InterSystems® Caché

Using the DeepSee Analyzer

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About This Book

This book describes, to users and developers, how to create DeepSee pivot tables and how to use the Analyzer. It includes the following chapters:

- Introduction to the Analyzer

- Creating Pivot Tables

- Filtering Pivot Tables

- Defining Calculated Elements

- Defining and Using Pivot Variables

- Customizing Pivot Tables

- Working with Pivot Tables

- Performing Ad Hoc Analysis

For a detailed outline, see the table of contents.

The other user books for DeepSee are as follows:

- *Creating DeepSee Dashboards* describes how to create and modify dashboards in DeepSee.

- *DeepSee End User Guide* describes how to use the DeepSee User Portal and dashboards.

The following books are primarily for developers who work with DeepSee:

- *Getting Started with DeepSee* briefly introduces DeepSee and the tools that it provides.

- *DeepSee Developer Tutorial* guides developers through the process of creating a sample that consists of a cube, subject areas, pivot tables, and dashboards.

- *DeepSee Implementation Guide* describes how to implement DeepSee, apart from creating the model.

- *Defining DeepSee Models* describes how to define the basic elements used in DeepSee queries: cubes and subject areas. It also describes how to define listing groups. It also describes how to define listing groups.

- *Advanced DeepSee Modeling Guide* describes how to use the more advanced and less common DeepSee modeling features: computed dimensions, unstructured data in cubes, compound cubes, cube relationships, term lists, quality measures, KPIs, plugins, and other special options.

- *Using MDX with DeepSee* introduces MDX and describes how to write MDX queries for use with DeepSee cubes.

- *DeepSee MDX Reference* provides reference information on MDX as supported by DeepSee.

- *Tools for Creating DeepSee Web Clients* provides information on the DeepSee JavaScript and REST APIs, which you can use to create web clients for your DeepSee applications.

Also see the article *Using PMML Models in Caché*.

For general information, see the *InterSystems Documentation Guide*.

1

Introduction to the Analyzer

This chapter introduces the DeepSee Analyzer. It discusses the following topics:

- Introduction

- How to access the Analyzer

- Orientation to the Analyzer

- How to display a pivot table

- How to exit the Analyzer

- Location of pivot table definitions

Be sure to consult the online *InterSystems Supported Platforms* document for this release for information on system requirements for DeepSee.

You can access the Analyzer from the InterSystems launcher or from the DeepSee User Portal; for information on the Portal, see the *DeepSee End User Guide*.

1.1 Introduction

The Analyzer enables you to create pivot tables, which display aggregated data. Each pivot table is based upon a subject area or a cube. (In the Analyzer, the terms *subject area* and *cube* are equivalent to each other; this book uses the term *subject area*.) When you access the Analyzer, you must choose the subject area to work with. The Analyzer then displays the elements defined in that subject area, which you drag and drop to create pivot tables.

Pivot tables are central to InterSystems DeepSee; they select and aggregate data. The following figure shows an example pivot table that shows the number of patients and the average allergy count per patient, grouped by age and gender.

Age Group		Female		Male	
		Patient Count	Avg Allergy Count	Patient Count	Avg Allergy Count
0 to 29	0 to 9	680	0.60	750	0.63
	10 to 19	756	0.66	769	0.69
	20 to 29	661	0.64	648	0.61
30 to 59	30 to 39	815	0.63	735	0.65
	40 to 49	728	0.68	741	0.61
	50 to 59	586	0.58	552	0.62
60+	60 to 69	397	0.64	319	0.68
	70 to 79	304	0.58	242	0.56
	80+	217	0.57	100	0.66

A *level* is used to group the source data. A level has *members*. Each member, in turn, corresponds to a specific set of records in the source data. For example, the `Age Group` level has the members `0-29`, `30-39`, and `60+`. The `Gender` level has the members `Female` and `Male`.

A *measure* is a value displayed in the body of the pivot table; it is based on values in the source data. For a given context, a measure aggregates the values for all applicable source records and represents them with a single value. For example, the measure `Patient Count` is the number of patients, and the measure `Avg Allergy Count` is the average number of allergies per patient.

The preceding example shows a preview of a pivot table within the Analyzer, which provides a large set of tools for modifying the pivot table, exporting to Microsoft Excel, toggling to a chart format, and so on.

1.2 Accessing the Analyzer

To access the Analyzer:

1. Click the InterSystems Launcher and then click **Management Portal**.

    Depending on your security, you may be prompted to log in with a Caché username and password.

2. Switch to the appropriate namespace as follows:

    a. Click **Switch**.

    b. Click the namespace.

    c. Click **OK**.

3. Select **DeepSee** > **Analyzer**.

    If you see the message `Select a Subject Area to Display`, do the following:

    a. Click the Change button ⬡ or click the **Select Subject Area** link.

    b. Click the name of the subject area.

    c. Click **OK**.

Or, you can access the Analyzer from the DeepSee User Portal, as follows:

• Click **Menu > Analyzer**.

- Click the **<** button at the left side of the User Portal, click **Add**, and then click **Add Pivot**.

- Click the name of a pivot table in the User Portal. This opens that pivot table in edit mode, within the Analyzer.

1.2.1 Accessing the Mini Analyzer

To access the Mini Analyzer, you must first display a suitable dashboard. Not all dashboards provide access to the Mini Analyzer.

If a dashboard displays the Mini Analyzer button in a widget, click that button, and the system then opens the current pivot table in the Mini Analyzer.

The Mini Analyzer includes only the options that let you make local changes to the pivot table as displayed in this widget. The changes do not affect other widgets, other dashboards, or other users.

1.3 Orientation to the Analyzer and Mini Analyzer

This section provides an orientation to the areas of the Analyzer and Mini Analyzer. First, consider the upper part of the Analyzer page (which is not included in the Mini Analyzer):
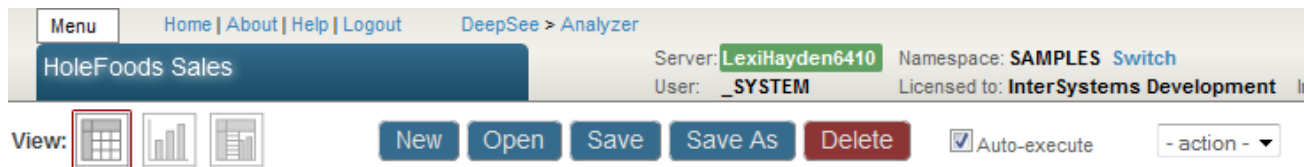
The key options here are as follows:

- **Menu** — This drop-down menu provides options to open and save pivot tables.

- **Home** — This link accesses the User Portal.

- **DeepSee** — This link accesses other DeepSee tools.

- **Analyzer** — This link redisplays the Analyzer. This is useful if there have been changes to the definition of the subject area.

- **Switch** — This link (next to the namespace name) lets you switch to another Caché namespace.

- **View** — These buttons switch the pivot table display to a chart format or to a table-and-chart format.

- **New** — This button lets you create a new pivot table.

- **Open**, **Save**, and **Save As** — These buttons let you open and save pivot tables.

- **Delete** — This button lets you delete the current pivot table.

- **Auto-execute** — This check box lets you control whether DeepSee automatically executes the pivot table.

- **actions** — This drop-down list lets you perform actions. This is included only if the cube defines actions. Note that when you invoke actions this way, DeepSee supports only a subset of the only client-side commands; other client-side commands are ignored. For details, see the *DeepSee Implementation Guide*.

The title below **Menu** displays the name of the currently selected subject area (which is `HoleFoods Sales` in this case) or the pivot table that you currently editing, if any.

The rest of the page is visible in both the Analyzer and the Mini Analyzer. The following subsections discuss the Model Contents pane, the Pivot Builder area, and the Pivot Preview area. The final subsection discusses how the Mini Analyzer is different from the full Analyzer.

1.3.1 Model Contents Pane

Both the Analyzer and the Mini Analyzer include the *Model Contents* pane on the left. This area lists the contents of the subject area that you are currently viewing:
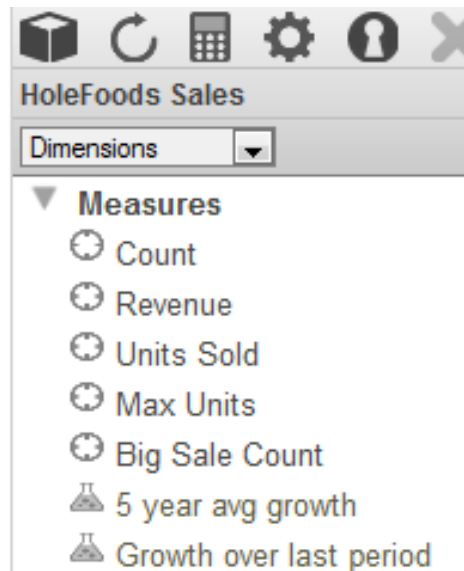
This area lists the contents of the subject area that you are currently viewing. The next chapter discusses this area in more detail.

Tip: During development, you may find it necessary to reload the model, if you have made changes in the Architect or Studio. To reload the model, click the Refresh button in this area. Note that this button does not rerun the pivot table; it affects only the model as shown in this area.

You can resize this area. To do so, drag the vertical divider on the right edge of this area.

1.3.2 Pivot Builder Area

To the right of the Model Contents pane, both the Analyzer and the Mini Analyzer include the *Pivot Builder* area, where you define a pivot table:
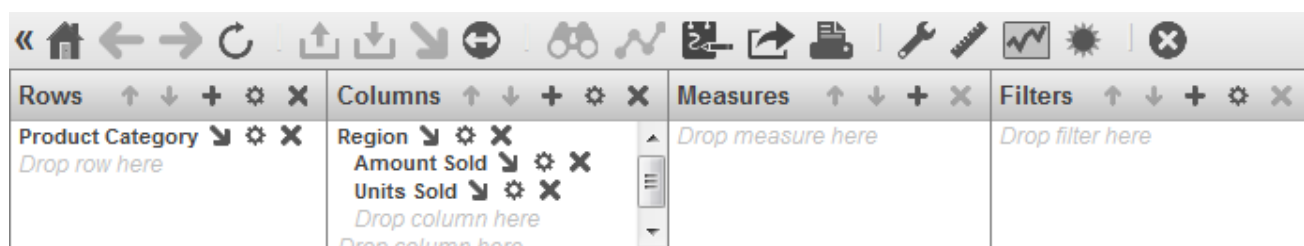
You can resize this area. To do so, drag the horizontal divider on the bottom edge of this area. You can also resize the four boxes shown in this area; to do so, drag the divider between boxes.

1.3.3 Pivot Preview Area

Both the Analyzer and the Mini Analyzer include the *Pivot Preview* area, which displays a preview of the actual pivot table:

Product Category	Asia Amount Sold	Units Sold	Europe Amount Sold	Units Sold	N. America Amount Sold	Units Sold	S. America Amount Sold	Units Sold
Candy	59.13	56	22.21	20	54.88	50	4.26	
Cereal	35.95	10	11.06	3	11.85	3	7.90	
Dairy			13.10	3	28.57	5	23.80	
Fruit	491.35	57	387.77	53	403.18	49	269.42	
Pasta	445.52	147	805.39	138	481.38	131	136.30	
Seafood	465.89	21	227.21	10	860.67	41	571.47	
Snack	2,385.20	221	1,049.40	127	1,842.57	152	671.49	
Vegetable	598.28	112	355.98	70	425.52	85	177.27	

The bottom area looks like this:

Cells: 36 Total: **10,119.03**

The **Cells** number displays the number of cells that are currently selected (or the total number of cells on the page if there is no selection). The **Total** number displays the total value of all the selected cells (or of all the cells on the page if there is no selection).

If there is too much data to display on the screen, the lower right corner displays buttons that you can use to page through the results.

You can resize this area. To do so, drag the horizontal divider on the top edge of this area.

1.3.4 Mini Analyzer Differences

The Mini Analyzer is similar to the full Analyzer but has two key differences:

- The Mini Analyzer does not provide options that enable you to create a *new* pivot table.

  That is, you can only make changes to the currently displayed pivot table.

- The changes are visible only to yourself. Other users are unaffected.

For information on accessing the Mini Analyzer, see the previous topic.

1.4 Displaying a Pivot Table

To display an existing pivot table, do either of the following:

- Click **Open**, expand folders as needed, select a pivot table, and click **OK**.

- Select **Pivots** in the Model Contents area. Then expand folders as needed and select a pivot table.

In most cases, DeepSee immediately runs the query defined by the pivot table and then displays the results. If the **Auto-execute** option is off, however, DeepSee does not do so. In such cases, click the Refresh button ↻ in the Pivot Builder area. DeepSee then runs the query and displays the table.

1.5 Exiting the Analyzer or Mini Analyzer

To exit the Analyzer and return to the User Portal, click **Home**. Any unsaved changes are discarded.

To exit the Mini Analyzer and return to the dashboard from which you started, click either **OK** or **Cancel**. The **OK** option saves your changes, and the **Cancel** option discards them. Or click **Reset** to remove any changes created in the Mini Analyzer, and then click **OK**.

1.6 Location of Pivot Table Definitions

When you create a pivot table in the Analyzer, its definition is visible in the Studio Workspace window, within the **Other** folder. For example:
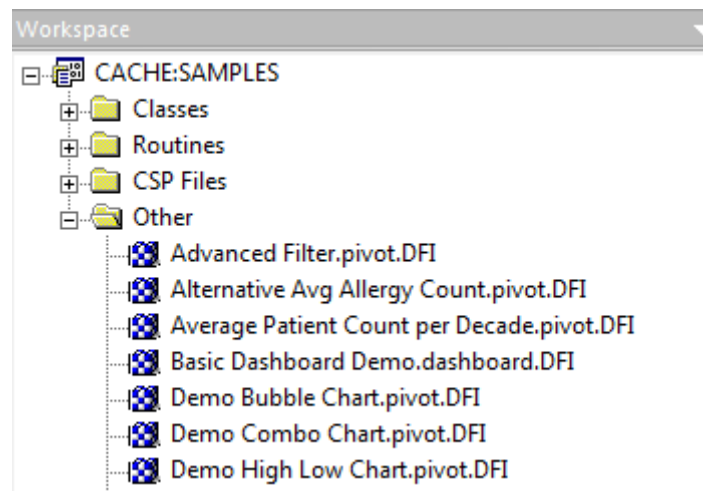
A pivot table definition is not a class definition but can be copied and pasted into a special container class if needed; this container class can contain multiple pivot tables and other items. For details, see "Packaging DeepSee Elements into Classes" in the *DeepSee Implementation Guide*.

2
Creating Pivot Tables

This chapter presents basic information on creating pivot tables. It discusses the following topics:

- The autosave feature

- How to select a subject area to work in

- Orientation to a subject area

- How to create a pivot table

- How to specify the rows in a pivot table

- How to specify the columns in a pivot table

- How to display measures

- How to display properties

- How to transpose a pivot table

- How to change the order of items

- How to copy and paste items

- How to add a summary row or column

- How to clear the autosave state of a pivot table

- How to save a pivot table

2.1 Introduction to the Autosave Feature

DeepSee provides an optional autosave feature, which can automatically save the state of the Analyzer for each user, for each pivot table. If the autosave feature is enabled for the Analyzer:

- When you access the Analyzer, DeepSee displays that user interface as you last saw it.

- When you display a pivot table in the Analyzer, DeepSee displays that pivot table as you last saw it.

For information on this option, see "Specifying Basic Settings" in the *DeepSee Implementation Guide*. Note that there is a separate autosave feature for the User Portal.

2.2 Selecting a Subject Area

A subject area provides the elements that you use as the basis of any pivot table. To select the subject area to use:

1. Click the Change button ![cube icon] or click the **Select Subject Area** link.

2. Click the name of the subject area.

3. Click **OK**.

2.3 Getting Familiar with a Subject Area

The Model Contents area lists the contents of the subject area that you are currently viewing. For example, this area might look like this initially:
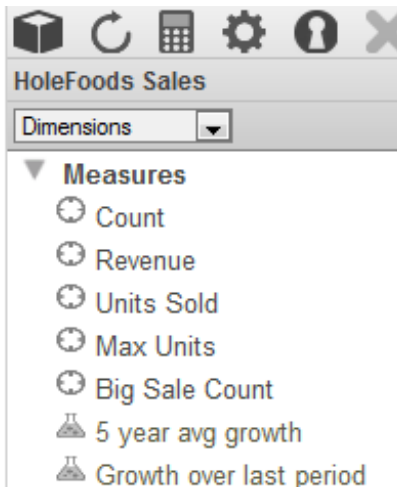
If you have not worked with the current subject area before, it is useful to examine its contents. First, use the drop-down list to select the kind of item to display in this area. Select one of the following:

*   **Dimensions** — Select this to display the basic model defined in this subject area. In this case, the Model Viewer can display the following sections:

    –   Measures

    –   Dimensions

    –   Pivot Variables

    –   Plug-ins

    –   Named Sets

    –   Named Filters

    –   Calculated Members

*   **Pivots** — Select this to display any pivot tables defined in this subject area.

*   **Quality Measures** — Select this to display any quality measures available in this subject area.

- **Detail Listings** — Select this to display any detail listings defined in this subject area.

The main purpose of the Model Content area is to enable you to create pivot tables. To do this, you generally drag and drop items into the Pivot Builder area on the right, as described in the next section.

Tip: For most items, if you hover the cursor over the name of an item in the Model Content area, the system displays a tooltip that shows the description of the item, if any.

