A good starting distance to use is 5 or 10 miles. Large regional centers may want to use a larger number, such as 15 or 20 miles. However, there is no rule of thumb for a starting distance—it varies by retailer.
11. Click the units of distance you want to use.
12. Click Next. ▸



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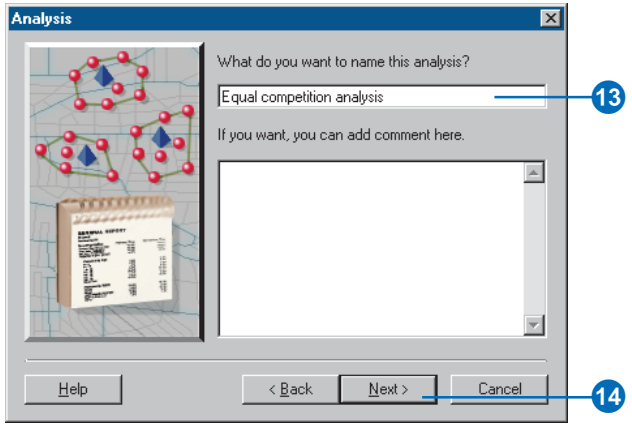
13. Type a name and comments for your analysis. You must provide a unique name but can use spaces or special characters.
14. Click Next.
15. Optionally, check the Report check box to create a report of your analysis.
16. If you're creating a report, click the dropdown arrows to choose the templates.
17. Click Finish.

    A layer containing equal competition areas is added to your map. If you're creating a report, the report window appears.

    To print your report, click the Print button on the report's application window.

    To print your map layout, make it active by clicking the title bar. Click the File menu and click Print.



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Drive-time and drive-distance analyses

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 have to 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 15 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).

Notice that 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 use the drive times at the edge of built-up urban areas to restrict delivery distances and times.

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 that at least some minimum population is within five minutes of each store. The threshold population is also dependent upon 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.

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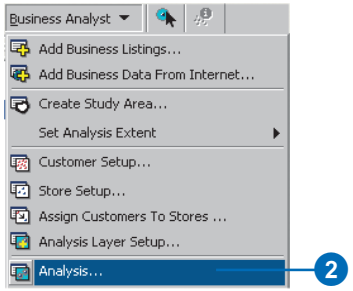
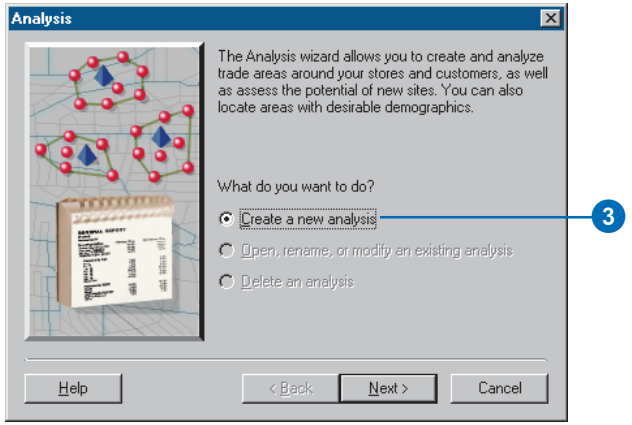
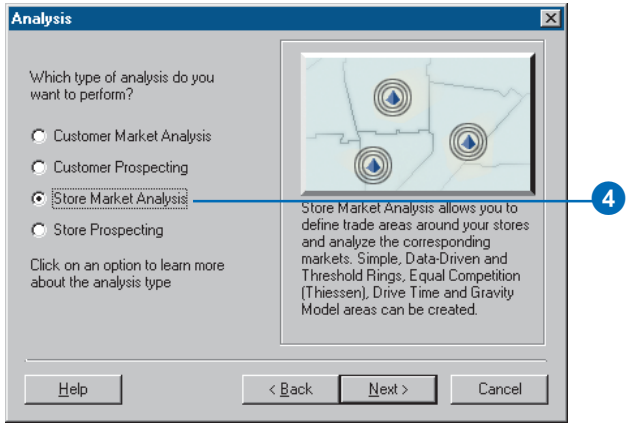
Creating market areas around your stores based on drive time or drive distance

Business Analyst will create an area around your store based on a driving time or distance outward from a store location using the surrounding road network.

1. Open the study area that contains the data you want to analyze.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis and click Next.
4. Click Store Market Analysis and click Next. ▸







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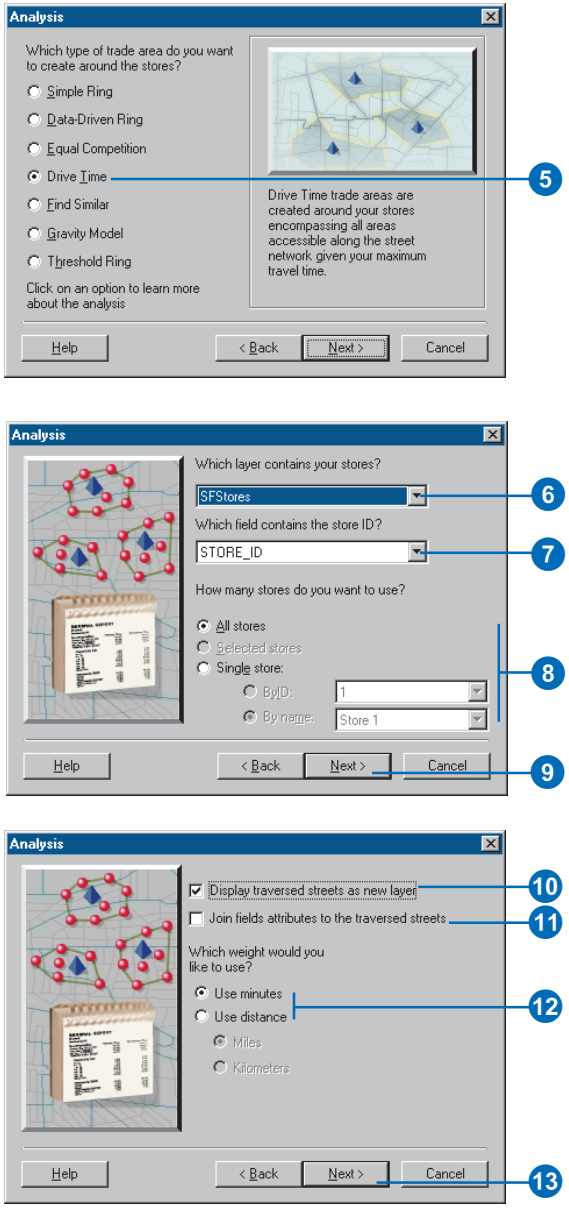
5. Click Drive Time and click Next.
6. Click the first dropdown arrow and click the layer that contains your stores.
7. Click the second dropdown arrow and click the field that contains the store ID.
8. Click the option that describes the number of stores you want to create store market areas around.

   To use all stores, click the first option.

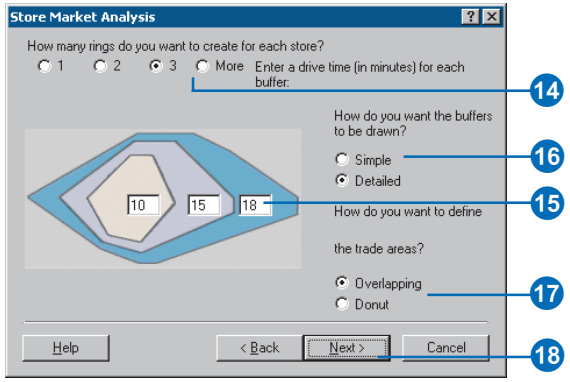
   To use only certain stores, click Selected stores.

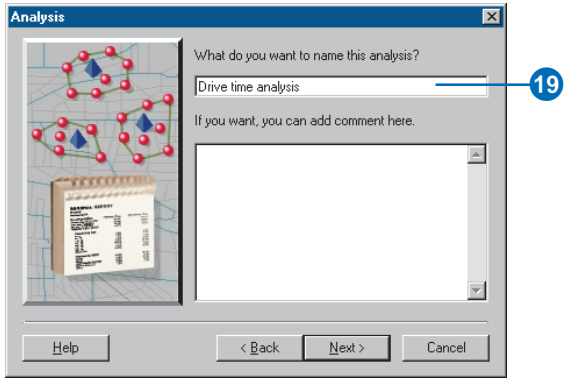
   To use a single store, click ByID or By name, then click the dropdown arrow to choose the ID or name of that store.
9. Click Next.
10. Check the first check box if you want to create a new layer (shapefile) that shows all of the streets inside the drive-time areas.
11. Check the second check box if you want to join street address ranges to the new shapefile that shows traversed streets.
12. Click the weight you want to use. If you click Use distance, click the units you want to use.
13. Click Next. ▶



14. Click the number of drive-time buffers you want to create around each store.
15. Type a drive time in minutes for each trade area.

    If you're creating multiple rings, the outer rings must be a higher value than the inner rings.
16. Click the option that describes how you want the buffers drawn.
17. Click the option that describes how you want to define the trade areas.
18. Click Next.
19. Type a name and comments for your analysis. You must provide a unique name but can use spaces or special characters. Click Next to continue.
20. Optionally, check the Report check box to create a report of your analysis.
21. If you're creating a report, click the dropdown arrows to choose the templates.
22. Click Finish. ▶





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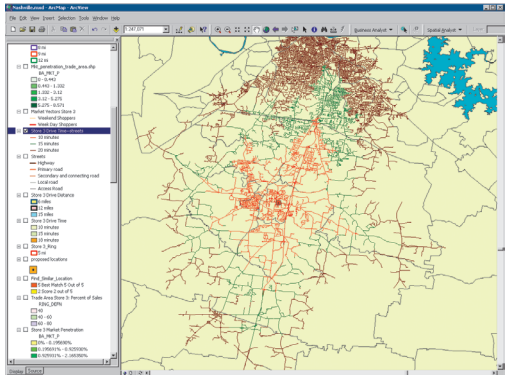
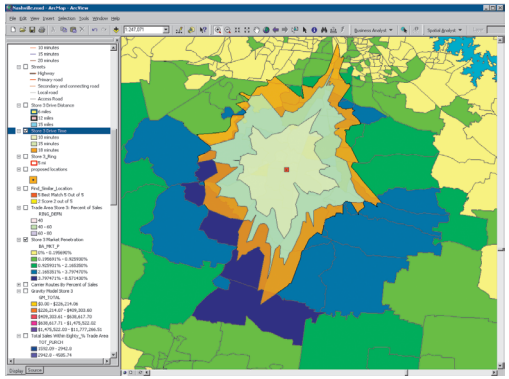
A layer containing drive-time buffers (and streets, if requested) is added to your map.

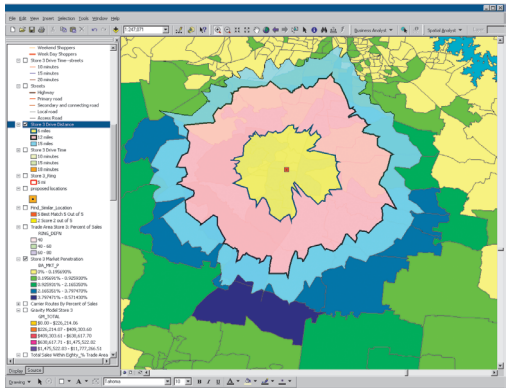
To print your report, click the Print button on the report's application window.



Drive-time traversed streets



Drive-time polygon



Drive distance

The Gravity Model

The *Gravity 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 Gravity 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:

Pij = the probability of consumer j shopping at store i.

Wi = a measure of the "attractiveness" of each store or site i.

Dij = the distance from consumer j to store or site i.

a = 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 (e.g., 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 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 one 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 Gravity Model will extend. Enter a value that will encompass all of your competitors. You can use the measure tool (on the toolbar) 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 gravity models.

Distance–Decay function

Our perception of how far a destination is may not be a linear function of distance. That is, we are more likely to shop some place closer to home than far away. In other words, we view distance 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

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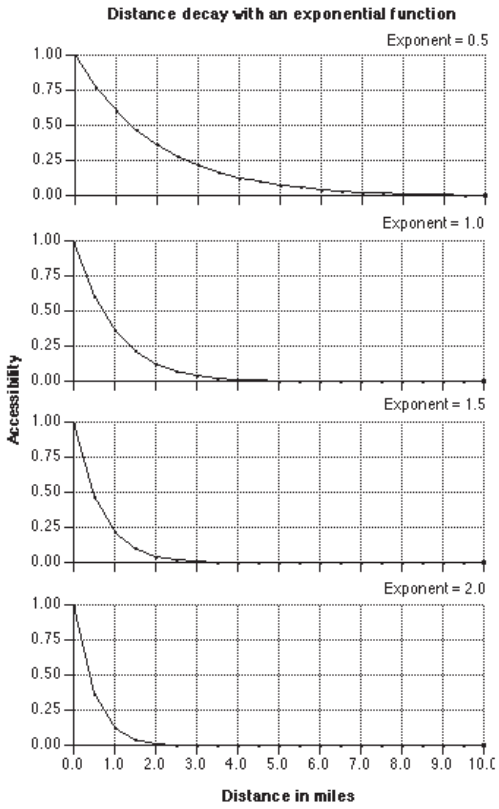
large exponent indicating that we will travel only a short distance for such things. Other activities, such as furniture shopping, have a small exponent because we are willing to travel farther to shop for furniture.

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

The exponential function is typically used for computing interactions over a small distance, such as within a city.

All Gravity 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).

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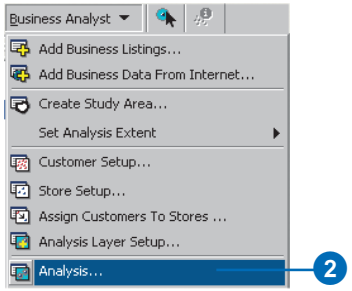
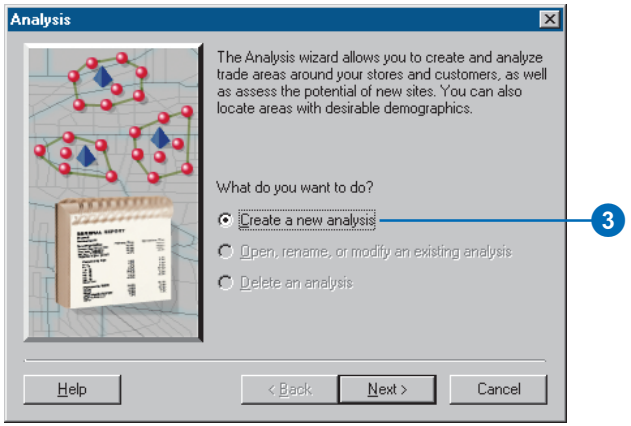
Performing analysis using the Gravity Model

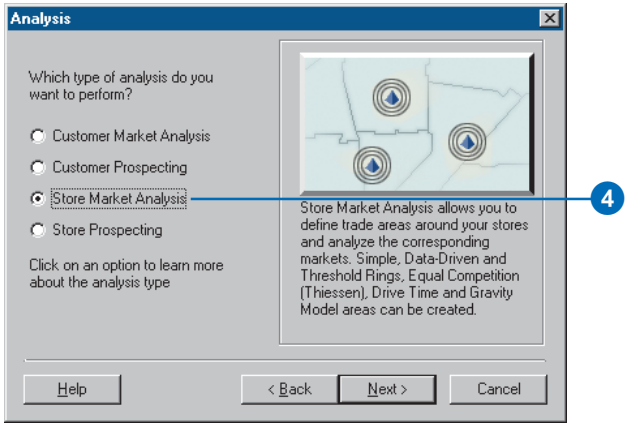
This task demonstrates how to perform a store market analysis using the Gravity Model.

The Gravity Model predicts 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 (that is, block group or tract) containing a "sales potential" field 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 common attractiveness attribute is GLA.

1. Open the study area you want to use for analysis.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis, then click Next.
4. Click Store Market Analysis, then click Next. ▶







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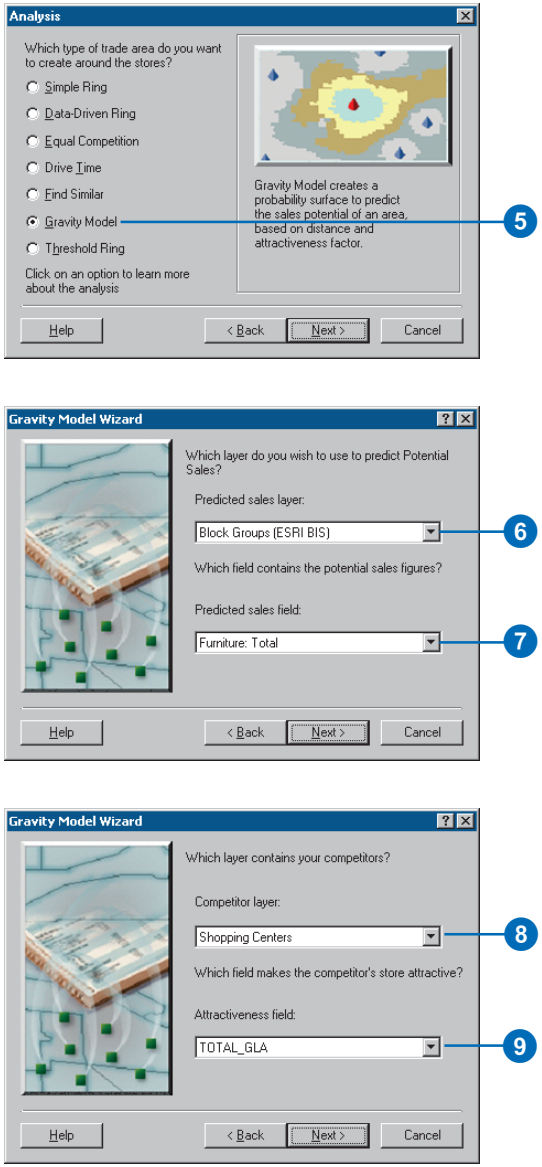
5. Click Gravity Model and click Next.
6. Click the first dropdown arrow and click the layer that contains the predicted sales.
7. Click the second dropdown arrow and click the field that contains the predicted sales. Click Next to continue.
8. Click the first dropdown arrow and click the layer that contains your competition.
9. Click the second dropdown arrow and click the field that makes the competitor's store attractive. Click Next to continue. ►



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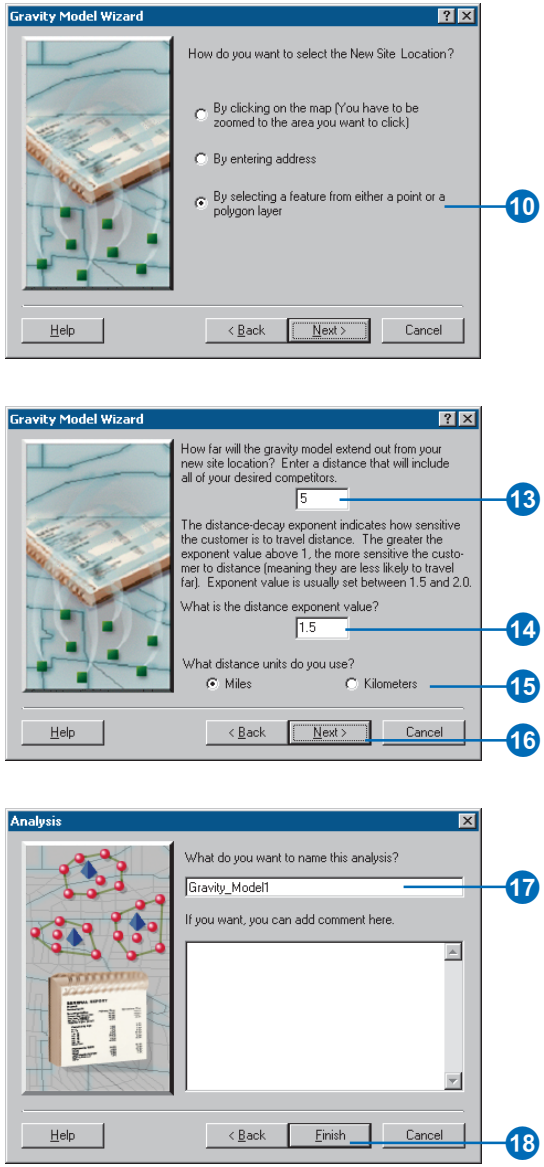
10. Select the method for identifying the new site location, then click Next.
11. If you choose By clicking on the map or By entering address, you will then have to enter the attractiveness value for your new site. This will be compared with that of the competitor during the analysis.
12. If you choose By selecting a feature from either a point or a polygon layer, use the dropdown arrow to choose the layer, feature, and field containing the attractiveness value.
13. Type the distance that the Gravity Model will extend from the new site location.
14. Type a distance–decay exponent value.
15. Click the unit of distance you want to use.
16. Click Next.
17. Type a name and comments for your analysis. You must provide a unique name but you can use spaces or special characters.
18. Click Finish.

