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DeepSee - Period to date vs same period last year

How are we doing THIS year versus the same period LAST year?

This is a common need in Business Intelligence. In fact, many design specifications for reports make use of a comparison between a selected period (year, quarter, etc) up to a certain date (for example November 15th, 2016) and a summary of the same information for the previous year (i.e. up to November 15th, 2015). This post shows how to implement this in DeepSee.

The following is an example using the HoleFoods cube. The table shows sell counts for each Product Category in rows. The first column shows the sell counts in 2016 up to the date of today. The second column shows the sell counts in 2015 up to exactly one year ago.

In this example the period of interest is year, corresponding to the "YearSold" level in HoleFoods but we will implement a dynamical period that can be set to quarter, month, etc.

Product	Count			
Category	2016	2015		
Candy	12	17		
Cereal	15	16		
Dairy	3	1		
Fruit	14	9		
Pasta	29	32		
Seafood	9	7		
Snack	88	78		
Vegetable	47	40		

This implementation is not trivial but it can be achieved on a "normal" non-KPI pivot

Prerequisites

For this implementation you will need a standard calendar, that is a calendar based on Months and not on custom periods.

A week level in the same hierarchy as day and month will lead to unexpected results. If a week period is needed the week level should be placed in a different hierarchy than the rest of the levels.

Define the Period as a pivot variable

In Analyzer Define a Period pivot variable as in the following picture:

Pivot Variable	×
Pivot Variable Define a pivot variable.	
Variable Name Period Name of the pivot variable Caption Period Displayed name for the pivot variable Description Period in Date Of Sale hierarchy Default Value YearSold How is this variable used © Expression © Literal What type of value will this variable © Expression © String © Nur	have nber O Integer O Day
● Manual ○ Termlist ○ KPI	
Values (one per line) YearSold MonthSold DaySold	Captions (one per line) YearSold MonthSold DaySold
	Cancel OK

Define PTD and LYPTD

Define two <u>Calculated Measures</u> to compute period to date (PTD) and the same period in the last year (LYPTD):

• PTD (Period To Date) with Expression:

%OR(PERIODSTODATE([DateOfSale].[Actual].[\$variable.Period], [DateOfSale].[Actual].[DaySold].&[NOW]))

<u>PERIODSTODATE</u> is an MDX function returning the set of child or descendent members of the given level, up to

and including the given member. In the example above PERIODSTODATE returns a set of dates in the period specified by the pivot variable Period up to the date of today. <u>%OR</u> is used to return a single value for the set of all dates.

Calculated Member	×
Calculated Member Add or edit a calculated member.	
Member type O Measure O Dimension	<u>^</u>
Shared Storage	
Dimension DateOfSale Dimension for the calculated member	
Member name PTD Name of the calculated member	
Dimension level DaySold Choose a dimension level if you want to select existing members to populate the M expression	DX
Existing members	
Select any combination of existing dimension members to populate the MDX expre	ssion
Expression	
<pre>%OR(PERIODSTODATE([DateOfSale].[Actual]. [\$variable.Period],[DateOfSale].[Actual].[DaySold].& [NOW]))</pre>	۹
MDX expression for the calculated member	
Format	
For example, #,###.#	
Solve Order	
Optional	
Cancel	ок

• LYPTD (Last Year Period To Date) with Expression:

%OR(PERIODSTODATE([DateOfSale].[Actual].[\$variable.Period],

PARALLELPERIOD([DateOfSale].[Actual].[YearSold], 1, [DateOfSale].[Actual].[DaySold].&[NOW])))

<u>PARALLELPERIOD</u> is used to calculate the date of today but one year in the past. This date is used in PERIODSTODATE as it was done in PTD to return a set of dates in Period but one year in the past. %OR combines all elements of this set of dates in one single value. Notice that \$variable.Period is how you can reference the value of the Period pivot variable.

