



SAS[®] Add-In 2.1 for Microsoft Office: Getting Started with Data Analysis

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SAS® Add-In 2.1 for Microsoft Office: Getting Started with Data Analysis

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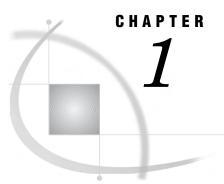
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Introduction to the SAS Add-In for Microsoft Office

What Is the SAS Add-In for Microsoft Office? 1 Benefits to Using the SAS Add-In for Microsoft Office 1 How to Use the SAS Add-In for Microsoft Office 2 Accessibility Features of the SAS Add-In for Microsoft Office 3

What Is the SAS Add-In for Microsoft Office?

The SAS Add-In for Microsoft Office extends the functionality of Microsoft Excel, Microsoft Word, and Microsoft PowerPoint by enabling you to access SAS analytics and SAS reporting functionality without any SAS programming experience. The SAS add-in is designed for users who are familiar with these Microsoft Office programs but who might be new to SAS.

The SAS add-in includes approximately 80 SAS tasks that enable you to perform a variety of analyses. Examples of analyses that you can perform include linear and nonlinear regressions, multivariate analyses, time series analyses, one-way frequencies, and summary statistics. The SAS add-in enables you to refresh these analyses so that your results include the most up-to-date information. You can also easily share the results with others at your site.

When the SAS add-in is installed on your computer, a SAS menu and the SAS Analysis Tools toolbar are automatically integrated into Excel, Word, and PowerPoint. (In Excel, the SAS Data Tools toolbar is also available.) The menu and toolbars enable you to access the SAS analytics and reporting functionality directly from these Microsoft Office programs without having to open a separate SAS interface.

Benefits to Using the SAS Add-In for Microsoft Office

Most of the SAS add-in functionality is identical in Excel, Word, and PowerPoint; for example, you can run analyses and reports in all three applications.

The SAS add-in extends the functionality in Excel, Word, and PowerPoint by enabling you to complete the following tasks:

- □ Access SAS data sources as the input data for your analysis. You can view any SAS data source or any data source available from your SAS server (including databases such as Oracle, Teradata, and DB2).
- Perform more sophisticated analysis and computations than what is available in Microsoft Excel. For example, one of the sophisticated analyses that SAS provides is the Canonical Correlation task. This task enables you to examine the relationship between a linear combination of a set of X variables and a linear

combination of a set of Y variables. You might run a canonical correlation analysis to determine the degree of correspondence between a set of job characteristics and a set of measures of employee satisfaction. This extends the correlation analysis that is available in Excel. You can run these sophisticated analyses and computations in Excel, Word, or PowerPoint.

- Run custom analyses that were developed by others at your company. Using the SAS add-in, you can also access programs, which are called SAS Stored Processes. These programs are customized SAS code that is developed by business analysts or your IT department. Running these programs enables you to quickly generate a custom report without writing any SAS code.
- □ Refresh the content in the Excel worksheet, Word document, or PowerPoint presentation on demand or automatically at a specified time. Scheduling when the content is refreshed enables you to have the most up-to-date data and reports when you need it.
- Publish the results to a central location. By publishing a document, you can share
 it with others without having to e-mail it. If you publish the document to a
 metadata repository, then you can perform an impact analysis on the document.
 Impact analysis enables you to see where a data source came from and the items
 that are dependent on this source. This analysis enables you to know how
 changing a data source might affect other documents.

Additional functionality is available in Excel. In Microsoft Excel, you can also complete the following tasks:

- □ Access and view data sources that exceed the 65,536 record limitation in Excel. The SAS add-in does its processing on the server, which enables it to by-pass the record limitation in Excel.
- Copy data to a SAS server. You can copy an Excel data source or a SAS data source to the SAS server. After a data source is copied to a SAS server, it becomes a SAS data set. This enables you to share Excel data with Word and PowerPoint users at your site. This functionality also enables Excel users to update information in a SAS data source and upload it to the SAS server.
- □ Send the results from an analysis that you ran in Excel to a Word document or PowerPoint presentation. For example, you ran analysis of your company's sales for this year, and now you need to give a presentation of the results. Using this functionality in Excel, you can select which results to include in a PowerPoint presentation. This saves you time because you only need to run the analysis once.

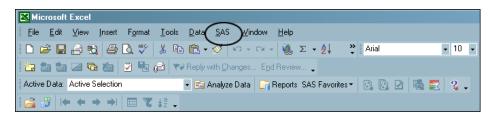
This book explores some of the basic tasks that you can perform in Excel.

How to Use the SAS Add-In for Microsoft Office

When you open Microsoft Excel, Microsoft Word, or Microsoft PowerPoint, you should see a **SAS** menu item and the SAS Analysis Tools toolbar. (In Excel, the SAS Data Tools toolbar is also available.). You access the SAS add-in from the menu or from these toolbars.

Note: If you do not see a **SAS** menu item or the toolbars, then you might not have the SAS add-in installed. For help, contact the SAS administrator at your site. \triangle

Display 1.1 Location of SAS Menu in Microsoft Excel



You can perform a variety of tasks using the SAS add-in. The following process briefly explains how you would run a SAS analysis:

- 1 Open Microsoft Excel, Microsoft Word, or Microsoft PowerPoint.
- 2 Select the analysis that you want to perform.

Note: After you select the analysis, you are prompted to login to the SAS server if you have not previously logged in during the current session. You must be connected to a SAS server to run an analysis or to access a SAS data source. \triangle

- **3** Select the data source that you want to use in the analysis. In Excel, you can use data in an existing Excel worksheet or in a SAS data source. If you select a SAS data source, you can choose to filter and sort the data before the analysis.
- 4 Select the options in the analysis that you want to use and then run the analysis.
- 5 Specify the location of the output. For example in Excel, you can choose to include the results in the existing worksheet, in a new worksheet, or in a new workbook.

The results automatically open in Excel, Word, or PowerPoint in the location that you chose.

Accessibility Features of the SAS Add-In for Microsoft Office

The SAS Add-In for Microsoft Office includes accessibility and compatibility features that improve usability of the product for users with disabilities. These features are related to accessibility standards for electronic information technology adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended. For more information about the accessibility of the SAS Add-In for Microsoft, see the online Help.

If you have questions or concerns about the accessibility of SAS products, send e-mail to accessibility@sas.com.

5



Learning by Example: Analyzing and Reporting Using SAS

About the Scenario in This Book 5 Prerequistes for This Scenario 6 How to Get Help for the SAS Add-In for Microsoft Office 6

About the Scenario in This Book

This book is intended for Microsoft Excel users. Each topic in this book builds on the previous topic, so you must work through the chapters in sequence.

For the purpose of the scenario in this book, you are a data analyst for a company that sells men's and women's shoes worldwide. You have been asked to analyze the company's global sales for 2006. The data is saved as a SAS data source. Your company recently purchased the SAS Add-In for Microsoft Office, so you can now access SAS data sources from Excel. You are an experienced Excel user, but are new to SAS.

The next three chapters provide step-by-step instructions for analyzing a data source and creating an Excel workbook that can be shared with others at your site. During the first part of the scenario, you will open in an Excel worksheet the SAS data source that contains your company's 2006 sales data. Then you will run four SAS tasks to analyze the data. Running these SAS tasks will enable you to answer the following questions:

- □ Which product had the highest sales in 2006? Which product had the lowest sales?
- □ What are the average total sales, average total inventory, and average returns for each product?
- □ Is there a correlation between the total sales and inventory and returns for each product?
- □ Which parameters (inventory, returns, and number of stores) determine the total sales for a product?

After answering these questions, you are asked to analyze the sales for the product line with the lowest sales. During this second part of the scenario, you will open the SAS data source into a PivotTable report to answer the following questions:

- \Box Which regions have sales less than \$10,000?
- □ Which region has the lowest sales? What are the sales and inventory costs for each subsidiary in that region?

By the end of this scenario, you will have an Excel worksheet that you can publish to a common repository, so it can be viewed by other SAS add-in users at your site.

Prerequisites for This Scenario

By the time that you are ready to perform the tasks in this book, administrators at your site should have installed and configured all necessary components of the SAS Enterprise Intelligence Platform. You must also have the following:

□ The 21AMO03 hotfix for the SAS Add-In 2.1 for Microsoft Office. This hotfix was released in the summer of 2006. Your site administrator can install this hotfix from http://www.sas.com/techsup/download/hotfix/amo21.html.

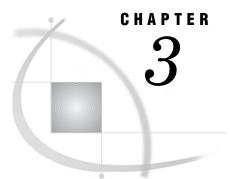
Note: You need this hotfix only to perform the steps in Chapter 5, "Analyzing a SAS Data Source in a PivotTable Report," on page 37. You can perform the rest of the steps in this book without the hotfix. \triangle

- Microsoft Office 2000, Microsoft Office XP, or Microsoft Office 2003 installed on your desktop.
- Permissions to access the SAS Metadata Server. Your site administrator sets these permissions. Contact your site administrator for the name and location of the SAS Metadata Server.
- □ A metadata configuration file to specify which SAS Metadata Server you will connect to by default. This file enables you to access SAS data sources on remote servers. For more information about setting up a metadata configuration file, see the online Help for the SAS add-in.
- □ Access to the SHOES data source that is available in the SASHELP library. This is the data source that you will be using during the analysis. The SASHELP library ships with the SAS Add-In for Microsoft Office. If you do not have access to this SAS library, contact your site administrator.

