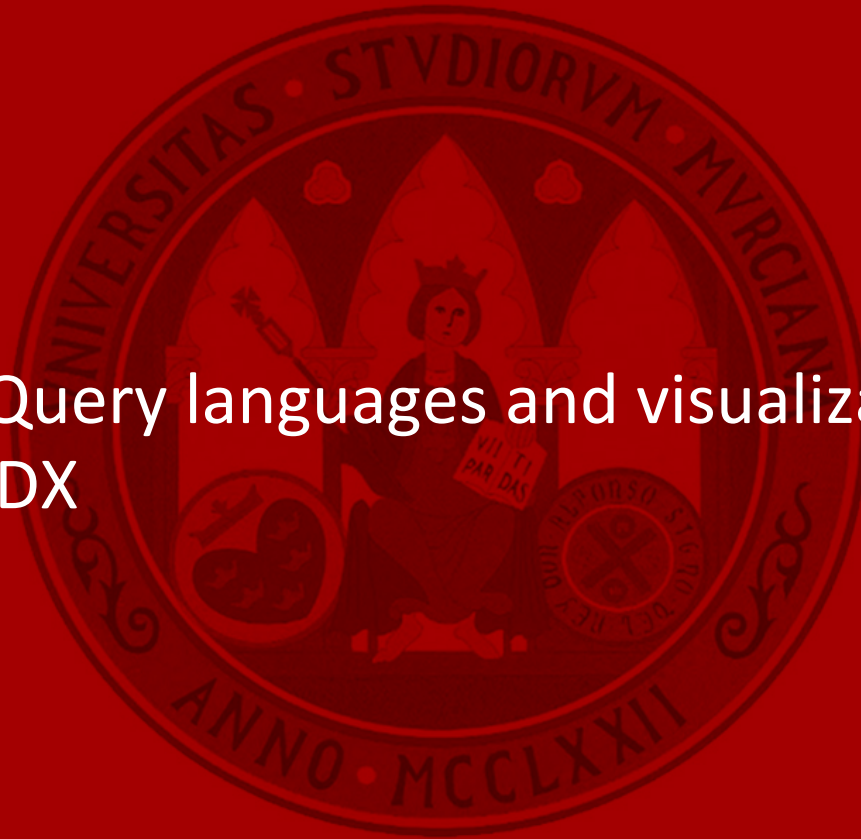


MDX: lab

Unit 3 – Query languages and visualization
S3-2 – MDX



UNIVERSIDAD DE
MURCIA

OUTLINE:

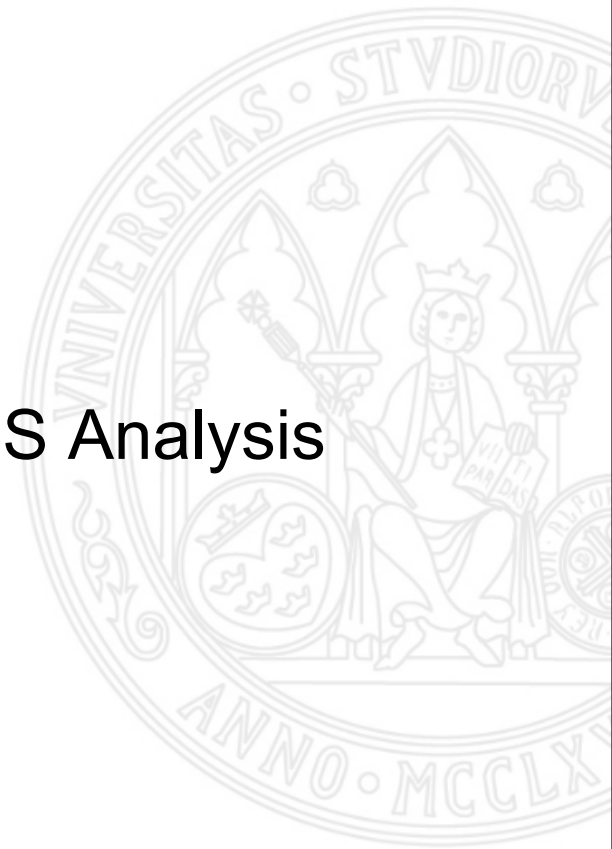
- YOUR CUBE.
- PENTAHO SAIKU ANALYTICS.
- 6 QUERIES: Graphic Tool.
- 6 QUERIES: MDX mode.