Calculated Member				
Calculated Member				
Add or edit a calculated member.				
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Make this calculated member available to all pivots based on this cube.				
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DaySold Choose a dimension level if you want to select existing members to populate the MDX expression				
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Select any combination of existing dimension members to populate the MDX expression				
Expression				
<pre>%OR(PERIODSTODATE([DateOfSale].[Actual]. [\$variable.Period], PARALLELPERIOD([DateOfSale].[Actual]. [YearSold],1,[DateOfSale].[Actual].[DaySold].&[NOW])))</pre>				
MDX expression for the calculated member				
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A simpler solution to calculate the date of today but one year in the past is to use the following syntax together with the <u>NOW</u> member:

[DateOfSale].[Actual].[DaySold].&[NOW-1y]

The expression becomes:

%OR(PERIODSTODATE([DateOfSale].[Actual].[\$variable.Period], [DateOfSale].[Actual].[DaySold].&[NOW-1y]))

Calculated Member
Calculated Member Add or edit a calculated sember.
Member type O Measure
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Dimension Dimension for the calculated member
Member name LYPTD Name of the calculated member
Dimension level DaySold Choose a dimension level if you want to select existing members to populate the MDX expression
Existing members Q Select any combination of existing dimension members to populate the MDX expression
Expression AGGREGATE(PERIODSTODATE([DateOfSale].[Actual]. [\$variable.Period],[DateOfSale].[Actual].[DaySold].&[NOW- 1y]))
MDX expression for the calculated member Format
For example, #,###.#
Solve Order O Optional
Cancel OK

Create the pivot

Place Product Category on Rows, Count on Measures, crossjoin PTD and LYPTD on Count. Drag the Period pivot variable to filters and select a period, for example YearSold. Finally, click on the gear icon next to PTD and LYPTD in Columns to change the captions. It is possible to use \$variable.Period in the caption string (not shown).

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📥 5 Year Avg Growth	Product Category	PTD	LYPTD						
A 90th Percentile Revenue	Candy	12	15						
Growth Over Last Period	Cereal	15	16						
A Median Revenue	Dairy	3	1						
A Pct Sold	Fruit	14	9						
A Product Percent of Total	Pasta	28	28						
Dimensions	Seafood	9	7						
Comments	Spack	97	74						
Date Of Sale	Shack	47	25			3			
All Sales Dates	vegetable	47	30						
VoarSold									
MonthSold	Cells: 16 Total: 4	00							

The MDX for this example is the following:

WITH MEMBER [DateOfSale].[PTD] AS '%OR(PERIODSTODATE([DateOfSale].[Actual].[\$variable.Period], [DateOfSale].[Actual].[DaySold].&[NOW]))' MEMBER [DateOfSale].[LYPTD] AS '%OR(PERIODSTODATE([DateOfSale].[Actual].[\$variable.Period], [DateOfSale].[Actual].[DaySold].&[NOW]))' SELECT NON EMPTY NONEMPTYCROSSJOIN([Measures].[%COUNT], {%LABEL([DATEOFSALE].[PTD],"PTD",""), %LABEL([DATEOFSALE].[LYPTD],"LYPTD","")}) ON 0, NON EMPTY [Product].[P1].[Product Category].Members ON 1 FROM [HOLEFOODS]

Embed the Pivot in a dashboard

Finally, create a dashboard and embed your pivot as a widget. Add an Apply Pivot Variable Control targeting Period on your widget to be able to change period. This is how the widgets appear as a Bar Chart:

DeepSee - Period to date vs same period last year Published on InterSystems Developer Community (https://community.intersystems.com)



Exercises for the reader

- Extend this implementation to be able to select a dynamic date so that sales can be shown up up to a userselected date. Hint: create a Date pivot variable.
- Can you find an alternative to the method proposed in this post, for example using %MDX in calculated members? Post your answer in the comments.

#Analytics #Dashboards #MDX #InterSystems IRIS BI (DeepSee)

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