How to Get Help for the SAS Add-In for Microsoft Office

Use any of the following methods to get Help for the SAS Add-In for Microsoft Office:

- □ From the menu bar, select SAS ► SAS Add-In for Microsoft Office Help.
- Press F1 in most application windows and dialog boxes.



Opening a SAS Data Source in Microsoft Excel

About the Tasks That You Will Perform 7 Open the Sales Data in an Excel Worksheet 7 Save the Workbook 12

About the Tasks That You Will Perform

To open and view the data that you will be using in the analysis, you will perform the following main tasks:

1 You will select the data source to open.

Note: In this scenario, you are accessing a SAS data source from the SAS server. However, you can use the SAS add-in to access data from a database, such as Oracle, Teradata, and DB2. In Excel, you can also use Excel worksheets as the data source. Δ

- 2 For the data source, you will select the following:
 - $\hfill\square$ the variables to include in the output
 - \Box how to sort the data
 - $\hfill\square$ the output location for the data

Open the Sales Data in an Excel Worksheet

To open the SHOES data source (which is available in the SASHELP library) in Excel, complete the following steps:

1 Select Start ► Programs ► Microsoft Office ► Microsoft Excel.

Microsoft Excel opens. In the menu bar, you should see a **SAS** menu item. You access the SAS add-in from this menu.

Note: If you do not see a **SAS** menu item, then you might not have the SAS add-in installed. For help, contact the SAS administrator at your site. \triangle

Display 3.1 Location of SAS Menu in Microsoft Excel

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2 Select SAS ► Open Data Source ► Into Worksheet. The Open Data Source window opens.



- 3 Click Servers to select the SAS server that you want to use.
- 4 From the **Look in** drop-down list, select **SASHELP**. The Open Data Source window now displays the contents of the SASHELP library.

🚘 Open Data S	iource					×
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	I ∎I File name:			Þ	-	pen
	Files of type:	All SAS Data Sou	urces			ncel

Note: The location of the SASHELP library is dependent on how SAS was installed at your site. If you cannot find the SASHELP library, contact the SAS administrator at your site. \triangle

5 In the SASHELP library, select the **SHOES** data source. The variables in the SHOES data source automatically appear in the Variables pane.

🛌 Open Data S	Source					×
Look in:	SASHELP			💽 🗧 - 🔁 🛛 🗙	í 📺 🎟 🔹	
My Documents Desktop My Network Places Servers	KOC LANKB LANKB LANKB LIBRARY LIBRARY LIHEME MACRS10 MACRS10 MACRS15 MACRS20 MACRS3 MACRS3 MACRS5 MACRS5 MACRS7 MANAGE MANAGE MANAGE MDBMSG MDV MLEIS MLVIEW MON1001	MON111 MRRGSTRY MWELECT NTWRKKB NVST1 NVST2 NVST3 NVST4 NVST5 OBJECTS OMAASSC OMAASSC OMAASSC OMAVERB ORSALES PLFIPS PRDSAL2 PRDSAL2 PRDSALE PRDSALE PRDSALE	QSEEDS QTR1001 QTR111 RENT RETAIL REVHUB2 ROCKPIT SASAPPL SASABC SASMBC SASMBC SASMSG SHOES SNACKS SNACKS SR3 STEEL STTMSG SYR1001	TAL Variables: TGI TGI TGI TGI Subsid TOI Subsid VCI VCI VCI VCI VCI VCI VCI VCI VCI VCI	n st liary ory	
	File name:				▪ Open	
	Files of type:	All SAS Data Sou	lices		Cancel	

6 Click Open. The Modify Data Source window opens.

Modify Data Source - SASHELP.SHO		1				×
Available (7):		Selected (0 of 7):				
Name	[Name	Туре	Label		
\land Region				-		
A Product			<select at<="" td=""><td>least one variable></td><td></td><td></td></select>	least one variable>		
A Subsidiary						-
stoles ≰¥ Sales						-
€¥ Inventory						
💱 Returns	⊑ ≫					
						_
	(-
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						-
						-
						-
						-
						-
Display labels instead of variable names						
Show Preview				ОК	Cancel	Help

7 On the **Variables** tab, select the variables that you want to include in the final output. You can also specify the order of the variables.

Click to move all the variables from the **Available** list box to the **Selected** list box. Select the variables so they appear in the following order:

Section 2017 Secti	ES					×
🔚 Variables 😽 Filter 🚼 😨 Sort 🐴 0)utput Locatior	1				
Available (0):		Selected (7 of 7):				
Name		Name	Туре	Label		
		🔌 Region	Char	Region		
		A Product	Char	Product		<u> </u>
		\land Subsidiary	Char	Subsidiary		
		1 Stores	Num	Number of Stores		
		💱 Sales	Currency	Total Sales		
	-10	Market Inventory	Currency	Total Inventory		
		💱 Returns	Currency	Total Returns		
		L				
	4					
	≪⊅					
	16 <u>1</u>	L				
Display labels instead of variable names						
Show Preview				ОК	Cancel	Help

Click the **Sort** tab to continue.

8 On the **Sort** tab, you can specify the order of the rows in the output.

Use the drop-down lists to specify the following sort order:

B Modify Data Source - SASHELP.SHOES	×
🔲 Variables 🛛 🏹 Filter 🚦 Sort 🛛 🍇 Output Location	
Specify sort:	
Sort by	
Region C Ascending	
Then by:	
Product C Ascending	
Then by: O Descending	
Ascending	
C Descending	
Display labels instead of variable names	Clear All
Show Preview OK	Cancel Help

Click the **Output Location** tab to continue.

9 On the Output Location tab, you can select the location for the final output. By default, the data source is opened in a new worksheet. In the Named box, delete SASHELP.SHOES and type Worldwide Shoe Sales.

Modify Data Source - SASHELP.SHOES	×
🔚 Variables 🔀 Filter 🚦 💈 Sort 🏾 🎦 Output Location	
Select location:	
Existing worksheet	
Start at: \$4\$1	Choose
(Examples: \$A\$1 or A1)	Why is the Choose button disabled?
New Worksheet	
Named: Worldwide Shoe Sales	
C New Workbook	
Show Preview	OK Cancel Help

Click OK. The results open in a new worksheet called Worldwide Shoe Sales.

	Α	В	С	D	E	F	G	Н	l 🖬
1	ļ	Region	Product	Subsidiary	Stores		Inventory	Returns	
2	1	Africa	Boot	Algiers	21	\$21,297	\$73,737	\$710	
3	2	Africa	Boot	Kinshasa	16	\$13,921	\$70,736	\$553	
4	3	Africa	Boot	Cairo	20	\$4,846	\$18,965	\$229	
5	4	Africa	Boot	Luanda	8	\$6,081	\$51,572	\$325	
6	- 5	Africa	Boot	Khartoum	24	\$19,282	\$105,370	\$700	
- 7	6	Africa	Boot	Addis Ababa	12	\$29,761	\$191,821	\$769	
8	- 7	Africa	Boot	Nairobi	25	\$16,282	\$66,017	\$844	
9	8	Africa	Boot	Johannesburg	14	\$8,365	\$33,011	\$483	
10	- 9	Africa	Men's Casual	Algiers	4	\$63,206	\$100,982	\$2,221	
11	10	Africa	Men's Casual	Addis Ababa	4	\$67,242	\$118,036	\$2,284	
12	11	Africa	Men's Casual	Luanda	3	\$62,893	\$149,864	\$1,701	
13	12	Africa	Men's Casual	Khartoum	1	\$9,244	\$16,230	\$478	
14	13	Africa	Men's Casual	Cairo	25	\$360,209	\$1,063,251	\$9,424	
15	-14	Africa	Men's Dress	Algiers	13	\$123,743	\$428,575	\$3,621	
16	-15	Africa	Men's Dress	Khartoum	3	\$18,053	\$51,132	\$1,177	
17	-16	Africa	Men's Dress	Nairobi	1	\$8,587	\$20,877	\$363	
18	-17	Africa	Men's Dress	Addis Ababa	7	\$76,793	\$136,273	\$2,433	
19	18	Africa	Men's Dress	Kinshasa	5	\$57,691	\$95,663	\$1,699	
20	- 19	Africa	Men's Dress	Cairo	5	\$4,051	\$45,962	\$97	
21	20	Africa	Men's Dress	Luanda	2	\$29,582	\$67,247	\$705	
22	21	Africa	Sandal	Kinshasa	10	\$16,662	\$104,438	\$611	
23	22	Africa	Sandal	Luanda	9	\$11,145	\$19,900	\$657	
24	23	Africa	Sandal	Nairobi	19	\$16,289	\$47,406	\$1,175	
25	24	Africa	Sandal	Khartoum	18	\$26,427	\$81,825	\$1,281	
26	25	Africa	Sandal	Algiers	25	\$29,198	\$84,447	\$1,530	
27	26	Africa	Sandal	Cairo	9	\$10,532	\$50,430	\$598	
28	27	Africa	Sandal	Johannesburg	13	\$17,337	\$63,003	\$809	
29		Africa	Sandal	Addis Ababa	10	\$62,819	\$204,284	\$1,861	•
14 4	▶ н\	Sheet1 \ Vorldwide Shoe Sales /	Sheet2 / Sheet3 /		1				

Tip: By default, the SAS add-in displays the variable names in the first row of the Excel worksheet. If a variable name has a label, a red triangle appears in the

upper right corner of the cell that contains the variable name. To view the label, place your mouse over the triangle. In this example, the Stores, Sales, Inventory, and Returns variables have labels.