2.3.1 Measures

To display a list of measures, select **Dimensions** from the drop-down list in the Model Contents area. Then expand the **Measures** folder. This folder lists all measures in the subject area. For example:
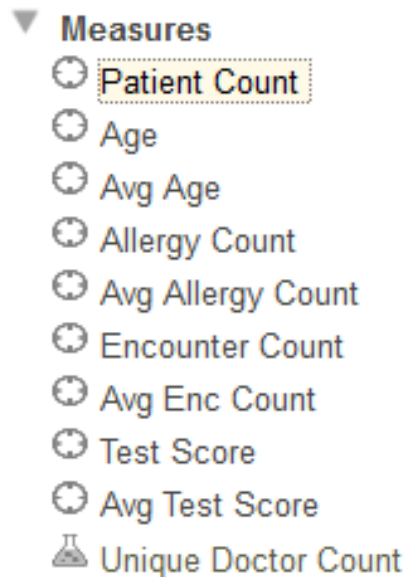
You can have two types of measures, indicated by icons as follows:

⊕	Standard measures
⚗	*Calculated measures*, which are defined in terms of other measures

2.3.2 Dimensions

To display a list of dimensions, select **Dimensions** from the drop-down list in the Model Contents area. Then expand the **Dimensions** folder. This folder lists the dimensions and the levels, members, and properties that they contain; it might also list related cubes, with their dimensions, levels, and so on.

Click the triangle next to any dimension name to expand it. A dimension contains at least one level and may also include a special member known as the *All member*. In the following example, the `AgeD` dimension includes an All member named `All Patients`, as well as the levels `Age Group`, `Age Bucket`, and `Age`.
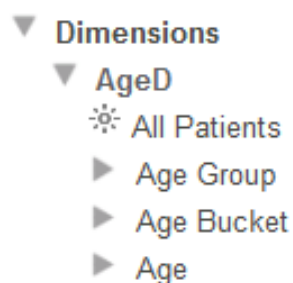
2.3.2.1 Hierarchies

Each dimension also includes at least one hierarchy, which is the actual container for levels. The following shows an example (a modified version of the Patients cube). Here `H1` is a hierarchy name.

`
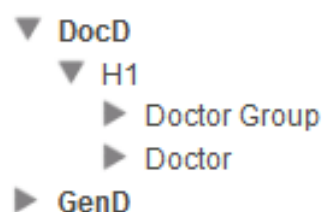
By default, the hierarchy names are not shown unless a dimension contains multiple hierarchies. Alternatively, a dimension can be defined so that its hierarchy names are always shown or never shown.

In the Patients cube, each dimension contains only one hierarchy, so the hierarchy names are not shown. Hierarchies are purely informational; you cannot drag and drop them as you can with the other items in the Model Contents pane.

2.3.2.2 Level Members and Properties

If you expand a level, the list displays the members of that level. For example:
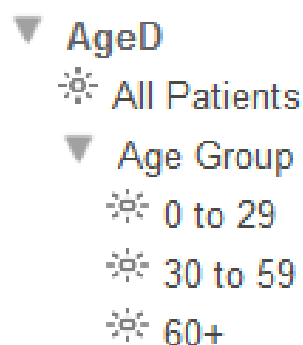
If a level also includes *properties*, this area shows the property names with a different icon. For example, the `City` level includes the `Population` and `Principal Export` properties:

```
▼ HomeD
   ▶ ZIP
   ▼ City
      ◈ Population
      ◈ Principal Export
      ☀ Cedar Falls
      ☀ Centerville
      ☀ Cypress
      ☀ Elm Heights
```
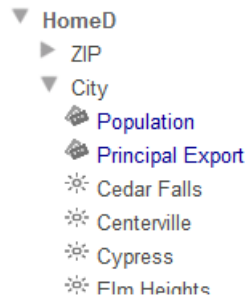
Variations for Data Levels with Many Members

If a data level contains more than 500 members but fewer than 10000 members, this area displays any property names, followed by subfolders that contain the members in groups of 100. For example (not as contained in SAMPLES):

```
▼ DocD
   ▶ Doctor Group
   ▼ Doctor
      ◈ Name
      ◈ Specialty
      ▶ #1 - #100
      ▶ #101 - #200
      ▶ #201 - #300
      ▶ #301 - #400
```

In this case, DeepSee does not access the member names until you expand one of these subfolders. Thus it is possible to see and use the properties without waiting for DeepSee to access all the member names.

If a level contains 10000 members or more, this area displays only the property names, if any, of the level.

The preceding discussion applies only to data levels. In contrast, time levels are always displayed in the same way.

2.3.2.3 Related Cubes

The **Dimensions** folder might also list related cubes, which it shows in bold italics. If you expand a related cube, you can access the dimensions, levels (and possibly hierarchies) of the other cube, as follows:

```
▼ Dimensions
   ▶ DateD
   ▼ Cities
      ▼ CitiesD
         ☀ All Locations
         ▶ ZIP
         ▶ City
   ▶ Doctors
```
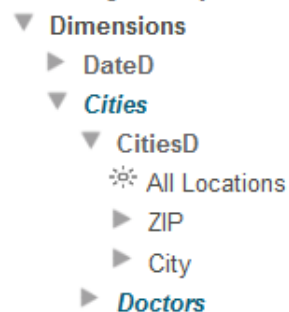
2.3.3 Pivot Variables

To display a list of pivot variables, select **Dimensions** from the drop-down list in the Model Contents area. Then expand the **Pivot Variables** folder. This folder (if included) lists any *pivot variables* in the subject area. For example:

Unlike most other elements in the **Dimensions** section, pivot variables are defined in the Analyzer; see "Defining and Using Pivot Variables," later in this book.

2.3.4 Plug-ins

To display a list of plugins, select **Dimensions** from the drop-down list in the Model Contents area. Then expand the **Plug-ins** folder. This folder (if included) lists any *plugins* in the subject area. For example:

A plugin contains one or more properties, each of which computes a value. This plugin contains two properties. Plugin properties can be used in the same way as measures.

2.3.5 Named Sets

To display a list of named sets, select **Dimensions** from the drop-down list in the Model Contents area. Then expand the **Named Sets** folder. This folder (if included) lists any *named sets* in the subject area. For example:
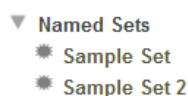
A set contains one or more items; typically each item is a member of a level defined elsewhere.

2.3.6 Named Filters

To display a list of named filters, select **Dimensions** from the drop-down list in the Model Contents area. Then expand the **Named Filters** folder. This folder (if included) lists any named filters in the subject area. For example:
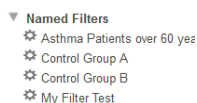

Unlike most other elements in the **Dimensions** section, named filters are defined in the Analyzer; see "Defining Named Filters," later in this book.

2.3.7 Calculated Members

At the bottom of **Dimensions** section, the Model Contents pane shows any special dimensions that contain *calculated members*. These special dimensions just include members, not hierarchies or levels. For example:
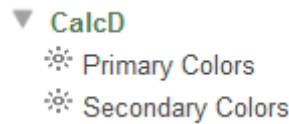
Calculated members are typically combinations of other members. For example, the `Primary Colors` member is a combination of the `Red`, `Yellow`, and `Blue` members of the `Favorite Color` level.

Other dimensions in your model might also include calculated members. If so, the member is displayed in that dimension with a different icon than other members. For example, if we redefined the two calculated members to move them to the `ColorD` dimension, we would see the following for that dimension:
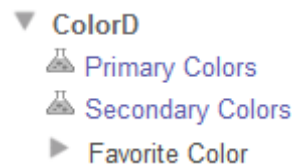
Unlike most other elements in the **Dimensions** section, calculated members can be defined in the Analyzer; see "Defining Calculated Elements," later in this book.

2.3.8 Pivot Tables

To display a list of pivot tables, select **Pivots** from the drop-down list in the Model Contents area. Then expand the **Pivots** folder. This folder (if included) lists any pivot tables defined in the subject area. For example:
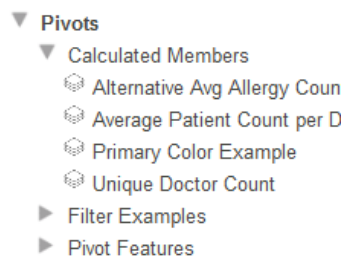
To use this area, expand folders and needed and click a pivot table name. The Pivot Preview area then displays that pivot table.

2.3.9 Quality Measures

To display a list of quality measures, select **Quality Measures** from the drop-down list in the Model Contents area. Then expand the **Quality Measures** folder. This folder (if included) lists any *quality measures* in the subject area. For example:
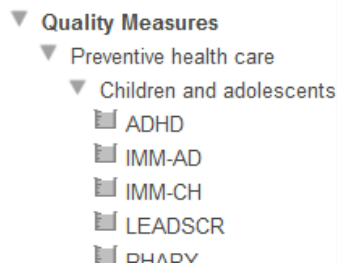
Quality measures can be used in the same way as measures.

2.3.10 Detail Listings

To display a list of detail listings, select **Detail Listings** from the drop-down list in the Model Contents area. This area then lists any detail listings defined in the subject area. For example:

For information on using this area, see "Displaying a Detail Listing," later in this book.

2.4 Creating a Pivot Table

To create a pivot table:

1. Click **New**.

2. In the Model Contents pane, select either **Dimensions** or **Quality Measures**.

3. Drag and drop items from the Model Contents pane to the Pivot Builder area, as described in the rest of this chapter.

    For example:

    a. Expand `DiagD` in the Model Contents pane.

    b. Drag and drop `Diagnoses` to **Rows**.

        Or double-click `Diagnoses`.

        Or click `Diagnoses` and then click the plus sign in the header of the **Rows** box.

    c. Drag and drop `Patient Count` to **Measures**.

        Or double-click this measure.

        Or click `Patient Count` and then click the plus sign in the header of the **Measures** box.

    d. Drag and drop `Avg Allergy Count` to **Measures**.

    e. Expand `AgeD` in the Model Contents pane.

    f. Drag and drop `All Patients` to **Rows**, below `Diagnoses`.

4. Repeat steps 2 and 3 as necessary.

   Each time you make a change, the Analyzer reruns the pivot table and shows the results in the Pivot Preview area. For the preceding steps, the final result might be as follows (depending on the values in your data):

5. Click **Save**.

   The system displays a dialog box where you specify the pivot table name.

6. For **Pivot Name**, specify the name of the pivot table.

   Also see "Preparing for Folder Item Localization" in the *DeepSee Implementation Guide*.

   Note that this complete string is used (along with **Folder**) as the logical name of the pivot table; DeepSee displays this logical name when you use the **Save As** option, for example.

7. Optionally specify other values as follows:

   • **Folder** — Type a folder name or select an existing folder.

     Also see "Preparing for Folder Item Localization" in the *DeepSee Implementation Guide*.

     Note that if you specify a folder name that starts with a *single* dollar sign, the pivot table definition is accessible only in Studio.

   • **Public** — Specifies whether this pivot table is displayed in the User Portal main area.

     Important: This option does not control access to the pivot table. Access is controlled instead by the **Pivot Owner** and **Access Resource** options, discussed later in this list.

     Note that even if the pivot table is not marked as public, you can access it in the Analyzer via **Open**. Also, you can find it in the User Portal by using the Find option. See the chapter "Introduction to the User Portal" in the *DeepSee End User Guide*.

   • **Locked** — Select this check box to temporarily prevent changes to this pivot table. If you select this option, you must clear the **Locked** check box before any changes can be made to it.

   • **Pivot Owner** — Optionally specifies the Caché user who owns this pivot table. If a pivot table has an owner, then only the owner can specify the **Access Resource** value for the pivot table; see the next item.

   • **Access Resource** — Optionally specifies the Caché resource that is used to control access to this pivot table. If you specify this, also specify **Pivot Owner**.

     See "Visibility of Folders and Folder Items," in the chapter "Using the Portal Features" in the *DeepSee End User Guide*.

   • **Description** — Type a description for this pivot table.

- **Keywords** — Type keywords to categorize this pivot table, one keyword (or phrase) per line.

  These keywords are displayed in the User Portal in List View.

- **Category** — Specify the category to which this item belongs.

  Categories control how the items are grouped in the User Portal in Covers View.

8. Click **OK**.

2.5 Specifying the Rows in a Pivot Table

To specify the rows of the pivot table, you drag and drop items of items of various types from the Model Contents pane into different areas of the **Rows** box. This section discusses the items that can be used as rows (and shows samples) and then discusses the details for how to specify the rows.

2.5.1 Items That Can Be Used in the Rows Box

You can use any combination of the following items in the **Rows** box:

- Levels. This is the most common scenario. When you drag and drop a level to **Rows**, the query creates a set of all the members of that level, and uses those members for rows. For example:

Rows	Pivot Table
`Allergies` level	

- Members, including calculated members. You can drag and drop individual members to **Rows**. For example:

Rows	Pivot Table
`10 to 19` member of `Age Bucket` level `Green` member of `Favorite Color` level `asthma` member of `Allergies` level	

Important: To drag and drop a member, you must click the member name rather than the icon to its left.

Note that you can hide the row caption; see "Specifying Pivot Options," later in this book. This option is especially useful when you drag and drop individual members, because the name of the first member is also used as the caption for the rows, and this is not usually a suitable caption.

- Dimensions, including calculated dimensions. If you drag and drop a dimension to **Rows**, the query uses (as rows) all members of the first level of the first hierarchy of that dimension. For example:

Rows	Pivot Table
AgeD dimension	

- Named sets. If you drag and drop a named set to **Rows**, the query uses each item in that set as a separate row. For example:

Rows	Pivot Table
Sample Set 2	

- Measures. If you drag and drop a measure to **Rows**, the system uses that measure as a row. For example:

Rows	Pivot Table
Avg Age measure Avg Allergy Count measure Avg Test Score measure	

If there is only one column (as in the case shown here), the data shown for the measure is the aggregate value for that measure across all records (or across all the included records, if the pivot table includes a filter).

If the pivot table includes multiple columns that correspond to members, then the data in any column is the value for that measure for that member.

If the pivot table includes columns that correspond to measures, the column definition takes precedence and the value shown is determined by the measure used in the column.

Note that you can hide the row caption; see "Specifying Pivot Options," later in this book. This option is especially useful when you drag and drop measures to **Rows**, because the name of the first measure is also used as the caption for the rows, and this is not usually a suitable caption.

- Level properties. See "Displaying Properties in a Pivot Table."

- Pivot variables (or, more precisely, expression pivot variables). See "Defining and Using Expression Pivot Variables," later in this book.

- Plugins (or, more precisely, properties within plugins). For example:

Rows	Pivot Table
`PatientCount` plugin property `HighScoreCount` plugin property	

- Quality measures.

You can also double-click a level, dimension, member, or named set in the Model Contents pane. If you do, the system removes any items currently in **Rows** and replaces them with what you double-clicked.

If hierarchies are displayed in the Model Contents pane, they are for informational purposes only; you cannot drag and drop them.

2.5.2 Specifying the Rows

To specify the rows in the pivot table, drag and drop items from the Model Contents pane to the **Drop row here** label in the **Rows** box. When you do so, the **Rows** box looks like this:

Now there are three places here into which you can drag and drop additional items:

- If you drag and drop onto the bold item label (`Age Group` in this case), the Analyzer replaces the existing item with the new one.

- If you drag and drop onto **Drop row here**, the Analyzer adds additional rows to the table. For example:

Rows	Pivot Table

Note that you can hide the row caption; see "Specifying Pivot Options," later in this book.

- If you drag and drop onto the Add Breakout button after the bold item label, the Analyzer subdivides the existing rows. For example:

Notice that now there are *two* labels called **Drop row here**. The non-indented one affects the outermost grouping. The indented one affects the inner grouping.

When you nest levels this way, DeepSee initially returns only the first 2000 combinations of the levels. If there are more than 2000 rows, DeepSee displays the **Show All** button at the bottom of the pivot preview area. If you click this button, DeepSee returns all the combinations, and you can page through them.

To remove an item from the rows, click the X button to the right of its label in the **Rows** box.

For information on the Advanced Options button ⚙, see "Customizing a Pivot Table Items," later in this book.

Note: If you use calculated members for rows, they are always shown *after* the other members.

2.6 Specifying the Columns in a Pivot Table

The columns of a pivot table are controlled by **Measures** and by **Columns**:

*   For the **Columns** box, you can drag and drop any of the items that you can use for **Rows**. See the preceding section for information on the items and details on the options.

*   You can drag and drop only measures from the Model Contents pane to **Measures**.

Measures are always used as the innermost grouping. For example, consider the following pivot table configuration:

This pivot table looks as follows:

Note: DeepSee does not display more than 100 columns.

2.7 Displaying Measures in a Pivot Table

By default, the Analyzer displays the count of lowest-level records. For example:

	All
Count	10,000

Within the body of the pivot table, you can instead display one or more measures, quality measures, or plugin properties, in any combination. Note that you can use measures, quality measures, and plugin properties (usually just referred to as plugins) interchangeably. This section uses the generic term *measures* to refer to all of these items.

To display a measure as a column, drag and drop it into the **Measures** box or the **Columns** box. For example:

Measures	Pivot Table
`Avg Age` measure `Avg Test Score` measure	<table><tr><td>Avg Age</td><td>Avg Test Score</td></tr><tr><td>36.00</td><td>74.44</td></tr></table>

Or double-click the measure in the Model Contents pane.

Or drag and drop a measure to the **Rows** box, as discussed earlier. Note that if you display a measure as a row and another measure as a column, DeepSee displays only the value of the measure that is used as a column.

The following subsections discuss additional topics:

- Pivot tables with one measure

- Pivot tables with multiple measures

- How to control the display of the measure headings

2.7.1 Pivot Tables with One Measure

To display measures as columns, you can drag and drop them to the **Measures** box or to the **Columns** box. If the pivot table has multiple measures, the resulting pivot table (and underlying MDX query) is identical with either technique. If the pivot table has only a single measure, however, the two techniques generate slightly different MDX queries:

Technique	Comments
Drag and drop the measure to the **Measures** box	The underlying MDX query uses the measure in its filter clause. This means that this pivot table *cannot* be displayed in a scorecard (on a dashboard).
Drag and drop the measure to the **Columns** box	The underlying MDX query uses the measure as a column. This pivot table can be displayed in a scorecard.