    The predicted sales for the new site location appear. Click OK to close this box and view the Gravity Model results.



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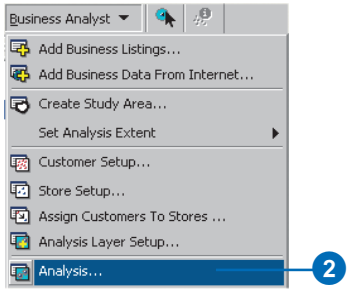
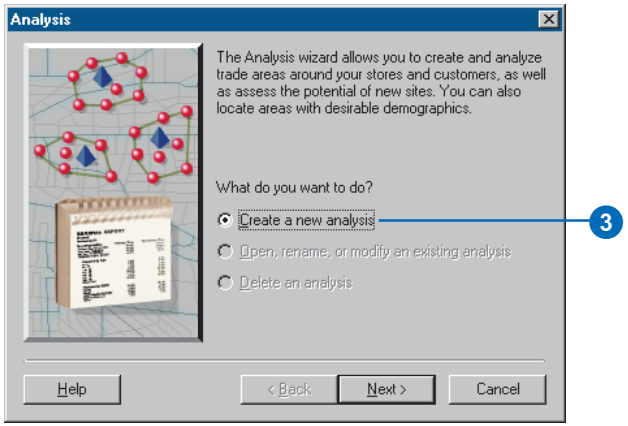
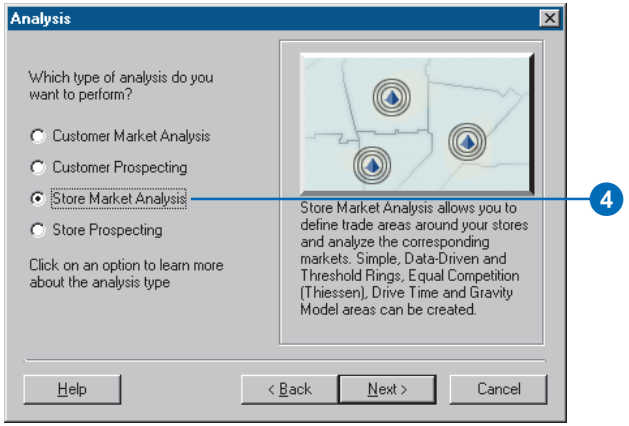
Threshold ring analysis

The *threshold ring analysis* allows you to create rings around your stores containing a given count of population, households, or total housing units. The threshold ring analysis uses data at the block-point level.

1. Open the study area you want to use for analysis.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis, then click Next.
4. Click Store Market Analysis, then click Next. ▸







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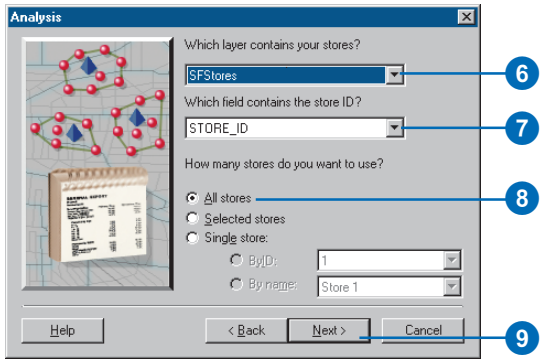
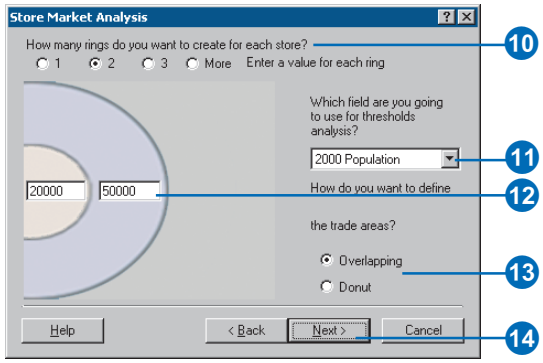
5. Click Threshold Ring, then click Next.
6. Click the first dropdown arrow and click the layer that contains your stores.
7. Click the second dropdown arrow and click the field that contains the store ID.
8. Click the option to select how many stores you want to use.
9. Click Next.
10. Click the option to select how many rings you want to create for each store.
11. Click the dropdown arrow and click the field you want to use for threshold analysis.
12. In the text boxes, enter a value for each ring.
13. Click the option to specify how you want to define the trade areas.
14. Click Next. ▶





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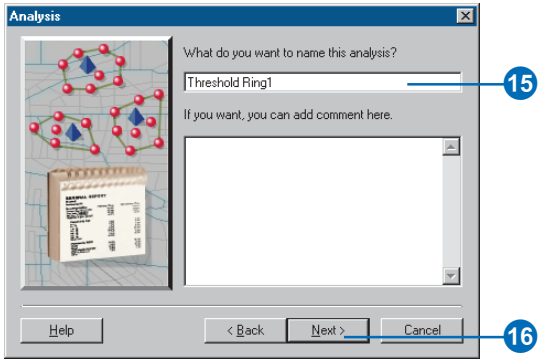
15. Type a name and comments for your analysis. You must provide a unique name but you can use spaces or special characters.
16. Click Next.
17. Optionally, check the Report check box to create a report. Click the first dropdown arrow and click the layer you want to summarize, then click the second dropdown arrow and click the report template you want to use.
18. Click Finish.

    A layer containing threshold rings is added to your map. If you're creating a report, the report window appears.

    To print your report, click the Print button on the report's application window.

    To print your map layout, make it active by clicking the title bar. Click the File menu and click Print.



Store prospecting: simple ring, drive time, and threshold ring

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 coming up for sale or lease. The Site Prospecting tool also provides this capability in a quick, easy tool for use on a single site. The Store Prospecting wizard is most commonly used for reading in a database of potential store locations, though 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, then 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, or total housing units. 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 purposes—for example, what is the population within a two-mile ring for all points being analyzed?

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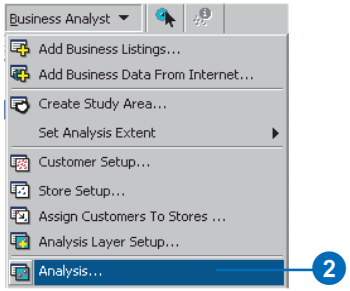
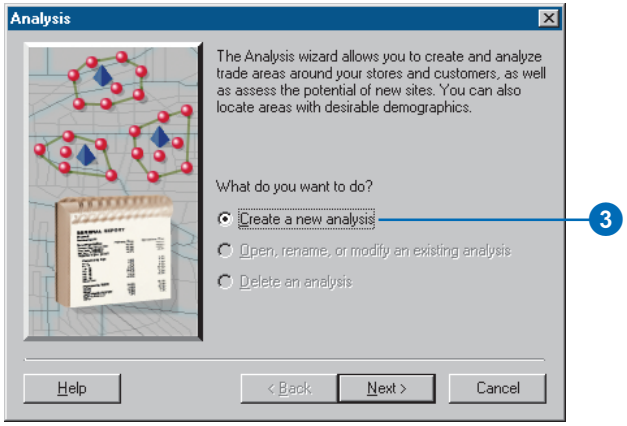
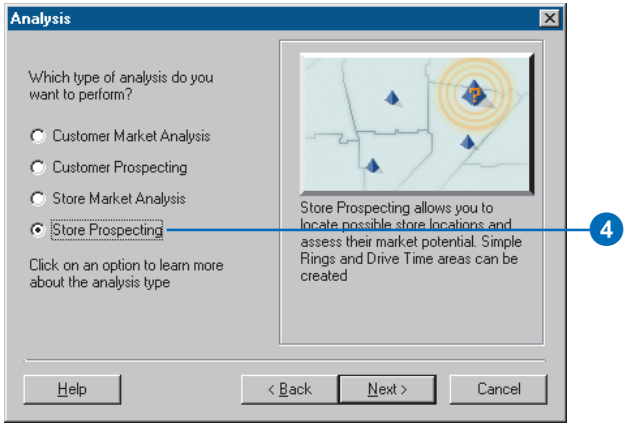
Evaluating a potential store site based on simple rings around the location

You can prospect for a store by creating a simple ring around the potential sites, then creating demographic reports for comparison of each site.

1. Open the study area that contains the data you want to analyze.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis and click Next.
4. Click Store Prospecting and click Next. ▸







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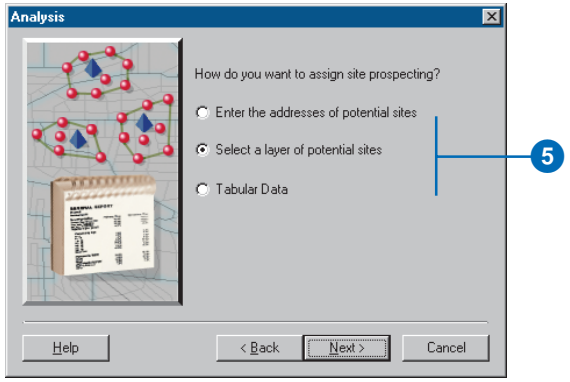
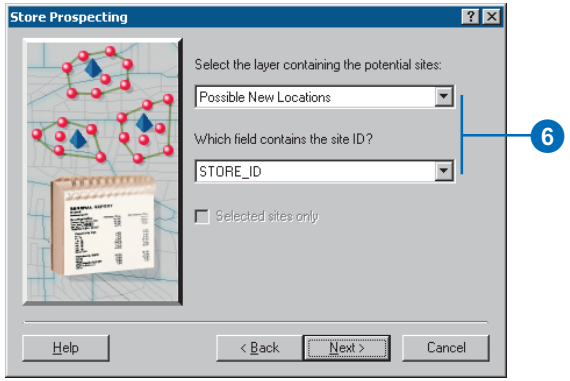
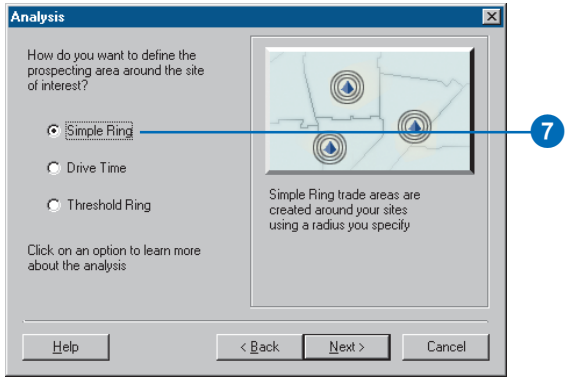
5. Click how you want to identify your sites, then click Next.
6. Follow the instructions on the panel that appears. Depending on how you chose to identify your sites, a different panel will appear. Click Next to continue.
7. Click Simple Ring, then click Next. ▶







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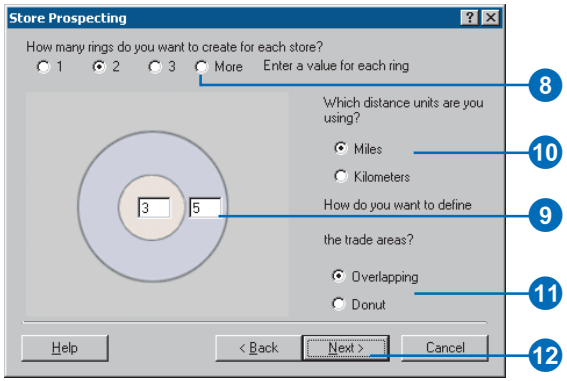
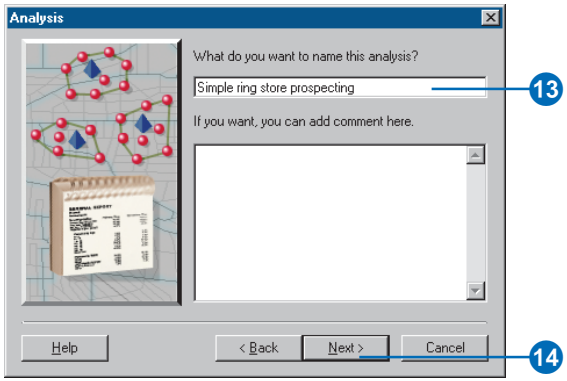
8. Click the number of rings you want to create around each store.
9. Type a radius for each ring.

   By definition, for multiple rings, the outer rings must be a higher number than the inner rings.
10. Click the unit of distance you want to use.
11. Click the option that describes how you want to define the outer rings.
12. Click Next.
13. Type a name and comments for your analysis. You must provide a unique name but can use spaces or special characters.
14. Click Next.
15. Optionally, check the Report check box to create a report of your analysis.
16. If you're creating a report, click the dropdown arrows to choose the templates.
17. Click Finish.

    A layer containing simple rings is added to your map.

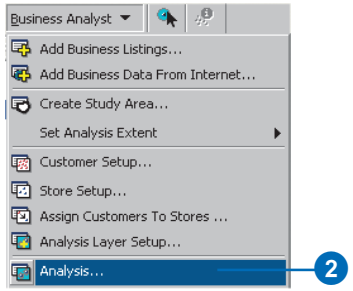


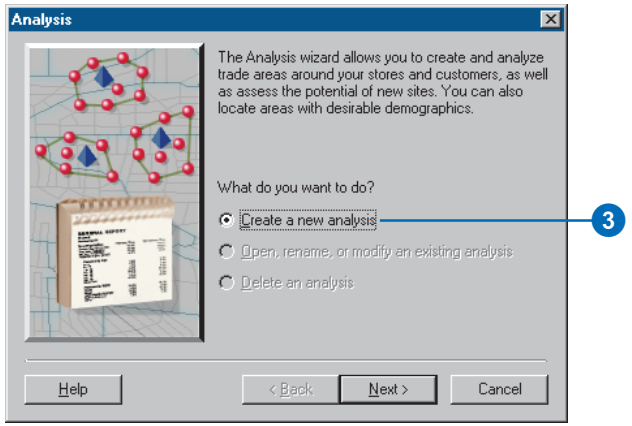


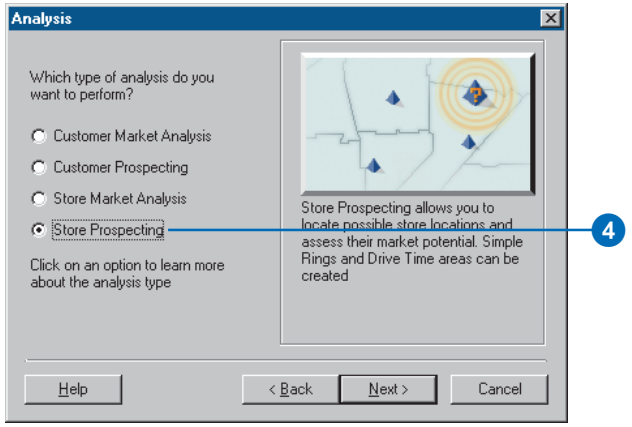
Evaluating a potential store site based on drive time

With Business Analyst, you can create drive-time areas around possible sites and create demographic reports for comparison of each site.