As you scroll through the data, you will see the following:

- □ Ten regions are represented: Africa, Asia, Canada, Central America/Caribbean, Eastern Europe, Middle East, Pacific, South America, United States, and Western Europe.
- □ There are eight product types: Boot, Men's Casual, Men's Dress, Sandal, Slipper, Sport Shoe, Women's Casual, and Women's Dress.
- $\hfill\square$ For each Region, the data is divided into product and subsidiary.
- □ For each subsidiary, the data contains the number of stores that sell each product, the total sales, total inventory, and total returns for the product.

Save the Workbook

To save the workbook, complete the following steps:

- 1 Select **File** ► **Save As**. The Save As dialog box opens.
- 2 From the Save in drop-down list, select C:\Program Files\SAS\Add-In for Microsoft Office.
- 3 Type Shoe Sales 2006 in the File name box.

Save As					?>
Save in:	Add-In for Microso	ft Office 🗾		Q × 🖆 🎟	Tools
History My Documents	i⊇ hotfix Mishoe Sales 2005.xls				
Desktop					
* Favorites					
	File <u>n</u> ame: Shoe Sa	es 2006, xls		•	Save
My Network Places	Save as type: Microsof	t Excel Workbook (*	.×ls)	-	Cancel

4 Click **Save** to save the workbook.

You are now ready to analyze the data source. For the next steps, see Chapter 4, "Running SAS Tasks to Analyze the Data," on page 13.



Running SAS Tasks to Analyze the Data

About the Tasks That You Will Perform 13
Compare Sales for Each Product 14
Determine Average Sales, Inventory, and Returns for Each Product 20
Determine Correlation between Sales, Inventory, and Returns 26
Perform a Linear Regression Analysis 31
Save the Workbook 35

About the Tasks That You Will Perform

These tasks assume that you have the SHOES data source open in a Microsoft Excel worksheet. For these steps, see Chapter 3, "Opening a SAS Data Source in Microsoft Excel," on page 7.

To analyze the data, you will perform the following main tasks:

- 1 You will create a bar chart to compare the sales of each product and to determine which products have the highest and lowest sales.
- **2** You will use summary statistics to determine the average total sales, average total inventory, and average returns for each product.
- **3** You will determine if there is any correlation between the total sales and total inventory and total returns for each product.
- **4** You will use a linear regression to determine if the parameter estimates for inventory, returns, and number of stores should be included in a linear regression model of sales.

Compare Sales for Each Product

To create a bar chart that shows the sales for each product, complete the following steps:

1 From the Active Data drop-down list on the SAS Data Analysis toolbar, verify that SASHELP.SHOES is the active data source that you opened in the previous chapter.

Note: In the Active Data drop-down list, the name of the SAS server appears before the name of the data source. The name of the server depends on the SAS server at your site. \triangle

```
Active Data: ISASMain:SASHELP.SHOES 🛛 🗸 🖾 Analyze Data 📑 Reports SAS Favorites 🔹 💁 👩 📝 🦓 🛒 🤱 🜉
```

Tip: In Excel, data sources that are open are at the top of the list and have an exclamation point (!) before the name. The current selection is the active data source by default. Therefore, depending on where your cursor is in a worksheet, you might have a different active data source.

2 Select SAS ► Analyze Data from the main menu. The Analyze Data window opens.

📾 Analyze Data					×
🔌 🗈 🔞 🖁					
🖃 😓 SAS Tasks	Name 🔺	Туре	Description		
ANDVA	ANOVA Capability Control Charts Capability Data Describe Graph Multivariate Pareto Regression Survival Analysis Time Series	Folder Folder Folder Folder Folder Folder Folder Folder Folder Folder Folder			
	1				F
				Open Ca	ancel

Tip: You can also open the Analyze Data window by clicking \boxed{Eint} Analyze Data in the SAS Data Analysis toolbar.

-💼 SAS Tasks	Name 🔺	Туре	Description
ANDVA ANDVA Capability Capa	Name Marea Plot Bar Chart Bar Chart Bar Chart Bar Chart Bar Chart Bar Doatt Box Plot Contour Plot Create Map Feature Table Donut Chart Interactive Graphics Line Plot Line Plot Map Graph Pie Chart Pie Chart Pie Chart Pie Chart Pie Chart Scatter Plot Scatter Plot Surface Plot	Task Task Wizard Task Task Task Task Task Task Task Task	Generate a Area Plot for a set of data. Generate a Bar Chart for a set of data. Generate a Bar Chart for a set of data. Generate a Bar Chart for a set of data. Generate a Box Plot for a set of data. Generate a Bubble Plot for a set of data. Generate a Bubble Plot for a set of data. Generate a Contour Plot for a set of data Create a feature table for a map data set Generate a Contour Plot for a set of data Evaluate the data in different graphs Generate a Line Plot for a set of data Generate a Pie Chart for a set of data Generate a Pie Chart for a set of data Generate a Radar Chart for a set of data Generate a Surface Plot for a set of data

3 In the left pane, select **Graph**. The list of available graph tasks appears in the right pane.

- 4 Select Bar Chart Wizard and click Open. The Bar Chart Wizard opens.
- **5** In step 1 of the wizard, you can verify that you have selected the data source that you want to use, but you cannot change the data source after you have opened a SAS task.

For this example, you should have the SHOES data source as the active data. Click **Next** to continue.

📊 Bar Chart fo	or_TEMP_SHOES	1
1 of 4 V	erify Data SSAS.	
The Bar Chart W stacked bars.	/izard helps you create vertical or horizontal bar charts, in two or three dimensions, with options for grouped or	
Active data		
SAS Server:	SASMain	
Library: Data set:	SASHELP SHOES	
Sort:	Region ASC, Product ASC	
Workbook: Worksheet:	C:\Program Files\SAS\Add-In for Microsoft Office\Shoe Sales 2006.xls Worldwide Shoe Sales	
Worksneet: Range:	A1:H396	
-		
	< Back Next > Finish Cancel Help	

- **6** In step 2 of the wizard, you can assign variables from the data to roles. You can also specify whether to create a horizontal bar chart. By default, the Bar Chart Wizard creates vertical bar charts.
 - In the second step, specify the following options:
 - □ From the **Bars** drop-down list, select **Product**.
 - □ From the **Bar height** drop-down list, select **Sales**.

Bar Chart for _TEMP_SH	IOES					×
2 of 4 Assign variab	les to roles				<u></u> Sa	AS.
 Horizontal bar charl Required Bars: Bar height: Optional Group by: Chart by: 	Product Sales Sales Region Region Region		× λ × Σ ·	Sample chart: Sales	2 2 oduct	
		(Deck)	Neda	1 est. 1		
		< Back	Next>	Finish	Cancel H	elp //

Click Next to continue.

- 7 In step 3 of the wizard, you can specify the appearance of the chart.
 - In the third step, specify the following options:
 - □ Clear the **3D** chart check box.
 - □ Select the Data labels check box, and then select Sum from the drop-down list.

Bar Chart for _TEMP_SI	HOES						×
3 of 4 Specify appe	arance					SS	as.
□ 3D chart Colors Color bars by: Bar color: Labels □ Legend: ☑ Data labels:	(All bars the same) ↓ South			Sample chart: Sales		18	1
Lines and ticks Use reference lines Tick marks		Axis La		1	2 Product	3	
	[< Back	Next >	Finish	Cancel		Help

Click Next to continue.

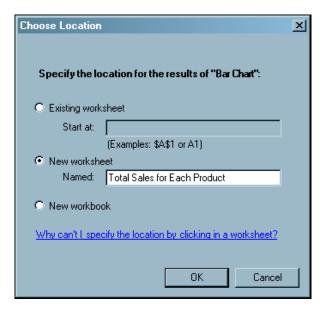
8 In step 4 of the wizard, you can customize the title and footnote for the chart. The Bar Chart Wizard provides a default title and footnote.

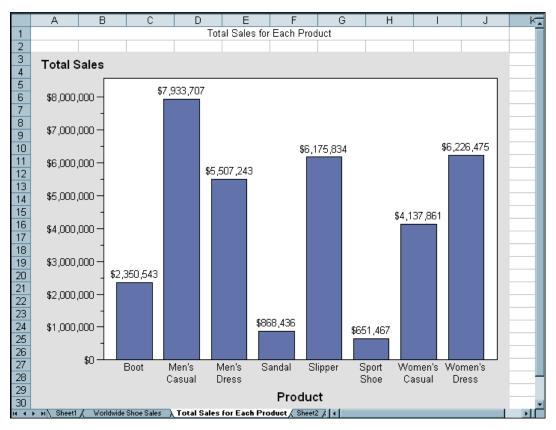
📶 Bar Cha	art for _TEMP_SHOES	×
4 of 4	Provide a title and footnote	<u>S</u> sas.
Graph:	Total Sales for Each Product	Reset
Footnote:	Generated by SAS (&_SASSERVERNAME, &SYSSCPL) on %SYSFUNC(DATE(), EURDFDE9.) at %SYSFUNC(TIME(), TIMEAMPM8.)	Reset
	< Back Next> Finish Cancel	Help

In the Graph box, delete Bar Chart and type Total Sales for Each Product.

Click Finish. The Choose Location dialog box opens.

9 From the Choose Location dialog box, select New worksheet and in the Named box, type Total Sales for Each Product.





Click OK. The results open in a new worksheet called **Total Sales for Each Product**.