2.7.2 Pivot Tables with Multiple Measures

If you drag and drop multiple measures to the **Measures** box, you can specify whether the measures are used as columns (as in the default case) or as rows. To do so, click the Options button ✿ in the **Measures** box. DeepSee displays a dialog box; for this discussion, use the options in the section **Place measures on**. Choose one of the following:

- **Rows** — Displays the measures as rows.

- **Columns** — Displays the measures as columns.

Then click **OK**.

This option makes it easier to redefine complex pivot tables, because you can rearrange the **Rows** box or **Columns** box and leave the measures alone.

For example, consider the following pivot table definition:

Rows ↑ ↓ ✚ ⚙ ✖	Columns ↑ ↓ ✚ ⚙ ✖	Measures ↑ ↓ ✚ ⚙ ✖
Decade ↘ ⚙ ✖	Gender ↘ ⚙ ✖	Patient Count ⚙ ✖
Drop row here	*Drop column here*	Avg Allergy Count ⚙ ✖
		Drop measure here

By default, the measures are used as columns (nested within the elements listed in the **Columns** box), as in the following example:

Decade	Female		Male	
	Patient Count	**Avg Allergy Count**	**Patient Count**	**Avg Allergy Count**
1910s	5	1.40		
1920s	18	1.15	6	0.50
1930s	32	0.93	27	1.07
1940s	45	1.19	30	1.05
1950s	55	0.79	43	0.96
1960s	73	1.09	61	1.13
1970s	80	1.00	75	1.19
1980s	56	1.00	65	0.95
1990s	64	1.24	74	1.15
2000s	71	0.93	77	1.08
2010s	19	1.50	24	1.07

If you instead use the option to display the measures as rows, the pivot table looks like this:

Decade		Female	Male
1910s	Patient Count	5	
	Avg Allergy Count	1.40	
1920s	Patient Count	18	6
	Avg Allergy Count	1.15	0.50
1930s	Patient Count	32	27
	Avg Allergy Count	0.93	1.07
1940s	Patient Count	45	30
	Avg Allergy Count	1.19	1.05
1950s	Patient Count	55	43
	Avg Allergy Count	0.79	0.96
1960s	Patient Count	73	61
	Avg Allergy Count	1.09	1.13
1970s	Patient Count	80	75
	Avg Allergy Count	1.00	1.19
1980s	Patient Count	56	65
	Avg Allergy Count	1.00	0.95
1990s	Patient Count	64	74
	Avg Allergy Count	1.24	1.15
2000s	Patient Count	71	77
	Avg Allergy Count	0.93	1.08
2010s	Patient Count	19	24
	Avg Allergy Count	1.50	1.07

This pivot table is equivalent to one defined as follows:

Rows ↑ ↓ ✚ ⚙ ✖	Columns ↑ ↓ ✚ ⚙ ✖	Measures ↑ ↓ ✚ ⚙ ✖
Decade ↘ ⚙ ✖	Gender ↘ ⚙ ✖	*Drop measure here*
Patient Count ↘ ⚙ ✖	*Drop column here*	
Avg Allergy Count ↘ ⚙ ✖		
Drop row here		

2.7.3 Controlling the Display of the Measure Headings

By default, when a pivot table displays a level on columns and displays measures, the pivot table may or may not include a heading for the measures, as follows:

• If the pivot table has only one measure, the measure name is not shown. For example:

Age Group	Female	Male
0 to 29	191	209
30 to 59	211	200
60+	116	73

• If the pivot table has multiple measures, the measure names are shown. For example:

Age Group	Female		Male	
	Patient Count	Avg Allergy Count	Patient Count	Avg Allergy Count
0 to 29	191	1.09	209	1.07
30 to 59	211	1.00	200	1.12
60+	116	1.07	73	0.93

You can control this behavior. To do so, click the Options button ⚙ in the **Measures** box. DeepSee displays a dialog box; for this discussion, use the options in the section **Display measure headers**. Choose one of the following options:

- **If More Than 1 Measure** — DeepSee displays the measure name if there is more than one measure, but does not display the name if there is only one measure.

- **Always** — DeepSee always displays the measure name.

- **Never** — DeepSee never displays the measure name.

These options apply only when the pivot table *also* displays another item on columns, as in the examples shown here.

2.8 Displaying Properties in a Pivot Table

You can display the properties of a level if you are also using that level as rows or columns. For example, if you display `City` as rows, you can display `Principal Export` as a column (by dragging the property to the **Columns** box) :

City	Principal Export
Cedar Falls	iron
Centerville	video games
Cypress	gravel
Elm Heights	lettuce
Juniper	wheat
Magnolia	bundt cake
Pine	spaghetti
Redwood	peaches
Spruce	mud

If you display `City` as columns, you can display `Principal Export` as a row:

Principal Export	Cedar Falls	Centerville	Cypress	Elm Heights	J...
Principal Export	iron	video games	gravel	lettuce	w...

2.8.1 Displaying Both Properties and Measures

If you display a property as a column and you want to display a measure as another column, you must drag and drop the measure to **Columns** rather than to **Measures**. For example:

2.9 Transposing a Pivot Table

You can transpose a pivot table; that is, switch its rows and columns. To do so, click the Transpose button .

2.10 Changing the Order of Items

To change the order of items listed within the **Rows**, **Columns**, **Measures**, or **Filters** box:

1. Click an item within that box. When you do so, the system enables the applicable buttons in the header of the box.

2. Click the up or down arrows as appropriate.

2.11 Copying and Pasting Items

To copy and paste items within the **Rows**, **Columns**, **Measures**, or **Filters** box:

1. Click an item within that box. Now it is shown with a highlight.

2.
    Click the Copy button in the top area.

3. Click the destination for this item. Either click another box or click an item in a box.

4. Click one of the paste buttons:

- Click to paste the item within the box or after to the selected item.

- Click to paste the item as a breakout within the selected item.

2.12 Adding a Summary Row or Column

You can add a summary row, summary column, or both. This section describes the following approaches:

- Adding the summary as a pivot option

- Using the All member as a summary

- Using a custom aggregation as a summary

2.12.1 Adding a Summary Row or Column as a Pivot Option

To add a summary row, summary column, or both:

1.
   Click the Pivot Options button .

   The Analyzer displays the Pivot Options page, which is discussed in detail later in this book.

   This procedure discusses only the **Summary** option.

2. Click the **Summary** check box.

3. Select a summary option from the drop-down list. The options are as follows:

   - **Sum** — Displays the sum of the values.

   - **Count** — Displays the count of rows.

   - **Max** — Displays the maximum of the values.

   - **Min** — Displays the minimum of the values.

   - **Average** — Displays the average of the values.

   - **% of Total** — Displays the sum of the values of this column (or row), as a percentage of the sums of all columns (or rows).

   For information on overriding how the summary is computed for a given measure, see "Specifying Alternative Aggregation Methods for a Measure," later in this book.

4. (For summary rows only) Optionally, to cause the summary row to summarize all rows (including rows on later pages), select **All Rows** from the second drop-down list.

For example, the following pivot table includes a total row. Notice that it displays the total only for numeric values:

City	Population	Principal Export
Cedar Falls	90,000	iron
Centerville	49,000	video games
Cypress	3,000	gravel
Elm Heights	33,194	lettuce
Juniper	10,333	wheat
Magnolia	4,503	bundt cake
Pine	15,060	spaghetti
Redwood	29,192	peaches
Spruce	5,900	mud
Total	240,182	

The following example shows **% of Total**, which is useful primarily when you use a level in **Columns**:

	Female	Male
Diagnoses	Patient Count	Patient Count
None	410	414
asthma	41	51
CHD	19	19
diabetes	25	13
osteoporosis	20	2
% of Total	50.79%	49.21%

In contrast to the other forms of summaries, note the following:

• If you display the pivot table as a chart, the chart does not include the summary row or column.

• If you export to Excel, the summary is included only if it is a sum.

2.12.2 Adding the All Member as a Summary Row or Column

Your cube may include one or more All members. Each dimension can contain a All member, which is listed within the dimension, in the Model Contents pane, before any levels. For example:

```
▼ AgeD
    ☀ All Patients
    ▶ Age Group
    ▶ Age Bucket
    ▶ Age
```

An All member represents all records and is typically named something like `All Ages` or `All Categories`. Or, as in the example shown here, the All member might have a truly generic name.

You can drag and drop this member to **Rows** or **Columns** to add it as a summary row or column. For example:

Diagnoses	Patient Count	Avg Age	Avg Allergy Count
None	822	32.81	1.03
asthma	83	37.78	1.02
CHD	41	65.17	0.93
diabetes	48	62.46	1.28
osteoporosis	25	79.80	0.71
All Patients	1,000	36.30	1.03

In contrast to using the pivot options, this approach allows each measure to be aggregated in a different manner. The `Patient Count` measure is summed, and the `Avg Age` and `Avg Allergy Count` measures are averaged.

If you do not have any All members, you can always add a custom aggregation; this is also quite simple to do.

2.12.3 Adding a Summary Row or Column as a Custom Aggregation

For clarity, this section describes how to add a summary row as a custom aggregation. The technique is easily adapted for a summary column.

1. For the level used as the rows, add the same level again to the **Rows** box.
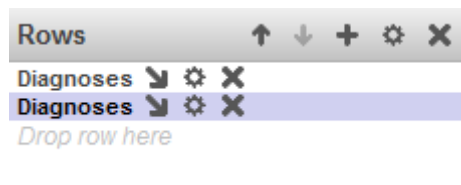
2. Click the Advanced Options button next to the second level in **Rows**.

    The Analyzer displays the Advanced Options page, which is discussed in detail later in this book.

    This procedure discusses only a couple of the options.

3. Select **Compute Aggregate** and then select an aggregation function. You can use any of the following functions:

    *   **SUM** — For each displayed measure, display the sum of the values for the members.

    *   **AVG** — For each displayed measure, display the average of the values for the members.

    *   **MIN** — For each displayed measure, display the minimum of the values for the members.

    *   **MAX** — For each displayed measure, display the maximum of the values for the members.

    *   **COUNT** — For each displayed measure, display the count of the members.

    *   **COUNT NONEMPTY** — For each displayed measure, display the count of the members that have values in the current context.

- **AGGREGATE** — For each displayed measure, display the aggregate value for the members, using the aggregation method defined for that measure.

- **MEDIAN** — For each displayed measure, display the median of the values for the members.

- **STDDEV** — For each displayed measure, display the standard deviation of the values for the members.

- **VARIANCE** — For each displayed measure, display the variance of the values for the members.

- **PERCENTILE** — For the given percentile value and for each displayed measure, display the measure value that is at that percentile value.

  For this option, you can specify a percentile value in the **Percentile** field; the default is 50.

4. Optionally type a new caption into **Caption**. The default caption is the name of the function.

When you use this option, the system first uses any other settings you specified on this dialog box.

For example, consider the following pivot table:

Age Group	Gender	Patient Count	Avg Enc Count
0 to 29	Female	2,101	19.72
	Male	2,123	19.80
	Subtotal	4,224	19.76
30 to 59	Female	2,142	38.56
	Male	2,013	36.87
	Subtotal	4,155	37.71
60+	Female	931	55.58
	Male	690	56.19
	Subtotal	1,621	55.88

This pivot table is defined with the following items in **Rows**:
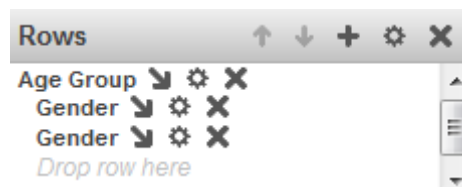
The second `Gender` item uses the following options:

- **Compute Aggregate** is **Aggregate**

- **Caption** is `Subtotal`

2.13 Applying 80/20 Suppression

The Analyzer provides an easy way to display the top 80% of a set (considering the count measure by default), and to group the bottom 20% into a single unit, as in the following example.

Product Name	Count	Revenue	Units Sold
Ziti (box)	124	$606.76	216
Donuts (dozen)	106	$507.21	178
Penne (box)	103	$304.89	169
Bundt Cake	92	$3,010.59	160
Tortellini (frozen)	85	$859.86	130
Cheerios (box)	81	$518.01	143
Pineapple Rings (can)	79	$1,208.39	144
Onion ring	61	$442.20	78
Fruit Loops (box)	54	$400.53	86
Pretzels (bag)	50	$267.07	76
Other	165	$1,754.77	303

This example demonstrates the 80/20 suppression option used for rows. The option is also available for columns. To use this option:

1. Click the Advanced Options button in the **Rows** or **Columns** box.

2. Optionally click **Sort Members**.

   Then select a measure and select **Ascending** or **Descending**.

   By default, the 80/20 suppression option first sorts the members in descending order by count. Use **Sort Members** to specify a different sort order.

3. Select **Apply 80/20 Suppression**.

4. Click **OK**.

To modify the query to use different percentages, see the section "Modifying Details of the 80/20 Suppression Option," later in this book.

2.14 Clearing the Autosave State of a Pivot Table

If the autosave feature for the Analyzer is enabled, then when you display a pivot table, the Analyzer displays that pivot table with any unsaved changes that you might have made in the Analyzer. To remove these unsaved changes, click **Restore**. Then the Analyzer displays the pivot table as defined in its saved definition.

Or save the pivot table, thus saving the changes and changing the definition. See the next topic.

2.15 Saving a Pivot Table

To save a pivot table, do one of the following:

- Click **Save**. The Analyzer saves the pivot table immediately, if you have specified a name for it; otherwise, the Analyzer prompts you as if you had selected **Menu > Save With Options**.

- Click **Menu > Save**. The Analyzer saves the pivot table immediately, if you have specified a name for it; otherwise, the Analyzer prompts you as if you had selected **Menu > Save With Options**.

- Click **Menu > Save With Options**. The Analyzer displays a dialog box with the same options that are available for a new pivot table; see "Creating a Pivot Table."

  If you specify a new folder or a new name, the Analyzer creates a copy of the original pivot table and saves it to this new name.

  Then click **OK**.

  If the pivot table already exists, the system prompts you for confirmation that you want to overwrite it.

Or click **Save As** to make a copy of the pivot table. The Analyzer prompts you for a new name.

3

Filtering Pivot Tables

This chapter describes how to use the Analyzer to include filters in a pivot table, which restricts the set of records that the pivot table accesses. It discusses the following topics:

- An overview of filters
- How to add a simple filter by dragging and dropping filter items
- How to add a simple filter by creating and using a drop-down menu
- How to add an advanced filter
- How to filter the base records by the value of a measure
- How to define a named filter
- How to redefine a named filter
- How to delete a named filter
- How to use a named filter
- How to disable or remove a filter
- How DeepSee combines filters
- How to find the key for a member

Note: Applying a filter to a pivot table is different from adding a filter control to a pivot table widget in a dashboard (see *Creating DeepSee Dashboards*). A filter control enables another user later to filter the data. You can add filter controls to a widget that displays a pivot table that has its own filter.

3.1 About Filters

Filters restrict the set of records that the system uses.

You use the **Filters** box, shown below, to add filters to your pivot table:
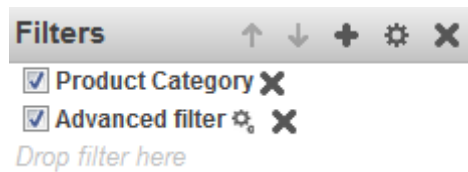
Filters can be either simple or advanced, and you can add any combination of filters to your pivot table.

To create simple filters, you can also drag and drop filter items to the *filter bar* directly above the pivot table:
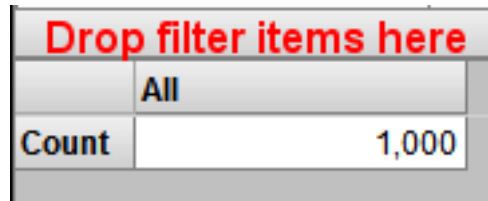
Later sections describe how to create these filters in detail.

3.2 Dragging and Dropping Filter Items

You can drag and drop an individual member to use as a filter. To do so, drag and drop a member to **Drop filter here** in the **Filters** box or to the filter bar.

The pivot table is then filtered to show only data for that member. The **Filters** box displays the name of the associated level, and the filter bar displays the name of the level and the member. For example:

3.3 Creating and Using a Drop-Down Menu
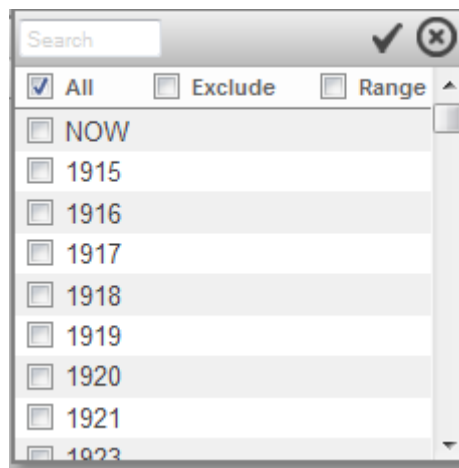
You can drag and drop a level to the **Filters** box or the filter bar and then use the filter drop-down menu that the system displays. This section provides the details. (You can use expression pivot variables in the same way. See "Defining and Using Expression Pivot Variables," later in this book.)

