

Don't Miss Out On Excel Cube Functions

Meagan Longoria

BI Solutions Consultant at Valorem Consulting

Twitter: [@mmarioe](https://twitter.com/mmarioe)

Blog: DataSavvy.wordpress.com

Who Am I and What Am I Doing Here?

- Business Intelligence Consultant with Valorem Consulting in Kansas City, MO
- Organizer of Kansas City SQLSaturday
- LinkedIn: www.linkedin.com/in/meaganlongoria/
- Twitter: [@mmarie](https://twitter.com/mmarie)
- Blog: <http://datasavvy.wordpress.com/>



Let's Get Started

- Slides and examples are on the SQLSaturday site as well as my blog. All examples use the AdventureWorks Tabular Cube.
- Questions are expected and welcomed throughout the presentation.
- **Audience Survey**
 - **What is your main function in your job (DBA/BI Developer/BA)?**
 - **Who has used OLAP/PowerPivot Pivot Tables?**
 - **Who can write MDX?**

What Are Cube Functions?



- **Another great tool in your report developer/business analyst toolbox**
- Introduced in Excel 2007
- Enable data from OLAP cubes and PowerPivot models to be brought into Excel cells using functions
- Native to Excel, no add-ins needed to use cube functions (except PowerPivot, if using that as your data source)

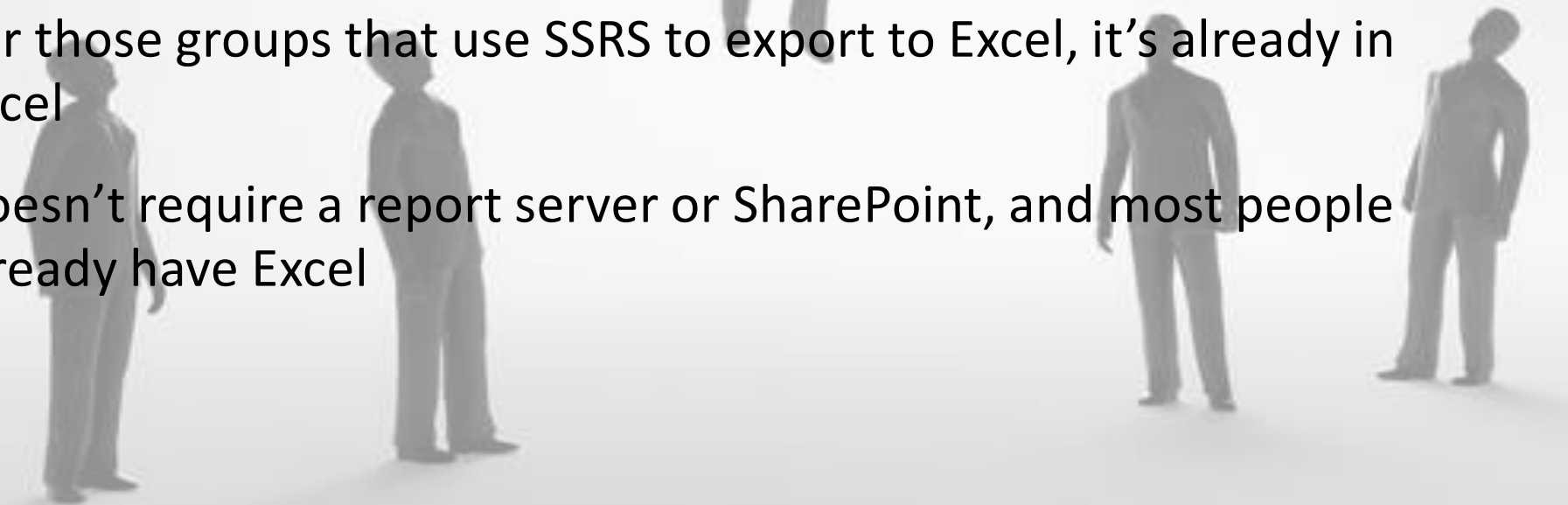
Advantages Over Pivot Tables

A person in a dark suit is reaching up to touch a red balloon. In the background, four other people in dark suits are standing on a light-colored floor, looking towards the person with the balloon. The scene is set against a plain, light-colored wall.

- Asymmetrical reporting – not limited to predefined pivot table structure
- No loss of functionality when designing charts
- Easily add basic calculations to a report
- Combine data from multiple sources
- Easily add custom spacing, precise grouping and ordering