The bar chart shows the following:

- \square Men's Casual shoes had the highest sales with \$7,933,707.
- \Box Sport Shoes had the lowest sales with \$651,467.

Determine Average Sales, Inventory, and Returns for Each Product

To create an analysis that shows the average sales, inventory, and returns for each product, complete the following steps:

1 From the Active Data drop-down list on the SAS Data Analysis toolbar, verify that SASHELP.SHOES is the active data source.

Active Data: ISASMain:SASHELP.SHOES 💿 🗟 Analyze Data 📑 Reports SAS Favorites 🔹 💁 🚱 📝 🤱 🛒 🤱 🜉

2 Select SAS ► Analyze Data from the main menu. The Analyze Data window opens.

3 In the left pane, select **Describe**. The list of tasks in this category appears in the right pane.

Image: Sast Tasks Name Type Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast Tasks Image: Sast	Description Compute data characteristics Perform a Distribution Analysis Create list data Generate simple frequency counts on data Generate summary statistics for a set of data Generate summary statistics for a set of data Create a tabular summary of the data Create a tabular summary of the data Perform table analysis
Image: Characterize Data wizard Image: Characterize Data I	Perform a Distribution Analysis Create list data Generate simple frequency counts on data Generate summary statistics for a set of data Generate summary statistics for a set of data Create a tabular summary of the data Create a tabular summary of the data
Time Series	

- 4 Select Summary Statistics Wizard and click Open. The Summary Statistics Wizard opens.
- **5** In step 1 of the wizard, you can verify that you have selected the data source that you want to use, but you cannot change the data source after you have opened a SAS task.

For this example, you should have the SHOES data source as the active data.

∑ Summary St	atistics for _TEMP_SHOES
1 of 4 ∨	erify Data SSAS.
The Summary SI with optional gro	atistics Wizard helps you create tables of descriptive statistics as well as histograms and box-and-whisker plots, uping variables.
Active data	
SAS Server:	SASMain
Library:	SASHELP
Data set:	SHOES
Sort: Workbook:	Region ASC, Product ASC C:\Program Files\SAS\Add-In for Microsoft Office\Shoe Sales 2006.xls
Worksheet:	Worldwide Shoe Sales
Range:	A1:H396
-	
	< Back Next > Finish Cancel Help

Click Next to continue.

6 In step 2 of the wizard, you can assign variables from the data to roles.

Select the following variables in the **Available variables** pane and drag and drop them to the following roles:

Variables	Role
Sales, Inventory, Returns	Summary statistics of (Analysis variable)
Product	For each value of (Classification variable)

∑ Summary Statistics for _TEMP_SHOES	<u>×</u>
2 of 4 Assign variables to roles	<u>S</u> sas.
Available variables:	Summary statistics of (Analysis variable):
 Region Product Subsidiary Stores Sales Inventory Returns 	Image: Soles Image: Sole state
	Image: Second state of the second s
	Image: Separate tables for values of (Group variable): Image: Separate tables for values of (Group variable): Image: Optional) Drop variables here.
	Advanced
	Kack Next > Finish Cancel Help

Click Next to continue.

7 In step 3 of the wizard, you can specify the statistics and the results to include in the output. By default, the Summary Statistics task calculates the mean, standard deviation, minimum, maximum, and number of observations for each classification variable. However, you want to include the range of values and remove the number of observations from the output.

To specify the statistics to include in the output, complete the following steps:

a Click Edit. The Edit Statistics dialog box opens.

b On the **Basic** tab, select the **Range** check box, and clear the **Number** of observations check box.

∑ Edit Statistics		×
Basic Percentile Additional		
✓ Mean	⊽ Range	
Standard deviation	Sum	
Standard error	Sum of weights	
Variance	Number of observations	
🗹 Minimum	Number of missing values	
Maximum		
Decimal places: Best fit	•	
	OK Cancel Help	

c Click ox to return to step 3 of the Summary Statistics Wizard.

The statistics that are listed in the Summary Statistics Wizard should now be the following:

Σ Summary Statistics for _TEMP_SHOES	×
3 of 4 Specify statistics and results	<u>S</u> as.
Statistics: MEAN; STD; MIN; MAX; RANGE	Edit
Results: ✓ Show statistics	
SAS server: nineonethree Library: WORK Data set: MEANSummaryStats_TEMP_SHOES	Browse,
< Back Next > Finish Cance	el Help

Click Next to continue.

8 In step 4 of the wizard, you can customize the title and footnote for the output. In the Analysis box, delete Summary Statistics Results and type Summary Statistics for Each Product.

Summary Statistics	s for _TEMP_SHOES	×
4 of 4 Provide	title and footnote	sas.
Analysis:	Summary Statistics for Each Product	Reset
Histogram:	Summary Statistics Histograms	Reset
Box and Whisker Plot:	Summary Statistics Box and Whisker Plots	Reset
Footnote:	Generated by SAS (&_SASSERVERNAME, &SYSSCPL) on %SYSFUNC(DATE(), EURDFDE9.) at %SYSFUNC(TIME(), TIMEAMPM8.)	Reset
	< Back Next > Finish Cancel	Help

Click Finish. The Choose Location dialog box opens.

9 In the Choose Location dialog box, select New worksheet, and click OK.

Choose Location	×
Specify the location for the results of "Summary Statistics":	
C Existing worksheet	
Start at:	
(Examples: \$A\$1 or A1)	
New worksheet	
Named: Summary Statistics	
O New workbook	
Why can't I specify the location by clicking in a worksheet?	
OK Cance	

The results open in a new worksheet called Summary Statistics.

A	B	С	D	E	F	G	Н
1		Sum	mary Statistics f	or Each Produc	t		
2							
3 Product	Variable	Label	Mean	Std Dev	Minimum	Maximum	Range
4 Boot	Sales	Total Sales	45202.75	45705.28307	1179	286497	285318
5	Inventory	Total Inventory	187012.9038	172214.3691	374	882080	881706
6	Returns	Total Returns	1896.576923	1652.972277	80	9160	9080
7 Men's Casual	Sales	Total Sales	176304.6	224859.9038	9244	1298717	1289473
8	Inventory	Total Inventory	379672.2889	504818.0812	2176	2881005	2878829
9	Returns	Total Returns	6911.888889	9505.673749	478	57362	56884
10 Men's Dress	Sales	Total Sales	110144.86	126085.4346	3033	757798	754765
11	Inventory	Total Inventory	290146.8	318693.6955	538	1847559	1847021
12	Returns	Total Returns	3281.98	3160.150704	52	16833	16781
13 Sandal	Sales	Total Sales	17723.18367	31555.64156	325	200156	199831
14	Inventory	Total Inventory	65964.79592	101080.6854	960	624163	623203
15	Returns	Total Returns	778.9795918	1341.493547	10	8365	8355
16 Slipper	Sales	Total Sales	118766.0385	127423.8541	3019	700513	697494
17	Inventory	Total Inventory	427526.5385	451452.7593	10234	2520085	2509851
18	Returns	Total Returns	4037.307692	4029.218309	127	21247	21120
19 Sport Shoe	Sales	Total Sales	12773.86275	17910.53844	449	101922	101473
20	Inventory	Total Inventory	65151.01961	79344.1466	455	370388	369933
21	Returns	Total Returns	493.7058824	694.7706469	10	4204	4194
22 Women's Casual	Sales	Total Sales	91952.46667	105862.9157	5389	502636	497247
23	Inventory	Total Inventory	215481.1333	251422.7633	6972	1110412	1103440
24	Returns	Total Returns	2919.866667	3561.211659	185	17448	17263
25 Women's Dress	Sales	Total Sales	122087.7451	138840.1593	4659	756347	751688
26	Inventory	Total Inventory	378525.0784	447663.5925	19899	2503387	2483488
27	Returns	Total Returns	3797.117647	4177.352121	210	19378	19168
28							
29	Ger	erated by SAS (S	ASMain, NET_S	RV) on 07DEC	2006 at 10:57 A	M	
RD I 4 ▶ ₩[\ Sheet1 & World	lwide Shoe Sales), Summary Statist	an / Tatal Salas fa	or Each Product			
A MIV Sueer V _ Moud	iwide once oales	A summary statist	Nos A in rotario alles ro				

The output shows the mean, standard deviation, minimum value, maximum value and range of the total sales, total inventory, and total returns for each product. After analyzing the data, you note the following:

- □ For each product, the average total cost of the inventory exceeds the average total sales. For example, for Boots, the average total inventory is \$187,012.90, but the average total sales is only \$45,202.75.
- □ The ranges for all products is rather large. For example, for Boots, the average total sales ranges from \$1,179 to \$286,497. This large range implies that sales for boots vary across stores worldwide.

Determine Correlation between Sales, Inventory, and Returns

In the previous analysis, you saw that total inventory exceed sales for all products. Therefore, you want to analyze whether there is any correlation between total inventory and sales. You also decide to analyze the correlation between total returns and sales. To determine if there is a correlation between these items, complete the following

steps:

1 From the **Active Data** drop-down list on the SAS Data Analysis toolbar, verify that SASHELP.SHOES is the active data source.