1. Open the study area that contains the data you want to analyze.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis and click Next.
4. Click Store Prospecting and click Next. ▶







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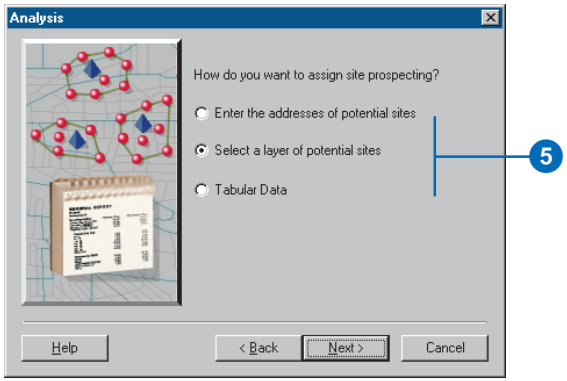
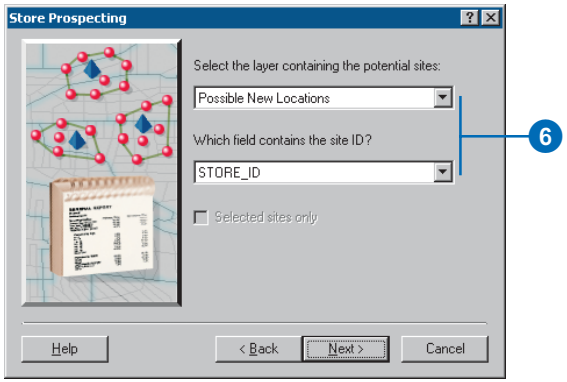
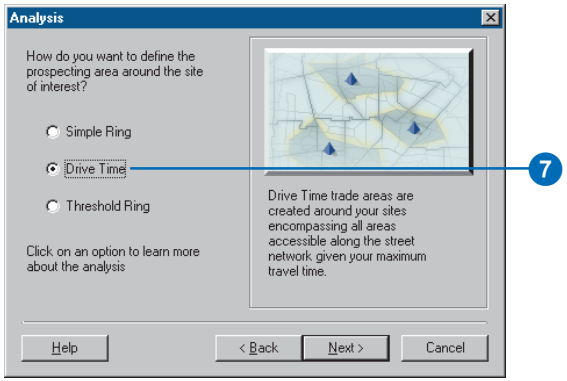
5. Click how you want to identify your sites, then click Next.
6. Follow the instructions on the panel that appears. Depending on how you chose to identify your sites, a different panel will appear. Click Next to continue.
7. Click Drive Time and click Next. ►







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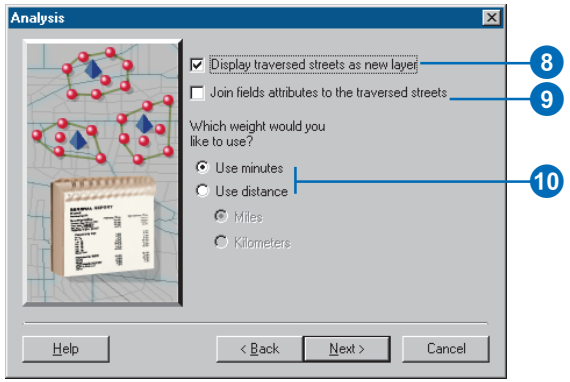
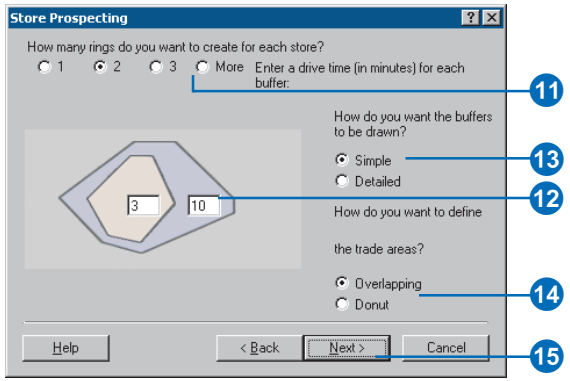
8. Check the first check box if you want to create a new layer (shapefile) that shows all of the streets inside the drive-time areas.
9. Check the second check box if you want to join street address ranges to the new shapefile that shows traversed streets.
10. Click the weight you want to use. If you click Use distance, click the units you want to use. Click Next to continue.
11. Click the number of drive-time buffers you want to create around each store.
12. Type a drive time in minutes for each trade area.

    If you're creating multiple rings, the outer rings must be a higher value than the inner rings.
13. Click the option that describes how you want the buffers drawn.
14. Click the option that describes how you want to define the trade areas.
15. Click Next. ▶





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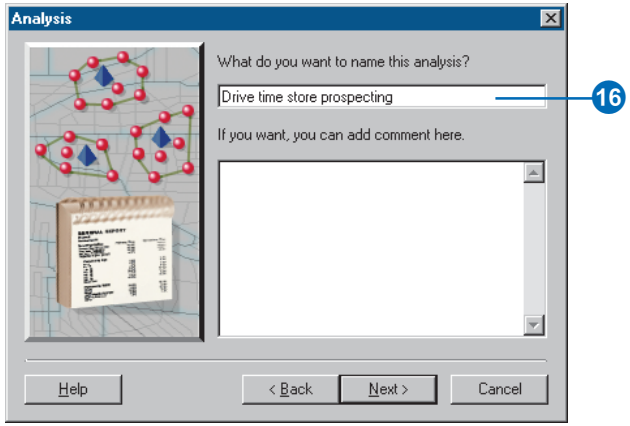
16. Type a name and comments for your analysis. You must provide a unique name but can use spaces or special characters. Click Next to continue.
17. Optionally, check the Report check box to create a report of your analysis.
18. If you're creating a report, click the dropdown arrows to choose the templates.
19. Click Finish.

    A layer containing drive-time buffers (and streets, if requested) is added to your map. If you're creating a report, the report window appears.

    To print your report, click the Print button on the report's application window.

    To print your map layout, make it active by clicking the title bar. Click the File menu and click Print.



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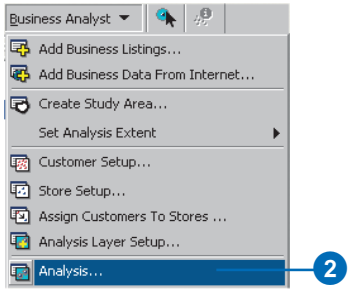
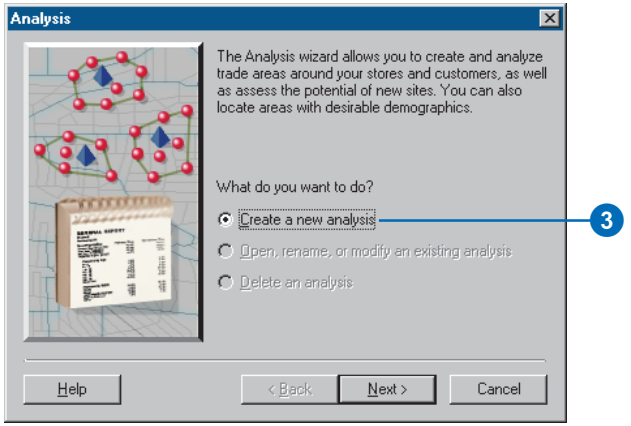
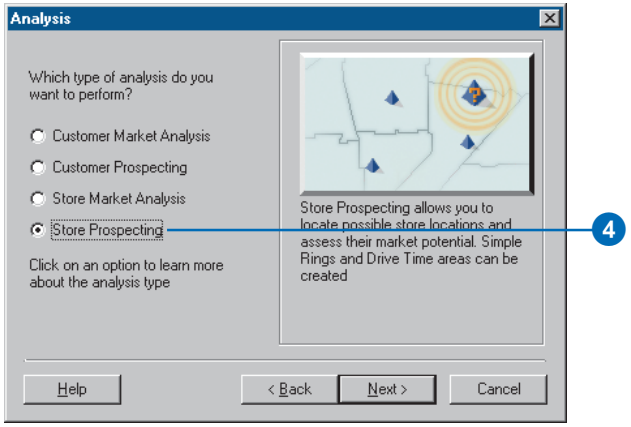
Evaluating a potential store site based on threshold rings around the location

You can prospect for a store by creating a threshold ring around the potential sites and creating demographic reports for comparison of each site.

1. Open the study area that contains the data you want to analyze.
2. Click the Business Analyst menu and click Analysis.
3. Click Create a new analysis and click Next.
4. Click Store Prospecting and click Next. ▶







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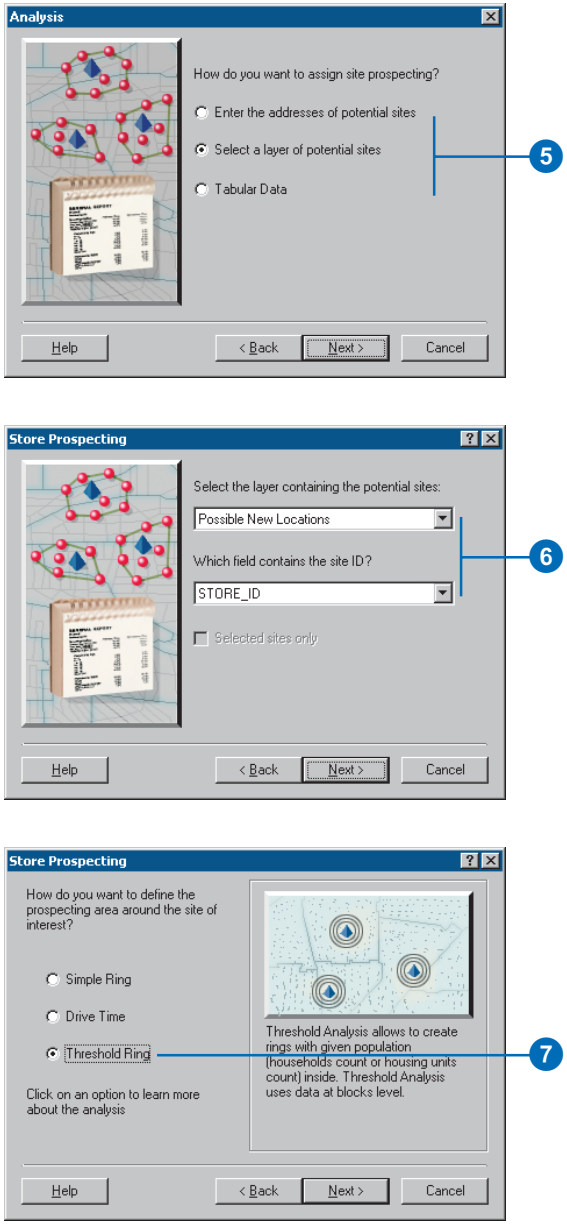
5. Click how you want to identify your sites, then click Next.
6. Follow the instructions on the panel that appears. Depending on how you chose to identify your sites, a different panel will appear. Click Next to continue.
7. Click Threshold Ring, then click Next. ►



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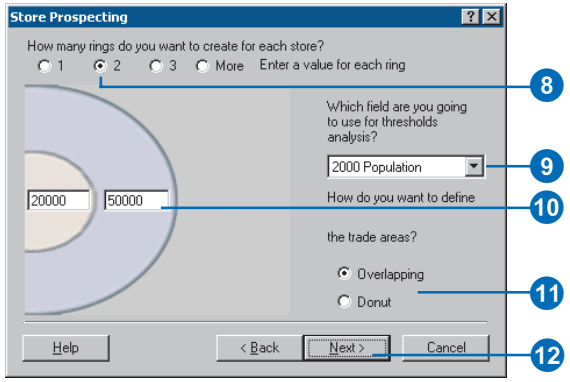
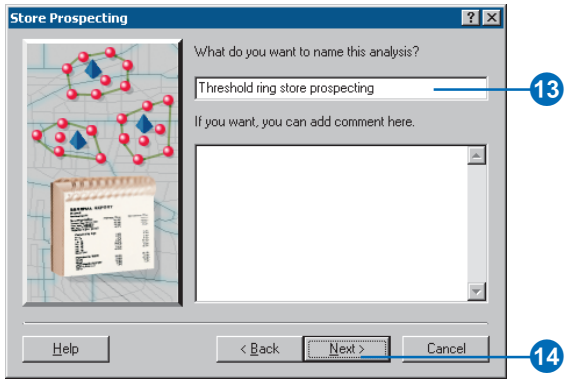
8. Click the number of rings you want to create around each store.
9. Click the dropdown arrow and click the field you want to use for threshold analysis.
10. In the text boxes, enter a value for each ring.
11. Click the option that describes how you want to define the trade areas.
12. Click Next.
13. Type a name and comments for your analysis. You must provide a unique name but can use spaces or special characters.
14. Click Next.
15. Optionally, check the Report check box to create a report of your analysis.
16. If you're creating a report, click the dropdown arrows to choose the templates.
17. Click Finish.

    A layer containing threshold rings is added to your map.





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Advanced analyses

9

IN THIS CHAPTER

- **Spatial overlay**
- **Using the Spatial Overlay wizard**
- **Find Similar analysis**

This chapter shows you how to perform Spatial Overlay and Find Similar analyses.

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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 you have created in ArcMap.

You begin this analysis with two layers. The first, called the Input layer, contains the underlying data that you want to extract. Data is extracted from this layer into a second, or *Overlay*, layer. For example, suppose you have demographic and socioeconomic data at the block group level. You then 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 in Business Analyst has been improved to work not only with polygons but also with point layers. The possible Input layer and Overlay layer combinations are:

Input layer	Overlay layer
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 lets you 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.

Let's begin with a simple example of area apportionment of population. If a block group falls totally within the overlay polygon, all 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 much 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 quite straightforward when considering data that represents whole quantities—for example, population, households, housing units, people aged 12–17, and so on—but it becomes more complicated for proportional data such as average age, per capita income, or median household income. For these cases, a weighted average must be used.

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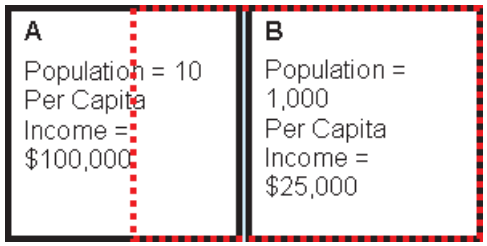
Consider the following exaggerated example of two underlying polygons—for example, block groups—and a single overlay polygon—for example, a market area. The situation is illustrated by the following graphic:



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 much 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.

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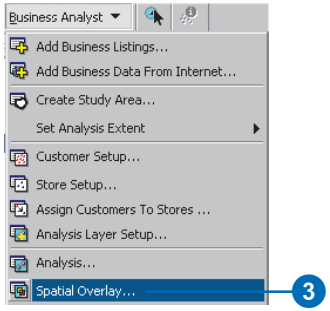
Using the Spatial Overlay wizard

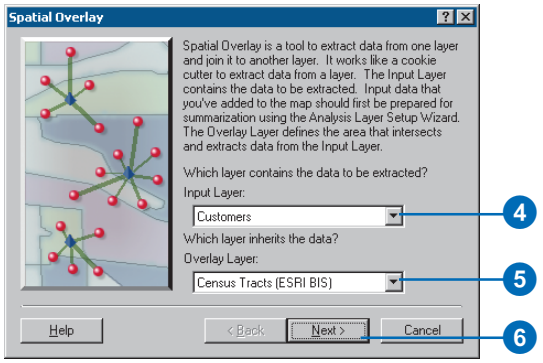
To get access to and run the Spatial Overlay wizard, you must have at least one polygon layer in your map document.

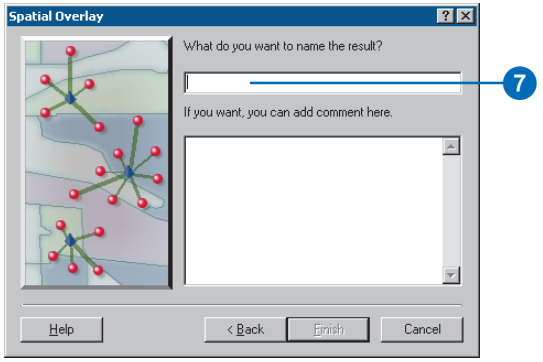
The *Spatial Overlay wizard* is a simple tool to use. You select an Input layer, Overlay layer, and a name for the new Spatial Overlay layer that is created.

Note that 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 three-step wizard that lets Business Analyst know how you want data in that layer aggregated.

1. Open the study area you want to use for the spatial overlay.
2. The Spatial Overlay wizard will join fields from the Input layer and fields from the Overlay layer in the attribute table of the new Spatial Overlay layer. For this reason, you may want to set the visible fields in each layer before combining them in the new layer. This can be done by right-clicking the layer in the table of contents, clicking Properties, and clicking the Fields Visibility tab. This lets you tailor the fields in the new layer to those you choose.
3. Click the Business Analyst menu and click Spatial Overlay.
4. Click the first dropdown arrow and click the layer that contains the data that will be extracted (Input Layer).
5. Click the second dropdown arrow and click the layer that will inherit the new data (Overlay Layer).
6. Click Next.
7. Enter a name for the resulting Spatial Overlay layer and any desired comments. Click Finish to create the new Spatial Overlay layer.







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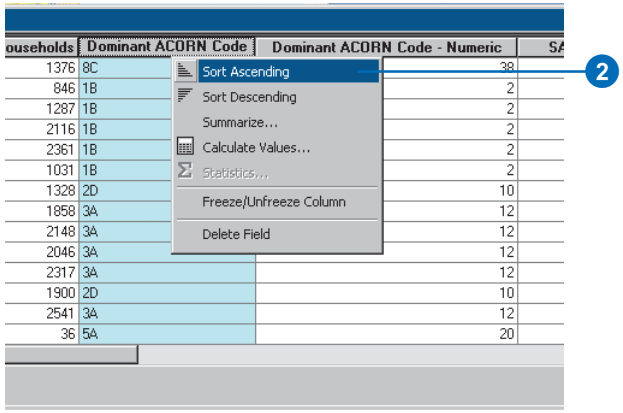
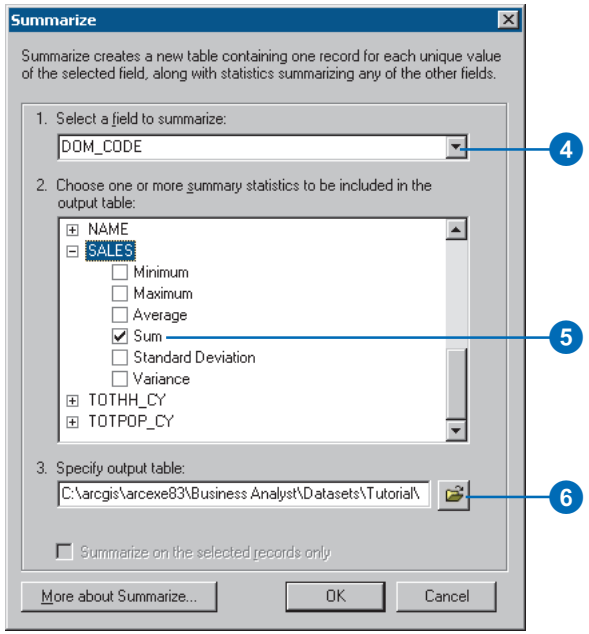
Example of using Spatial Overlay

In the spatial overlay steps on the previous page, you used the Tutorial customer database (sp_custs.dbf) as the Input layer and Census Tracts (ESRI BIS) as the Overlay layer. The field visibility of the Census Tract layer was changed to show only the fields of interest, including Dominant ACORN code, Dominant ACORN code–Numeric, and 2003 Total ACORN households (1A–9C). Dominant ACORN fields provide information as to the dominant characteristics of people living in each census tract.

1. After creating the new spatial overlay layer (for more information on that see the previous page), right-click the layer and click Open attribute table.
2. Right-click the field heading Dominant ACORN Code and click Sort Ascending.
3. Summarize the Dominant ACORN codes by right-clicking the field heading and clicking Summarize. This function will create a new table with one record for each unique ACORN code.
4. Click the first dropdown arrow and click DOM_CODE.
5. Click Sales (+) in the second information box and check Sum. You can also summarize the other fields if you choose to.
6. Specify a location on your computer to which to save the new table and click OK.
7. Click Yes to add the resulting table to your map.