For example, if you drag and drop the `Year` level, you might see this in the Analyzer (depending on what else you have done):
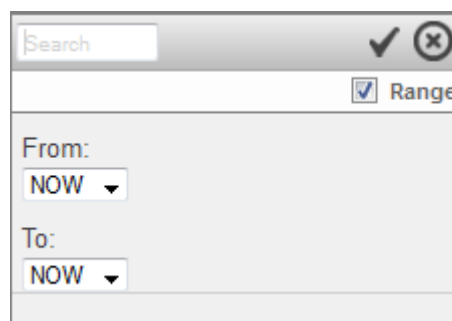
Then you can use the control to select members of the `Favorite Color` level. When you click the Search button 🔍, you see something like this:

Here you can do the following:

- Select **All** to see all members of this level (that is, perform no filtering with this level).

- Select one or more members to filter the pivot table to use only data for those members.

    You must press **Ctrl** while selecting multiple members.

- Select one or more members and select **Exclude Members** to filter the pivot table to use data for all members except for the selected ones.

- Click **Range** and then specify an inclusive range of members. When you click **Range**, the control changes to look like this:

In each drop-down list, select a member. For a time level, the list of members includes NOW, which always refers to the current date.

For other options, see "Filtering Data," in the chapter "Using Dashboards" in *DeepSee End User Guide*.

When you are done, click the check mark button to accept the selections. Or click the X button to discard your changes.

Note: The filter control is part of the Pivot Builder area, not part of the Pivot Preview area. This has two implications:

- When you save the pivot table, the Analyzer saves any selections in the filter control. When you next open the pivot table, the Analyzer redisplays the filter control as you saved it.

- The pivot table as seen in a dashboard is filtered as you saved it and does not include the filter control. (You use a separate mechanism to provide filters to users of your dashboards.)

3.4 Adding Advanced Filters

To see the filter definition for an advanced filter, click the Advanced Options button ⚙ next to that filter. DeepSee then displays a dialog box with information like the following:
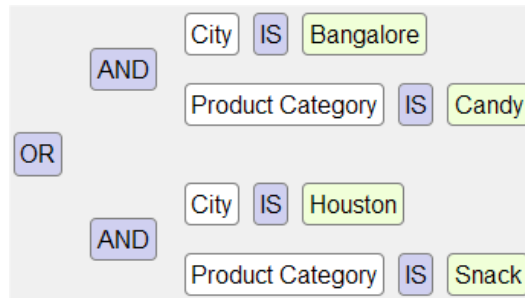
This represents the logic of the filter, but not its literal syntax. This filter selects only products that are either of the following:

- Candy products sold in Bangalore
- Snack products sold in Houston

The Advanced Filter Editor enables you to easily add, modify, and remove parts of a filter expression, while seeing the resulting expression with every change. This book does not describe this tool in detail, but instead provides a brief demonstration:

1.
   Click the Advanced Options button ⚙ in the **Filters** box. The system displays a dialog box like the following:
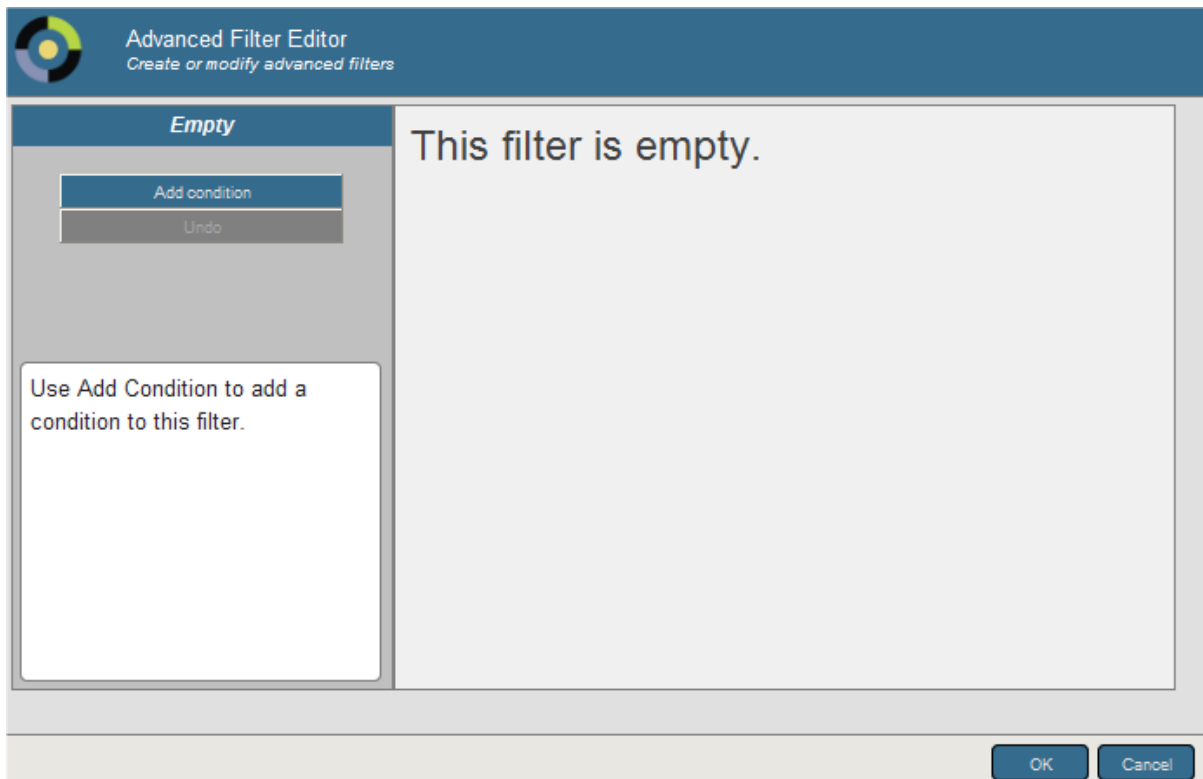
2. Click **Add Condition**.

The dialog box now looks something like this:
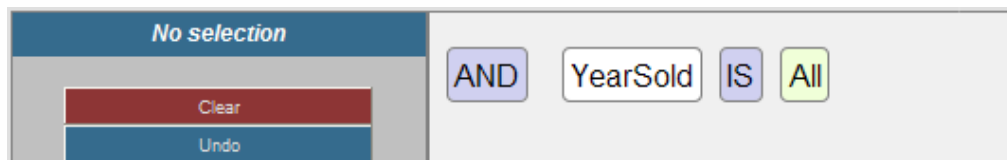
Initially, the advanced filter editor uses the first level (considering alphabetic order) defined in your subject area.

3. If you want to use a different level:

   a. Click **YearSold**, which enables you to edit this part of the expression.

   b. Optionally type a string into the search box and then click **Search**. This is useful if the cube has a large number of levels.

   c. Select a level from the drop-down list on the left. As soon as you do, the expression is updated. For example:
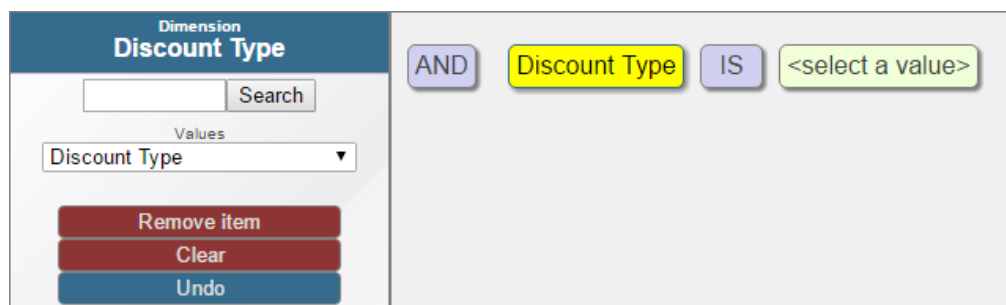
The end of the drop-down list may include measures; if so, see "Filtering the Data by Measure Value," later in this chapter.

4. If you want to change the operator from IS to IS NOT:

   a. Click **IS**, which enables you to edit this part of the expression.

   b. In the left area, click **IS NOT**. As soon as you do, the expression is updated.

5. To specify a member of the level:

   a. Click **<select a value>**, which enables you to edit this part of the expression. The left area might look like the following:
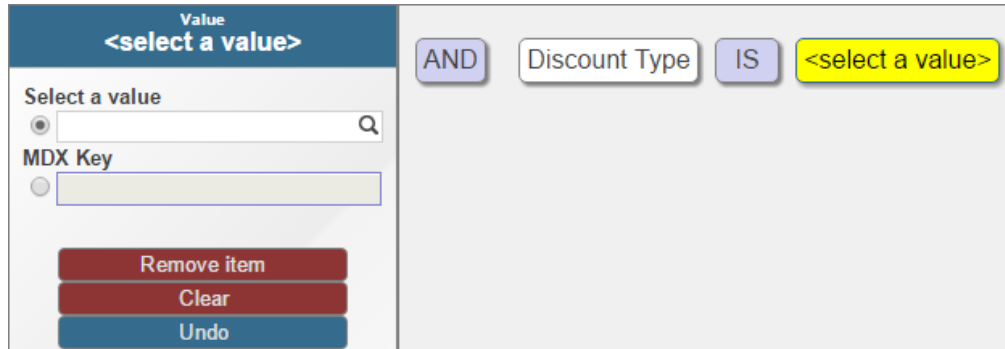
   b. In the left area, click the Search button 🔍 under **Select a value** to display a dialog.

   c. The resulting dialog displays a set of members and options. Optionally type text into the search box and press **Enter**; this restricts the set of members listed in the dialog.

   The list of values also includes all searchable measures (see the next section) and all pivot variables (see "Defining and Using Pivot Variables," later in this book).

   d. Select members and options by selecting their check boxes.

   e. Click the check mark button in the upper right hand corner of the dialog. As soon as you do, the expression is updated.

   For example:
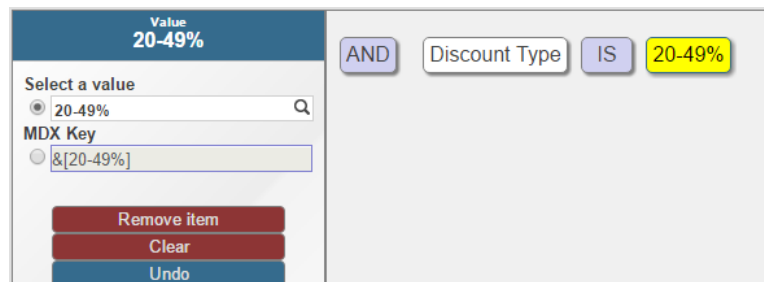
   f. Alternatively, you may enter an MDX key by selecting the **MDX Key** option.

   This advanced filter is equivalent to a simple filter. Typically you would now add another condition or a branch that contains other conditions.

6. To add another condition:

   a. Click **AND**, so that you can edit this item.

   b. Optionally, in the left area, click **OR**. As soon as you do, the expression is updated.

   c. Click **Add condition**.

You might now see the following:
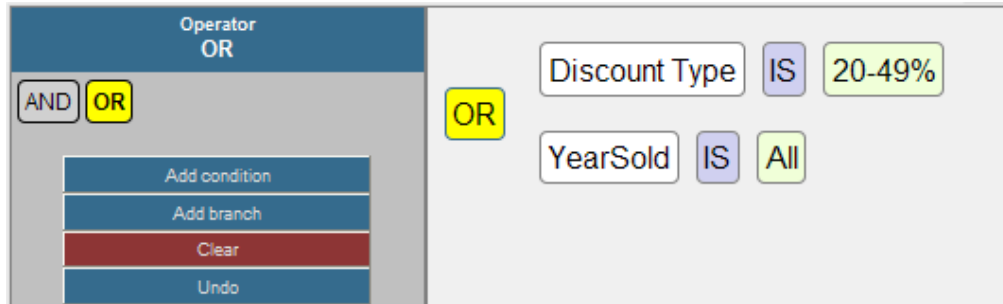
d. Edit this condition in the same way that you edited the first one.

7. Click **OK** to close the dialog box.

Or add another condition or a branch that contains other conditions.

Note that you can undo any change. To do so, click **Undo**.

3.5 Filtering the Base Records by Measure Value

If your subject area includes *searchable measures*, you can filter records used in a pivot table by the value of those measures. To do so:

1. Click the Advanced Options button ⚙ in the **Filters** box.

2. Click **Add Condition**.

The dialog box now looks something like this:
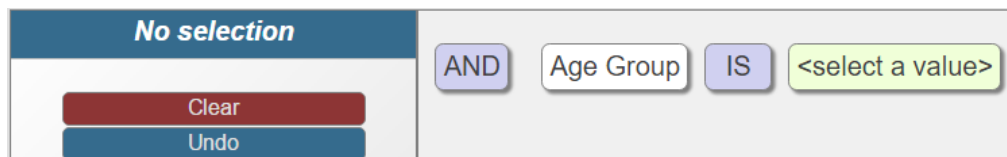
The advanced filter editor initially uses the first level (considering alphabetic order) defined in your subject area.

3. Click **Age Group**, which allows you to edit this part of the expression.

4. Click the drop-down list on the left and scroll to the end of the list, which may include measures. For example:
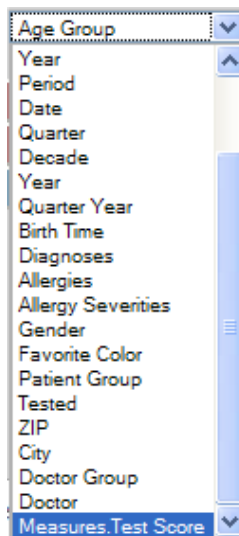
Note that the list of values also includes all pivot variables (see "Defining and Using Pivot Variables," later in this book).

5. Click the measure that you want to use.

    Now the expression is updated as follows:
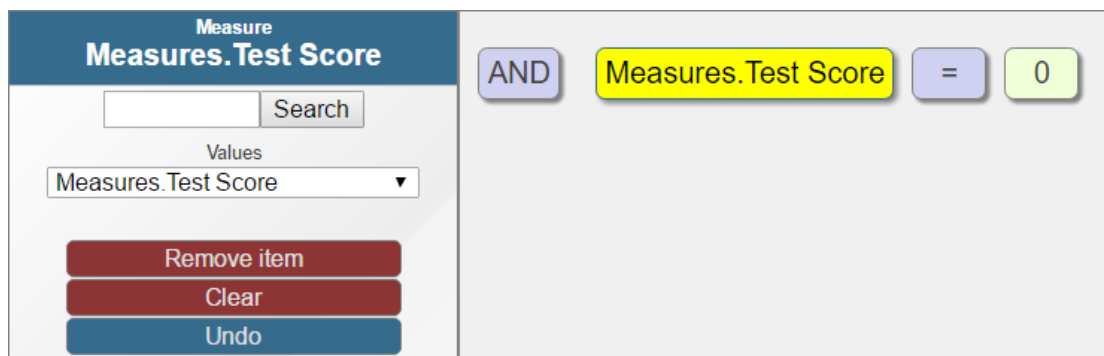
6. Click the operator, which is an equals sign (=) by default.

    Now the editor displays the following set of operators:
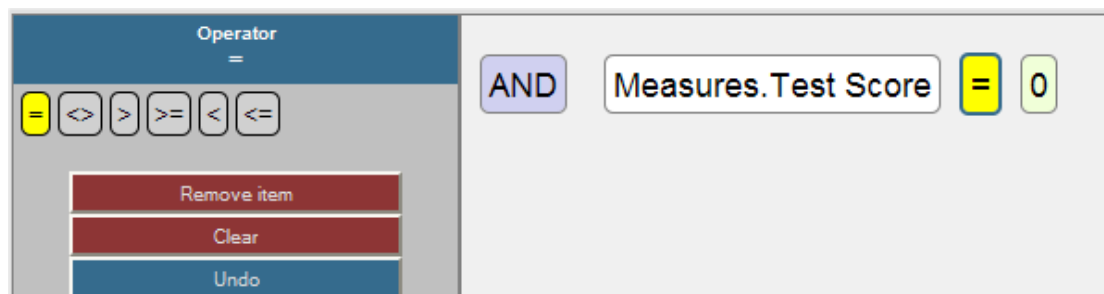
Or, if the searchable measure contains string values, the editor displays the following operators: = <> LIKE

7. Click the comparison value, which is 0 by default.

    Now the editor displays a box into which you can type a new value.

8. Type a value and then click **Apply**.

    If you enter a string value, enclose it within single quotes. For example: `'abc'`

9.   Click **OK** to close the dialog box.

Or add another condition or a branch that contains other conditions.

For example, consider the following filter:
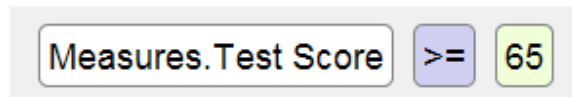
This filter selects all patients whose test score is 65 or higher.

3.6 Defining Named Filters

A named filter is saved with the subject area. You can use it in multiple pivot tables and in filter controls on dashboards.

To define a named filter:

1.   Make sure that no named filter is currently selected.

2.
Click the Named Filter button in the Model Contents pane.

3.   For **Filter Name**, type a user-friendly filter name.

4.   For **Description**, type an optional description.

The rest of the dialog box is the same as the Advanced Filter Editor.

5.   For details on the rest of this dialog box, see "Adding Advanced Filters," earlier in this chapter.

When you are done, the Model Contents pane displays the filter within the **Named Filters** section.

Because a named filter can be relatively complex, it can be useful to define appropriate named filters for use on dashboards. If you do this, users of the dashboards can filter their data more easily.

3.7 Redefining a Named Filter

To redefine a named filter:

1.   Select the named filter in the Model Contents pane.

2.
Click the Named Filter button .

3.   Make changes as needed.

For details, see "Adding Advanced Filters," earlier in this chapter.

3.8 Deleting a Pivot Variable

To delete a named filter:

1. Select the named filter in the Model Contents pane.

2. Click the X button.

3. Click OK to confirm this deletion.

3.9 Using Named Filters

To use a named filter, drag and drop it from the Model Contents pane to the **Filters** box.