- INB_CUBE
 - DIMENSIONS:
 - Origin
 - Sex
 - Time → Year , Month
 - Type of admission
 - MEASURE:
 - Stay duration



- PENTAHO SAIKU ANALYTICS
 - Open-source.
 - Analysis suite offering lightweight OLAP.
 - @ <http://analytical-labs.com/>
 - Connects to OLAP servers: Mondrian, MS Analysis server, Oracle Hyperion, etc.



- PENTAHO SAIKU ANALYTICS

Quick Links

Create a new query

Create a dashboard

Visit the website

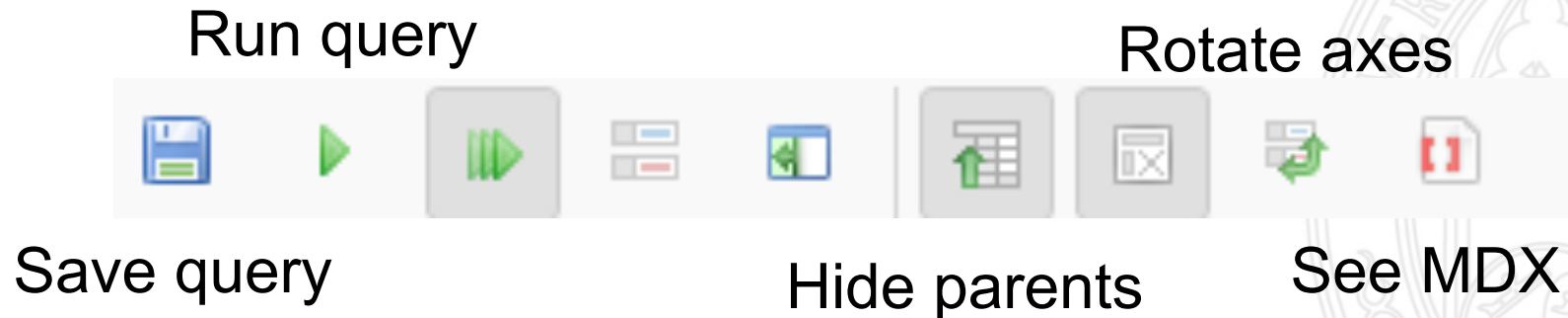
Report a bug

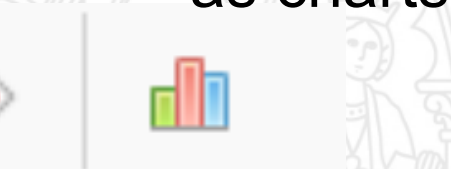
The screenshot displays the Pentaho Saiku Analytics web application. The interface is divided into several sections:

- Left Panel (Cube Structure):** Contains a tree view for selecting cube components. It includes sections for "Cubos" (with "CuboTutorial" selected), "Medidas" (Measures) with a list of measures like "Duracion", "Conteo", "Suma", "IdEpisodio", and "DuracionDoble", and "Dimensiones" (Dimensions) with a list of dimensions like "Diagnostico", "GeoSnowflake", "Procedencia", "Tiempo", "Tiempo", and "Tipologia".
- Top Bar:** Includes a "Saiku Analytics" tab and a "TOOLBAR" with various icons for file operations, execution, and help.
- Main Area (Query Builder):** A central workspace for building queries. It features four dropdown menus labeled "Medidas", "Columnas", "Filas", and "Filtro". Below these is a text area for the query definition.
- Right Panel:** Contains a "TOOLBAR" with icons for visualizations (bar chart, line chart) and a summary icon.

Red boxes highlight the "Cube Structure" on the left and the "Query" builder in the center. A red arrow points from the "PENTAHO SAIKU ANALYTICS" text to the "Create a new query" button in the Quick Links section.