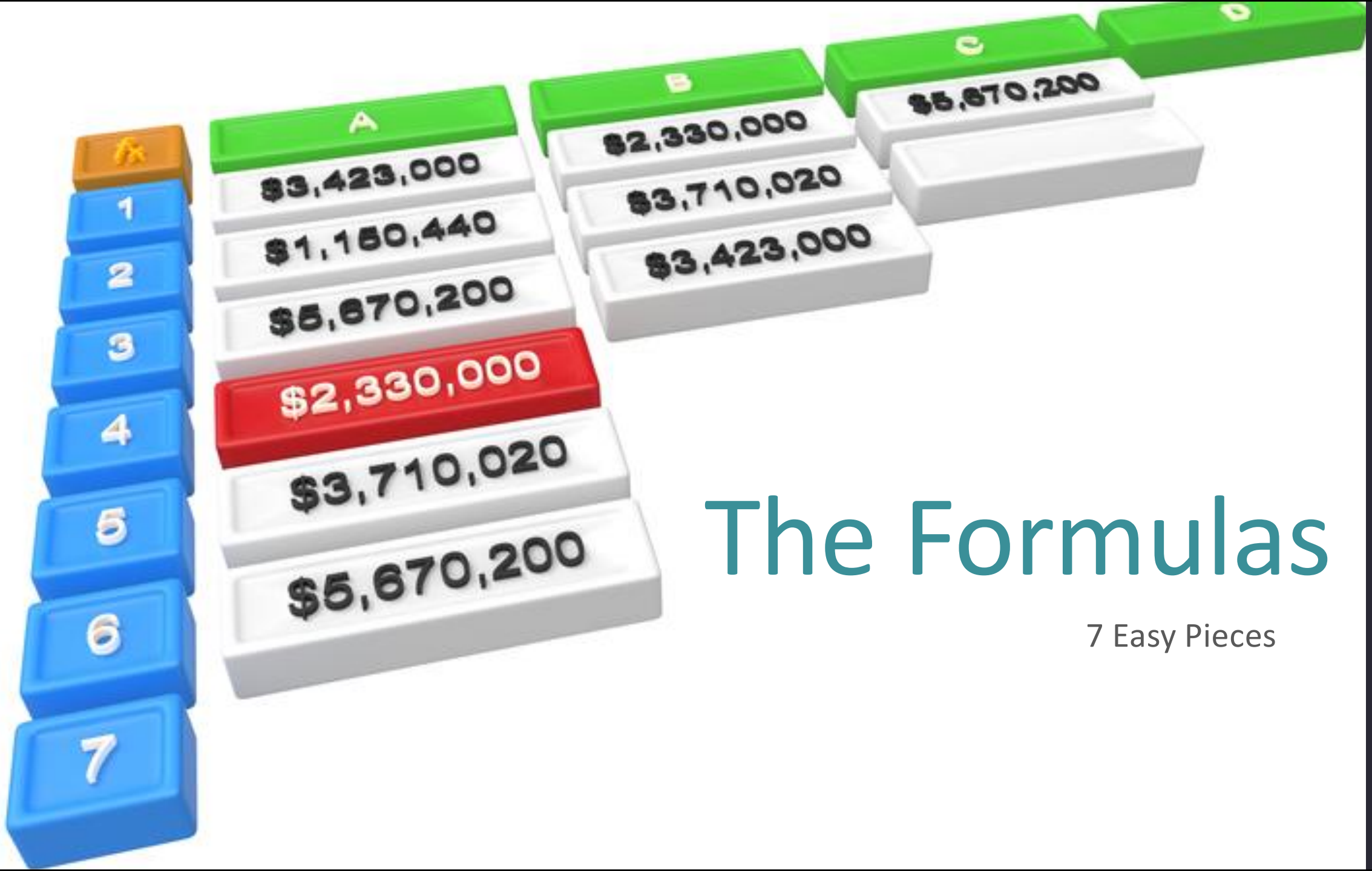
Advantages Over SSRS

A silhouette of a person in a suit reaching up to touch a red balloon. The balloon is floating in the air, and the person's arm is extended towards it. The background is a light, neutral color.

- Excel users get a familiar interface and no need to learn VBA expressions
 - Easier to combine data from multiple sources in one table
 - Referencing cells relative to position makes formulas shorter
 - For those groups that use SSRS to export to Excel, it's already in Excel
 - Doesn't require a report server or SharePoint, and most people already have Excel
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- A series of silhouettes of people in business attire. One person is in the center, reaching for a red balloon. To the left and right, there are several other silhouettes of people standing and looking in various directions. The background is a light, neutral color.

Foundational Concepts

- Basic MDX/Cube concepts
 - Members
 - Sets
 - Measures/Values
 - Member Properties
 - KPIs
- Demo: Convert a pivot table to cube functions



The Formulas

7 Easy Pieces

Cubemember

CUBEMEMBER(connection,member_expression,caption)

- Connection is a text string of the name of the connection to the cube.
- Member_expression is a text string of a multidimensional expression (MDX) that evaluates to a unique member in the cube. Alternatively, member_expression can be a tuple, specified as a cell range or an array constant.
- Caption is a text string displayed in the cell instead of the caption, if one is defined, from the cube. When a tuple is returned, the caption used is the one for the last member in the tuple.

Cubevalue

CUBEVALUE(connection,member_expression1,member_expression2...)

- Connection is a text string of the name of the connection to the cube.
- Member_expression is a text string of a multidimensional expression (MDX) that evaluates to a member or tuple within the cube. Alternatively, member_expression can be a set defined with the CUBESET function. Use member_expression as a slicer to define the portion of the cube for which the aggregated value is returned. If no measure is specified in member_expression, the default measure for that cube is used.