Active Data: ISASMain:SASHELP.SHOES 💿 🗸 📴 Analyze Data 📑 Reports SAS Favorites 🔹 💁 🚱 📝 🦓 🌉

2 Select SAS ► Analyze Data from the main menu. The Analyze Data window opens.

3 In the left pane, select Multivariate. The list of tasks in this category appears in the right pane.

∃~💼 SAS Tasks	Name 🔺	Туре	Description
Image: Second	 ✓ Canonical Correlation ✓ Cluster Analysis ✓ Correlations ▲ Factor Analysis ✓ Principal Components 	Task Task Task Task Task	Perform a canonical correlation analysis Perform a cluster analysis Perform a correlation Perform a factor analysis Perform a principal components analysis

4 Select Correlations and click Open. The Correlations task opens.

5 In the Task Roles panel, you can assign variables from the data to roles.

Select the following variables in the $\tt Variables$ to assign pane and drag and drop them to the following roles:

Variables	Role
Sales	Analysis variable
Inventory, Returns	Correlate with

Task Roles	Task Roles	
Options Results	Variables to assign:	Task roles:
Dutput Data Titles	Name	Analysis variables Analysis variables Sales Correlate with Simple for the second secon
🚆 Preview coo		correlated with the variables in the Analysis Variables role.

In the selection pane, select **Results** to continue.

6 In the Results panel, you can specify whether to include any plots in the output and what statistics to include in the output. You can also view a summary of the correlations for the task.

Correlations for _TEMP_SHOES ×

For this analysis, select the Create a scatter plot for each correlation pair check box.

Task Roles	Results
Options Results Output Data Titles	Plots Results to display Create a scatter plot for each correlation pair Show statistics for each variable Show significance probabilities associated with correlations Show correlations in decreasing order of magnitude Show n correlations per row variable: Show n correlations per row variable:
	Summary of correlations to calculate Number of variables to correlate: 1 Total correlations to be calculated: 2 Number of plots to generate:
Preview code	Generates a scatter plot for each correlation pair. Scatter plots show the relationships between two or three variables by revealing patterns or concentrations of data points.

In the selection pane, select **Titles** to continue.

7 In the Titles panel, you can customize the title and footnote for the output.

To create a customize title for the analysis, complete the following steps:

- a In the Section area, select Analysis Titles.
- b In the Text for section: Analysis Titles area, clear the Use default text check box.
- c Delete the default text and type Correlation of Sales to Inventory and Returns.

Correlations f	for _TEMP_SHOES	×
Task Roles	Titles	
Options Results Output Data	Section: Text for section: Analysis Titles	
Titles	 ✓ Analysis Titles ✓ Plots ✓ Footnote 	
	Checked sections will be generated based on current task settings.	
	Displays the text that is associated with the selected section in the Section area. You can edit this to	ext.
Preview code	de Run Cancel	Help

Click Run. The Choose Location dialog box opens.

8 In the Choose Location dialog box, select New worksheet, and click OK.

Choose Location	×
Specify the location for the results of "Correlations":	
Existing worksheet	
Start at:	1
(Examples: \$A\$1 or A1)	
New worksheet	
Named: Correlations	
C New workbook	
Why can't I specify the location by clicking in a worksheet?	
OK Cance	el

The results open in a new worksheet called Correlations.

	А	В	С	D	E	F	G	Н	I	
1		Correlation of Sales to Inventory and Returns								
2										
3						Inventory Returns				
4					1 Variables:	Sales				
5										
6						ple Statistics				
7		Variable	N	Mean	Std Dev	Sum	Minimum	Maximum		
8		Inventory	395	250898.9	351514.6268	99105051	374		Total Inventory	
9		Returns	395	2967.322	4611.742654	1172092	10		Total Returns	
10		Sales	395	85700.17	129107.2339	33851566	325	1298717	Total Sales	
11										
12					3	on Coefficients, N = 95 Jer HO: Rho=0				
13						Sales				
14					Inventory	0.95444				
15					Total Inventory	1.6575E-208				
16					Returns	0.96434				
17					Total Returns	5.5761E-229				
18										
19			1	Generated	by SAS (SASMain,	NET_SRV) on 07DE	C2006 at 11:	00 AM		
20										
21										
22					Corr	elations Plots				
23										
24					Scatter plot	of Sales by Inventor	у			
25										
26		Total	Sales							
27										
H 4	► ►I \ Sheet1	🖌 Worldwide S	Shoe Sales 🛛 🗎 🕻	Correlations	/ Summary Statistics /	(Total Sales f ↓				

The output shows the correlation statistics for the correlation between sales and inventory and sales and returns. The analysis shows the following:

- □ The correlation between sales and inventory is 0.95444. This implies a strong positive correlation between sales and inventory.
- □ The correlation between sales and returns is 0.96434. This implies a strong positive correlation between sales and returns.
- □ The scatter plots also reflect this strong positive correlation. The scatter plots also show a few outliers as sales reach \$1,400,000.

Perform a Linear Regression Analysis

In the previous analysis, you saw that total inventory and returns were strongly correlated to sales. You now want to perform a linear regression analysis on the data. You want to determine what model you can use to determine total sales for each product. To run a linear regression analysis, complete the following steps:

1 From the Active Data drop-down list on the SAS Data Analysis toolbar, verify that SASHELP.SHOES is the active data source.

Active Data: ISASMain:SASHELP.SHOES 💿 🗸 🖾 Analyze Data 📑 Reports SAS Favorites * 🙆 👩 📝 🦓 🌠 🤱

- 2 Select SAS ► Analyze Data from the main menu. The Analyze Data window opens.
- 3 In the left pane, select **Regression**. The list of tasks in this category appears in the right pane.
- 4 Select Linear and click Open. The Linear task opens.
- 5 In the Task Roles panel, you can assign variables from the data to roles.

Select the following variables in the **Variables to assign** pane and drag and drop them to the following roles:

Variables	Role
Sales	Dependent variable
Inventory, Returns	Explanatory variables
Product	Group analysis by

Task Roles Model	Task Roles		
Statistics	Variables to assign:	Task roles:	Product sort order:
Plots Predicted Residual Influence Predictions Titles	Name Region Product Subsidiary Stores Sales Nentory Returns	Dependent variable (Limit: 1 Sales Explanatory variables Explanatory variables Frequency count (Limit: 1) Relative weight (Limit: 1)	I) Ascending ✓ Sort by variables
Preview coc		r observations in each group that is defined b	y the variable.

In the selection pane, select **Titles** to continue.

- 6 In the Titles panel, you can customize the title and footnote for the output.To create a customize title for the analysis, complete the following steps:
 - a In the Section area, select Linear Regression.
 - b In the Text for section: Linear Regression area, clear the Use default text check box.
 - c Delete the default text and type Linear Regression Results for Each Product.

Linear for _T	TEMP_SHOES	×
Task Roles Model Statistics Plots Predicted	Titles Section: Text for section: Linear Regression Linear Regression Use default text Plots	
Residual Influence Predictions Titles	Predictions ✓ Footnote	
	Checked sections will be generated based on current task settings.	
	Displays the text that is associated with the selected section in the Section area. You	u can edit this text.
Preview code	de Run (Cancel Help

Click Run. The Choose Location dialog box opens.

7 In the Choose Location dialog box, select New worksheet and in the Named box, type Linear Regression.

Choose Location		×
Specify the lo	cation for the results of "Linear":	
C Existing work:	sheet	
Start at:		
	(Examples: \$A\$1 or A1)	
New workshe		
Named:	Linear Regression	
C New workboo	ok.	
Why can't I spec	tify the location by clicking in a worksheet?	
	OK Cancel	

Click **oK**. The results open in a new worksheet called Linear Regression.

	A	В	C	D	E	F	G		
1			Linear Regression Results for Each Product						
2									
3			Model: Linear_Regression_	Model					
4			Dependent Variable: Sales To	otal Sales				-	
5									
6			Product=Boot						
7									
8			Number of Observations Read	52					
9			Number of Observations Used	52					
10									
11			Analysis of Variance						
			Sum of	Mean					
12	Source	DF	Squares	Square	F Value	Pr > F			
	Model	2	1.00892E+11	50445914088	437.82	5.54E-32			
	Error	49	5645789755	115220199.1	_	_			
	Corrected Total	51	1.06538E+11						
16									
17		Root MSE		R-Square	0.9470				
18		Dependent Mean		Adj R-Sq	0.9448			_	
19		Coeff Var	23.74649					_	
20								_	
21			Parameter Estimate:						
				Parameter	Standard				
	Variable	Label	DF	Estimate	Error	t Value	Pr > t		
	Intercept	Intercept	1	-5581.097245		-2.45			
	Inventory	Total Inventory	1	0.098486978	0.024650315	4.00			
	Returns	Total Returns	1	17.06522479	2.568184856	6.64	2.36E-08		
26				07050000 14	4 00 414			_	
27	· ··· ································		by SAS (SASMain, NET_SRV) on		1:02 AM				
H A	► H\ Sheet1 / Work	dwide Shoe Sales λ Linear	Regression / Correlations / Summary	statis 🛛 🖣					

Before running this analysis, you assumed a significance level of 0.05. Therefore, any parameter estimates that have a p-value less then 0.05 should be included in the model, and any parameter estimates that have a p-value greater than 0.05 should not be included in the model.

The following analysis of the Boot product shows you how to analyze the results for each product.

 \Box You can use the Pr>|t| column in the Parameter Estimates table to determine if an input is statistically significant and should be included in the model.

The total inventory and total returns have a p-value less than 0.05, so these inputs can be included in the model.