Or double-click the named filter; then it is added to the **Filters** box.

3.10 Disabling or Removing Filters

To disable a filter, clear the check box to the left of the name of the filter in the **Filters** box.
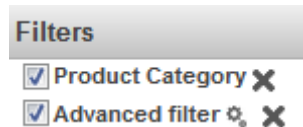
To remove a filter, click the X to the right of the name of the filter.
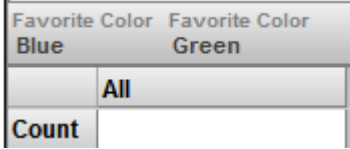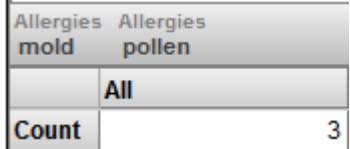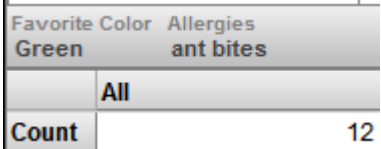
3.11 How DeepSee Combines Filters

This section describes how the system combines filters.
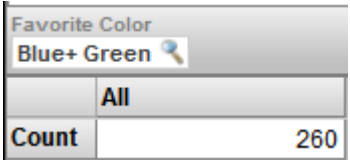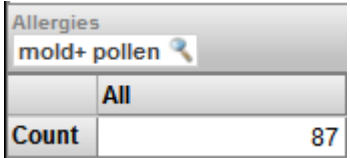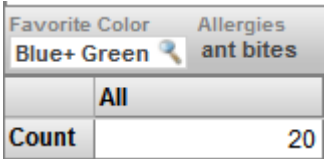
If you apply multiple simple filters, the system combines them as follows (but see the important note after this list):

- DeepSee uses a logical AND to combine all the items shown in the bar above the pivot table.

Filter	Meaning
Favorite Color **Blue** Favorite Color **Green** · All · Count	All patients whose favorite color is green and whose favorite color is blue (zero patients)
Allergies **mold** Allergies **pollen** · All · Count 3	All patients who are allergic to both mold and to pollen
Favorite Color **Green** Allergies **ant bites** · All · Count 12	All patients whose favorite color is green and who are allergic to ant bites

- If this bar displays a level, and if you have selected one or more members of that level in the drop-down, *those* members are combined with a logical OR.

Filter	Meaning
Favorite Color **Blue+ Green** · All · Count 260	All patients whose favorite color is either green or blue
Allergies **mold+ pollen** · All · Count 87	All patients who are allergic to mold, to pollen, or to both
Favorite Color **Blue+ Green** Allergies **ant bites** · All · Count 20	All patients whose favorite color is green or blue and who also are allergic to ant bites

If you have also applied advanced filters, those are combined with the other filters via logical AND.

Important: Depending on the form of the combined filter, DeepSee might perform *axis folding*. This phrase refers to the process of combining multiple filters (a filter is considered to be a query axis). Axis folding means that if a given source record has a non-null result for each slicer axis, that record is counted multiple times. For details on when this occurs, see "Axis Folding" in the appendix "How the DeepSee Query Engine Works" in the *DeepSee Implementation Guide*.

3.12 Finding the Key for a Member

This section describes how and why to find the key identifier for a member.

Each member has two identifiers:

- A name (shown in the Analyzer and pivot tables). For example, in the Patients sample, a member of the `Doctor` level might have the name `Vivaldi, Lola`

    Names are not necessarily unique.

- A *key* (never displayed). This is often but not always the same as the name. For example, in the Patients sample, the doctor whose name is `Vivaldi, Lola` might have the key `12`

    The keys should be unique in a well-defined cube. (DeepSee does not force them to be unique, but the developers who create a cube can and should take steps to ensure their uniqueness.)

    When you create a filter by drag and drop actions, DeepSee automatically uses the member key rather than the member name.

You should use the key when you specify a filter value manually, which you do in the following scenarios:

- When you specify the default value for a filter control on a dashboard (as described in *Creating DeepSee Dashboards*).

- When you specify the initial value for a filter control via a dashboard URL (as described in the *DeepSee Implementation Guide*).

It is also best practice to use the key when you refer to a member in a pivot variable.

To find the key for a given member, do the following:

1. Drag and drop the member to the **Filters** box in the Analyzer.

2. Click the Display Query button on the toolbar.

    The system displays the current MDX query, which looks something like this:
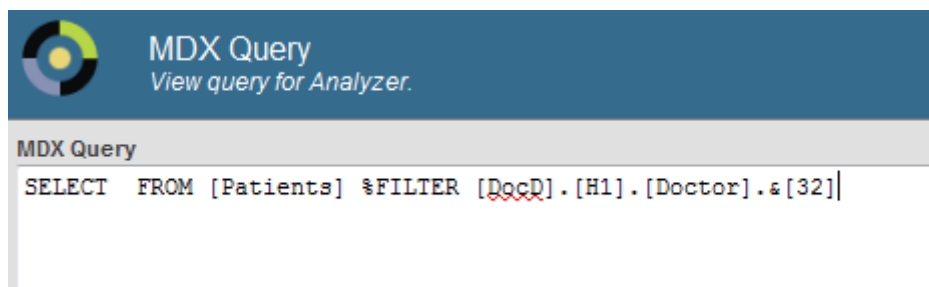
    The `%FILTER` part specifies the filter. The `[DocD].[H1].[Doctor].&[32]` part is the complete member identifier for this member. The key for this member is 32.

If the level contains multiple members with the same name, and if you are not sure which member to use, try the following technique:

1. Drag and drop each of the members to **Rows**.

2. If this level has a property, drag and drop that to **Columns**. The property values are typically different for each member, and you can use the information here to determine which member to look at.

Or drag and drop a level to **Columns**. Choose a level that can give some context. In SAMPLES, you could display `Doctor Group` as columns. You might see something like this:

Presley, Sam	None	II
Presley, Sam		22
Presley, Sam	21	

According to this pivot table, the first Sam Presley is not in any doctor group, and the second one is in doctor group II. You can use this information to determine which member to look at.

In other cases, it might be necessary to display a detail listing in order to correctly identify the desired member.

4

Defining Calculated Elements

This chapter describes how to define calculated elements. This chapter discusses the following topics:

- Overview of kinds of calculated elements you can define

- How to define a calculated measure

- How to define a calculated member

- How to redefine a calculated element

- How to delete a calculated element

These calculated elements can be saved as part of a pivot table definition (and are then usable only in that pivot table) or can be saved in a shared area (and are then usable in any pivot table based on the same cube).

4.1 Overview

Often it is convenient to combine existing model elements into new elements. In DeepSee, you can add two kinds of calculated elements:

- You can define a new measure that is based on other measures. For example, you can define a measure via a formula like the following:

```
Measure 3 = (Measure 1 + Measure 2) / Measure 2
```

This is not the exact syntax. The following sections provide more detail.

- You can define a new member that is based on other members. For example, you could create a `Primary Colors` member that combines the `red`, `yellow`, and `blue` members of the `Favorite Color` dimension.

The new `Primary Colors` member refers to all the patients who belong to the `red`, `yellow`, or `blue` members.

In MDX, a measure is considered to be a member, and both kinds of calculated elements are considered to be *calculated members*. This book uses the phrase *calculated measure* to refer to a calculated member that is a measure.
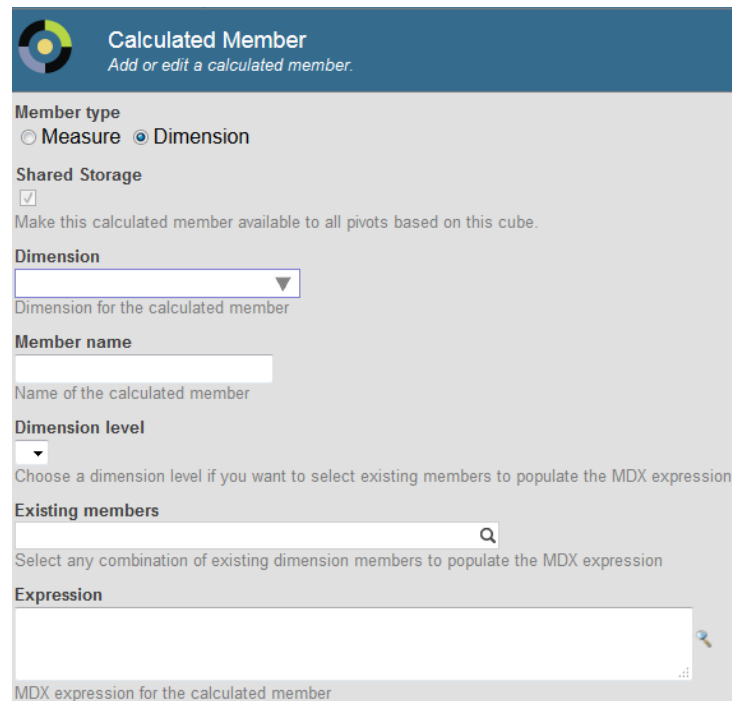
4.2 Defining a Calculated Measure

To define a measure that is based on other measures:

1. If you intend to define this measure only in a given pivot table, save that pivot table.

2. Click the Calculated Element button ▦ .

   The system displays the following dialog box (partially shown here):

3. For **Member Type**, click **Measure**.

   When you do so, the system automatically selects **Measures** for the **Dimension** option.

4. Optionally select **Shared Storage**. DeepSee uses this option as follows:

   - If **Shared Storage** is not selected, the calculated measure is stored with the pivot table definition and can be used in this pivot table but nowhere else.

   - If **Shared Storage** is selected, the calculated measure is stored in a shared area and can be used in any pivot table based on the same cube. In this case, the Analyzer displays the calculated measure along with the elements that are defined in the cube itself.

5. For **Member name**, type the name of the new measure.

6. Specify the MDX expression that defines the new member. To do so, you can do either of the following:

   - Type the expression directly into **Expression**.

   - Use the Expression Builder. This tool is intended to make it easy to obtain the correct MDX identifier for any part of the cube. To access this tool, click the magnifying glass next to **Expression**. The left area lists the contents of the cube, including all measures and levels. The right area displays the expression that you are creating. To add an item to the expression, drag and drop it from the left area to the expression. The item is added to the end of the expression, and you might need to move it to a different part of the expression.

   For an introduction to these expressions, see the first subsection.

7. Optionally specify the following additional options:

- **Format** — Specify a format string to control how this measure is displayed. See "Specifying a Format String," earlier in this book.

- **Solve Order** — Use this if your pivot table has a calculated measure as a column and a conflicting calculated measure (or other kind of calculated member) as a row. See the second subsection.

8. Click **OK**.

The new member is then displayed within the **Measures** section in the Model Contents pane:
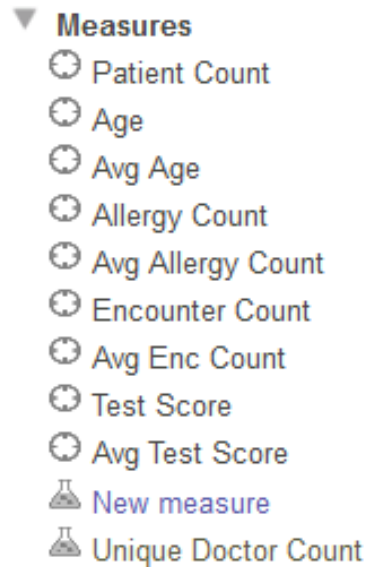
You can then use this measure in the same way you use any other measure.

4.2.1 Measure Expressions

The measure expression can include the following elements:

- References to measures. The syntax is as follows:

```
[MEASURES].[measure name]
```

Or:

```
MEASURES.[measure name]
```

You can omit the square brackets around the measure name, if the measure name contains only alphanumeric characters, does not start with a number, and is not an MDX reserved word. (MDX statements and functions are reserved words; see the table of contents in the *DeepSee MDX Reference*.)

The expression is not case-sensitive.

- Numeric literals. For example: `37`

- Pivot variables. See the next chapter.

To refer to a pivot variable, use the syntax `$variable.`*variablename* where *variablename* is the logical variable name. This syntax is not case-sensitive.

- Mathematical operators. DeepSee supports the standard mathematical operators: + (addition), – (subtraction), / (division), and * (multiplication). It also supports the standard unary operators: + (positive) and – (negative).

For example: `MEASURES.[%COUNT] / 100`

You can also use parentheses to control precedence.

- MDX functions that return numeric values. Many MDX functions return numeric values, including AVG, MAX, COUNT, and others. See the *DeepSee MDX Reference* for details.

For other variations and specific recipes, see "Defining Calculated Members" in *Defining DeepSee Models*.

4.2.2 Solve Order

The **Solve Order** option is useful if your pivot table has a calculated member (either measure or non-measure) as a column and a conflicting calculated member as a row.

This option affects how the system determines the value in the cell *and* the format applied to the cell. By default:

- The *column* determines the **Format**.

- If both calculated members are measures, the *column* determines the cell value. (In other scenarios, the logic is more complex and **Solve Order** does not apply.)

If you instead want the row to determine the format and the value, ensure that **Solve Order** is higher for the calculated member used as a row.

With one exception, the calculated member with the higher **Solve Order** is evaluated last and thus controls the results. The exception is that if a row or column uses the %CELL function, its implicit default **Solve Order** is 10.

If the row and column both use %CELL and you want the row to determine the value and format string, set the **Solve Order** to 11 for the row.

If the column and row members have the same **Solve Order**, the column member controls the results, as in the default case.

Tip: For calculated measures that depend on other calculated measures, the system recognizes the dependencies and evaluates the measures in the appropriate order. You do not need to use **Solve Order** for these measures.

4.3 Defining a Calculated Member That Is Not a Measure

To define a calculated member based on other members:

1. If you intend to define this member only in a given pivot table, save that pivot table.

2. Click the Calculated Element button .

3. For **Member Type**, click **Dimension**.

4. Optionally select **Shared Storage**. DeepSee uses this option as follows:

    - If **Shared Storage** is not selected, the calculated measure is stored with the pivot table definition and can be used in this pivot table but nowhere else.

    - If **Shared Storage** is selected, the calculated measure is stored in a shared area and can be used in any pivot table based on the same cube. In this case, the Analyzer displays the calculated measure along with the elements that are defined in the cube itself.

5. For **Dimension**, either select a dimension or type the name of a new dimension. For example: `Calculated`

    You can specify any dimension, including an existing dimension that includes non-calculated members or a new dimension.

6. For **Member**, type the name of the new member.

7. Specify the MDX expression that defines the new member. To do so, you can do any of the following:

   • Select a level from **Dimension level**. You can choose any level from the dimension that you selected in step 3. Then use **Existing members** to select one or more members of that level.

   DeepSee then creates an MDX set expression in the **Expression** field.

   Then edit the expression in the **Expression** field.

   • Type the expression directly into **Expression**.

   • Use the Expression Builder. This tool is intended to make it easy to obtain the correct MDX identifier for any part of the cube. To access this tool, click the magnifying glass next to **Expression**. The left area lists the contents of the cube, including all measures and levels. The right area displays the expression that you are creating. To add an item to the expression, drag and drop it from the left area to the expression. The item is added to the end of the expression, and you might need to move it to a different part of the expression.

   These expressions are discussed later in this section.

8. Optionally specify the following additional options:

   • **Format** — Specify a format string to control how numeric values are displayed for this member. See "Specifying a Format String," earlier in this book.

   • **Solve Order** — Select a number to specify the relative order in which to evaluate this calculated member, compared to other calculated members that affect the same cell. See "Solve Order," earlier in this chapter.

9. Click **OK**.

The new member is then available in the **Dimensions** section in the Model Contents pane:

If you added the member to an existing dimension, the system lists it within every level of that dimension. If you added it to a new dimension, that new dimension is displayed at the bottom of this pane. For example, the following shows a new dimension with two calculated members:

    ▼ CalcD
       ☼ Primary Colors
       ☼ Secondary Colors
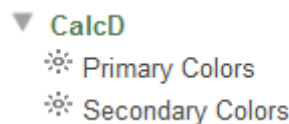
You can then use these members the same way that you use other members.

In a typical case, you define a new member that combines other members. In these cases, use one of the following syntaxes:

• If the members that you want to combine all belong to the same level, use the %OR function as follows:

```
%OR({member reference, member reference, ...})
```

For example:

```
%OR({[colord].[h1].[favorite color].[red],
[colord].[h1].[favorite color].[blue],
[colord].[h1].[favorite color].[yellow]})
```

The general syntax for a *member reference* is as follows:

```
[dimension name].[hierarchy name].[level name].[member name]
```

Or:

```
[dimension name].[hierarchy name].[level name].&[member
key]
```

- As a special case of the preceding, you can define a member that combines a range of members of a time level. To do so, use the %TIMERANGE function, which enables you to define an open-ended range. For example, the following expression defines a range that starts *after* the 2009 member:

```
%TIMERANGE(DateOfSale.YearSold.&[2009],,EXCLUSIVE)
```

- Otherwise, use the AGGREGATE function as follows:

```
AGGREGATE({member reference, member reference, ...})
```

For other variations and specific recipes, see "Defining Calculated Members" in *Defining DeepSee Models*.

4.4 Redefining a Calculated Member

To redefine a calculated member:

1. Select the calculated member in the Model Contents pane.

2.
   Click the Calculated Element button .

3. Make changes as needed.

4.5 Deleting a Calculated Member

To delete a calculated member:

1. Select the calculated member in the Model Contents pane.

2. Click the X button.

3. Click OK to confirm this deletion.

5

Defining and Using Pivot Variables

This chapter describes how to define pivot variables and use them in pivot tables. It discusses the following topics:

- How to define a pivot variable
- How to define and use expression pivot variables
- How to define and use literal pivot variables
- How to redefine a pivot variable
- How to delete a pivot variable

A pivot variable is saved with the subject area. You can use it in multiple pivot tables and in controls on dashboards.