   Your table of contents will shift to the Source tab to view tabular data. The new summarized table is added to the bottom of the list.
8. Click the Close button to close the Spatial Overlay attribute table if you still have it open. ▶





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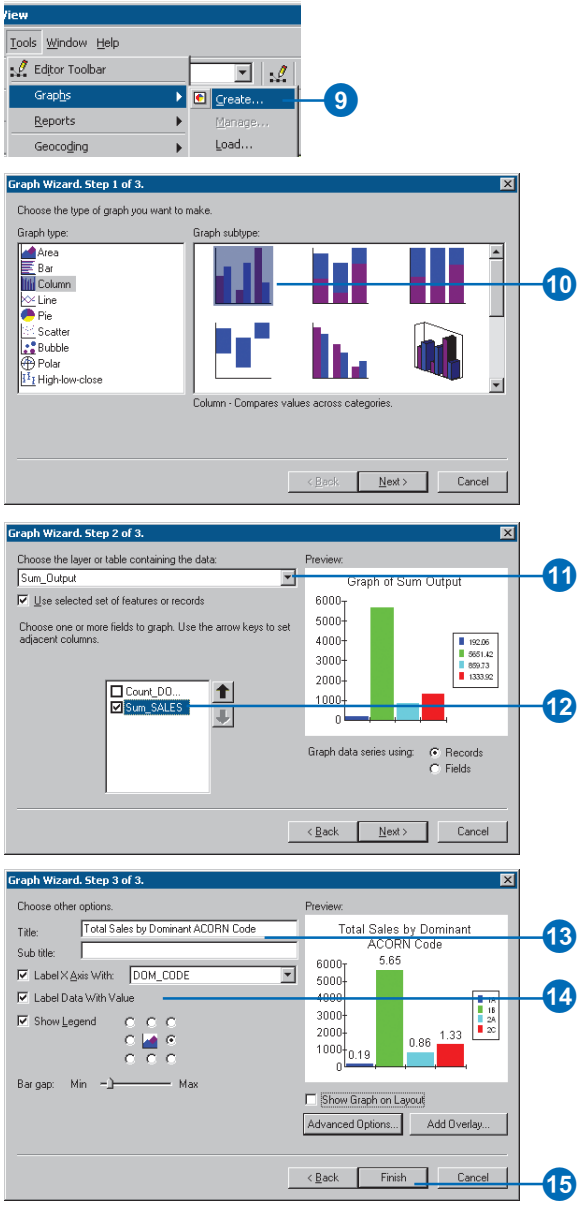
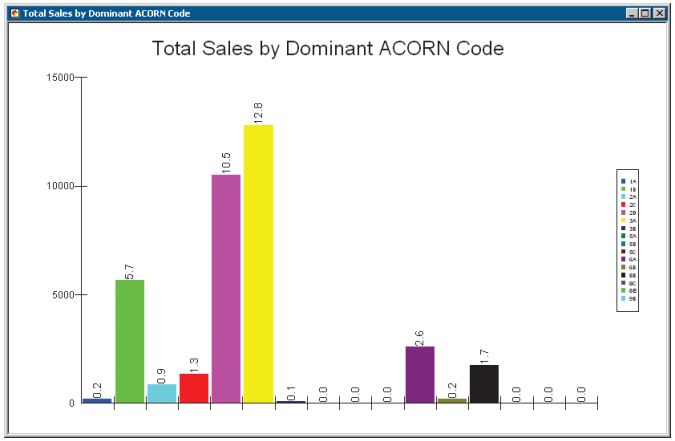
9. Highlight the new summarized table by clicking Sum Output. Then, click the Tools menu, click Graphs, and click Create.
10. Click Column under Graph type and the upper-left graph under Graph subtype, then click Next.
11. Click the dropdown arrow and click the Sum_Output table at the bottom of the list.
12. Check the box to use selected records and check the Sum_SALES field to graph. Click to graph Records in the table—rather than Fields—and click Next.
13. Type the title "Total Sales by Dominant ACORN Code".
14. Check to Label X Axis With DOM_CODE, Label Data With Value, and Show Legend.
15. Click Finish to create a graph showing Total Sales by Dominant ACORN Code within your study area. ►



You can now see which ACORN codes are accounting for most of your sales and focus your marketing on similar areas.

16. You can also create a report of your spatial overlay results by using the Reports option on the Business Analyst menu. To do this, select the Spatial Overlay layer as the boundary layer and Census Tracts (ESRI BIS) as the layer to summarize.



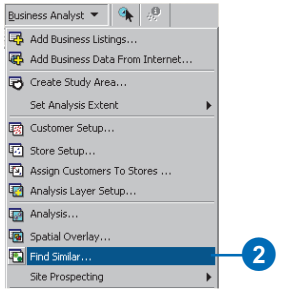
Find Similar analysis

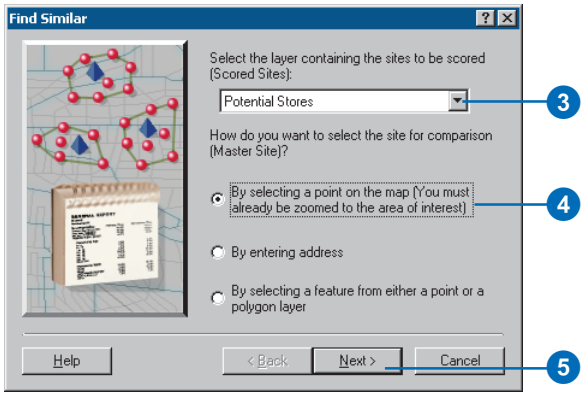
Find Similar is a tool to score potential new sites against a known, well-performing site, called a *master site*. It does this by comparing values, for up to five variables, between the master site and the scored sites. You will assign a +/- percentage that you would like the sites to be scored to according to the master site value. Sites are then assigned a score of 1–5 based on the number of variables that match the criteria you set.

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 module 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 (for example, simple rings, drive times, other forms of trade areas, and census tracts). It also lets you score point locating by associating the point with its underlying geography polygon and the characteristics of that polygon. Use Find Similar to get a quick overview of a large number of potential sites and pick the ►

Find Similar using a master site picked on the map or an address

1. Open the study area you want to use for analysis.
2. Click the Business Analyst menu and click Find Similar.
3. Click the first dropdown arrow and click the layer that contains the sites to be scored.
4. Click either By selecting a point on the map or By entering address.
5. Click Next. ►





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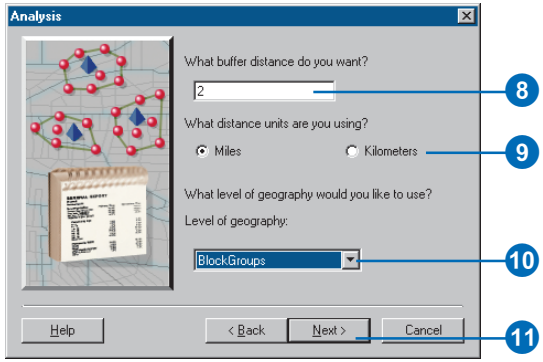
top-scoring sites for additional analysis.

The master site might be based on your best location or a "typical" location. You might select a master site based on a store with a particular product mix or one that has the highest rate of same store sales. You have to pick the master site candidate for Find Similar to score against. You can choose your master site by selecting a point on the map, by entering an address, or by selecting a feature from either a point or polygon layer.

The Find Similar tool also needs a layer of sites to be scored (scored sites) against the master site.

The Find Similar wizard is quite flexible as to what is used for scored sites. Some examples of scored sites 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, in most cases you should compare similar-sized areas around ▸

6. If you clicked By selecting a point on the map, click the map in the desired location and skip to step 8.
7. If you clicked By entering address, enter the Address, City, and State, then click Next.
8. Type a distance value to be used to create the buffer around each site.
9. Click either Miles or Kilometers as the distance units.
10. Click the dropdown arrow and click the level of geography that will be used to perform the analysis.
11. Click Next. ▸



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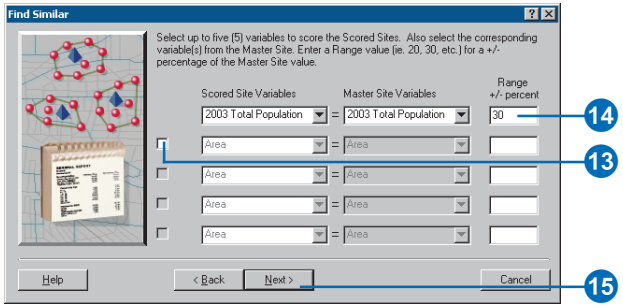
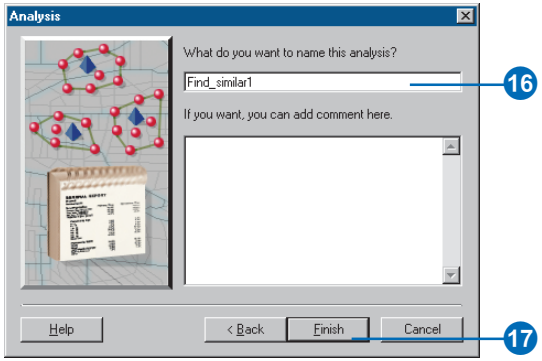
the master and scored sites. For example, if you're using a five-minute drive time around your master site, you should create and use a five-minute drive time around your scored sites.

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.

12. Click up to five variables to use in scoring the scored sites against the master site. Click the variable names for the corresponding Scored Site Variables and Master Site Variables.
13. Check the check box on the left to select two or more variables.
14. Enter a range percentage for which the scored site value can be above or below the master site.
15. Click Next.
16. Type a name and comments for your analysis. You must provide a unique name, but you can use spaces or special characters.
17. Click Finish.

    Each of the sites is scored based on the number of variables that matched the values of the master site.





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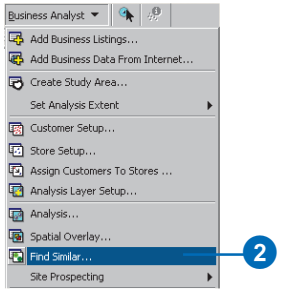
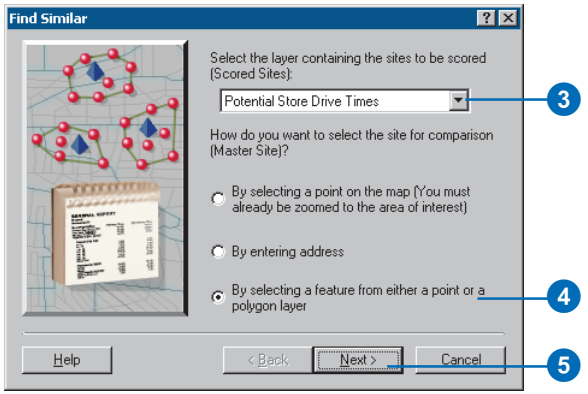
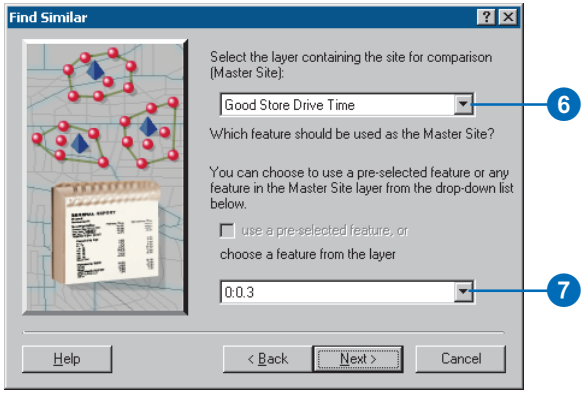
Find Similar using a master site from a layer

1. Open the study area you want to use for analysis. This example compares drive times around the site.
2. Click the Business Analyst menu and click Find Similar.
3. Click the first dropdown arrow and click the layer that contains the sites to be scored.
4. Click By selecting a feature from either a point or a polygon layer.
5. Click Next.
6. Click the first dropdown arrow and click the Master Site layer.
7. Click the second dropdown arrow and click the feature that represents the master site. ▶







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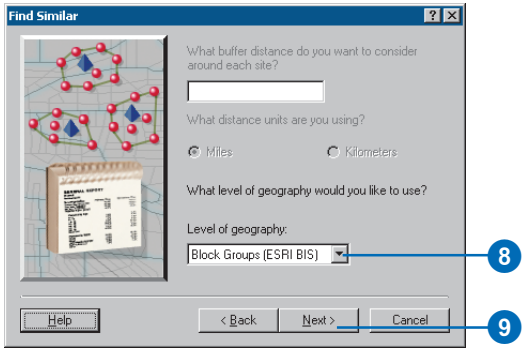
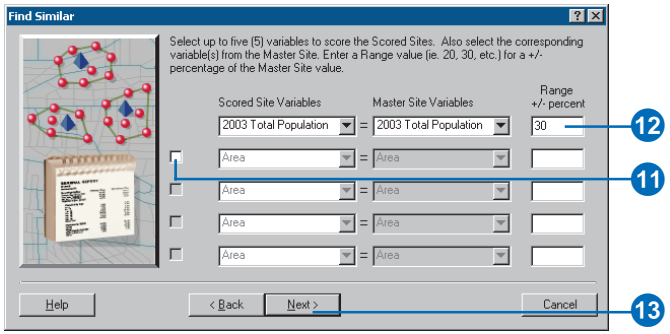
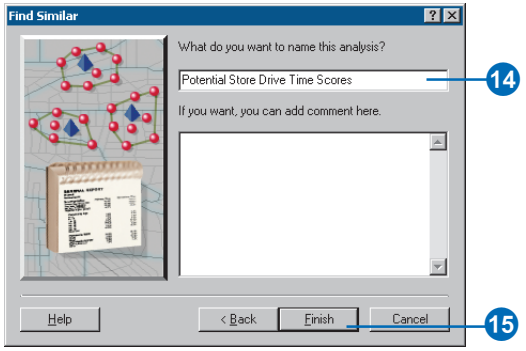
8. Since you're comparing polygons, no buffer distance is needed. Click the dropdown arrow and click the level of geography that will be used to perform the analysis.
9. Click Next.
10. Click up to five variables to use in scoring the scored sites against the master site. Click the variable names for the corresponding Scored Site Variables and Master Site Variables.
11. Check the check box to select two or more variables.
12. Enter a range percentage for which the scored site value can be above or below the master site.
13. Click Next.
14. Type a name and comments for your analysis. You must provide a unique name, but you can use spaces or special characters.
15. Click Finish.

    Each of the sites is scored based on the number of variables that matched the values of the master site.
16. The finished analysis scores all polygons based on the number of variables that matched the range values of the master site.







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Finding a route

10

IN THIS CHAPTER

- **The Find Route wizard**
- **Pointing and clicking on your map to assign stops**
- **Using a point layer or table of your stops**
- **Using addresses, ZIP Codes, or latitude/longitude of your stops**
- **Using a point graphic or feature to assign stops**

When you want to know how to get somewhere, a map can provide a lot of information. But what about when you want to know the shortest way to get there? Particularly if you're a business that has more than one stop to visit, it's often impossible to choose the most efficient route just by looking at a map.

Here's what the *Find Route wizard* can help you do:

- Find the shortest way to get somewhere or the shortest way to visit several locations.
- Determine the best sequence to visit those stops.
- Make a map showing the shortest travel route.
- Create a list of travel directions to use when driving a route.

You can make a list of the stops to be calculated along your route in several ways: by pointing and clicking on the map, by entering the address and ZIP Code of the stop, by typing the x,y coordinates of the stop, by choosing a point layer of stops, by selecting a point feature or features, by selecting a point graphic or graphics, or by selecting a table of stops that have been added to ArcMap. Use one method or a combination of several.

For the Find Route wizard to be available, the Streets layer must be added to your map, but it does not have to be visible.

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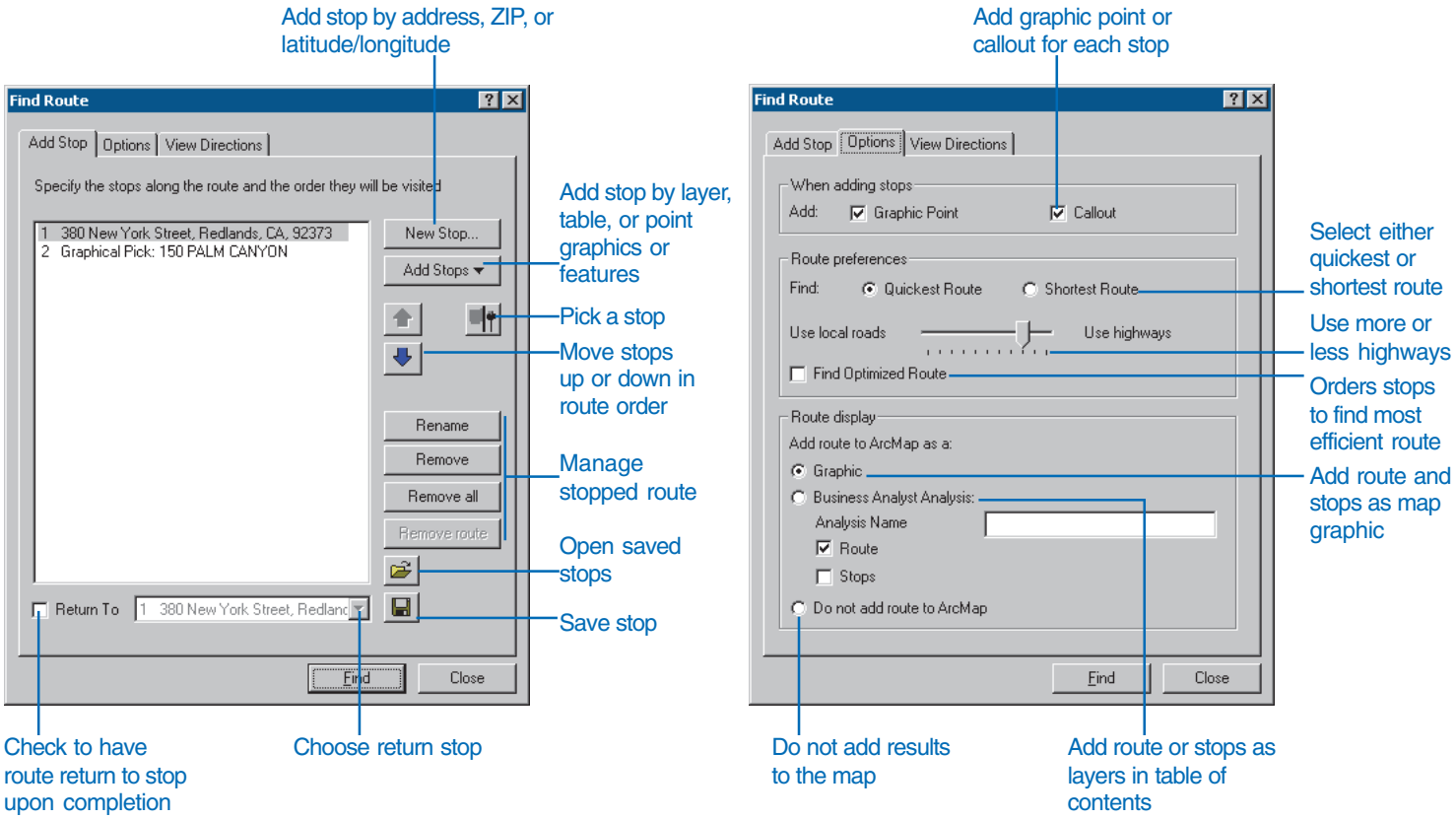
The Find Route wizard

The Find Route wizard lets you find routes between points using a variety of methods. You can find an optimized route, which is 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 with your mouse, by adding them from a layer, or by geocoding.