Cuberset

CUBESET(connection,set_expression,caption,sort_order,sort_by)

- Connection is a text string of the name of the connection to the cube.
- Set_expression is a text string of a set expression that results in a set of members or tuples. Set_expression can also be a cell reference to an Excel range that contains one or more members, tuples, or sets included in the set.
- Caption is a text string that is displayed in the cell instead of the caption, if one is defined, from the cube.
- Sort_order is the type of sort, if any, to perform

Cubesetcount

CUBESETCOUNT(set)

- Set is a text string of a Microsoft Office Excel expression that evaluates to a set defined by the CUBESET function. Set can also be the CUBESET function, or a reference to a cell that contains the CUBESET function.

Cuberankedmember

CUBERANKEDMEMBER(connection,set_expression,rank,caption)

- Connection is a text string of the name of the connection to the cube.
- Set_expression is a text string of a set expression, such as "[Item1].children". Set_expression can also be the CUBESET function, or a reference to a cell that contains the CUBESET function.
- Rank is an integer value specifying the top value to return. If rank is a value of 1, it returns the top value, if rank is a value of 2, it returns the second most top value, and so on. To return the top 5 values, use CUBERANKEDMEMBER five times, specifying a different rank, 1 through 5, each time.
- Caption is a text string displayed in the cell instead of the caption, if one is defined, from the cube.

Cubekpimember

CUBEKPIMEMBER(connection,kpi_name,kpi_property,caption)

- Connection is a text string of the name of the connection to the cube.
- Kpi_name is a text string of the name of the KPI in the cube.
- Kpi_property is the KPI component returned.
- Caption is an alternative text string that is displayed in the cell instead of kpi_name and kpi_property.

Cubememberproperty

CUBEMEMBERPROPERTY(connection,member_expression,property)

- Connection is a text string of the name of the connection to the cube.
- Member_expression is a text string of a multidimensional expression (MDX) of a member within the cube.
- Property is a text string of the name of the property returned or a reference to a cell that contains the name of the property.
- No member properties in tabular SSAS.
- Memberproperties are used to display data that is helpful to see but will not be used to slice (ex: address line 1)
- Example:
 - CUBEMEMBERPROPERTY("Sales","[Store].[MyFavoriteStore]","[Store].[Store Name].[Store Sqft]")

Quiz/Review

- CUBEKPIMEMBER
- CUBEMEMBER
- CUBEMEMBERPROPERTY
- CUBERANKEDMEMBER
- CUBESET
- CUBESETCOUNT
- CUBEVALUE

1. Retrieve the Bikes product category
2. Determine the number of total subcategories
3. Retrieve the total sales value
4. Define a custom group of subcategories that includes socks and tights
5. Retrieve the Sales Territory with the second highest amount of sales from the set of all sales territories

A 3D rendering of three gray cubes stacked on top of each other. A cyan ladder is leaning against the cubes, starting from the bottom cube and reaching up to the top cube. The scene is set against a white background with soft shadows.

Let's Do This

Put Cube Functions to Work

Tips

- Intellisense is your friend
- Name your SSAS connection something short and clearly identifiable. Best practice is to put your connection in a separate cell and reference it in formulas.
- If member_expression is longer than 255 characters, which is the limit for an argument to a function, CUBEMEMBER returns a #VALUE! error value.
 - To use text strings longer than 255 characters, enter the text string in a cell (for which the limit is 32,767 characters), and then use a cell reference as the argument.
- Use IFERROR with cube formulas
- Use formula and value references to other cells
- You can use MDX functions in your cube functions (ex: lag, child, etc.)
- Use captions for more user-friendly labels



Put It All Together

- Extra formulas for ancillary calculations
- Indirect cell references
- Slicers
- Charts
- **Demo**

For More Info...

- Cube functions (reference): <http://office.microsoft.com/en-us/excel-help/cube-functions-reference-HA010083026.aspx>
- PowerPivotPro Blog: <http://www.powerpivotpro.com/2010/06/using-excel-cube-functions-with-powerpivot/>
- Excel Blog: <http://blogs.office.com/b/microsoft-excel/archive/2006/02/02/the-excel-12-blog-rides-again-or-cube-functions-part-1.aspx>
- BI Memos Blog: <http://bimemos.blogspot.com/2011/09/using-mdx-cube-functions-in-excel.html>
- ThatMSFTBIGuy Blog: <http://thatmsftbiguy.com/excelcubefunction/>
- Bob Phillips Blog: <http://msmvps.com/blogs/xldynamic/archive/2012/12/16/cooking-with-cubes.aspx>
- Video- Benefits of Excel Cube Functions Over Pivot Tables: <http://www.youtube.com/watch?v=B-HBnAWRpL0>

Questions and Final Comments



Please feel free to contact me with questions or feedback

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Company website: ValoremConsulting.com



For More Fun

- SQL Saturday Kansas City
- September 14th
- Cerner Corporation's Riverport Campus, [6711 NE Birmingham Rd, Kansas City, MO 64117](#)
- Go to <http://www.sqlsaturday.com/191/eventhome.aspx> to register



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