5.1 Overview

Pivot variables provide another way for your end users to interact with your dashboards.

The definition of a pivot variable includes the following elements:

- A name, which is not case-sensitive.
- A default value, for use when the user has not specified a value for the variable.
- (In most cases) A set of allowed values for the user to choose among.

These values are generally MDX identifiers, MDX expressions, or literal numbers or strings, depending on precisely how the variable is intended to be used.

Pivot variables are generally intended to be used in pivot tables. Specifically, when you create a pivot table, you can use pivot variables in selected parts of the query that defines the pivot table. When a dashboard displays the pivot table, that dashboard can include a *pivot variable control*, with which the user can change the value of the corresponding pivot variable. DeepSee simply substitutes the given value into the query, executes the query, and then redisplays the pivot table.

Similarly, when you access a dashboard via a URL, that URL can include parameters that specify the value for pivot variables used in pivot tables on the dashboard. Before displaying the dashboard, DeepSee substitutes the given value into the queries and executes the queries.
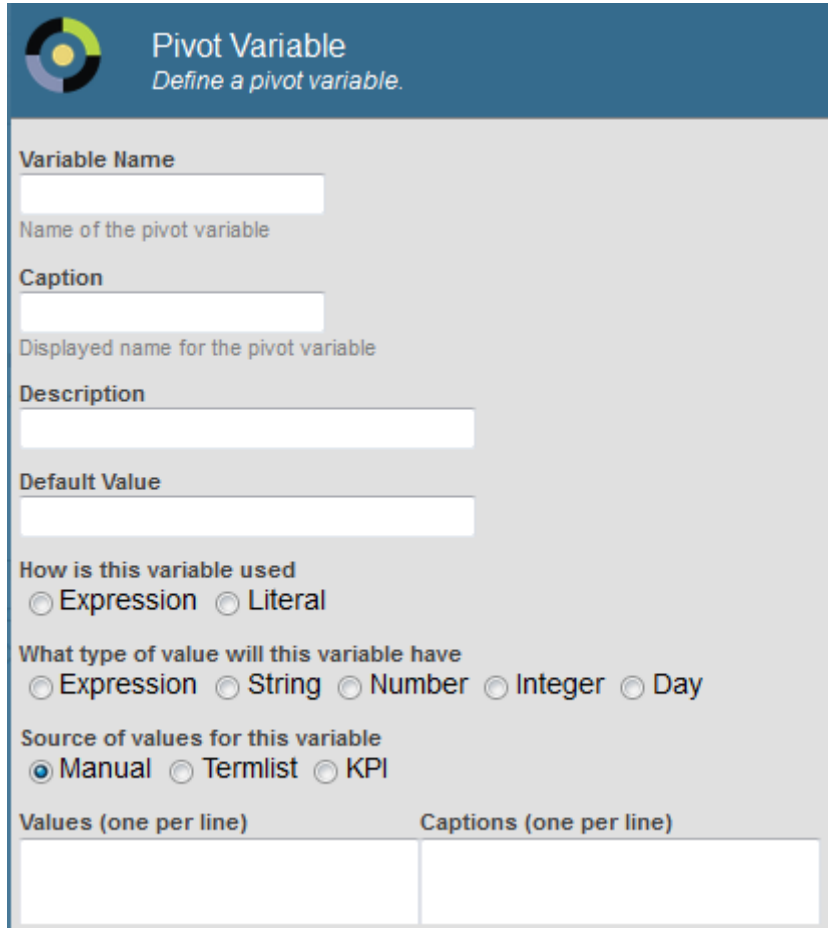
5.2 Defining a Pivot Variable

In general, to define a pivot variable:

1. Click the Add Pivot Variable button [icon].

    The system displays the following dialog box (partially shown here):

2. For **Variable Name**, type the logical name of the variable, to be used internally.

    The logical name must contain only alphanumeric characters. The name is not case-sensitive. Note that you cannot create multiple pivot variables whose names differ only in case.

3. Optionally specify the following additional options:

    *   **Caption** — Specify the display name of the variable. The default caption is the logical name.

    *   **Description** — Specify a description.

    *   **Default Value** — Specify the default value. The best practice is to specify a default value so that DeepSee has a valid MDX query for any pivot table that uses this variable.

        For information on the kinds of values to provide, see "Expression Pivot Variables" and "Literal Pivot Variables," later in this chapter.

    *   **How is this variable used** — This option affects how DeepSee handles the variable internally. Select one of the following:

- **Expression** — Select this if you intend to use this variable to represent an MDX expression.

- **Literal** — Select this if you intend to use this variable to represent a literal number or string, for use within an MDX expression.

  For details, see "Expression Pivot Variables" and "Literal Pivot Variables," later in this chapter.

- **What type of value will this variable have** — This option affects the default style of the control used when you add a pivot variable control to a dashboard.

- **Source of values for this variable** — Specify the source of possible values for this pivot variable. Select one of the following:

  - **Manual** — Select this if you want to provide a hardcoded list of values, if you want to display a calendar control, or if you want the user to type a value.

    If you select **Manual**, do one of the following:

    - To specify a hardcoded list of values, specify **Values** and (optionally) **Captions**. For **Values**, specify one value per line. For **Captions**, specify the corresponding captions, if any, with one caption per line. In this case, the pivot variable control displays your list of options.

    - To display a calendar control, select **day** for **What type of value will this variable have**. In this case, the pivot variable control is a calendar control.

    - To enable the user to type a value, do not specify **Values** or **Captions**. Also, for **What type of value will this variable have**, do not select **day**. In this case, the pivot variable control is a simple field into which the user can type a value.

  - **Termlist** — Select this to use a term list to provide the values. If you select this, click the Search button 🔍 and then select a term list. For each item in the term list, DeepSee uses the item **value** as the value and uses the item **key** as the corresponding caption. The pivot variable control displays your list of options.

  - **KPI** — Select this to use a KPI to provide the values. If you select this, click the Search button 🔍 and then select a KPI.

    The KPI should have a property called `Value`. For each series in the KPI, DeepSee uses the `Value` property as the value and uses the series name as the corresponding caption. The pivot variable control displays your list of options.

    In all cases, for information on the kinds of values to provide, see "Expression Pivot Variables" and "Literal Pivot Variables," later in this chapter.

4. Click **OK**.

The new variable is then displayed within the **Pivot Variables** section in the Model Contents pane.

5.3 Defining and Using an Expression Pivot Variable

An *expression pivot variable* represents an MDX expression.

5.3.1 Defining an Expression Pivot Variable

To define an expression pivot variable:

- For **How is this variable used**, select **Expression**.

- For **Default Value**, specify an MDX expression.

- For **Source of values for this variable**, either specify a hardcoded set of MDX expressions or select a term list or KPI that returns a set of MDX expressions. See the next subsection.

5.3.2 Values for Expression Pivot Variables

A value for an expression pivot variable should be an expression of one of the following types:

Expression Type	Examples
member reference	`[aged].[h1].[age group].&[0 to 29]` See the comments after this table.
tuple expression (which represents an AND of multiple members)	`([aged].[h1].[age group].&[0 to 29],[gend].[h1].[gender].&[female])` Notice that the member references are separated by commas, and the expression is enclosed in parentheses.
set expression (which represents an OR of multiple members)	`{[homed].[h1].[city].&[magnolia],[homed].[h1].[city].&[pine]}` Notice that the member references are separated by commas, and the expression is enclosed in curly braces.

The general syntax for a *member reference* is as follows:

```
[dimension name].[hierarchy name].[level name].[member name]
```

Or:

```
[dimension name].[hierarchy name].[level name].&[member
key]
```

You can omit the square brackets for any identifier that contains only alphanumeric characters and that does not start with a number. Also, you can omit the hierarchy and level names if the member name or key is unique within this dimension.

5.3.3 Using an Expression Pivot Variable

To use an expression pivot variable in a pivot table, drag and drop the variable into **Rows**, **Columns**, or **Filters**, as applicable. In each case, the Analyzer adds a control to the filter bar so that you can test the variable. See the example.

Or define a calculated member that uses the pivot variable. See the chapter "Defining Calculated Elements."

5.3.4 Example

The following shows the definition of an expression pivot variable:

If we create a new pivot table and then drag and drop this variable to the **Rows** box, the Analyzer then displays the following simple pivot table:

To test the pivot variable, we can use the filter bar. If we click the search button for **SampleExprVariable**, the Analyzer displays the possible values for this variable:

If we select a different value, the pivot table changes, for example:

5.4 Literal Pivot Variables

A literal pivot variable represents a literal string or numeric value to be used within an MDX expression. Depending on how you define a literal pivot variable, you can use it within the Advanced Filter Editor, in calculated members, or in manually written MDX queries.

5.4.1 Defining a Literal Pivot Variable

To define a literal pivot variable:

- For **How is this variable used**, select **Literal**.

- For **Default Value**, specify a fragment suitable for use in an MDX query.

- For **Source of values for this variable**, either specify a hardcoded set of values or select a term list or KPI that returns a set of values. See the next subsection.

5.4.2 Values for Literal Pivot Variables

A literal pivot variable has a literal string or numeric value.

In the most useful scenario, the variable is intended to represent the last part of a member identifier, and you use it in the Advanced Filter Editor. In this scenario, any value for the variable should be a string of the form `&[key]` where *key* is a member key. For example: `&[0 to 29]`. (See "Finding the Key for a Member," earlier in this book.) See the example later in this section.

In another useful scenario, the variable is intended to represent a number that is used as a multiplier or other formula element. In this case, you would use the variable within the definition of a calculated measure.

5.4.3 Using a Literal Pivot Variable

To use a literal pivot variable in a pivot table, use the Advanced Filter Editor. When you add a condition, select a level. For the value for that level, select the name of the literal pivot variable. See the example, next.

Or define a calculated member that uses the pivot variable. See the chapter "Defining Calculated Elements."

5.4.4 Example

The following shows the definition of a literal pivot variable (for use with the HoleFoods sample):

Suppose that we create a new pivot table. For this pivot table, we use the Advanced Filter Editor and add a condition. For this condition, we select the YearSold level. For the Start Time value, we can select the following items:

The item `$variable.SampleLitVariable` is the pivot variable. The other items are the members of the YearSold level.

Note that *all* the pivot variables are available in *all* the value drop-downs in the Advanced Filter Editor. The `$variable.SampleLitVariable` variable is suitable for use only with one level in this case — the YearSold level, because this is the only level that has members with the keys 2008, 2009, and so on.

5.5 Redefining a Pivot Variable

To redefine a pivot variable:

1. Select the pivot variable in the Model Contents pane.

2. Click the Pivot Variable button .

3. Make changes as needed.

5.6 Deleting a Pivot Variable

To delete a pivot variable:

1. Select the pivot variable in the Model Contents pane.

2. Click the X button.

3. Click OK to confirm this deletion.

6

Customizing Pivot Tables

This chapter describes how to further customize pivot tables. It discusses the following topics:

- How to specify pivot options

- How to customize a pivot table item

- How to display a constant row or column

- How to display a spacer row or column

- How to display an alternative set for rows or columns

- How to specify new captions

- How to specify a format string

- How to specify cell and header styles

- How to sort and filter members in the rows or columns

- How to specify alternative aggregation methods for a measure

- How to apply customize double-click drilldown

- How to apply conditional formatting

- How to specify the print settings

- How to specify the MDX query manually

6.1 Specifying Pivot Options

The Pivot Options dialog box provides many ways to customize the pivot table. To access this dialog box, click the Pivot

Options button . The Analyzer displays the following:

Here you can do the following:

- Format the pivot table with zebra stripes. If you select **Zebra Striping**, the table is formatted with rows in alternating colors as follows:

- Remove the captions for the rows. To do so, clear **Row Caption**.

- Specify which listing to use for this pivot table. To do so, select a listing from the **Listing** drop-down menu.

- Specify the maximum number of records to include in listings for this pivot table. To do so, specify a value for **Maximum Listing Rows**. The default is 1000.

- Apply custom colors and font styles. To do so, use the drop-downs in **Row Options**, **Column Options**, or **Cell Options**. For example:

  This style definition specifies that the font is in 12 pt, blue Verdana on a pale green background. The text is also bold and center-aligned.

  If you specify a custom color for the cell background in **Cell Options**, the system ignores the **Zebra Striping** option.

- Use the **Span Labels** options to control whether labels are spanned.

When you display the table in a nested format, the labels are spanned by default. For example:

Age Group	Gender	
0 to 29	Female	2,107
	Male	2,110
30 to 59	Female	2,167
	Male	2,083
60+	Female	930
	Male	703

You can instead repeat the relevant labels, as follows:

Age Group	Gender	
0 to 29	Female	2,107
0 to 29	Male	2,110
30 to 59	Female	2,167
30 to 59	Male	2,083
60+	Female	930
60+	Male	703

- Use the **Show Empty** options to control whether empty rows and columns are displayed.

- Control the size of the data cells. To do so, type the width in pixels into **Width** and the height in pixels into **Height**.

As you make changes, the **Preview** area is updated to demonstrate the changes. For example:

Preview

		2010	
		January	February
USA	Boston	1234.56	1234.56
	New York	1234.56	1234.56

6.2 Customizing Pivot Table Items

The Analyzer displays Advanced Options button ⚙ in the **Rows**, **Columns**, and **Measures** boxes, next to each item in those boxes. The same button is also available for the **Rows** and **Columns** boxes.

For example:

Rows ↑ ↓ ✚ ⚙ ✖

Age Group ↘ ⚙ ✖
Drop row here

If you click any of these buttons, you see the following dialog box or a variation of it (the details are different for measures). The following figure shows only the top part of the dialog box:

The following sections describe changes you can make.

You can specify formatting in multiple places. If you specify different formatting, the following rules control which formatting options are used:

- Wherever possible, all the formatting is used. For example, if you specify the typeface to use for rows and the color to use for columns, both of those format options are applied.

- Formatting specified for a measure in a pivot table takes precedence over formatting specified elsewhere.

- Formatting specified for columns takes precedence over formatting specified for rows or the entire pivot table.

- Formatting specified for rows takes precedence over formatting specified for the entire pivot table.

- Formatting specified in the pivot table takes precedence over formatting specified in a measure definition (other model elements do not have format options).

6.3 Displaying a Constant Row or Column

You can display a constant value rather than the selected item. To do so:

1. Click the Advanced Options button ⚙ next to the item.

   See "Customizing Pivot Table Items."

2. Click **Value**.

3. Type a value into **Value**. For example:

   Show
   ○ Members ⊙ Value ○ Space ○ Advanced
   Place a constant value in this axis.
   Value
   5000
   Display a constant value in cells; use quotes for string values

4. Click **OK**.

You might also want to specify a different caption; see "Specifying New Captions," later in this chapter.

6.4 Specifying a Spacer Row or Column

You can display a spacer row or column rather than the selected item or items. To do so:

1. Click the Advanced Options button ⚙ next to the item.

   See "Customizing Pivot Table Items."

2. Click **Space**.

3. Click **OK**.

The following shows an example:

Age Group	Patient Count	Avg Enc Count
0 to 29	4,224	19.76
30 to 59	4,155	37.74
60+	1,621	55.84
Female	5,174	33.97
Male	4,826	32.12

For this pivot table, the **Rows** definition is as follows:

Rows   ↑ ↓ + ⚙ ✖
Age Group ↘ ⚙ ✖
space ↘ ⚙ ✖
Gender ↘ ⚙ ✖
Drop row here

6.5 Displaying an Different Set for Rows or Columns

You can display an alternative set of elements rather than the selected item or items. To do so:

1.
   Click the Advanced Options button ⚙ next to the item.

   See "Customizing Pivot Table Items."

2.   Click **Advanced**.

3.   Type an MDX set expression into **MDX Expression**.

   For information, see *Using MDX with DeepSee*.

4.   Click **OK**.

6.6 Specifying New Captions

To specify new captions:

1.
   Click the Advanced Options button ⚙ next to the item or in the header of the **Rows** or **Columns** box, as appropriate.

   See "Customizing Pivot Table Items."

2.   Type a value into **Caption**.

   To include the original name in the caption, use an asterisk (*) at the appropriate position.

3.   Click **OK**.

For example:

Age Group	Patient Count	Avg Enc Count
Group: 0 to 29	4,224	19.76
Group: 30 to 59	4,155	37.74
Group: 60+	1,621	55.84

In this case, **Caption** is `Group:  *`

6.7 Specifying a Format String

A format string controls how numbers are displayed and can also specify colors to use. To specify the format string for an item:

1.
   Click the Advanced Options button ⚙ next to the item or in the header of the **Rows** or **Columns** box, as appropriate.

   See "Customizing Pivot Table Items."

2.
   Click the Find button 🔍 next to **Format**.

The system displays a dialog box that includes the following fields:

Here:

- **Positive piece** specifies the format to use for positive values.

- **Negative piece** specifies the format to use for negative values.

- **Zero piece** specifies the format to use for zero.

- **Missing piece** specifies the format to use for missing values.

In each of these, **Format string** specifies the numeric format, and **Color** specifies the color.

3. Specify values as needed (see the details after these steps).

4. Click **OK**.

6.7.1 Format String Field

The **Format string** field is a string that includes one of the following base units:

Base Unit	Meaning	Example
#	Display the value without the thousands separator. Do not include any decimal places.	12345
#,#	Display the value with the thousands separator. Do not include any decimal places. This is the default display format for positive numbers.	12,345
#.##	Display the value without the thousands separator. Include two decimal places (or one decimal place for each pound sign after the period). Specify as many pound signs after the period as you need.	12345.67
#,#.##	Display the value with the thousands separator. Include two decimal places (or one decimal place for each pound sign after the period). Specify as many pound signs after the period as you need.	12,345.67

You can include additional characters before or after the base unit.