- PENTAHO SAIKU ANALYTICS
- TOOLBAR



- # Show query result as charts
- 
- | id | name |
|----|------|
| 1 | John |
| 2 | John |
- n aggregations



Apply some function aggregations

- PENTAHO SAIKU ANALYTICS
- Choose members of a dimension

Columnas ▼

Procedencia

Procedencia

COLUMNS ✕

Selecciones para Procedencia

Buscar:

Miembros disponibles:

☐ All Members

☐ Hospital

☐ Otro hospital

☐ Urgencias

Miembros utilizados: ☒ Include ☐ Exclude

☐ All Members

> >> << <

☐ Mostrar nombres únicos ☒ Usar resultado

Items: 3

Display Limit: 3000
Filter Limit: 75

- PENTAHO SAIKU ANALYTICS
 - QUERY 1: graphic tool

SELECT

{[Origin]} ON COLUMNS

{[Month]} ON ROWS

FROM [IN_student]

Why missing values?

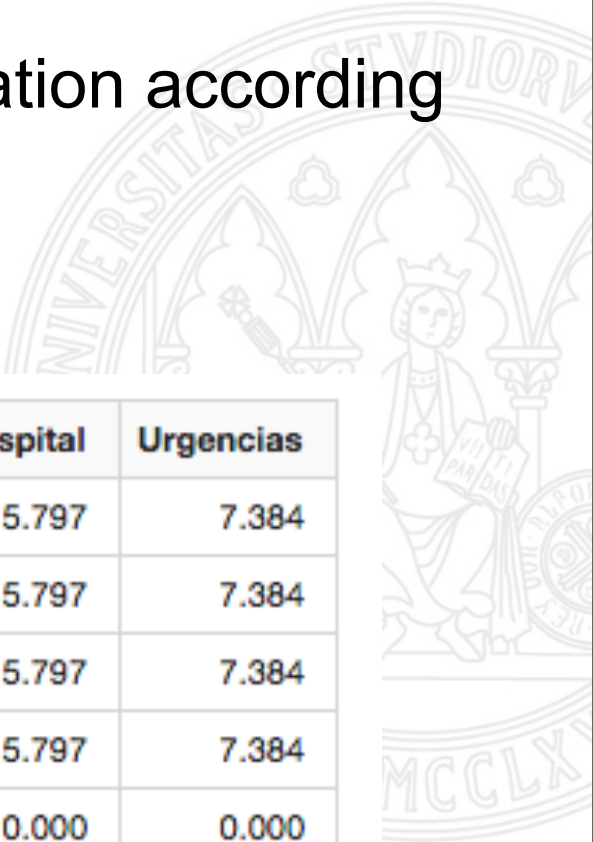
Why only 12 months?



- PENTAHO SAIKU ANALYTICS
 - QUERY 2: graphic tool
 - Query to get the stay duration of males in 2003 and 2004 considering the type of admission
 - Hint: the resulting table is:

Admission Type Level	2003	2004
Médico	43	7,051
Quirúrgico no programado	189	10,948
Quirúrgico programado		4,557

- PENTAHO SAIKU ANALYTICS
 - QUERY 3: graphic tool
 - Get the statistical information of stay duration according to the patient origin (procedencia).



Statistics	Hospital	Otro hospital	Urgencias
Min	6.476	15.797	7.384
Max	6.476	15.797	7.384
Sum	6.476	15.797	7.384
Average	6.476	15.797	7.384
Std. Deviation	0.000	0.000	0.000

- PENTAHO SAIKU ANALYTICS
 - QUERY 4: graphic tool
 - Get the sum of all stay durations of all years according to the type of admission.
 - Hint:

	Médico	Quirúrgico no programado	Quirúrgico programado
	7,692	12,084	4,323

- PENTAHO SAIKU ANALYTICS

- QUERY 5: graphic tool
- Get the stay duration along 2004 (all months) considering the patient origin (procedencia) and the type of admission.

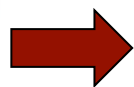
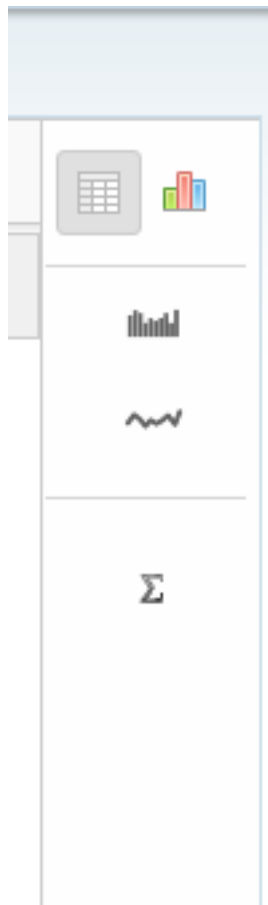
- Hint:

Procedence Level	Admission Type Level	12	1	2	3	4	5	6	7	8	9	10
Hospital	Médico	43	10,571	5,143	8,8	15,778	9,111	12,9	6,154	7,727	8,5	3,5
	Quirúrgico no programado	189	11	12,857	8,083	3,667	4,75	9,333	4,833	8,545	4,6	
	Quirúrgico programado		5,75	3,227	3,161	2,619	3,633	5,541	4	3,409	5,35	2,7
Otro hospital	Médico		52		9,6	7	11	2	4,667	4,25	22,333	
	Quirúrgico no programado			37,5	13,25	24,5	10,667	17,167	14	12,286	17,333	
	Quirúrgico programado		49	24							3	
Urgencias	Médico		9,909	12	5,2	5,462	3,867	6,714	3,857	3,385	3,857	3
	Quirúrgico no programado		7	16	9,833	7,167	9,417	10,182	14,857	28	6	4
	Quirúrgico programado							3	1			3

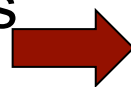
- PENTAHO SAIKU ANALYTICS
 - QUERY 6: graphic tool
 - Get the stay duration along 2004 (all months) considering the patient origin (procedencia) when the type of admission is “Medico”.
 - The query result must be :

Procedence Level	12	1	2	3	4	5	6	7	8	9	10
Hospital	43	10,571	5,143	8,8	15,778	9,111	12,9	6,154	7,727	8,5	3,5
Otro hospital		52		9,6	7	11	2	4,667	4,25	22,333	
Urgencias		9,909	12	5,2	5,462	3,867	6,714	3,857	3,385	3,857	3