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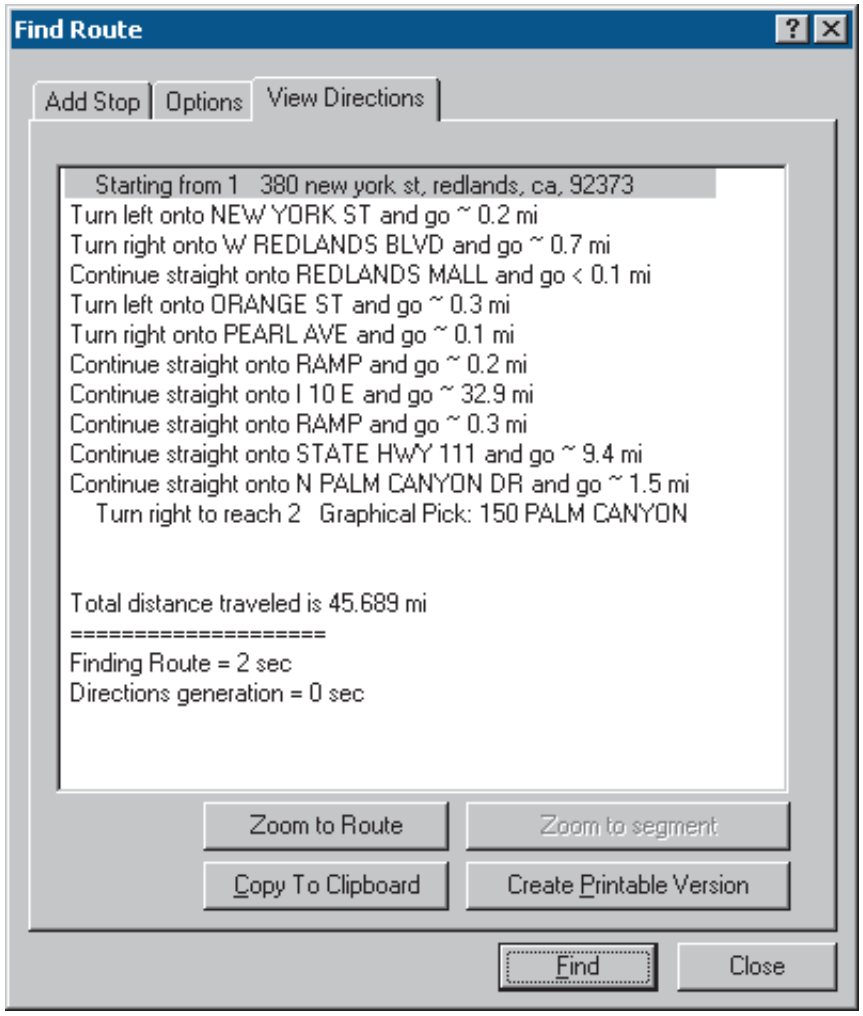

The View Directions tab provides a listing of driving directions that can be printed, copied to the Clipboard, or used to zoom to a particular route segment or the entire route.

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Pointing and clicking on your map to assign stops

You can create stops by pointing and clicking on your study area. This is helpful if you don't know the exact address of the stop but can place it visually. The Find Route wizard adds the stop to your map and gives you the address closest to where you clicked.

Tip

Finding the best route

If you want the order of the stops on the route to be determined by the shortest travel distance, click the Find optimized route button in the Options tab.

Tip

Renaming stops

After adding stops, you can rename them if you choose by clicking the stop and clicking the Rename button.

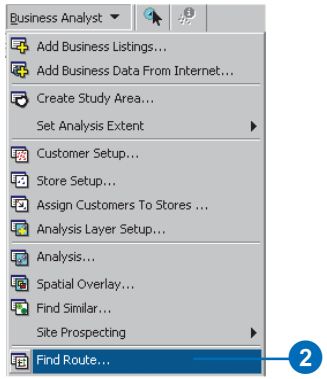
Tip

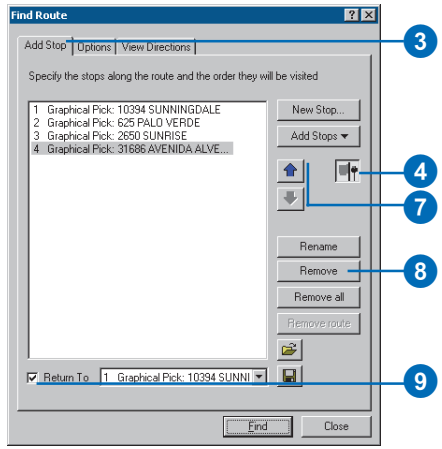
Calculating the route using a specific order of stops

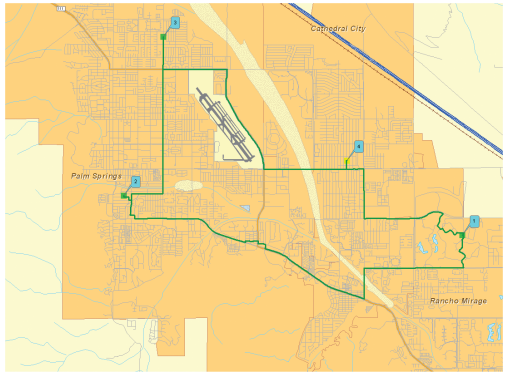
If you want the route calculated using a specific order of stops, make sure the list shows that order.

1. Open the study area for which you want to find a route and zoom to the area of interest.
2. Click the Business Analyst menu and click Find Route.
3. Click the Add Stop tab.
4. Click the Pick Stop on Map tool.
5. Click on the map where you want to place a stop.

   A stop is added to the map, and the closest street address appears in the list.
6. Optionally, add other stops to the list by clicking the map.
7. To move a stop up or down in the listed routing order, click the stop in the list (the corresponding stop on the map is highlighted yellow), then click the up or down arrow buttons.
8. To remove a stop, click the stop in the list and click the Remove button.
9. If you want the route to end at one of the stops previously listed, check the Return To box and select the desired stop.
10. Click the Find button.
11. Click the View Directions tab to see detailed directions for your route that includes distance in miles.







Using a point layer or table of your stops

You can use a layer or table of points in your study area as stops. For example, you could use this option if you want to find the quickest delivery route that visits all your stores. Or, perhaps you want to find the most efficient way for your sales representative to check in with the most valued customers in her territory. You could select those customers in the layer, then calculate the route.

Tip

Finding the best route

If you want the route drawn based on the shortest travel distance, click the Find optimized route button in the Options tab.

Tip

Renaming stops

After adding stops, you can rename them if you choose by clicking the stop and clicking the Rename button.

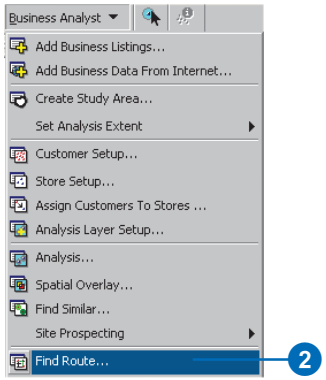
Tip

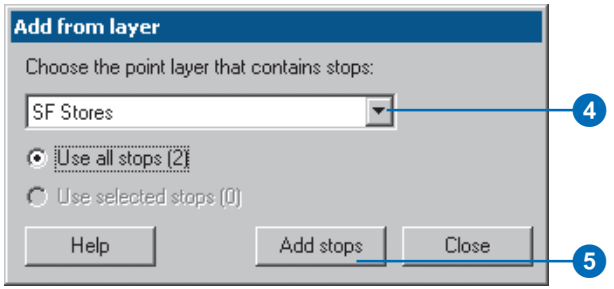
Table of points

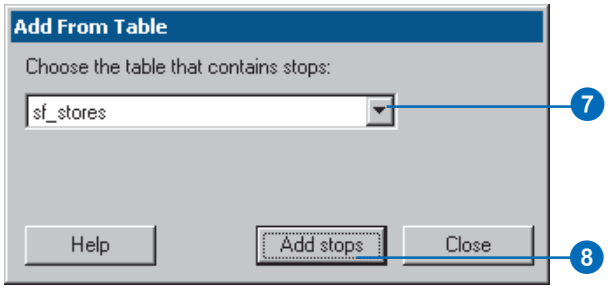
A table has not been geocoded to locate the points on the map. If you add stops from a table using the wizard, Business Analyst will geocode the points and add them as stops.

1. Open the study area for which you want to find a route.
2. Click the Business Analyst menu and click Find Route.
3. Click the Add Stop tab, click the Add Stops button, then click Layer.
4. Click the dropdown arrow to choose the layer of points you want to use as stops.

   If you want the route to use every point in the layer, click Use all stops. If you want to use only selected stops, click Use selected stops.
5. Click the Add stops button.
6. If your points are in a table, click the Add stops button and click Table.
7. Click the dropdown arrow to choose the table of points you want to use as stops.
8. Click Add stops to have the geocoder locate the points on the map. Follow the geocoder steps to select the appropriate fields. When the geocoder is complete, click Finish and close the log file that's created.
9. Optionally, add other stops to the list using any method. ▸







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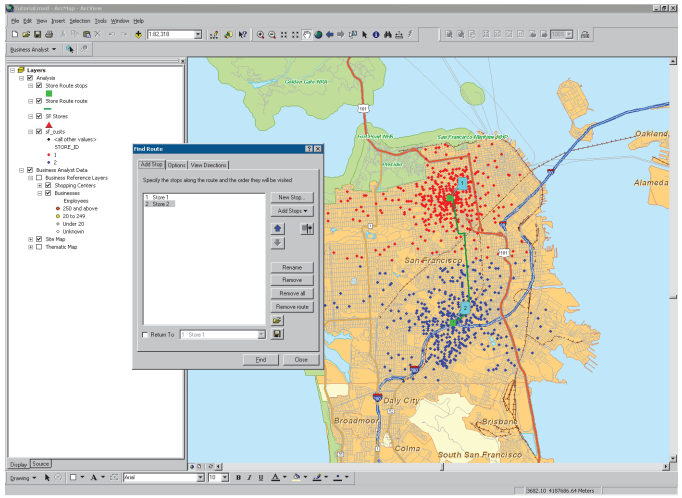
10. To move a stop up or down in the listed routing order, click the stop in the list (the corresponding stop on the map is highlighted yellow), then click the up or down arrow buttons.

    If you want the route calculated using a specific order of stops, make sure the list shows that order.

11. To remove a stop, click the stop in the list and click the Remove button.

12. Click Find. The wizard calculates the route for you and draws it on the map.

13. Click the View Directions tab to see detailed directions for your route that includes distance in miles.



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Using addresses, ZIP Codes, or latitude/longitude of your stops

If you know the addresses, ZIP Codes, or latitude/longitude of your stops, the Find Route wizard will place the stops on the map for you using the New Stop button.

Tip

Finding the best route

If you want the route drawn based on the shortest travel distance, click the Find optimized route button in the Options tab.

Tip

Renaming stops

After adding stops, you can rename them if you choose by clicking the stop and clicking the Rename button.

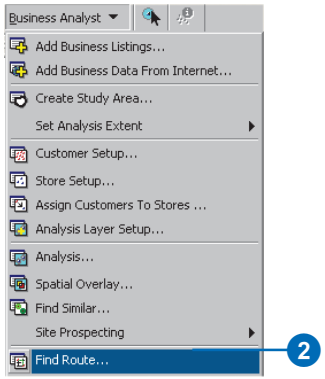
Tip

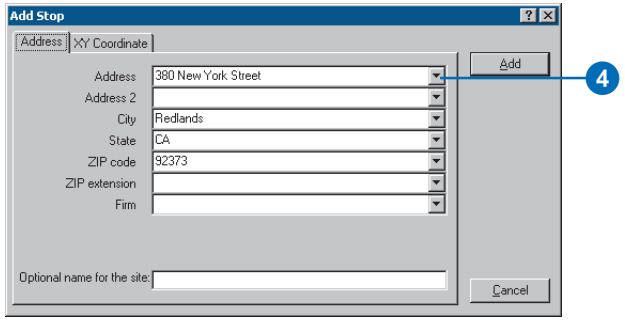
Adding stops

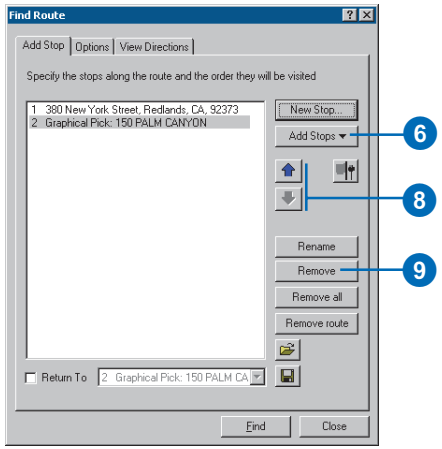
Any stop added must be contained in the active analysis extent—that is, when using Current Extent of Map, the stop must be within the current map area.

1. Open the study area for which you want to find a route.
2. Click the Business Analyst menu and click Find Route.
3. Click the Add Stop tab, then click the New Stop button.
4. If using an address or ZIP Code, input address and ZIP, address/city/state, or ZIP. If you only enter the ZIP Code, the point will be located at the ZIP Code center.
5. If using the latitude/longitude (x,y) coordinates for the point, click the XY Coordinate tab and enter the latitude/longitude in decimal degrees.
6. Click the Add Stops button.
7. Optionally, add other stops to the list using any method.
8. To move a stop up or down in the listed routing order, click the stop in the list (the corresponding stop on the map is highlighted yellow), then click the up or down arrow buttons.

   If you want the route calculated using a specific order of stops, make sure the list shows that order.
9. To remove a stop, click the stop in the list and click the Remove button. ▶







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10. Click Find. The wizard calculates the route for you and draws it on the map.
11. Click the View Directions tab to see detailed directions for your route that includes distance in miles.

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Using a point graphic or feature to assign stops

You can use point graphics or point features as stops on your route. To do this, the graphic or feature must first be selected on the map or in the layer's attribute table.

Tip

Renaming stops

After adding stops, you can rename them if you choose by clicking the stop and clicking the Rename button.

Tip

Finding the best route

If you want the route drawn based on the shortest travel distance, click the Find optimized route button in the Options tab.

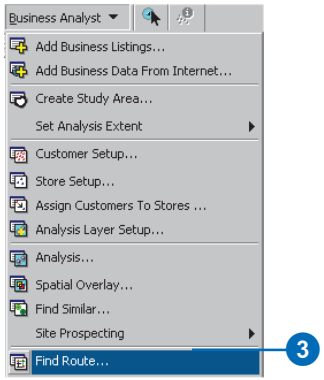
Tip

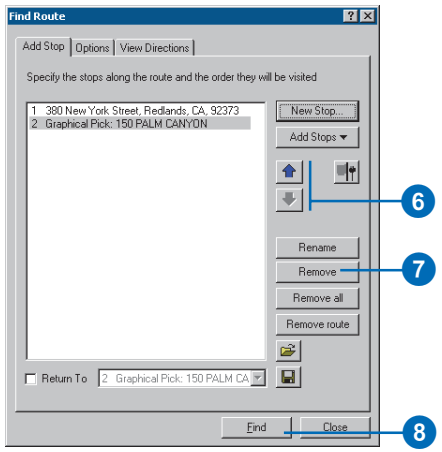
Selecting features and graphics

Point graphics that aren't part of a layer but are drawn on the map, can be selected using the Select Elements tool on the Drawing toolbar. Point features can alternatively be selected by clicking the feature in the layer's attribute table. You can select multiple points by pressing Ctrl while clicking selections.

1. Open the study area for which you want to find a route.
2. To select point graphics or point features that are found in a layer, click the Selection menu and click Set Selectable Layers to choose the desired layer. You can then select features or graphics on the map using the Select Features button on the Tools toolbar.
3. Click the Business Analyst menu and click Find Route.
4. Click the Add Stop tab, click the Add Stop button, then click Selected Point Graphic(s) or Selected Point Feature(s).

   All selected graphics or features will be added to the route using this wizard.
5. Optionally, add other stops to the list using any method.
6. To move a stop up or down in the listed routing order, click the stop in the list (the corresponding stop on the map is highlighted yellow), then click the up or down arrow buttons.
7. To remove a stop, click the stop in the list and click the Remove button.
8. Click Find. The wizard calculates the route and draws it on the map. ▶





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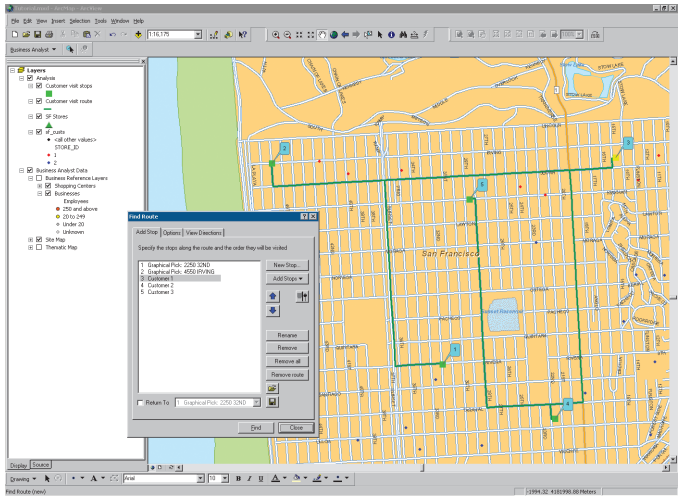
9. After the route is drawn, you can deselect the selected points by going to the Selection menu and clicking Clear Selected Features.
10. Click the View Directions tab to see detailed directions for your route that includes distances in miles.



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Working with reports

11

IN THIS CHAPTER

- **Creating a standard report of Business Analyst data**
- **Creating a custom report of Business Analyst data or your own data**

Every business person 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 reporting functions in Business Analyst are valuable because you can summarize the records in your data by geography—group the records by ZIP Code, tracts, and even trade areas.