	А	В	С	D	E	F	G	l ⊢_		
6		Product=Boot								
7										
8			Number of Observations Read	52						
9			Number of Observations Used	52						
10										
11			Analysis of Variance							
			Sum of	Mean						
12	Source	DF	Squares	Square	F Value	Pr > F				
13	Model	2	1.00892E+11	50445914088	437.82	5.54E-32				
14	Error	49	5645789755	115220199.1	_	_				
15	Corrected Total	51	1.06538E+11	_	_	_				
16										
17		Root MSE		R-Square	0.9470					
18		Dependent Mean		Adj R-Sq	0.9448					
19		Coeff Var	23.74649							
20										
21			Parameter Estimate	s			\frown			
				Parameter	Standard		/	Ν		
22	Variable	Label	DF	Estimate	Error	t Value	Pr > t			
	Intercept	Intercept	1	-5581.097245	2278.804854	-2.45	0.017943			
24	Inventory	Total Inventory	1	0.098486978	0.024650315	4.00	0.000217			
	Returns	Total Returns	1	17.06522479	2.568184856	6.64	2.36E-08			
26							\sim	-		
14 A	▶ µ \ Sheet1 / World	dwide Shoe Sales $-\lambda$ Linea	r Regression / Correlations / Summary:	Statist 🛛 🖌						

□ After you have determined that an input is statistically significant, you can use the value in the Parameter Estimate column to determine the impact that these inputs have.

The impact that each of these inputs have on total sales is the following:

- \Box For each \$1.00 spent on inventory, total sales increase by \$0.10.
- □ For each \$1.00 of returns, total sales increase by \$17.07. While at first this result was confusing, you remembered that some of your stores charge a 20% re-stocking fee on all returns. This means that your company still makes some money off of returned items.

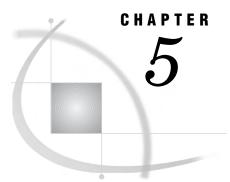
	A	В	С	D	E	F	G	÷۲
6			Product=Boot					
7								
8			Number of Observations Read	52				
9			Number of Observations Used	52				
10								_
11			Analysis of Variance					
			Sum of	Mean				
12	Source	DF	Squares		F Value	Pr > F		
13	Model	2	1.00892E+11	50445914088	437.82	5.54E-32		
14	Error	49	5645789755	115220199.1	_			
15	Corrected Total	51	1.06538E+11	_	_			_
16								_
17		Root MSE		R-Square	0.9470			_
18		Dependent Mean		Adj R-Sq	0.9448			
19		Coeff Var	23.74649					_
20								_
21			Parameter Estimates					_
				/ Parameter	Standard			
22	Variable	Label	DF	/ Estimate	L Error	t Value	Pr > t	_
23	Intercept	Intercept	1	-5581.097245	2278.804854	-2.45	0.017943	_
24	Inventory	Total Inventory	1	0.098486978	9 .024650315	4.00	0.000217	
25	Returns	Total Returns	11	17.06522479	2.568184856	6.64	2.36E-08	
26				\sim				-
н н	► N Sheet1 / Work	dwide Shoe Sales 🛛 🔪 Linea	r Regression / Correlations / Summary:	Statist 🚺				

You can perform the same analysis on the other products.

Save the Workbook

To save the workbook, select **File** ► **Save**.

You have now finished your initial analysis of your company's 2006 sales data. You can now use a PivotTable report to analyze a specific product line. For more information, see Chapter 5, "Analyzing a SAS Data Source in a PivotTable Report," on page 37.



Analyzing a SAS Data Source in a PivotTable Report

About the Tasks That You Will Perform37Open the Sales Data into a PivotTable Report38Create a PivotTable Report for the Sport Shoe Product Line41Drilling Down on the Data for Asia in the PivotTable Report42Save the Workbook44

About the Tasks That You Will Perform

During the first part of the scenario, you saw that sports shoes had the lowest sales. After your initial report, your managers asked you to identify the regions that had sport shoe sales less than \$10,000, and to perform a more in-depth analysis into the region with the lowest sales. Because you are in Microsoft Excel, you can perform this analysis using a PivotTable report.

To analyze the Sport Shoe product line, you will perform the following main tasks:

1 You will select the data source to open.

Note: In this scenario, you are accessing a SAS data source from the SAS server. However, you can use the SAS add-in to access data from a database, such as Oracle, Teradata, and DB2. In Excel, you can also use Excel worksheets as the data source. \triangle

- 2 For the data source, you will select the following:
 - $\hfill\square$ the variables to include in the output
 - $\hfill\square$ a filter that will subset the data
 - □ the output location for the PivotTable report

Open the Sales Data into a PivotTable Report

To open the SHOES data source (which is available from the SASHELP library) into a PivotTable report, complete the following steps:

Select SAS ► Open Data Source ► Into PivotTable. The Open into PivotTable window opens.

🚏 Open into Pi	votTable					×
Look in:	SASHELP			- 🗧 - 🔁	× 📫 🖩] -
My Documents	ACCBW ACCBWMT ACCPEO ADOMSG ADSMSG AFMSG AIR ASSCMGR ASSCWA ASSOCWA BUY BUY BVCHELP	CITIWK CITIVR CLASS CLNMSG COLUMN COLUMN COLUMN COMPANY COMPANY CSFDEFS CTHEME DESKACT DESKACT ESKOBJ	EISMBRP EISMKCN EISMKIL EISMKMX EISMKNA EISMKUS EISMSG EISMSG EISOBJ1 EISOBJ2 EISOBJ3 EISOBJ4 EISOBJ5	FEE FEE FEE FEA FEA FEA FEA FEA FEA FEA		
Servers	BVGMSG BVHELP BVMSG CITIDAY CITIMON CITIQTR	DFTDICT DPLOG DP_M_LOG DYNATTR EIS EISILCO	EISOBJ6 EISOBJ7 EISOBJ8 EISOBJ8 EISRG EISRG EISTOOLS ETLMSGS	GN HTI HTI IIMA IIMA IIMA IIMA IIMA IIMA IIMA II		
	File name:				•	Open
OLAP Servers	Files of type:	All SAS Data Sou	irces		•	Cancel

- 2 From the SASHELP library, select the **SHOES** data source. The variables in the SHOES data source appear in the Variables pane.
- 3 Click Open. The Modify Data Source window opens.

4 On the **Variables** tab, you select the variables that you want to include in the final output. You can also specify the order of the variables.

Click to move all the variables from the **Available** list box to the **Selected** list box. Select the variables so they appear in the following order:

Available (0):	-	Selected (7 of 7):	1-	1	
Name	_	Name	Туре	Label	- 1
		🔌 Region	Char	Region	
		A Product	Char	Product	 4
		A Subsidiary	Char	Subsidiary	
		1 Stores	Num	Number of Stores	
		💱 Sales	Currency	Total Sales	
		¥ Inventory	Currency	Total Inventory	
		💱 Returns	Currency	Total Returns	
					 _
					 -
					 -
					 -
1	s	1			

Click the Filter tab to continue.

5 On the **Filter** tab, you can specify the condition that you want to use to subset the data. On this tab, you will specify two conditions and join them by an AND operator to create a filter.

Use the drop-down lists and the text box to create the following filter:

Modify Data Source - SASHELP.SHOES										
	🛛 Variables 🛛 🎖 Filter	Sutput Location								
	Filter description:									
	Product	🗾 Is equal to	 Sport Shoe 	AND 🔹 🗙						
	Sales	🔽 Is less than	▼ 10,000	AND • X						
	Display labels instead o	of variable names	Advanced Edit	Clear All						
	Show Preview		ŌK	Cancel Help						

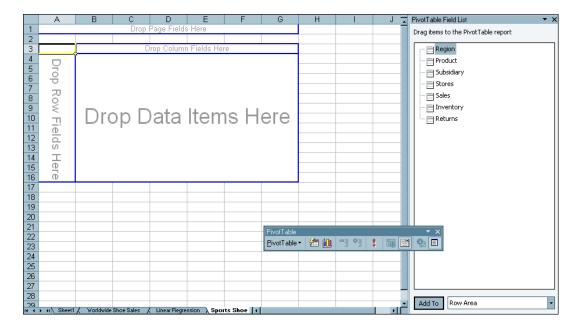
Click the **Output Location** tab to continue.

6 On the Output Location tab, you can select the location for the final output.

By default, the SAS add-in opens the PivotTable report in a new worksheet. In the Named box, delete SASHELP.SHOES and type Sport Shoe Sales Less Than 10,000.

Modify Data Source - SASHELP.SHOES								
🔚 Variables 🔀 Filter 🎽 Output Location								
Select location:								
C Existing worksheet								
Start at:	Choose							
(Examples: \$A\$1 or A1)	Why is the Choose button disabled?							
New Worksheet								
Named: Sport Shoe Sales Less Than 10,000								
C New Workbook								
Show Preview	OK Cancel Help							

Click or. The PivotTable report opens in a new worksheet.