- PENTAHO SAIKU ANALYTICS
 - OTHER TOOLS FOR VISUALISING MDX QUERIES



Tiny little charts
within the tables

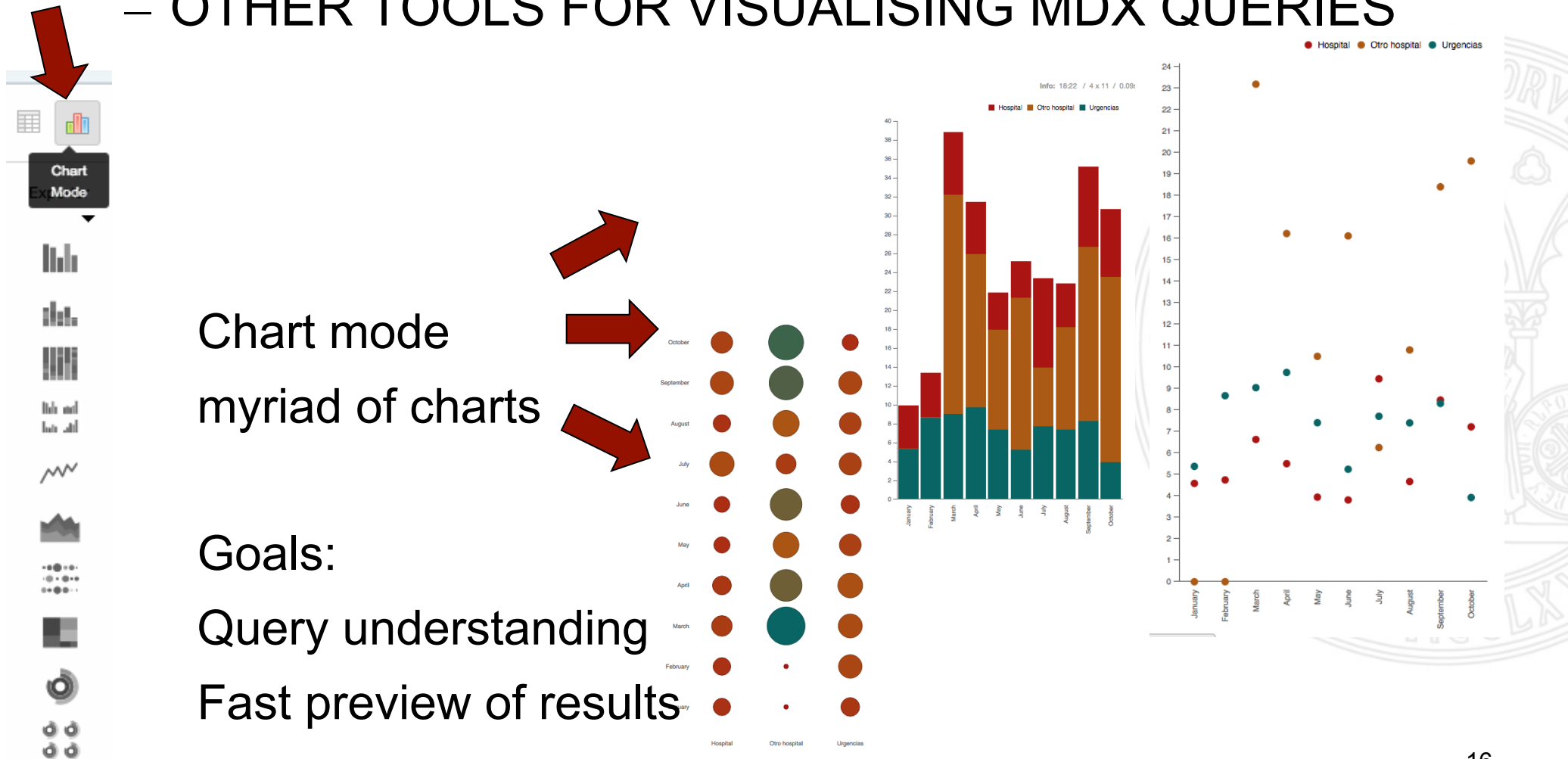


Goal:
Fast preview of rows

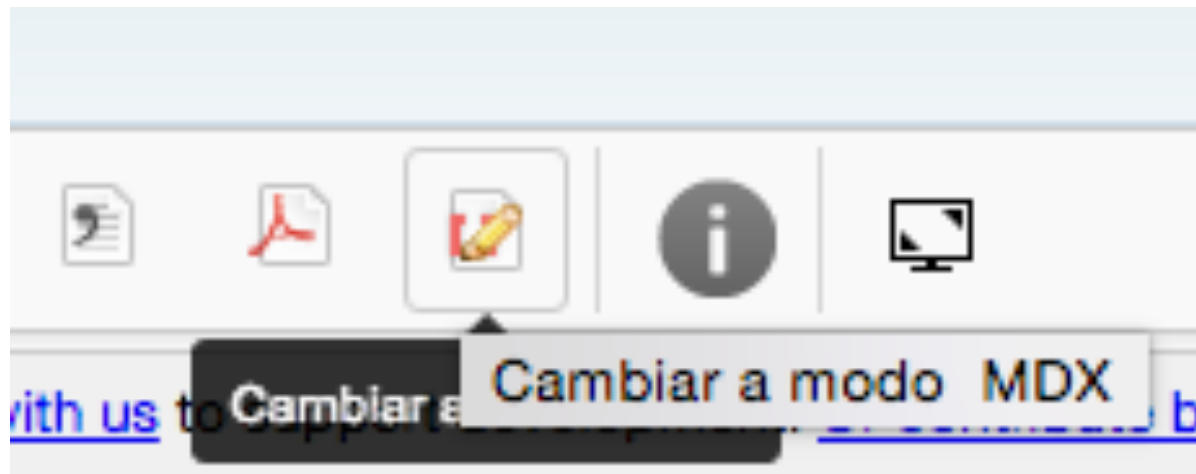
Medidas	
Columnas	Procedencia
Filas	TiempoAlta.Tiempo

Month	Hospital	Otro hospital	Urgencias	
January	4,581		5,375	
February	4,743		8,667	
March	6,627	23,182	9,042	
April	5,5	16,222	9,75	
May	3,94	10,5	7,407	
June	3,81	16,111	5,241	
July	9,452	6,25	7,708	
August	4,667	10,8	7,4	
September	8,467	18,4	8,308	
October	7,217	19,6	3,923	

- PENTAHO SAIKU ANALYTICS
 - OTHER TOOLS FOR VISUALISING MDX QUERIES



- PENTAHO SAIKU ANALYTICS
 - QUERY 7-12: USE MDX QUERY

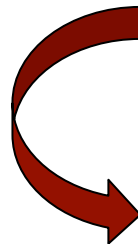


- PENTAHO SAIKU ANALYTICS
 - QUERY 7: MDX mode
 - Add a MDX command to the following query in order to obtain the same results but showing data of each year.