Crystal Reports 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 arcexe83\Business Analyst\Datasets\ESRI BIS ReportTemplates (or ArcGIS Report Templates) in the directory where ArcGIS was installed.

When creating a custom report on a layer, the number of fields must be limited to 255. This is done by right-clicking the layer name, clicking Properties, then clicking the Fields Visibility tab. The desired fields for your reports should be in the Visible fields column, and the count should be 255 or fewer.

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Creating a standard report of Business Analyst data

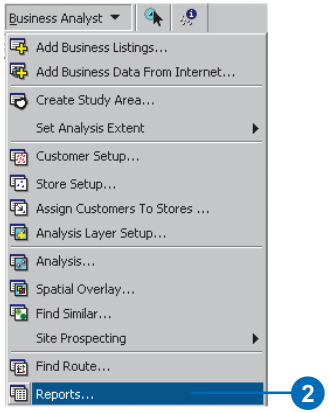
A number of standard demographic report templates are provided with Business Analyst. For more information on these reports, see the Appendix. You can also create a General Report that contains all categories. The Reports wizard uses Summary data to create standard reports.

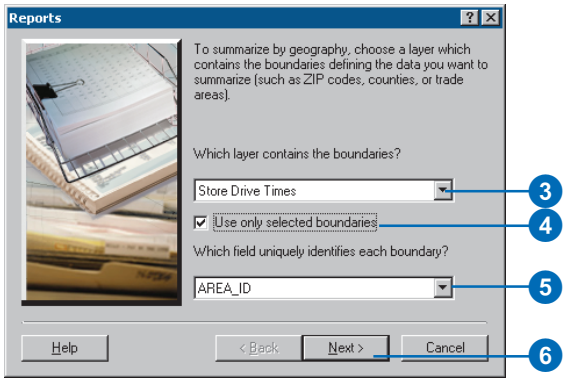
Choose a layer in your study area with boundaries, such as drive-time rings or equal competition areas. The demographics that fall inside the boundaries of the layer will be summarized in the report.

For example, if you created an Income report using simple ring trade areas as the layer with boundaries, your report would summarize income 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 study area you want to use to create a report.
2. Click the Business Analyst menu and click Reports.
3. Click the first dropdown arrow and click the layer that contains the boundaries.
4. Click Use only selected boundaries if you want the report to show demographics only from certain areas in the layer. Areas must be selected before starting the Report wizard.
5. Click the second dropdown arrow and click the field that provides a unique identifier for each boundary.
6. Click Next. ▸





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See Also

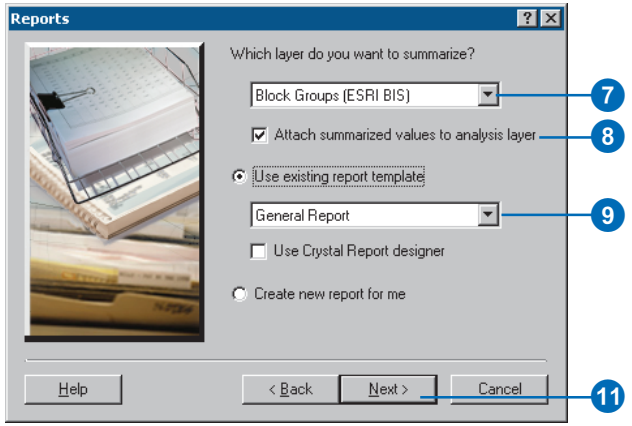
For more information on creating a custom report, see 'Creating a custom report of Business Analyst data or your own data' in this chapter.

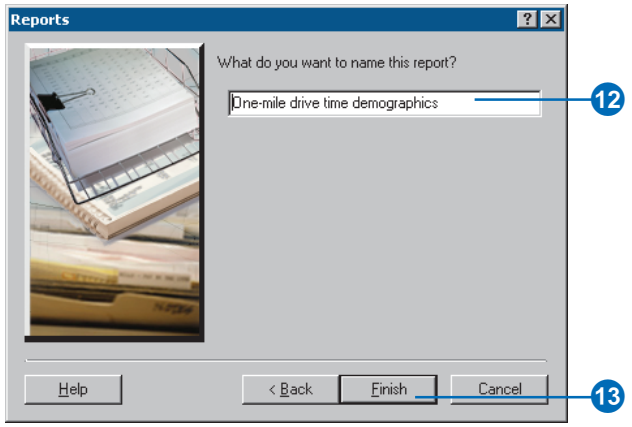
7. Click the first dropdown arrow to choose the layer you want to summarize.
8. If you want the summarized results added to the boundary layer, check the Attach summarized values to analysis layer check box.
9. Click the second dropdown arrow to choose the template for your report.

   A General Report contains all categories (age, household, income, population, and race).
10. If you want to use the Crystal Reports designer to edit the report form, check the box.
11. Click Next.
12. Type a name for your report.
13. Click Finish.

    The options you chose appear.

    To print your report, click the Print button on the Crystal Reports application window.





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Creating a custom report of Business Analyst data or your own data

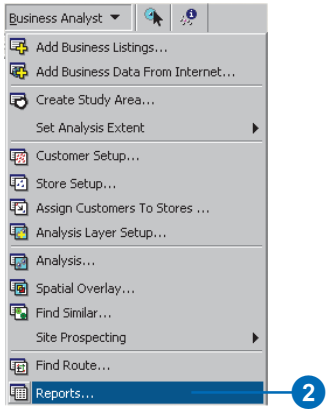
You can create a custom report of demographic data or your own data. As with a standard report, the data is summarized by a layer with boundaries, but instead of choosing from report templates, you can choose the specific demographics you want to show in your report.

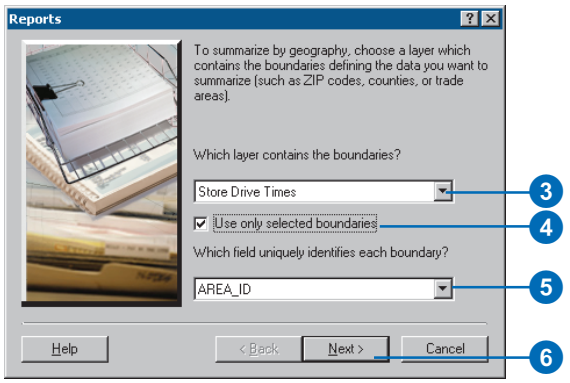
You might want to create a report of demographics not available for a standard report, such as level of education, marital status, or number of vehicles. Or, you might choose only the variables from summary data that are appropriate for your report—age, household and income, or income and race—there are many different possibilities.

The Crystal Reports wizard is started at the conclusion of the Business Analyst Report wizard to let you choose the desired fields for your report.

If you want to create a report for a table of data that you have added to ArcMap using the Add Data button, you ▸

1. Open the study area you want to use to create a report.
2. Click the Business Analyst menu and click Reports.
3. Click the first dropdown arrow and click the layer that contains the boundaries.
4. Click Use only selected boundaries if you want the report to show demographics only from certain areas in the layer. For this option, areas must be selected before starting the Report wizard.
5. Click the second dropdown arrow and click the field that provides a unique identifier for each boundary.
6. Click Next. ▸





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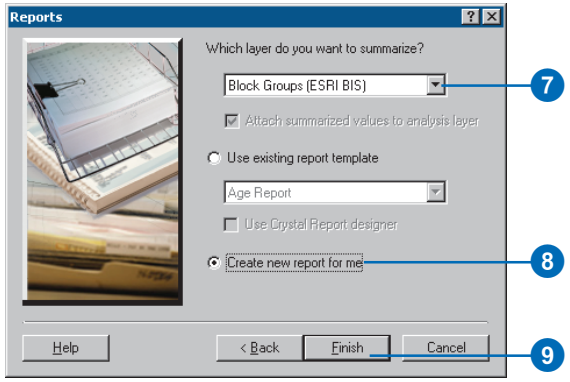
shouldn't use the Business Analyst Reports wizard. Reports for data tables can be created by clicking the Tools menu and clicking Reports. You can choose to create a Report for the table using the Report Properties dialog box, or by proceeding through the Crystal Reports wizard.

7. Click the first dropdown arrow and click the layer of data you want to summarize.
8. Click Create new report for me.
9. Click Finish to start the Crystal Reports wizard used to customize your report.
10. If you want your custom report available in the future as a template choice in Business Analyst, save it to the recommended template directory.

    This location is entered in the Reports dialog box. ►



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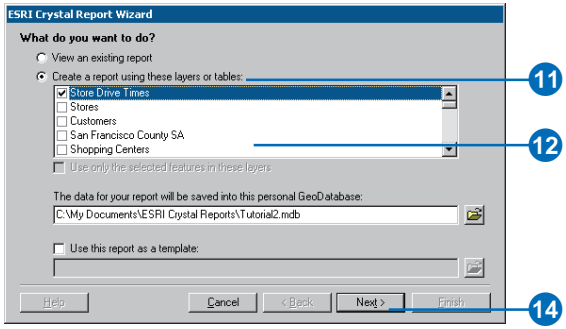
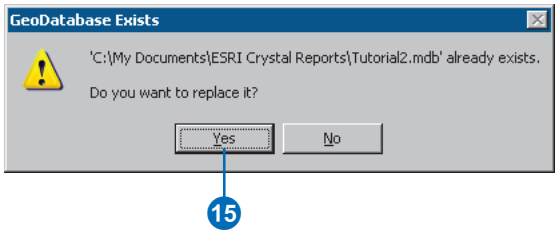
11. Because you will be using the Crystal Reports wizard to design your custom report, it is necessary to select your boundary layer. Click the button to Create a report using these layers or tables.
12. Check the box for the layer that's used as your boundary layer.

    The data for your report is saved to a personal geodatabase. You can change the location and name for this file if you choose.
13. You can begin your custom report with an existing report template. If you have an existing template you would like to begin with, check the box to browse to that template.
14. Click Next.
15. If you're overwriting the report data personal geodatabase, you will be asked if you want to replace it. In most cases, you should click Yes. It won't affect any previously created reports to overwrite this file. ►





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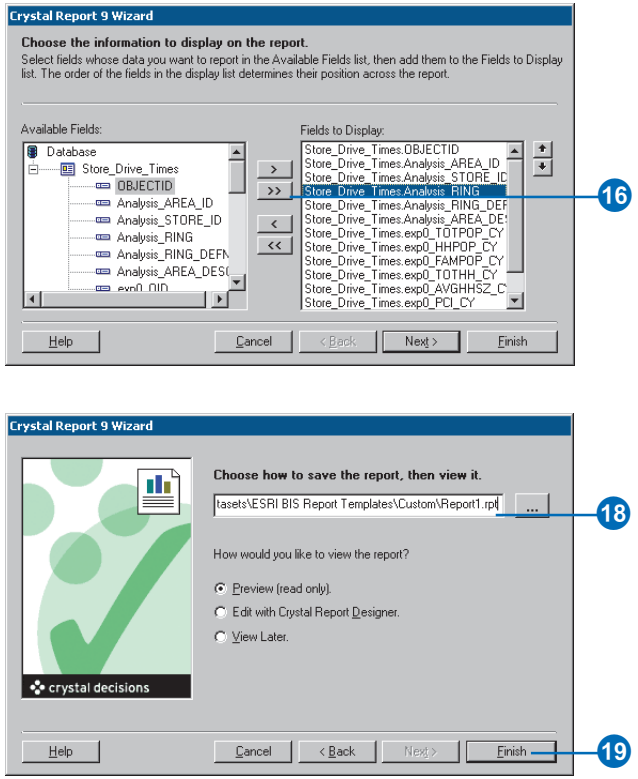
Tip

Making a report available as a custom template in Business Analyst

If you want the report you created to be available as a custom report template in Business Analyst, you must save it to the following directory on your computer: \\arcgis\arcexe83\Business Analyst\Datasets\ESRI BIS Report Templates\Custom. If you are using the AGS dataset, you would save the report to \\arcgis\arcexe83\Business Analyst\Datasets\AGS Report Templates\Custom.

16. Select the fields to use in the custom report by clicking them and using the arrow keys to move them to the column for Fields to Display.
17. Click Next through each of the four dialog boxes—these dialog boxes let you define grouping categories to organize fields, define what fields are in each group category, filter the data values in each of the fields, and set a report format style—to reach a final dialog box that lets you name your report and define where to save it. Note that if you click Finish on any of the first four dialog boxes, the wizard will create the report and you won't be able to change the report name.
18. When you reach the final dialog box, type a name for the report and enter the location to which you wish to save it.
19. You can preview the report, then print it, edit it with Crystal Report designer, or view it later. Make your choice and click Finish to create your custom report.



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Working with maps

12

IN THIS CHAPTER

- Changing map appearance with the table of contents
- 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

A map can communicate more information at a glance than a table or list. A map lets you see colors, sizes, patterns, and spatial relationships instantly. You can understand your data better by seeing where everything is. If your map features are based on values, you'll be able to see how they compare to each other. A simple example would be to use the Thematic Mapping wizard to display customer points sized according to how much each customer buys.

To use the Thematic Mapping wizard, you must have attribute data associated with the layers you want to symbolize. To view the Thematic Mapping results, the layer must be checked on and visible in the table of contents.

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Changing map appearance with the table of contents

Business Analyst has the flexibility to let you turn on and turn 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, simply 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.

Some geography layers may have their names 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 further 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 can enter a numeric value that will not show the layer 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, though, it's best to control what layer is visible or not by checking or unchecking the layer in the table of contents.

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Displaying points as charts

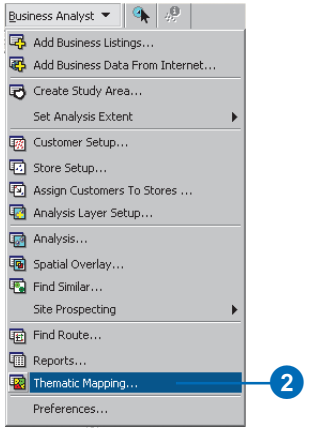
You can display the points on your map as charts using the Thematic Mapping wizard. Charts can be effective for comparing several values at once. For instance, you might display your stores as a pie chart, each wedge representing the percentage of total yearly sales for a specific product.

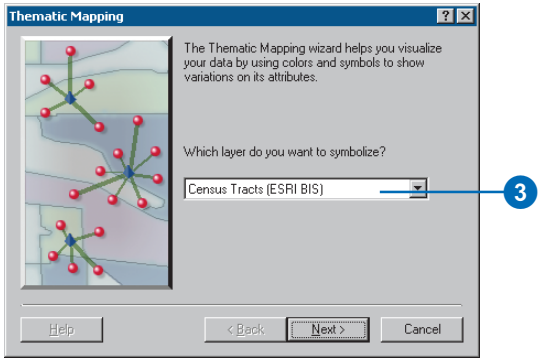
A pie chart is useful for comparing proportions of different categories in a total amount, whereas a bar chart compares actual values, rather than proportions of a total.

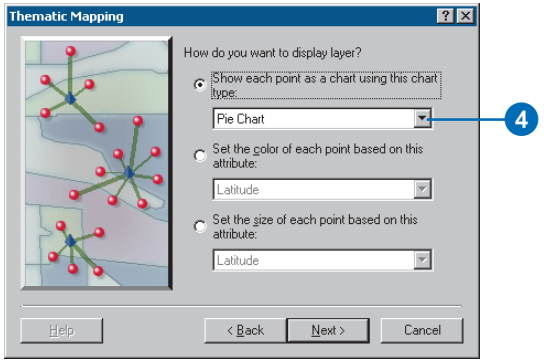
Tips for using charts:

- 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 menu and click Thematic Mapping.
3. Click the dropdown arrow 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 dropdown arrow and click Pie Chart, then click Next.
5. If you want to use all features, click All features. To use Selected features, you will first need to have the features selected on the map or in the layer's attribute table. ▸







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Tip

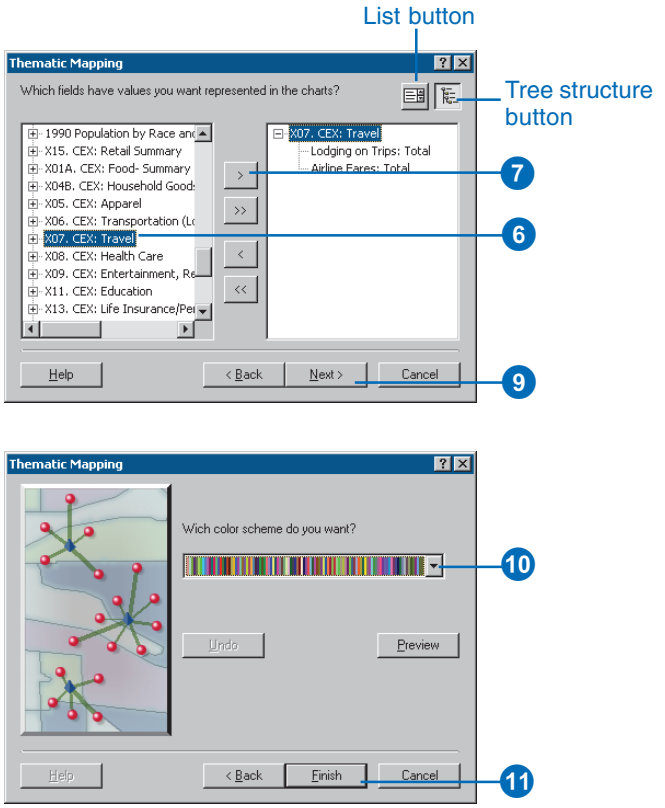
Adjusting layer properties

If you want to adjust the thematic properties of the layer you're working with, you can do it at any time by double-clicking the layer name in the table of contents. The Layer Properties dialog box appears; you can use the Symbology tab to adjust the properties of your layer. The wizard is an easy tool to guide you through the different methods of presenting thematic views of your data. Thematic results can easily be turned off in the Symbology tab by clicking Unique Values under Categories on the left side, picking a Value Field, and checking the Symbol box. Click Apply or OK, and the symbol will replace any thematic display of the points.

6. Click the field with values you want to see represented in the charts.
7. Click the arrow button to add the field to the list on the right. You can add all the fields by clicking the double arrow button.

   To remove a field, click the arrow button that points to the left.
8. Click the tree structure button to view a tree structure when the fields are grouped in categories or click the list button to view the available fields in a box.
9. Click Next.
10. Click the dropdown arrow to choose a color scheme.

    Color schemes contain a general color shading that Business Analyst uses to assign color variations to the pie chart pieces. This ensures contrast between neighboring chart pieces.
11. Click Finish. The points will be represented on your map as pie charts.



Classification methods

There are several different classification methods you can choose to organize your data when doing 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 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 *Equal Area classification method*, classes are formed so that the total area of the areas in each class is approximately the same (available only when working with areas).