- If you include a percent sign (%), the system displays the value as a percentage. That is, it multiplies the value by 100 and it displays the percent sign (%) in the position you specify.

- Any other characters are displayed as given, in the position you specify.

The following table shows some examples:

Example formatString	Logical Value	Display Value
formatString="#,#;(#,#);" Note that this corresponds to the default way in which numbers are displayed.	6608.9431	6,609
	−1,234	(1,234)
formatString="#,#.###;"	6608.9431	6,608.943
formatString="#%;"	6	600%
formatString="$#,#;($#,#);"	2195765	$2,195,765
	−3407228	($3,407,228)

6.7.2 Color Piece

For the *Color* field, specify either of the following:

- A CSS color name such as MediumBlue or SeaGreen. You can find these at https://www.w3.org/TR/css3-color/ and other locations on the Internet.

- A hex color code such as #FF0000 (which is red).

- An RGB value such as rgb(255,0,0) (which is red).

6.8 Specifying Cell and Header Styles

To specify the cell and header styles for an item:

1. Click the Advanced Options button ⚙ next to the item or in the header of the **Rows** or **Columns** box, as appropriate.

   See "Customizing Pivot Table Items."

2. Select values in the **Cell Style** and **Header Style** groups. These enable you to specify the style of the cells and the headers, respectively:

   To use these options, click each drop-down and select a value. For example:

   This style definition specifies that the header is in 12 pt, blue Verdana on a pale green background. The header is also bold and center-aligned.

3. Click **OK**.

6.9 Sorting and Filtering Members

You can filter and sort the members of a level or named set in various ways. To do so:

1. Click the Advanced Options button ⚙ next to a level or named set or in the header of the **Rows** or **Columns** box, as appropriate.

   See "Customizing Pivot Table Items."

2. Specify the following options as needed:

   • **Filter members** — Select this to filter the members by a measure value. Then select a measure and a comparison operator and type a value.

   • **Sort members** — Select this to sort the members. Then select the measure by which to sort them. Click **Ascending** or **Descending** to control how the members are sorted.

   • **Return the first n members** — Select this to select a subset from the beginning of the set. Then type an integer into **Count**.

     When you use this option, the system first uses any settings you specified for the **Filter members** and **Sort members** options.

3. Click **OK**.

6.10 Specifying Alternative Aggregation Methods for a Measure

For any cell in a pivot table, each measure is aggregated from the lowest-level data. Aggregation methods include sum, average, maximum value, and others. By default, DeepSee uses the aggregation method specified in the measure definition. You can specify an alternative method.

Similarly, if you add a summary row or column, you specify how to aggregate the displayed values into a single number for that summary row or column. You can specify an alternative method for this as well.

To specify alternative aggregation methods for a measure:

1. Click the Advanced Options button ⚙ next to the measure.

    See "Customizing Pivot Table Items."

2. Specify either or both of the following options:

    -   **Measure Aggregate** specifies how this measure is aggregated from a set of values in your data.

        The choices are **SUM**, **AVG**, **MIN**, **MAX**, and **COUNT**.

    -   **Total Override** specifies how the displayed measure values are aggregated for any summary rows or columns.

        The choices are **Sum**, **Count**, **Min**, **Max**, **Average**, **% of Total**, and **None**.

3. Click **OK**.

See also "Adding a Summary Row or Column," earlier in this book.

6.11 Customizing Double-Click Drilldown

By default, when you double-click a row in a pivot table, DeepSee drills down to the next lowest level in the hierarchy, if any (see "Drilldown via Double-Click," later in this book). You can customize this behavior. To do so:

1. Click the Advanced Options button ⚙ in the header of the **Rows** box.

2. Expand the **Drilldown Options** group if that is collapsed.

3. For **Drilldown Expression**, specify one or more MDX set expressions, one per line. For example:

    ```
    colord.h1.[favorite color].members
    gend.h1.gender.members
    ```

    To specify MDX set expressions, you can do either of the following:

    -   Type the expression directly into **Drilldown Expression**.

    -   Use the Expression Builder. To access this tool, click the plus sign ➕ next to **Drilldown Expression**. The left area lists the contents of the cube, including all measures and levels. The right area displays the expression that you are creating. To add an item to the expression, drag and drop it from the left area to the expression. The item is added to the end of the expression, and you might need to move it to a different part of the expression.

Typically you use set expressions of the form *[dimension]*.*[hierarchy]*.*[level]*.`MEMBERS`, where *dimension* is the logical name of a dimension, *hierarchy* is the logical name of a hierarchy, and *level* is the logical name of a level. This expression represents the members of the given level.

If these identifiers do not include spaces, you can omit the square brackets. Also, the expression is not case-sensitive.

The first set expression controls what happens when the user double-clicks the first time. Specifically, when the user double-clicks the first time, DeepSee creates a new query that uses this set expression for rows and that is filtered to the given context.

Similarly, the second expression controls what happens when the user double-clicks the second time, and so on.

The **Drilldown Expression** option overrides any other drilldown behavior in this pivot table. That is, if a level is in a hierarchy, the hierarchy drilldown behavior does not occur for this pivot table.

4. Click **OK**.

For an example, see "Custom Double-Click Drilldown," later in this book.

Note:
The same option is available in the Advanced Options button in the header of the **Columns** box. This option is ignored by default but is used if you pivot the table (via the Transpose button) and then perform double-click drilldown.

6.12 Applying Conditional Formatting

You can apply conditional formatting, which can add color, text, or graphics to pivot table cells. To do so, you create rules that examine the values in the cells. This conditional formatting overrides any customization you added to the pivot table.

To do so, click the Conditional Formatting button in the toolbar. The system displays a dialog box like the following (in this example, one rule has been specified):
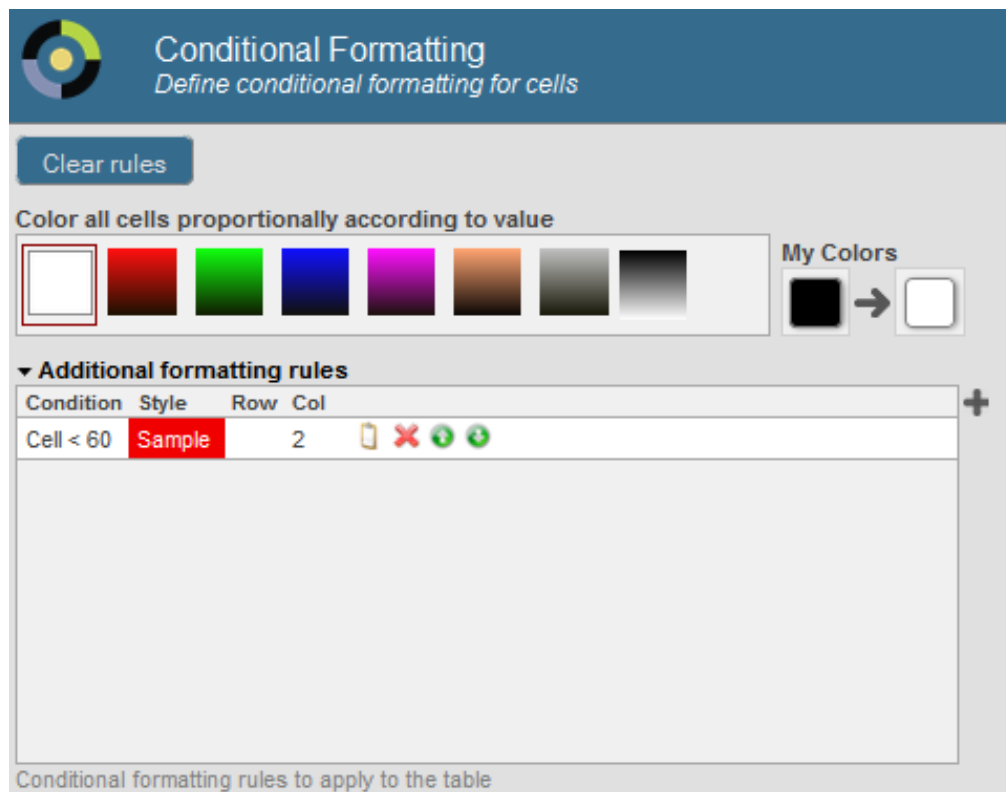
Here, you can do the following:

- Clear all conditional formatting. To do so, click **Clear rules**.

- Apply an overall color, based on values in the cells. To do so, click a button in the section **Color all cells proportionally according to value**. See "Applying an Overall Color."

- Define a custom gradient for use with the option **Color all cells proportionally according to value**. To define a custom gradient, use the two buttons displayed below **My Colors**. Click the first one and select a color to use at the bottom of the range. Click the second one and select a color to use at the top of the range. When you are done, the dialog box displays your gradient next to the predefined gradients. For example:
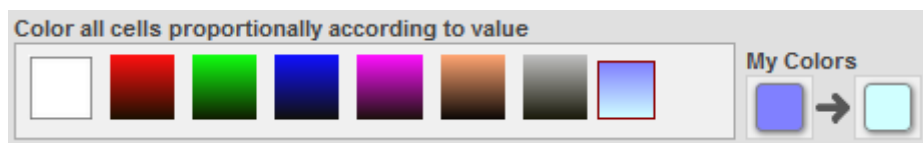
- Create formatting rules. See "Adding a Rule."

- Change the order of the rules. To do so, click the up or down arrows in the row for a rule.

- Delete a rule. To do so, click the X button in the row for that rule.

- Reconfigure a rule. To do so, click the Reconfigure button ▯ in the row for that rule.

- Apply the existing rules while leaving this dialog box open. To do so, click **Apply**.

- Apply the existing rules and exit this dialog box. To do so, click **OK**.

- Close this dialog box without making changes. To do so, click **Cancel**.

Rules are applied in the same order that they are listed here. If a later rule contains formatting information that is inconsistent with an earlier rule, the system uses the formatting specified in the later rule.

6.12.1 Applying an Overall Color

If you click a button in the section **Color all cells proportionally according to value**, the cells are colored according to their values. This works as follows: Each button displays a gradient of colors. To assign a color to a cell, DeepSee examines the range of values of the cells. If a value is at the bottom of this range, DeepSee uses the color that is shown at the top of the gradient button (a dark blue in the following example). If a value is at the top of this range, DeepSee uses the color that is shown at the bottom of the gradient button (a light blue in the following example). For other values, DeepSee uses an intermediate color. The following shows an example:

Age Bucket	Patient Count
0 to 9	149
10 to 19	135
20 to 29	116
30 to 39	166
40 to 49	139
50 to 59	106
60 to 69	86
70 to 79	62
80+	41

6.12.2 Adding a Rule

To add a rule, click the plus sign button. The system displays a dialog box where you can specify the rule details (in this example, one rule has been specified):

Here you can do the following:

- Specify the numeric comparison for the rule to use. A rule compares the value in each cell (or in specific cells) to a constant, using an operator. For example:

```
cell_value > 50
```

For each cell where this rule is true, the rule is applied. All the display details of the rule are applied to that cell.

To specify the numeric comparison, do the following:

1. Select an operator from the first drop-down menu.

2. Type a numeric constant into the field to the right of that.

- Optionally specify which row, which column, or both the rule applies to. To do so, type a number into **Row #**, **Col #**, or both.

- Optionally specify the text color to use when the rule is true. To do so, click a button in the **Color** section. If you select the left-most button, DeepSee uses the default color.

- Optionally specify the background color to use when the rule is true. To do so, click a button in the **Background Color** section. If you select the left-most button, DeepSee uses the default color.

- Optionally specify replacement text to display when the rule is true, instead of the actual cell value. To do so, type text into **Replace cell contents with**.

- Optionally specify an icon to display when the rule is true, instead of the actual cell value. To do so, click a button in **Display icon in cell**. This area lists the system icons, followed by any custom icons defined by the implementers. (For information on adding icons that can be used here, see "Creating Icons" in the *DeepSee Implementation Guide*.)

  If you select the left-most button, DeepSee does not display an icon.

  To display multiple icons, click a number from the **Number of icons to display** list.

The bottom of the dialog box shows a preview of the formatting.

6.13 Specifying the Print Settings

To specify the print options for a given pivot table:

1. Display that pivot table in the Analyzer.

2. Click the Print Options button .

3. Click **Page Setup**.

4. Specify options as described in "Customizing Print Settings for a Widget" in *Creating DeepSee Dashboards*.

5. Click **OK**.

6. Save the pivot table.

For comments on printing, see "Printing Pivot Tables," later in this book.

Note that when you create dashboards, you can specify print settings in the dashboards as well. See "Customizing Print Settings for a Widget" in *Creating DeepSee Dashboards*.

6.14 Specifying the MDX Query Manually

Sometimes it is useful to see and then modify the MDX query that DeepSee generates for a pivot table. To do so:

1.
   Click the Query Text button .

   DeepSee then displays a dialog box that displays the query used by this pivot table.

2. If you want to use a different query, click **Manual Mode**.

3. Edit the query. See the following subsection for an example.

   If you had displayed a detail listing, the bottom area of this dialog box also displays the listing query that DeepSee used:

   ```
   SQL Listing Query
   SELECT TOP 1000 PatientID,Age,Gender,HomeCity->Name AS "Home City",TestScore AS "Test Score"
   FROM DeepSee_Study.Patient source WHERE source.%ID IN (SELECT _DSsourceId FROM
   DeepSee_Model_PatientsCube.Listing WHERE _DSqueryKey = 'enus1452877348') ORDER BY Age,Gender
   ```

4. Click **OK**.

When the Analyzer displays a pivot table that is defined by a manually edited or manually entered MDX query, the Query Text button changes to the following: . Also, the **Rows**, **Columns**, and **Measures** boxes are grayed out. You cannot use locally defined calculated members unless you also add the appropriate WITH clause to your query. You can, however, drag items to the **Filters** box; DeepSee applies these filters but does not modify the manual query text. That is, the base query and its filters are stored separately within the pivot table definition.

Tip: You can also use the Query Text option to copy and paste the query (for example, to use in the MDX shell).

6.14.1 Modifying Details of the 80/20 Suppression Option

For example, if you had used the 80/20 suppression option, the MDX query might look like this (with harmless line breaks added):

```
SELECT
NON EMPTY {[Measures].[Amount Sold],[Measures].[Units Sold],[Measures].[%COUNT]}
ON 0,
NON EMPTY
{TOPPERCENT([Product].[P1].[Product Name].Members,80),
%LABEL(SUM(BOTTOMPERCENT([Product].[P1].[Product Name].Members,20)),"Other",,,,"font-style:italic;")}

ON 1
FROM [HoleFoods]
```

For the TOPPERCENT and BOTTOMPERCENT functions:

1. The first argument specifies the set of members to use.

2. The second argument specifies the percentage.

3. The third argument (omitted in the preceding example) specifies the measure to use for ranking the members.

To change the percentages, change the second arguments for TOPPERCENT and BOTTOMPERCENT. For example:

```
SELECT
NON EMPTY {[Measures].[Amount Sold],[Measures].[Units Sold],[Measures].[%COUNT]} ON 0,
NON EMPTY
{TOPPERCENT([Product].[P1].[Product Name].Members,90),
%LABEL(SUM(BOTTOMPERCENT([Product].[P1].[Product Name].Members,10)),"Other",,,,"font-style:italic;")}
ON 1
FROM [HoleFoods]
```

For details on MDX, see *Using MDX with DeepSee* and *DeepSee MDX Reference*.

7

Working with Pivot Tables

This chapter discusses how to work with pivot tables. It discusses the following topics:

- How to open a saved pivot table

- How to disable and enable auto-execution in the Analyzer

- How to cancel a running query

- How to export to Excel

- How to print

- How to send email

- How to display the pivot table as a chart

- How to delete a pivot table

7.1 Opening a Saved Pivot Table

To open a saved pivot table:

1. Click **Open**. Or click **Menu > Open**.

   The system displays a dialog box, which shows names of folders and of pivot tables that are not in any folders.

2. Optionally click the name of a folder.

   The dialog box then shows the contents of that folder.

   Repeat as necessary if your folders are nested.

3. Click the name of the pivot table you want to open.

4. Click **Go**.

The system closes the dialog box and then displays the selected pivot table in the Analyzer.

In most cases, the underlying query is executed automatically. If it is not, click the Refresh button . See the next topic.

7.2 Disabling and Enabling Auto-Execution

By default, when you make any change to the pivot table, the Analyzer re-executes the query and redisplays the results. You can disable this auto-execution. To do so, clear the **Auto-execute** option on the toolbar.

Later, to enable auto-execution, select the **Auto-execute** option.

Note: If you disable auto-execution and save the pivot table, that change is saved as part of the pivot table definition and affects the behavior of any dashboards that use the pivot table. Therefore, you should be careful to make this change and save it only if you do not want the pivot table to run automatically in dashboards. Be sure to include a refresh control in any widget that displays this pivot table.

7.3 Canceling a Running Query

While the Analyzer is executing a query, you can cancel it. To do so, click the Cancel Query button .

7.4 Exporting Data to Microsoft Excel

You can export data to Microsoft Excel from a pivot table widget, but not from other types of widgets. To do so, click the

Export to Excel button in the widget.

The system then generates an Excel file that contains all the data currently displayed in the widget. The file has the name %DeepSee.UI.MDXExcel.zen.xls, %DeepSee.UI.MDXExcel.zen-1.xls, or similar. Your browser then does one of the following, depending on your operating system, the configured file types on your machine, your browser, and your browser settings:

- Opens the file with Excel (or other selected program).