Create a PivotTable Report for the Sport Shoe Product Line

To create a PivotTable report that analyzes the actual and predicted sales for the Sport Shoe product line, complete the following steps:

1 From the PivotTable Field List, drag and drop **Region** to the area marked **Drop Row Fields Here**.

A	В	C	D	E	F	G	Н		PivotTable Field List 🔹 💌
1	Dro	op Page Fie	elds Here						Drag items to the PivotTable report
2									
3	Dr	on C	olumr	n Fial	de Lla	aro			Region
4 Region 👻		op or	Juin		19110				- Product
5 Africa									Subsidiary
6 Asia									Stores
7 Canada									
8 Central America/Caribbean			-	الم الم					📑 Sales
9 Middle East	Dro	ם מכ)ata	Item	וS H	ere			- Inventory
10 Pacific									Returns
11 South America									
12 Western Europe									
13 Grand Total									
14									
15									
16									
17									
18									
19									
20									
21				Pivot	[abla				▼ ×
22					rable - 🍊	10. min 10			
23				Pivot	Table 🕶 🛛 🚈	1	3 1 1 1		
24									
25									
26									
27									
28									
79 H ← ► FIX Worldwide Shoe Sales X L	inear Regressio	on 🖌 Correla	tions), Sport	5 1				<u>ا</u> ۲	Add To Row Area

2 From the PivotTable Field List, drag and drop **Product** to the area marked **Drop Column Fields Here**.

	A	В	С	D	E	F	G	Н	F P	ivotTable Field List 🔹 💌
1	Drop Page F	ields Here								Drag items to the PivotTable report
2										
3		Product 🔻								Region
4	Region 🗸 🗸	Sport Shoe	Grand Total							Product
5	Africa									Subsidiary
6	Asia									
- 7 -	Canada									Stores
8	Central America/Caribbean									🚍 Sales
9	Middle East	Drop Data	Items Here							Inventory
	Pacific									Returns
11	South America									<u> </u>
	Western Europe									
13	Grand Total									
14										
15										
16										
17										
18										
19										
20										
21					PivotTable					* X
22					PivetTable	- 🦛 🗤	, mili oli	• 100		6. E
23						· 🖾 🛄	1 2 2	• IIII		
24										
25										
26										
27										
28									. I	LUZ Daw Area
29	▶ N / Worldwide Shoe Sales / L	inear Regression	/ Correlations	Sports	41			Þ	Ľ۱	Add To Row Area

3 From the PivotTable Field List, drag and drop Sales in the area marked Drop Data Items Here.

1	Drop Page F	ields Here					 	Drag items to the PivotTable report
2								
	Sum of Sales	Product 🔻						Region
4	Region 🗸		Grand Total					- 🖃 Product
5	Africa	22150	22150					Subsidiary
6	Asia	2092	2092					
7	Canada	12343	12343					🔁 Stores
8	Central America/Caribbean	8787	8787					🔁 Sales
9	Middle East	4007	4007					- Inventory
10	Pacific	13958	13958					Returns
11	South America	33061	33061					
12	Western Europe	24510	24510					
13	Grand Total	120908	120908					
14								
15								
16								
17								
18								
19								
20								
21					(no. to the			
22					PivotTabl			×
23					<u>P</u> ivotTabl	e • / 🚈 🛍	: 曝 日	
24								
25								
26								
27								
28								
29	▶ ₩ 🔏 Worldwide Shoe Sales 🔏 L	inear Regression	/ Correlations) Sports			 - -	Add To Row Area
14 4	 MA wondwide shoe sales A L 	inear negression	A Correlations	A sports	•			

The results show that three regions (Asia, Middle East, and Central America/ Caribbean) have total sport shoe sales under \$10,000. Asia has the lowest sales, so you want to drill-down on the data in the Asia region to investigate further.

Drilling Down on the Data for Asia in the PivotTable Report

To drill-down on the data for the Asia region, complete the following steps:

- In the Region column, right-click in the Asia cell. From the pop-up menu, select Group and Show Detail ➤ Show Detail. The Show Detail dialog box opens.
- 2 Select Subsidiary and click OK.

Show Detail	? ×
Choose the field containing the detail you want to show:	
Product Subsidiary Stores Sales Inventory Returns	X
	7
OK Car	ncel

	A	В	С	D	E	F	G	
1	Drop F	Page Fields Hi	ere					
2								
3	Sum of Sales		Product 💌					
4	Region 💌	Subsidiary 👻		Grand Total				
5	Africa		22150	22150				
6	Asia	Seoul	937	937				
7		Tokyo	1155	1155				
8	Asia Total		2092	2092				
9	Canada		12343	12343				
10	Central America/Caribbean		8787	8787				
11	Middle East		4007	4007				
12	Pacific		13958	13958				
13	South America		33061	33061				
14	Western Europe		24510	24510				
15	Grand Total		120908	120908				
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
_20 ⊮ ∎	▶ ₩ /∠ Linear Regression /∠ Correl	ations / Chaotti	Sports Shoe	Salac				•

The Asia row now shows the sales for the Seoul and Tokyo subsidiaries.

3 In the Subsidiary column, right-click on the **Seoul** cell. From the pop-up menu, select **Group and Show Detail** ► **Show Detail**. The Show Detail dialog box opens.



4 Select Inventory and click OK.

The Seoul row now shows the inventory cost for the Seoul subsidiary.

5 Right-click on the Tokyo cell. From the pop-up menu, select Group and Show Detail ► Show Detail.

The Tokyo row now shows the inventory cost for the Tokyo subsidiary.

	A	В	C	D	E	F	G	
1		Drop Page Fi	elds Here					
2								
3	Sum of Sales			Product 💌				
4	Region 💌 🔻	Subsidiary 🗸	Inventory 👻		Grand Total			
5	Africa			22150	22150			
6	Asia	Seoul	\$455	937	937			
7		Seoul Total	_	937	937			
8		<u>Tokγo</u>	∬ \$15,602	1155	/ 1155			
9		Tokyo Total		1155	1155			
10	Asia Total			2092	2092			
11	Canada			12343	12343			
12	Central America/Caribbean			8787	8787			
13	Middle East			4007	4007			
14	Pacific			13958	13958			
15	South America			33061	33061			
16	Western Europe			24510	24510			
17	Grand Total			120908	120908			
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29		-Nora (Charatt	Country Of a	Calcal				_
14 4	▶ µ / Linear Regression / Correl	ations 🔏 Sheet11	Sports Shoe	Sales (•	П

The results suggest the following:

- □ While the sales for the Seoul subsidiary were \$937, the cost of inventory was only \$455. This suggests that the profit for sport shoes was good. It could also suggest that demand for sport shoes exceeded the inventory that the Seoul subsidiary had in the warehouse.
- □ While the sport shoe sales for the Tokyo subsidiary were \$1,155, the cost of inventory was \$15,602. This suggests that the Tokyo subsidiary was not profitable in selling sport shoes. Then you remember that a low-price competitor recently entered the Tokyo market. The demand for sport shoes declined unexpectedly, and consequently, the Tokyo subsidiary has leftover inventory in the warehouse.

Before ordering sport shoes for either of these subsidiaries, your company will probably want to perform an in-depth market analysis into the trends in each of these markets.

Save the Workbook

To save the workbook, select **File** ► **Save**.

You have now finished analyzing the sports shoe sales in a PivotTable report. This completes the second part of the scenario.

CHAPTER 6 Ne

Next Steps: A Quick Look at Additional Features

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Working with Published Documents

What Is a Published Document?

After you have completed an analysis, you might want to share the results with others at your site. Published documents are Excel, Word, or PowerPoint documents that are saved to a common repository.

Publishing your documents to a common repository has the following benefits:

- □ The workbooks, documents, and presentations in this repository can be opened by others at your site.
- □ When you publish the workbook, document, or presentation to the metadata repository, information about all the data sources is saved to the repository. Storing this metadata in the repository enables you to perform an impact analysis on a document. Impact analysis enables you to see where a data source came from and the items that depend on this source. This analysis enables you to know how changing a data source might affect other documents.

Note: To publish a document, your site administrator must have installed SAS Web Report Studio on the same metadata server. If you cannot publish documents, contact your site administrator. \triangle

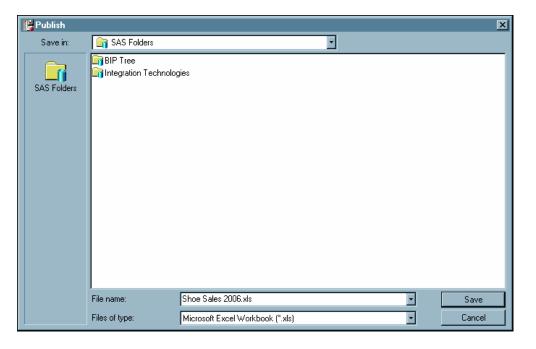
Publish the Sales Workbook

To publish the Shoe Sales 2006 workbook, complete the following steps:

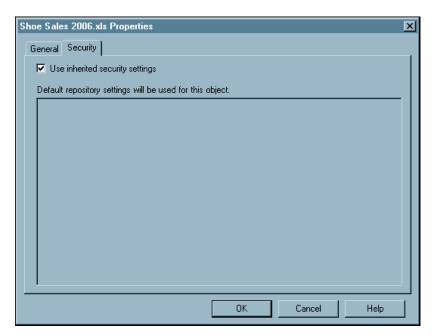
1 Select **SAS** ► **Tools** ► **Publish** from the main menu.

Note: If you have any data sources that cannot be tracked in your document, then the Verify Document for Impact Analysis dialog box opens. Click **ox** to continue. \triangle

The Publish window opens.



2 Select the location where you want to publish your document and click **Save**. The Properties dialog box for the published document opens.



3 On the **Security** tab, specify the security settings for the published document. By default, the **Use inherited security settings** check box is selected and the published document has the same settings as the parent directory.

For more information about how to set the security settings for a document or folder, click **Help** in this window.

4 Click **ok** to publish the document.

Open the Published Workbook

After a document has been published to a metadata repository, others at your site can view this document.

- For example, to open the Shoe Sales 2006 workbook, complete the following steps:
- 1 Select **SAS** ► **Reports**. The Reports window opens.