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.

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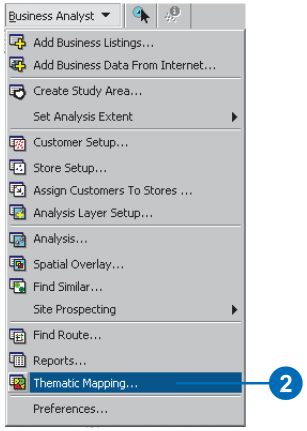
Displaying points as different colors

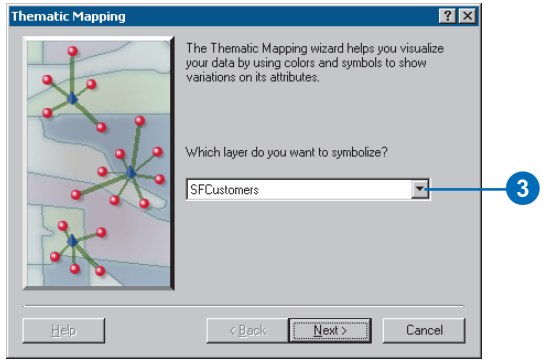
Displaying points as different colors based on the values of a numeric attribute is an example of a *graduated color map.* This kind of map is most useful for showing data that is ranked, such as 1 to 10 or low to high, or has some kind of numerical progression, such as measurements, counts, rates, or percentages, since colors don't necessarily imply a magnitude.

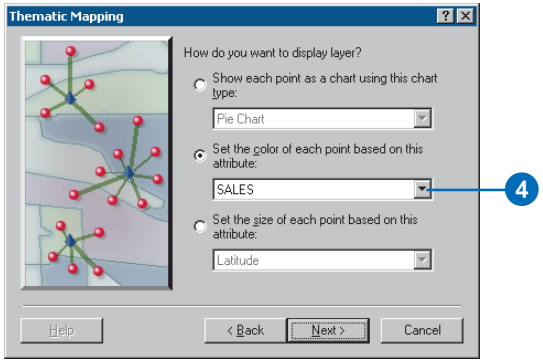
For example, you might want to display your customers as different colors depending on how many times a year they visit the store.

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. Open the study area with the points you want to display as different colors.
2. Click the Business Analyst menu and click Thematic Mapping.
3. Click the dropdown arrow to choose the point layer, then click Next.
4. Click Set the color of each point based on this attribute, then click Next. ►







Tip

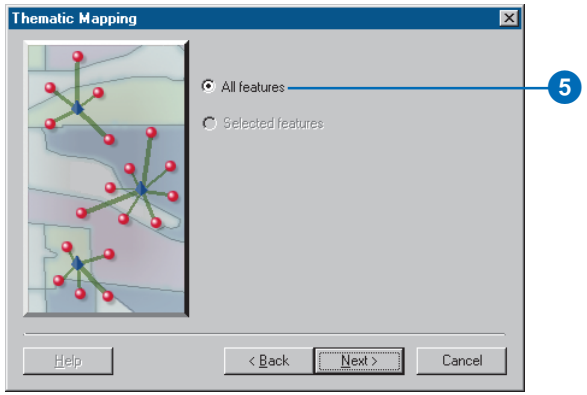
What is normalization?

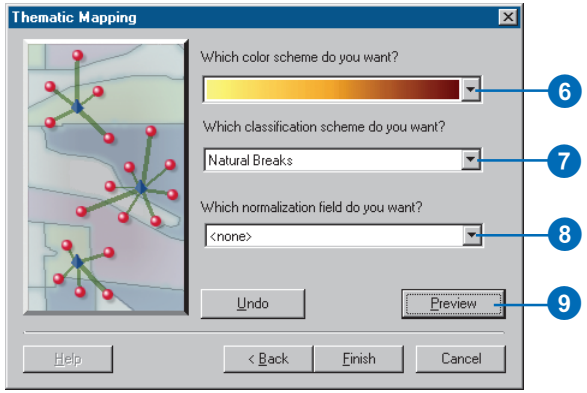
Normalization *is the process of dividing one numeric attribute value by another in order to minimize differences in values based on the size of areas or the number of features in each area. For example, normalizing (or dividing) total population by total area gives population per unit area, or density.*

You have the option to select a normalization field when you are displaying points as different sizes. You can also select <none> if you don't want your point data normalized.

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.
6. Click the dropdown arrow and click the color scheme you want to use.
7. Click the dropdown arrow and click the classification scheme you'd like to use.
8. If you want to normalize the result by dividing field values by some other field in the layer, click the dropdown arrow and select the field. An example could be to normalize population count by area.
9. Optionally, click the Preview button to see the results on your map without changing it permanently. To return to the original legend, click Undo.
10. Click Finish.

    The points in the chosen layer are displayed as different colors. ►





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11. This wizard provides a simple tool for thematic mapping. More advanced functionality is available by right-clicking the layer, clicking Properties, and clicking the Symbology tab. The wizard results are shown here as well as other thematic functionality. Thematic results can be easily turned off in the Layer Properties dialog box. Under Unique Values in the Categories section on the left side, pick a Value Field and check the Symbol box. Click Apply or OK, and the symbol will replace any thematic display of the points.

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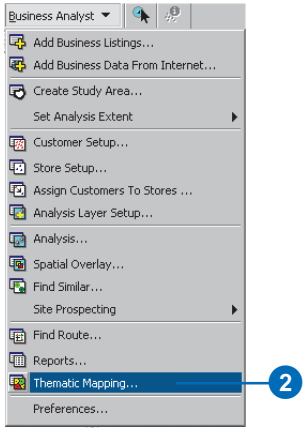
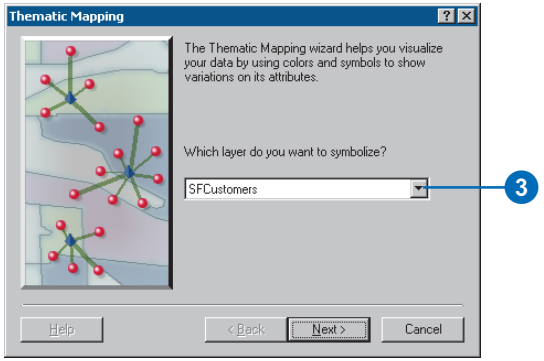
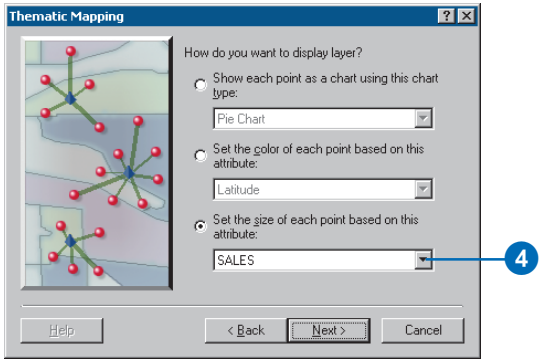
Displaying points as different sizes

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. Open the study area with the points you want to display as different sizes.
2. Click the Business Analyst menu and click Thematic Mapping.
3. Click the dropdown arrow to choose the point layer, 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. ▶







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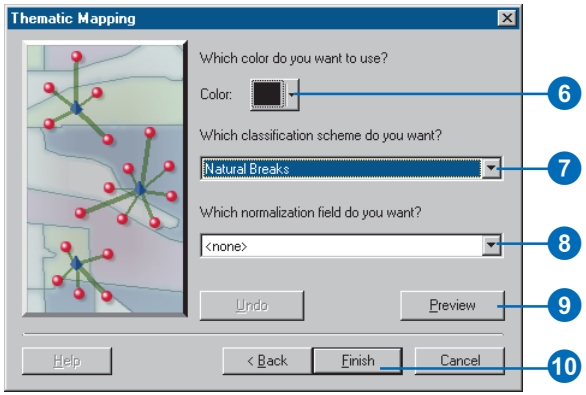
6. Click the Color dropdown arrow to choose a color for the points.
7. Click the dropdown arrow to choose a classification scheme.
8. Optionally, click to choose which normalization field you want to use.
9. Click the Preview button to see the results on your map without changing it permanently. To return to the original legend, click Undo.
10. Click Finish.

    The points in the chosen layer are displayed as different sizes.



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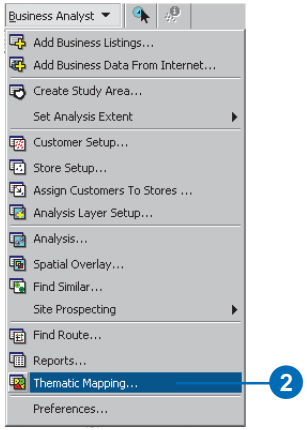
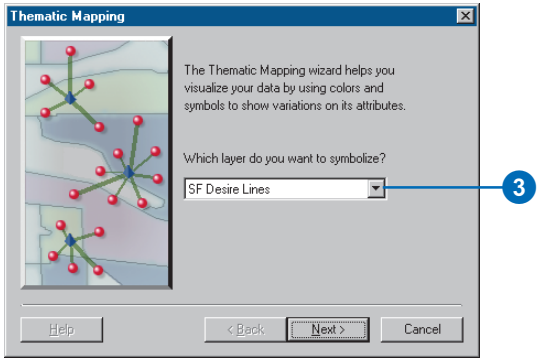
Displaying lines as different colors

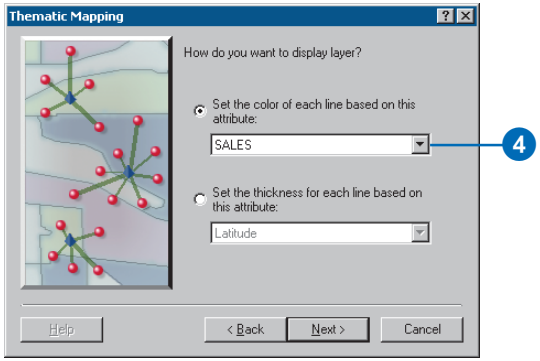
Using different colors can also be an effective method for displaying lines—the color of the lines varies according to the value of a particular attribute. This is most useful for showing data that is ranked, such as 1 to 10 or low to high, or has some kind of numerical progression, such as measurements, rates, or percentages, since colors don't necessarily imply a magnitude.

For example, you could display desire lines as different colors according to the store each customer visits or by whether the customer is a preferred shopper or not.

1. Open the study area with the lines you want to display as different colors.
2. Click the Business Analyst menu and click Thematic Mapping.
3. Click the dropdown arrow to choose the line layer, then click Next.
4. Click Set the color of each line 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. ▶







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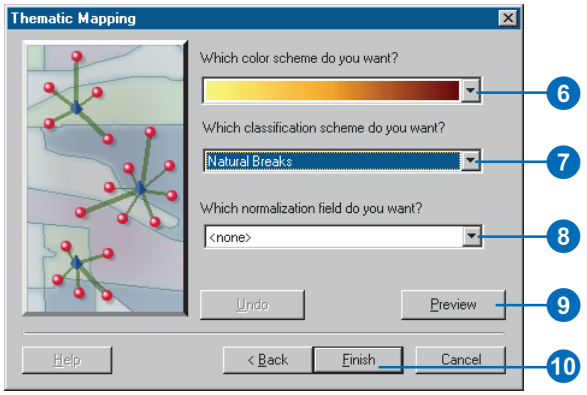
6. Click the dropdown arrow to choose the color scheme you want to determine the line color.
7. Click the dropdown arrow to choose a classification scheme you want to use.
8. Optionally, click the dropdown arrow and click the normalization field you want.
9. Click the Preview button to see the results on your map without changing it permanently. To return to the original legend click Undo.
10. Click Finish.

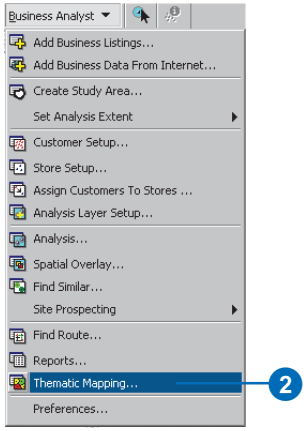
    The lines in the chosen layer are displayed as different colors.

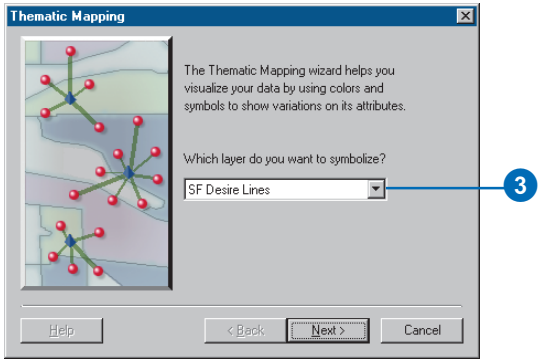


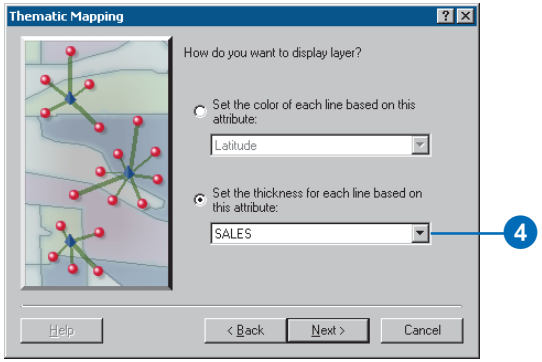
Displaying lines as different thicknesses

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. Open the study area with the lines you want to display as different thicknesses.
2. Click the Business Analyst menu and click Thematic Mapping.
3. Click the dropdown arrow to choose the line layer, then click Next.
4. Click Set the thickness of each line based on this attribute, then click Next.
5. Click All features to use all features or Selected features to use only selected features. Click Next to continue. ►







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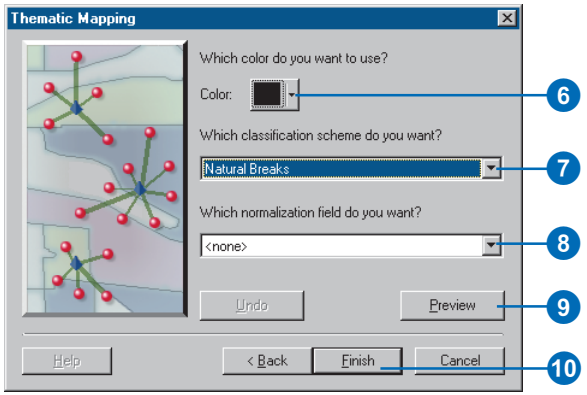
6. Click the Color dropdown arrow to choose a color for the lines.
7. Click the dropdown arrow to choose a classification scheme.
8. Click the dropdown arrow and click the normalization field you want to use.
9. Click the Preview button to see the results on your map without changing it permanently. To return to the original legend, click Undo.
10. Click Finish.

    The lines in the chosen layer are displayed as different thicknesses.



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Displaying charts in areas

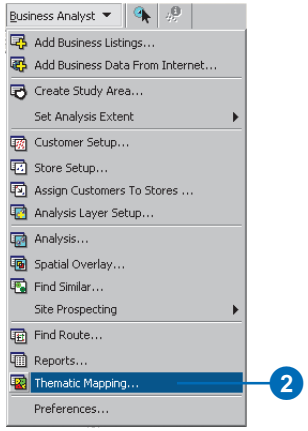
You can display charts in areas on your map using the Thematic Mapping wizard. Charts can be effective for comparing several values at once. For instance, you might display ZIP Codes as a pie chart, each wedge representing population by race. You could display tracts as bar charts representing the number of people who rent and those who are home owners.

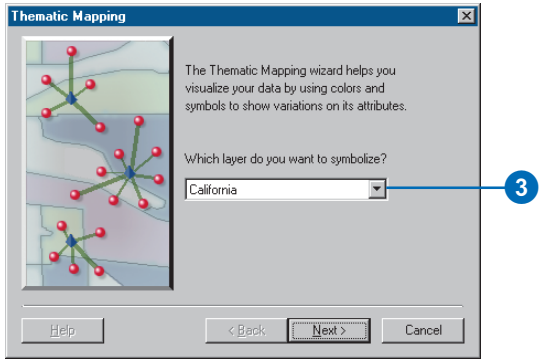
A pie chart is useful for comparing proportions of different categories in a total amount, whereas a bar chart compares actual values rather than proportions of a total.

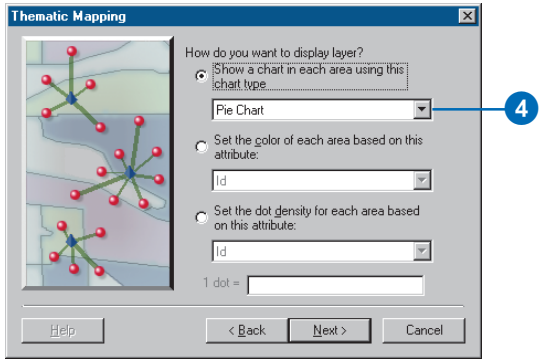
Tips for using charts:

- 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. Open the study area with the areas you want to display with charts.
2. Click the Business Analyst menu and click Thematic Mapping.
3. Click the dropdown arrow to choose the layer with areas, then click Next.
4. Click Show a chart in each area using this chart type, then click Next.
5. Click the dropdown arrow to choose the type of chart.
6. 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. ►







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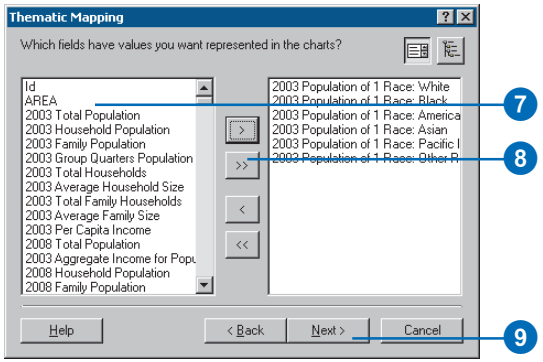
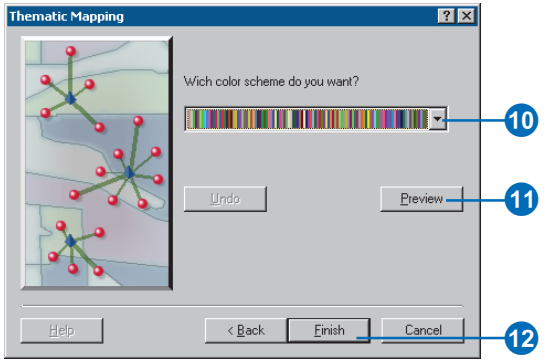
7. Click a field name with values you want to see represented in the charts.
8. Click the arrow to add the field to the list on the right. To add all the fields in the list, click the double arrows.