SELECT

{[AdmissionTypeDim.AdmissionTypeHierarchy].**Members**} ON COLUMNS,
{[TimeDim.TimeHierarchy].[**All** TimeDim.TimeHierarchys]} ON ROWS

FROM [MyCube]



AllLevelTime	Médico	Quirúrgico no programado	Quirúrgico programado
AllMemberCaptionTime	7,692	12,084	4,323

Year	Médico	Quirúrgico no programado	Quirúrgico programado
2003	43	189	
2004	7,544	11,018	4,323

- PENTAHO SAIKU ANALYTICS
 - QUERY 8: MDX mode
 - Find the MDX query for the following result:

Year	Médico		Quirúrgico no programado		Quirúrgico programado	
	Hombre	Mujer	Hombre	Mujer	Hombre	Mujer
2003	43		189			
2004	7,051	8,506	10,948	11,176	4,557	3,75

- HINT: CrossJoin(x,y) function

- PENTAHO SAIKU ANALYTICS
 - QUERY 9: MDX mode
 - Find the MDX query for the following result (where only stay durations of females is shown):

Query result:

Year	Hospital			Otro hospital			Urgencias		
	Médico	Quirúrgico no programado	Quirúrgico programado	Médico	Quirúrgico no programado	Quirúrgico programado	Médico	Quirúrgico no programado	Quirúrgico programado
2004	10,371	5,957	3,455	10,625	16	13,5	6,342	15,118	
2003									

(HINT: **CrossJoin** function,

- PENTAHO SAIKU ANALYTICS
 - QUERY 10: MDX mode
 - Same MDX as before but avoiding null values:

Year	Hospital			Otro hospital			Urgencias		
	Médico	Quirúrgico no programado	Quirúrgico programado	Médico	Quirúrgico no programado	Quirúrgico programado	Médico	Quirúrgico no programado	Quirúrgico programado
2004	10,371	5,957	3,455	10,625	16	13,5	6,342	15,118	

(HINT: **NON EMPTY** command)

- CALCULATED MEMBERS:
 - Formula as new members
 - WITH MEMBER **parent.name AS expression**

SYNTAX

WITH {MEMBER **parent.name AS expression**}+
SELECT ...



- CALCULATED MEMBERS:

Calculated members often obtained from other measures

- EXAMPLE (NOT FOR INB CUBES)

- Calculate the 10% of discount according to the cost.

WITH MEMBER [Measure].[cost 10disc] AS

*[Measure].[cost]*10/100*

SELECT [Time].[2010].Members AS ROWS

{[Location].[Austria].[Poysbrunn],

[Location].[Spain].[Alguazas]} AS COLUMNS

WHERE [Measure].[cost10disc]

- CALCULATED MEMBERS:

- QUERY 11:

Calculate patients durations of different origins (procedencia) in SUMMER (Jun, July and August) in 2004.

MonthsCap	Hospital	Otro hospital	Urgencias
6	7,358	15	7,758
7	5,065	7	7,227
8	5,773	9,364	6,667

AllLevelTime	Hospital	Otro hospital	Urgencias
SUMMER2004	18,196	31,364	21,652

HINT: use WITH MEMBER

- CALCULATED MEMBERS:

- QUERY 12:

Calculate patients durations in months of different origins (procedencia) in SUMMER.

AllLevelTime	Hospital	Otro hospital	Urgencias
SUMMER2004	18,196	31,364	21,652

AllLevelTime	Hospital	Otro hospital	Urgencias
SUMMER2004	0,607	1,045	0,722

HINT: use WITH MEMBER, SUMER=Jun,July,August
month duration: 1 month=30days.

- CALCULATED MEMBERS:
 - Calculated members not always in the hierarchy.



REFERENCES & RESOURCES:

- SAIKU

<http://analytical-labs.com/>

- Video SAIKU User Interface Introduction:

<http://www.screenr.com/mle>

- Video Example:

http://www.youtube.com/watch?v= _NYqPz4MYkU