Tip: You can also open the Reports window by clicking in the SAS Data Analysis toolbar.

- 2 Select Shoe Sales 2006.xls.
- 3 Click Open.

Working with Favorites

What Is a Favorite?

If you are going to be accessing a published document frequently, then you might want to add it to your list of favorites. In the SAS Add-In for Microsoft Office, a favorite is a task, stored process, or published document that is saved to the SAS Favorites folder so that you can quickly access it later.

Add a Favorite for the Sales Workbook

To add the Shoe Sales 2006 workbook to your list of favorites, complete these steps:

- **1** Select **SAS** \triangleright **Reports**. The Reports window opens.
- 2 Select Shoe Sales 2006.xls.
- 3 In the toolbar, click . The Add to SAS Favorites window opens.

Add to SAS Fa	avorites	×
Name:	Shoe Sales 2006	ОК
Create in:	👦 My SAS Favorites Graph	Cancel
		New Folder

4 Select the folder where you want to save this workbook and click **OK**.

Run the Favorite for the Sales Workbook

To open the Shoe Sales 2006 workbook that you added to your list of favorites, select **SAS** \triangleright **SAS Favorites** \triangleright **Shoe Sales 2006**.

Tip: You can also access your favorites by clicking the down arrow next to **SAS Favorites** in the SAS Data Analysis toolbar.

Active Data:	Active Selection	🝷 💼 Analyze Data	Reports S	AS Favorites •) 🖸 🙆	B 🔁	3.

The Shoe Sales 2006 workbook opens in Excel.

Sending Results to Microsoft Word or Microsoft PowerPoint

About Sending Results from Excel

After you performed your initial analysis of the company's 2006 sales data in Excel, your managers asked you to create a short presentation for the yearly sales meeting. This presentation should include the following:

- $\hfill\square$ the total sales for each product
- \Box the average sales, inventory, and returns for each product

From Excel, you can select the results from the Shoe Sales 2006 workbook to send to Word or to PowerPoint. When you select the SAS content to send, the current results for that analysis are automatically displayed in Word or PowerPoint. To make sure that the most up-to-date results are displayed in Word or PowerPoint, you should refresh the analysis after the results are sent to these applications.

Note: You can send only SAS content from Excel to Word or PowerPoint. Any formatting or text changes that you made to the SAS content are not sent. Only the results are re-opened in Word or PowerPoint.

You cannot send a SAS data source or data in an Excel worksheet. Word and PowerPoint are unable to open and read an Excel data source. Additionally, you cannot send a PivotTable report to Word or PowerPoint. \triangle

Send Results from the Sales Workbook to Microsoft PowerPoint

To send SAS content from the Shoe Sales 2006 workbook to Microsoft PowerPoint, complete the following steps:

1 Select SAS ► Tools ► Send To ► Microsoft PowerPoint. The Send to Microsoft PowerPoint window opens and displays all the analyses in the Shoe Sales 2006 workbook.

Tip: You can use the **view** drop-down list to the view the analyses for a particular workbook or worksheet. The list of analyses in the **SAS Content** box changes based on the workbook or worksheet that you selected. For each analysis, the estimated time to send this analysis and the worksheet where this analysis is stored is listed. By default, all of the analyses are selected.

2 In the **SAS Content** box, clear the **Linear** and **Correlations** check boxes.

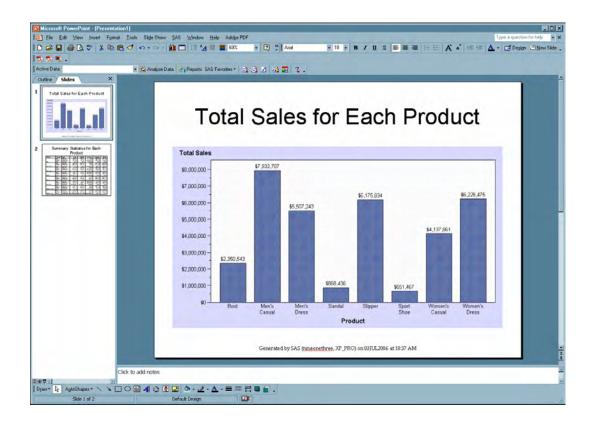
3 Select **Bar Chart** and click . This moves the results from the Bar Chart task up one position.

The Send to Microsoft PowerPoint window should appear similar to the following:

🖲 Send To Microsoft PowerPoint				×
SAS Content:	View:	Workbook (Sha	pe Sales 2006.xls)]
Name	Last Run Ti	me	Worksheet 🔺	
🗖 💹 Linear	4 seconds		Linear Regression	
Correlations	3 seconds		Correlations	
🗹 📶 Bar Chart	5 seconds		Total Sales for Each Pr	
Σ Summary Statistics	2 seconds		Summary Statistics	
Select All				
Send To: 💿 New presentation:		All results in one Po	werPoint presentation	-
C Active presentation:				-
Allow results to be refreshed in Microso	oft PowerPoir	nt.		
		Send	Cancel Hel	

4 Click Send.

The current results automatically open in PowerPoint. You can now use the functionality in PowerPoint to customize these slides and create your presentation.



Refresh Your Results in PowerPoint

To make sure that the most up-to-date results are displayed in Word or PowerPoint, you should refresh the analysis after the results are opened in Word or PowerPoint. You also might want to refresh your results if the data source for the analysis has been updated or modified since you last ran the analysis.

To refresh your results in PowerPoint, complete the following steps:

1 Select SAS ▶ Refresh Multiple. The Refresh Multiple window opens.

Name	Last Run Time	Slide 🔺	{
☑ <mark>∭</mark> Bar Chart ☑ Σ Summary Statistics	5 seconds 2 seconds	1	1
 Select All Refresh items in order (Last rui 	n time for selected items: 7 secor	ds)	

2 Click Refresh.

The SAS add-in refreshes all of the analyses in your presentation.

Tip: You can also use the Refresh Multiple window to select which analysis to refresh. For each analysis, the estimated time to run this analysis and the slide number of this content is listed. By default, all of the analyses are refreshed.



Recommended Reading

Recommended Reading 53

Recommended Reading

Here is the recommended reading list for this title:

- □ the online Help for the SAS Add-In 2.1 for Microsoft Office
- □ SAS offers instructor-led training and self-paced e-learning courses to help you get started with the SAS add-in, learn how the SAS add-in works with the other products in the SAS Enterprise Intelligence Platform, and learn how to run stored processes in the SAS add-in. For more information about the courses available, see support.sas.com/training.

For a complete list of SAS publications, see the current SAS Publishing Catalog. To order the most current publications or to receive a free copy of the catalog, contact a SAS representative at

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Customers outside the United States should contact their local SAS office.

Glossary

active data source

an Excel data source or a SAS data source that you specify to run all tasks on. Specifying an active data source enables you to perform multiple analyses on the same data source without having to specify that data source each time you run a task. See also SAS data source, task.

analysis

a statistical calculation that is generated by either a task or a stored process. See also task, stored process.

default metadata server

the metadata server that you will be automatically connected to when you start Microsoft Excel, Microsoft Word, or Microsoft PowerPoint. See also metadata, metadata server.

default server

the SAS server that will automatically be used to execute any tasks that use a Microsoft Excel worksheet or local data as the data source, unless an active data source that exists on a different server has been specified. See also active data source.

execution server

the server where the data is refreshed or the analysis is run.

favorite

in the SAS Add-In for Microsoft Office, a task or stored process that is saved to the My SAS Favorites folder so that you can quickly access it later.

filter

a program or section of a program that processes or forwards only the subset of a data source that meets specific criteria.

impact analysis

a search that enables you to track data sources and stored processes to see where they are used. For example, you can use a tool like SAS Data Integration Studio to determine what Microsoft Office documents are using a particular data source. This helps you to understand what items will be impacted if you delete or rename that data source.

label

text that describes the contents of a column in a Microsoft Excel file or of a variable in a SAS data set.

metadata

a description or definition of data or information.

metadata configuration file

a file that enables users to specify which SAS metadata server they want to connect to by default. The connection to the metadata server enables users to access and run stored processes and to access SAS data sources on remote computers.

metadata repository

a collection of related metadata objects, such as the metadata for a set of tables and columns that are maintained by an application.

metadata server

a server that stores information about servers, users, and stored processes and that provides this information to one or more client applications.

observation

a row in a SAS data set. All of the data values in an observation are associated with a single entity such as a customer or a state. Each observation contains either one data value or a missing-value indicator for each variable.

PivotTable

an interactive table that analyzes and summarizes data in Microsoft Excel. You can rotate the rows and columns in the table to see different views of the data.

published document

a Microsoft Office document that is saved to a central repository. This workbook, document, or presentation can be opened with the appropriate Microsoft Office application.

SAS data source

a data file that contains SAS data. See also active data source.

SAS library

a collection of one or more files that are recognized by SAS and that are referenced and stored as a unit. Each file is a member of the library.

stored process

a SAS program that is stored on a server and which can be executed as requested by client applications. Stored processes are often used to create reports.

task

a program that generates and executes SAS programming code that performs a particular type of statistical analysis on the active data source that you have specified. A wizard prompts you for the information that is required in order to execute the task. See also analysis, active data source.

variable

a column in a SAS data set or in a SAS data view. The data values for each variable describe a single characteristic for all observations.

Your Turn

If you have comments or suggestions about SAS Add-In 2.1 for Microsoft Office: Getting Started with Data Analysis, please send them to us on a photocopy of this page, or send us electronic mail.

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