   To remove the fields, click the field you want to remove and click the left arrow.
9. Click Next.
10. Click the dropdown arrow to choose a color scheme.
11. Click the Preview button to see the results on your map without changing it permanently. To return to the original legend, click Undo.
12. Click Finish.

    Charts are displayed in the areas.





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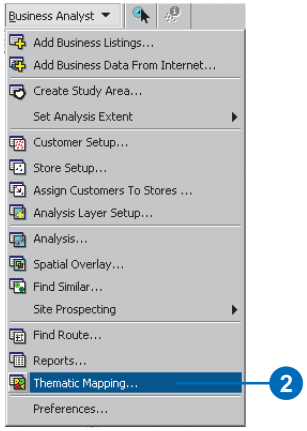
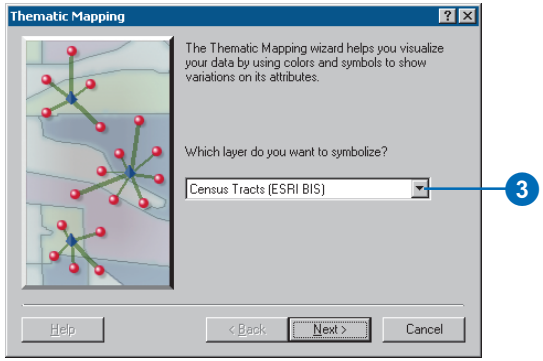
Displaying areas as different colors

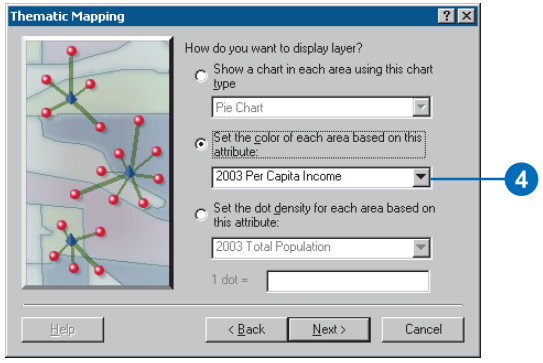
Displaying areas as different colors based on the values of a numeric attribute is another example of a graduated color map. This kind of map is most useful for showing data that is ranked, such as 1 to 10 or low to high, or has some kind of numerical progression, such as measurements, rates, or percentages, since colors don't necessarily imply a magnitude. 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. Open the study area with the areas you want to display as different colors.
2. Click the Business Analyst menu and click Thematic Mapping.
3. Click the dropdown arrow to choose the layer with areas, then click Next.
4. Click Set the color of each area based on this attribute, then click Next.
5. Click All features to use all features, or click Selected features to use selected features. Click Next to continue. ▶







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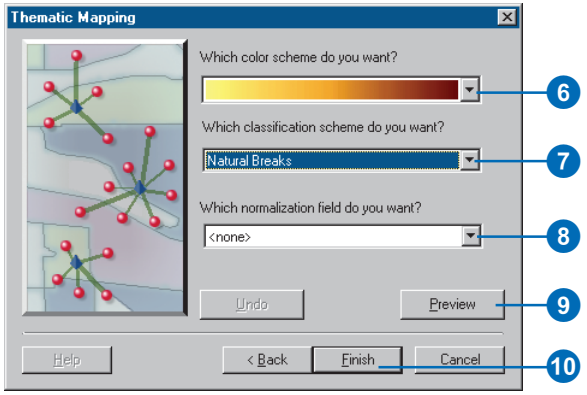
6. Click the Color dropdown arrow to choose the area color.
7. Click the dropdown arrow to choose a classification scheme you want to use for the polygons.
8. Click the dropdown arrow and click the normalization field.
9. Click the Preview button to see the results on your map without changing it permanently. To return to the original legend, click Undo.
10. Click Finish.

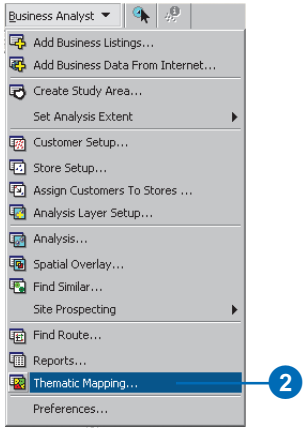
    The areas in the layer are displayed as different colors.

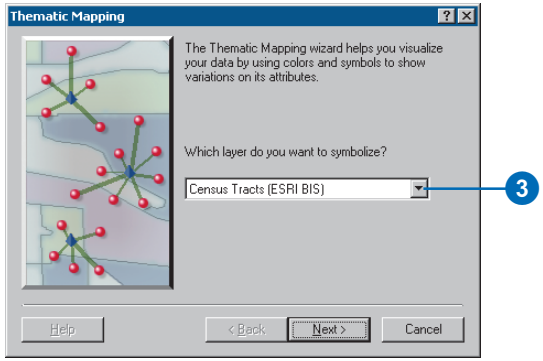


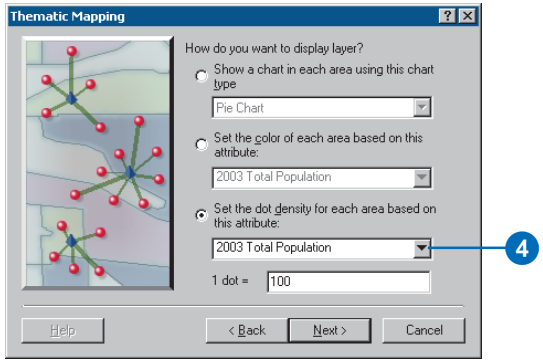
Setting dot density in areas

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. Open the study area with the areas you want to show using dot density.
2. Click the Business Analyst menu and click Thematic Mapping.
3. Click the dropdown arrow to choose the layer with areas, then click Next.
4. Click Set the dot density for each area based on this attribute.
5. Click the dropdown arrow to choose the field for which you want to determine the dot density.
6. Type the value that you want one dot to represent.
7. Click Next.
8. Click All features to use all features or Selected features to use only selected features. Click Next to continue. ▶







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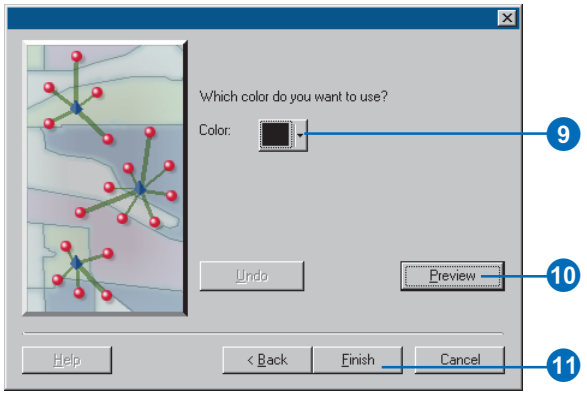
9. Click the Color dropdown arrow to choose a color for the dots.
10. Click the Preview button to see the results on your map without changing it permanently. To return to the original legend, click Undo.
11. Click Finish.

    The areas in the layer are displayed using dot density.



The Study Area Importer

13

IN THIS CHAPTER

- **Importing your study area**

The Study Area Importer is a standalone application that allows you to import study areas created in Business Analyst 2.x into the Business Analyst 8.x environment. This chapter shows you how to perform tasks using the importer.

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Importing your study area

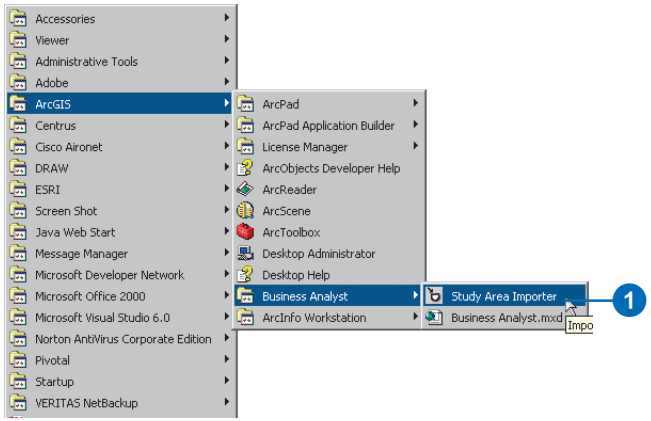
The Study Area Importer is a stand-alone application that converts study areas created in Business Analyst 2.x to Business Analyst 8.x. It does this by creating a .mxd (.apr in Business Analyst 2.x) for each of the study areas stored in the ESRI_BIZ directory. Don't delete the ESRI_BIZ folder, as it contains the data that will be used in the new .mxd. The new .mxd file only references the data in the ESRI_BIZ location, meaning that analysis layers are not duplicated; therefore, it is imperative that you do not delete the ESRI_BIZ folder. It should be noted that the Study Area Importer will only import one study area at a time; therefore, you must create a .mxd file for each study area in your ESRI_BIZ folder.

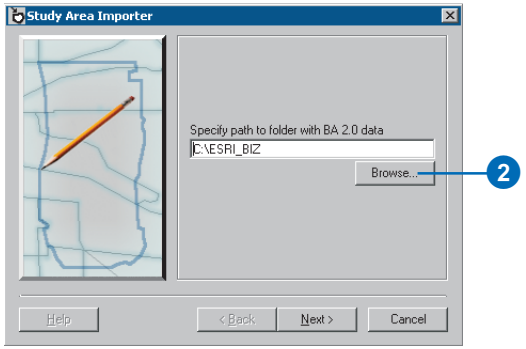
Tip

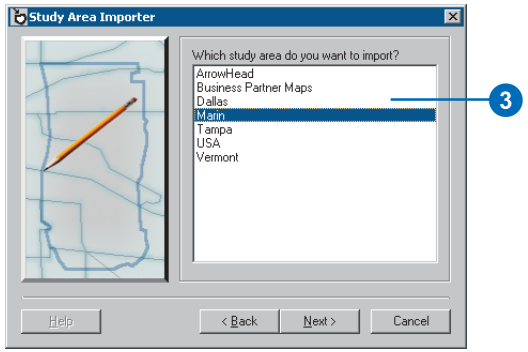
Saving the new .mxd

The new .mxd file will be saved in the C:\My Output Data\BA2 Projects folder. You can use the default location or you can save the new .mxd files in a different location. All analyses for the study area will automatically be transferred over to the new Business Analyst .mxd file. You can also import any customer and store layers that are associated with the study area.

1. Click Start, point to ArcGIS, point to Business Analyst, and click Study Area Importer.
2. The importer will default to the C:\ESRI_BIZ folder. Click the Browse button and navigate to the ESRI_BIZ folder if it's on a different drive (or not located in the default location). Click Next to continue.
3. Click the study area that you wish to import, then click Next. ▶







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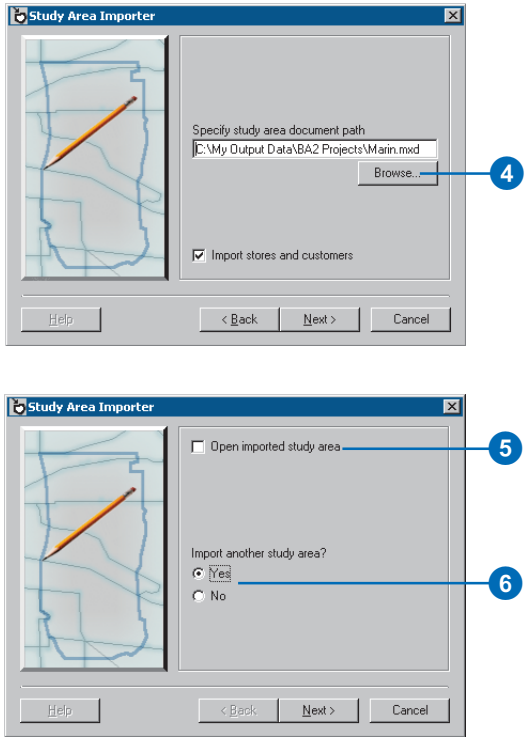
4. Click the Browse button to change the location of the new .mxd file. You can also import the store and customer layers that are associated with the study area by making sure the Import stores and customers check box is checked.

   Note that you can choose to continue importing other study areas or open the study area .mxd file in ArcMap. If you choose to import another study area, the importer program will return you to the first wizard step; otherwise, the program ends. If you wish to open the imported study area, make sure the Open imported study area option is checked in the next dialog box.

5. Check the check box if you wish to open the current imported study area.

6. You also have the option to import another study area. If you wish to import another study area, click Yes and click Next; otherwise, click No, then click Finish.



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Appendix

IN THIS APPENDIX

- **My Output Data folder structure**
- **Report templates**

This appendix contains the structure of the My Output Data folder. It also shows you the various report templates you can use with Business Analyst.

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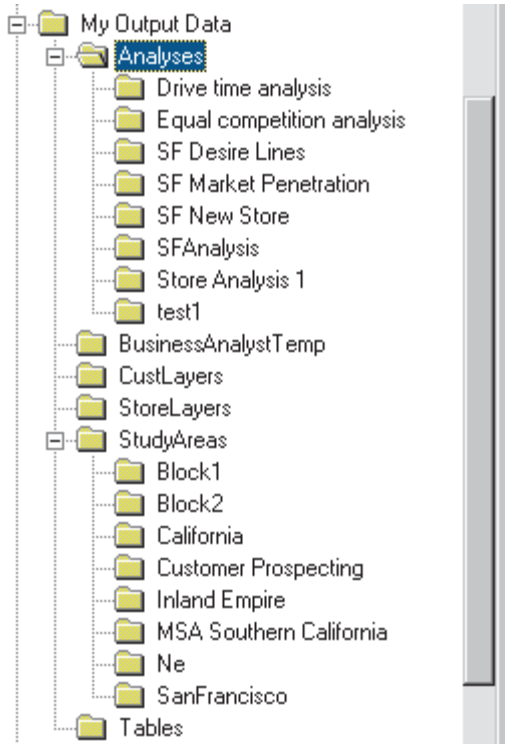
My Output Data folder structure

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. For more information about changing the location of the My Output Data folder, see Chapter 4, ‘Creating a study area’.

The structure of the My Output Data folder is as follows:

- 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.
- StoreLayers: Contains all the geocoded store files.
- StudyAreas: Contains the .dbf, .lyr, .shp, and .shx files that comprise your study areas.
- Tables: Contains the table files and reports you’ve created.



My Output Data folder structure

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Report templates

The purpose of this section is to examine the various templates associated with the report writing option within the Business Analyst extension. All templates use geography data; therefore, all levels of geography can be used in any of the predefined reports. Report templates are stored in arcexe83\Business Analyst\Datasets\ESRI BIS ReportTemplates in 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: \arcgis\arcexe83\Business Analyst\Datasets\ESRI BIS Report Templates\Custom. If you're using the AGS dataset, save to Report templates, which are stored in arcgis\arcexe83\Business Analyst\Datasets\AGS Report Templates\Custom.

The level of geography depends on the scale of the coverage used for the report. For example, selecting a coverage at the block group level will allow the user to create a report at the block group level. Similarly, a user can create a report based on the shape of the study area or a selected group of objects on the map. In this example, the block groups within the selected coverage are combined to create the totals in the report.

All reports summarize geography based on the user input. A study area is defined by the geography level selected during the completion of the Create Study Area wizard steps.

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 designer, which can be activated at the end of every report wizard.

What is ACORN?

ACORN (A Classification of Residential Neighborhoods) lifestyle segmentation by ESRI BIS is a segmentation system that divides all U.S. residential areas into 43 clusters and nine summary groups. These divisions are based on demographic characterisitcs such as income, age, household type, home value, occupation, education, and other consumer behavior characteristics.

Report descriptions

ACORN Index Profile report

This report lists the ACORN lifestyle segmentation data groups selected within the study area. The total sum of each lifestyle segmentation data group and a percentage of the total households are included in this report.

ACORN Area Profile report

This report compares the ACORN lifestyle segmentation data groups selected within the study area with the same groups on a national level. The sum of number of households, index, and Geographic ID are also included in this report.

Comprehensive report

This report shows the totals of each demographic variable in the study area. The variables are grouped into logical listings. For example, the grouping "Population by age" is composed of four-year increments, from age 0 to 85+. Both current year 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 and five-year projected totals. For example, 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.

Custom report

This report allows the user to define which variables are relevant to a study area. Any number of variables can be selected from the complete list of demographic attributes, and only those selected will be included in the report. Selecting all variables will produce the same result as the Comprehensive report.

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Custom Trend report

The Custom Trend report allows the user to define which variables are relevant to a study area. Any number of variables can be selected from the complete list of demographic attributes, and only those selected will be included in the report. This report lists the selected demographic variables and compares the current year estimate totals with the five-year projected totals. Selecting all variables will produce the same result as the Comprehensive Trend report.

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 two major groups: Population and Household Totals. The Population group is subdivided into age and race; the household group contains household income information.

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 and five-year projections.

Income report

This report displays the total annual household income as a percentage of the study area. These values are grouped into 15, 20, 25, and 50k increments. This report also contains the total number of households and the average income in the study area.

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, 65+. This report also contains the total population and the average age for the study area.

Race report

This report classifies the total population as a percentage based on race. The groups are White, Black, Asian/Pacific, Native American, Hispanic Origin, and Other. The current year total population is also included in this report.

Household report

This report classifies the households by percentage that are either 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 and five-year projection.

Multiarea 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.

Age by Sex Profile report

The Age by Sex Profile 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.

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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.

Market Profile report

The Market Profile 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.

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 average household size.

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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

Another name for a complex market area. They are often called amoebas because of their shape. See complex market area.

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.

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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. See also amoeba.

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 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.

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.

dBASE file

A file format native to dBASE database management software. The 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.

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 Area classification method

A classification method in which classes are formed so that the total area of the areas in each class is approximately the same.

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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.

event layer

A layer created from a table of event locations. In ArcGIS, an event is a location stored in tabular format. '34.03, 117.11' is an event (representing the latitude–longitude value 34.03° N, 117.11° E), as is '380 New York Street'.

extension

An optional ArcGIS module that performs a specialized function. Network Analyst, StreetMap, and Business Analyst are several 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 lets you 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 lets you 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.

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Gravity Model

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.

group layer

Several layers that appear and act as a single layer in the table of contents in ArcMap.

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 lets you 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 lets you 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.

Metropolitan Statistical Area (MSA)

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, an MSA 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.

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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 in 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.

new store analysis

A type of analysis that locates a new store by calculating the centroid of a group of customers.

normalization

The process of dividing one numeric attribute value by another in order 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 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.

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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 into 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 and is used as an identifying system in business directories, publications, and statistical sources.

store market analysis

A type of analysis that uses mostly store data. Simple Ring, Data-Driven, Equal Competition, and Drive Time are examples of store market analyses.

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 an 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 population 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 anywhere between 2,500 and 8,000 people.

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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 the user 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 address.

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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