    You specify the program to use by setting a browser option. For example, on Firefox, you use **Tools > Options > Applications**. This option also enables you to specify whether the browser should open the file with this program or prompt you to save it to the hard drive.

- Prompts you to open the file with Excel (or other selected program, as described in the previous bullet).

- Opens this file within the current browser window.

    This is the default behavior for Windows operating systems earlier than Windows Vista. You can change this behavior on the **Edit File Type** dialog box (which you access via **My Computer > Tools > Folder Options** or **My Computer > View > Options**, depending on the operating system version).

    This option is not available on Windows Vista and later Windows operating systems.

- Prompts you to save the file to the hard drive.

- Automatically saves the file to the hard drive.

When you export to Excel, note that it is not possible to export more than 250000 rows. Also, if the cube is based on a data connector that uses an external table, there is a limit of 1000 rows in the listing.

Note: If no numeric formatting is specified, any numbers are formatted as integers by default. (The actual values are available in Excel, and you can change the formatting as needed to display them appropriately). If numeric formatting is specified in the model or in the pivot table definition, that formatting is used in Excel.

7.5 Printing a Pivot Table

To print a pivot table from the Analyzer, click the Print button ![print icon] . DeepSee generates a .pdf file and opens it in your default browser. You can then use options in the browser to print the file or to download it, for printing later.

Note that if you download the file, the browser saves the file to the default download directory for that browser; there is no mechanism for DeepSee to specify a different location.

Also see "Specifying the Print Settings," earlier in this book.

7.5.1 Requirements for Printing

When a user invokes the Print option, Caché uses Java to call out to a third-party PDF rendering tool. This means that Java (or specifically JRE, Java Runtime Executable) is required on the user's machine. For information on the requirements, which also apply to Zen Reports, see "Configuring Zen Reports for PDF Output" in *Using Zen Reports*.

7.6 Sending Email

You can send email that contains a link to the pivot table, if your system is configured for this. To do so:

1. Open a pivot table that contains the data about which you want to send a message.

2. Click **Menu > Send Email**.

   If this option is not present, then your system is not configured to support email.

3. The system then does one of the following:

   • Displays the default email system on your machine, with a message that contains a link to the dashboard.

     Edit the message, specify one or recipients, and send it as usual.

   • Displays a dialog box.

     Choose a recipient, type a brief message to include along with the generated link, and click **OK**.

7.7 Displaying the Pivot Table as a Chart

By default, the Analyzer displays the results in table format. You can use the buttons in the upper left to switch to other formats.

To display the results as a chart, click the Display As Chart button ![chart icon] . For example:
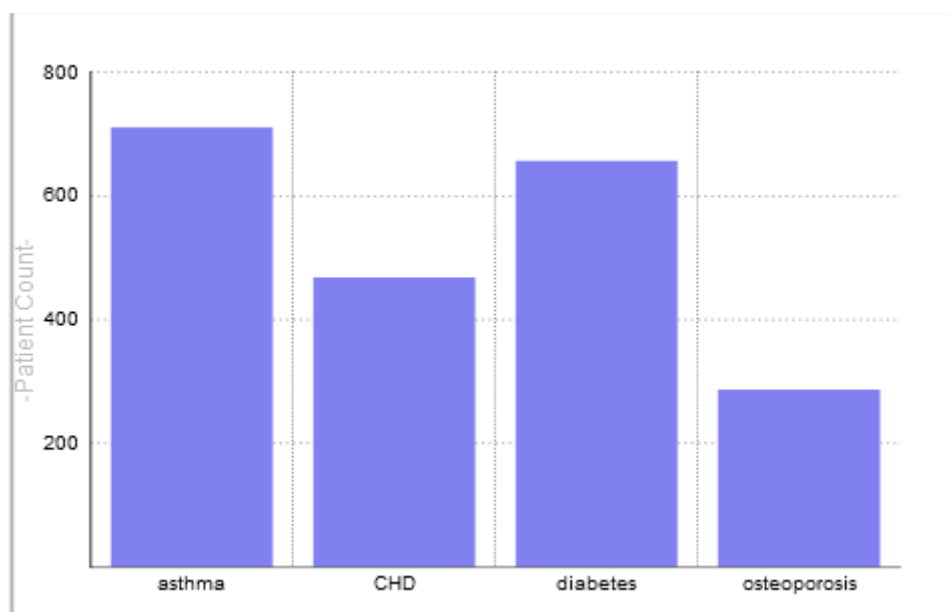
To display the results as a table and chart, click the Display As Table and Chart button [image]. For example:
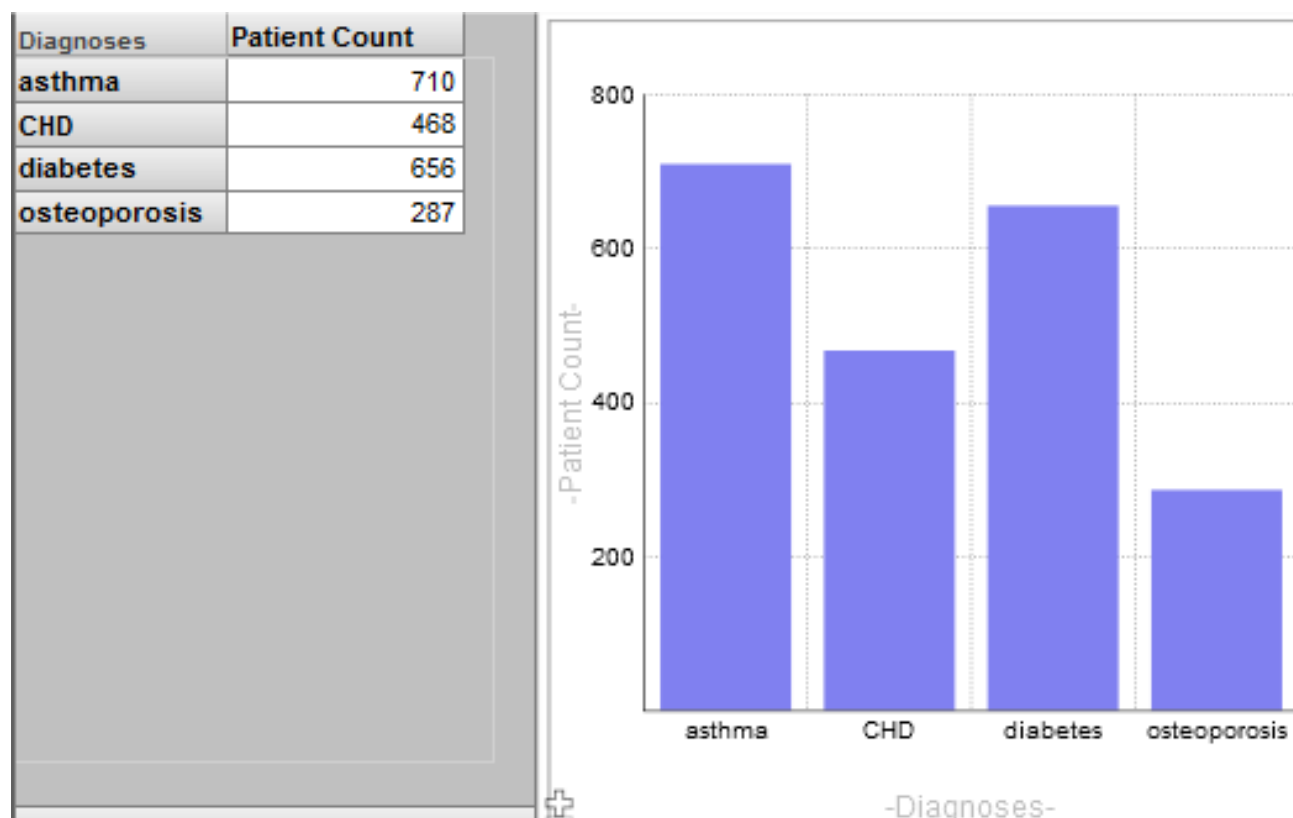
To display the results as a table, click the Display As Table button [image].

If you click the Chart Options button [image], the Analyzer displays the following page:

Here you can do the following:

- Specify a new title. To do so, type a value into **Title**.

- Specify a chart type. To do so, click the button in the **Chart Type** section.

- Control the display of grid lines. To do so, click a button in the **Grid Lines** section.

- Control the text size. To do so, click a button in the **Text Size** section.

- Specify the minimum value to display on the vertical axis. To do so, type a value into **Minimum Axis Value**.

- Specify the maximum value to display on the vertical axis. To do so, type a value into **Maximum Axis Value**.

Notes:

- These changes do not affect the definition of the pivot table. When you add a pivot table to a dashboard, you can choose a chart type.

- A chart displays only the first 100 items.

For information on the chart types, see "Available Chart Types" in the chapter "Adding Chart Widgets" in *Creating DeepSee Dashboards*.

7.8 Deleting a Pivot Table

To delete a pivot table in the Analyzer, click **Delete**.

Note: When you delete a pivot table, DeepSee moves it into a folder named $TRASH. Or, if the pivot table is already in a folder, then $TRASH/ is prepended to the folder name. In either case, the pivot table is no longer visible in the web-based interfaces. If you have access to Studio, you can restore it. For details, see "Restoring Deleted Folder Items" in the chapter "Packaging DeepSee Elements into Classes" in the *DeepSee Implementation Guide*.

8

Performing Ad Hoc Analysis

This chapter describes ways to analyze the data you see when viewing a pivot table in the Analyzer.

- How to display a detail listing

- How to drill down via double-click

- How to perform an arbitrary drill down

- Introduction to the Pivot Analysis window

8.1 Displaying a Detail Listing

A detail listing displays fields at the lowest level, for the records associated with one or more selected cells. You can display a default listing, select a different listing to display, or even select the fields to display. You can also sort the detail listing. The following subsections provide the details and also describe how to exit the listing.

Note: If you display a listing and save the pivot table, the Analyzer saves its listing state. That is, when you next open it, the Analyzer redisplays the pivot table as a listing. Similarly, if it is included in any dashboards, it is displayed there as a listing.

8.1.1 Displaying the Default Detail Listing

To display the default detail listing:

1. Display a pivot table as usual.

2. Click the data cells in the row or rows.

   To select multiple cells, hold the **Shift** key down while clicking the cells.

   To select an entire row, click the row label on the left. To click an entire column, click the column header.

   The listing option is not available for cells in a total row or a total column.

3.
   Click the Listing button ![binoculars icon].

The Pivot Preview area displays something like the following:

#	PatientID	Age	Gender
1	SUBJ_100381	78	M
2	SUBJ_100389	74	F
3	SUBJ_100558	56	M
4	SUBJ_100568	78	M
5	SUBJ_100610	58	F
6	SUBJ_100672	81	F
7	SUBJ_100736	73	M
8	SUBJ_100737	73	M
9	SUBJ_100758	82	F
10	SUBJ_100765	78	M
11	SUBJ_100775	72	F
12	SUBJ_100833	68	M
13	SUBJ_100848	64	F

If there are more than 100 rows, the bottom area displays buttons that you can use to page through all the rows.

The Pivot Builder area now displays the **Custom Listing Fields** box, which is for use when you select fields to display, if possible.

8.1.2 Displaying a Different Detail Listing

To display a different listing:

1. Display the default listing as described earlier.

2. Select **Detail Listings** in the Model Contents area.

3. Click the name of the listing to display.

    Typically each listing uses a different set of fields and is meant for a different purpose.

    If the name of a listing is italicized, that indicates that this listing is defined in a listing group *and* that you have the necessary permissions to modify the listing. See "Defining Listing Groups" in *Defining DeepSee Models*.

Or, *before* you display the listing, do the following:

1. Click the Pivot Options button   .

2. Select a listing from the **Listing** drop-down menu.

3. Click **OK**.

8.1.3 Creating a Custom Listing

Depending on the subject area, you might be able to create a custom listing that uses fields that you select. To do so:

1. Display the default listing as described earlier.

2. Select **Detail Listings** in the Model Contents area.

3. Select **Custom Listing**.

    DeepSee then displays a listing that initially shows only the IDs of the records.

4. Optionally clear the **Auto-execute** check box.

This is helpful if the listing uses many records, because each time when you change the listing definition, DeepSee reruns the corresponding query by default. When **Auto-execute** is off, DeepSee does not rerun the query automatically.

5. Expand the **Custom Listing** folder. For example:

This folder lists the available listing fields in this subject area.

Note that the Patients cube in SAMPLES defines a listing named **Custom listing**. This listing is an ordinary listing defined with custom syntax and cannot be used as described here.

6. Drag listing fields from this area to the **Custom Listing Fields** box.

7.
   If you cleared the **Auto-execute** check box, use the Refresh button in the Pivot Builder area.

   DeepSee then runs the query and displays the results. For example:

8.1.4 Sorting a Listing

By default, the definition of a listing controls the order of the rows.

You can instead sort the listing by the values shown in any data column. To do so, double-click the column header.

The first time you double-click the column header, the listing is sorted in ascending order, by the values in that column, and the column header includes the >> characters to indicate this sorting.

If you double-click the column header again, the listing is sorted in descending order instead (and the column header includes the << characters). If you double-click a third time, the sorting is removed and the default order is restored.

8.1.5 Exiting the Listing

To exit the listing and redisplay the pivot table, do either of the following:

*   Click the left arrow button

*   Click the Display Table button:

8.2 Drilldown via Double-Click

In some cases, you can drill down by double-clicking a row (other than a total row).

In some of these cases, DeepSee uses the hierarchy, if any, to determine how to drill down. In other cases, DeepSee drills down in a custom manner, as defined in the pivot table.

Note: The drilldown action has no effect if the pivot table uses a manually entered MDX query. See "Specifying the MDX Query Manually," earlier in this book.

8.2.1 Drilldown in a Hierarchy

This section describes drilldown in a hierarchy. For example, in the Patients sample, The ZIP code level is the parent of the city level. Consider the following pivot table:

ZIP	Patient Count	Avg Test Score
32006	2,226	73.93
32007	1,097	74.85
34577	3,366	74.28
36711	1,098	73.95
38928	2,213	74.25

If you double-click the cell 38928, the system displays the following in the upper right of the pivot builder area:
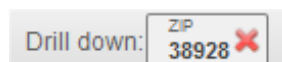
And the pivot table looks like this:

ZIP:38928	Patient Count	Avg Test Score
« Cedar Falls	1,131	74.51
« Elm Heights	1,082	73.97

8.2.2 Custom Double-Click Drilldown

To customize how DeepSee drills down, see "Customizing Double-Click Drilldown" earlier in this book. This section provides a demonstration.

For example, consider the following pivot table:

ZIP	Patient Count	Avg Age
32006	230	35.96
32007	115	35.79
34577	325	37.54
36711	95	37.78
38928	235	36.60

Suppose that for this pivot table, we specify **Drilldown Expression** as follows:

```
colord.h1.[favorite color].members
gend.h1.gender.members
```

If we double-click the cell 32006, the pivot table then looks like this:

	Patient Count	Avg Age
« None	55	35.36
« Blue	31	40.61
« Green	31	31.32
« Orange	20	39.55
« Purple	31	36.61
« Red	39	32.10
« Yellow	23	39.91

If we double-click the cell None, the pivot table then looks like this:

	Patient Count	Avg Age
« Female	34	37.97
« Male	21	31.14

If we double-click again, nothing further happens.

8.2.3 Saving the Drilldown

If you drill down in a pivot table and then save it, the Analyzer saves its drilldown state. That is, when you next open it, the Analyzer redisplays the pivot table with the drilldown. Similarly, if the pivot table is included in any dashboards, they display it in its drilldown state.

8.2.4 Clearing the Drilldown

To clear the drilldown of a pivot table, you can do any of the following:

*   Click the left arrow button in the toolbar.

*   Click the X button in the **Drill down** area in the toolbar, if applicable.

*   Click the << arrows in any of the rows in the pivot table.

8.3 Performing Arbitrary Drilldown

In the drilldown action, you focus on a row in the pivot table and see a different breakout for that row. To *drill down* in an arbitrary way, drag and drop any level from the Model Contents pane onto the non-scrolling part of a row in the pivot table.

For example, suppose that you start with the following pivot table:

City	Patient Count	Avg Test Score
Cedar Falls	1,131	74.51
Centerville	1,098	73.95
Cypress	1,121	74.24
Elm Heights	1,082	73.97
Juniper	1,173	74.55
Magnolia	1,111	74.77
Pine	1,134	73.85
Redwood	1,097	74.85
Spruce	1,053	73.26

Suppose that you expand the level list in the Model Contents pane (not shown) to display the birth year 1989. Then drag and drop 1989 onto Elm Heights. the system displays the following in the upper right of the pivot builder area:

Drill down: ZIP 38928 ✖
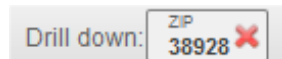
And the pivot table looks like this:

1989	Patient Count	Avg Test Score
« 1989	21	75.83

This option is not available for a total row.

Also see "Saving the Drilldown State" and "Clearing the Drilldown State," earlier in this chapter.

Note: The drilldown action has no effect if the pivot table uses a manually entered MDX query. See "Specifying the MDX Query Manually," earlier in this book.

8.4 Introduction to the Pivot Analysis Window

The Analyzer also provides the Pivot Analysis window, which you can use for several specialized kinds of analysis. In each case, you first select one or more cells, and the analysis considers the lowest-level data associated with those cells. To access this window:

1. Click the data cells in the row or rows.

   To select multiple cells, hold the **Shift** key down while clicking the cells.

   To select an entire row, click the row label on the left. To click an entire column, click the column header.

   The analysis option is not available for cells in a total row or a total column.

2.

Click the Analysis button .

For details, see the chapter "Using the Analysis Window" in the *DeepSee End User Guide*. (The same analysis options are also present in dashboards.)