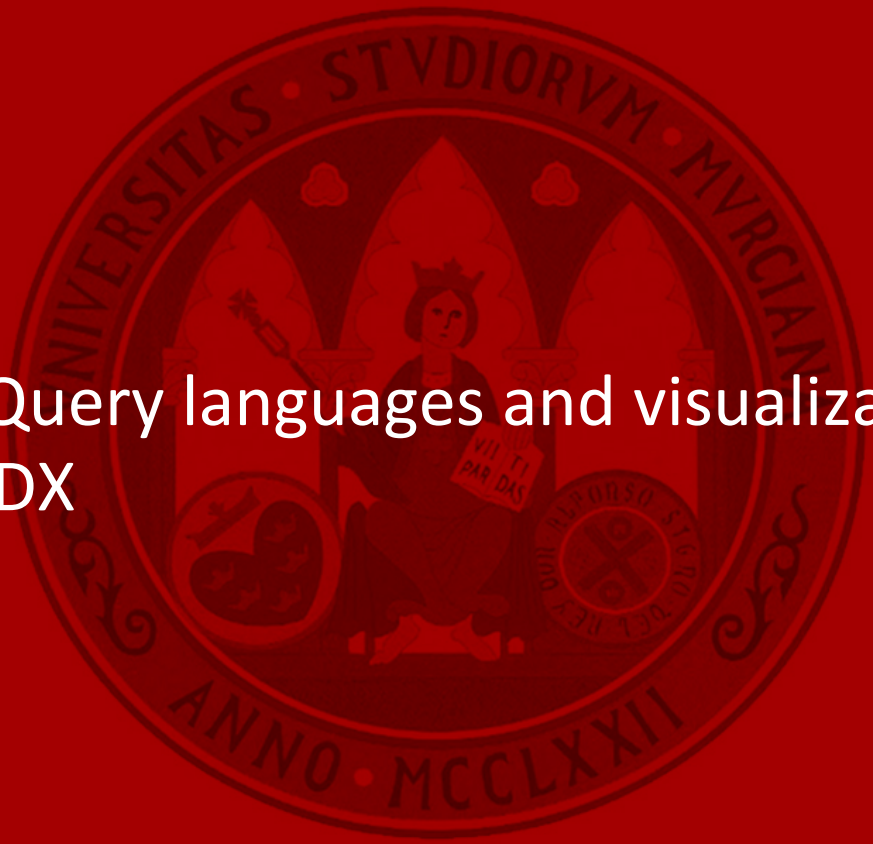
MDX: lab



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

UNIVERSIDAD DE
MURCIA

MDX: lab

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OUTLINE:

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

MDX: lab

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

MDX: lab

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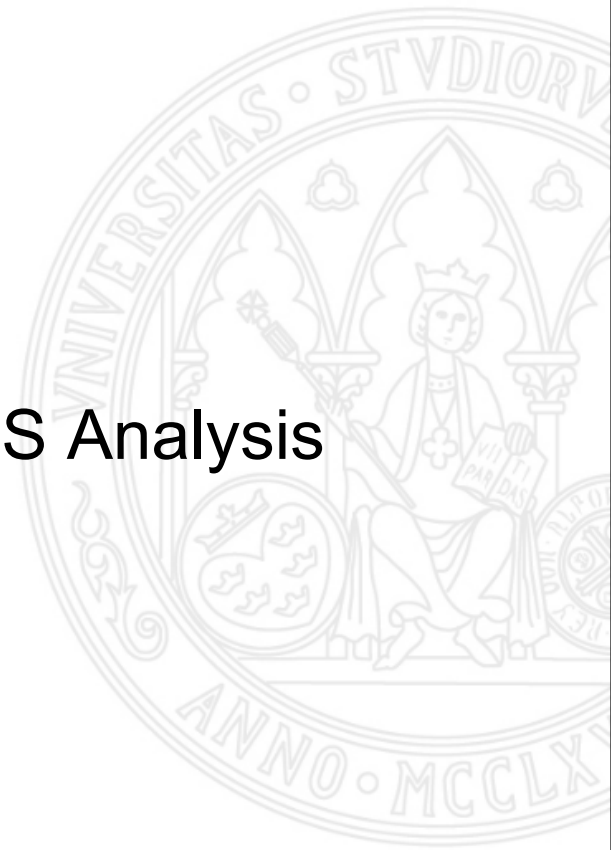
- PENTAHO SAIKU ANALYTICS
  - Open-source.
  - Analysis suite offering lightweight OLAP.
  - @ http://analytical-labs.com/
  - Connects to OLAP servers: Mondrian, MS Analysis server, Oracle Hyperion, etc.



MDX: lab

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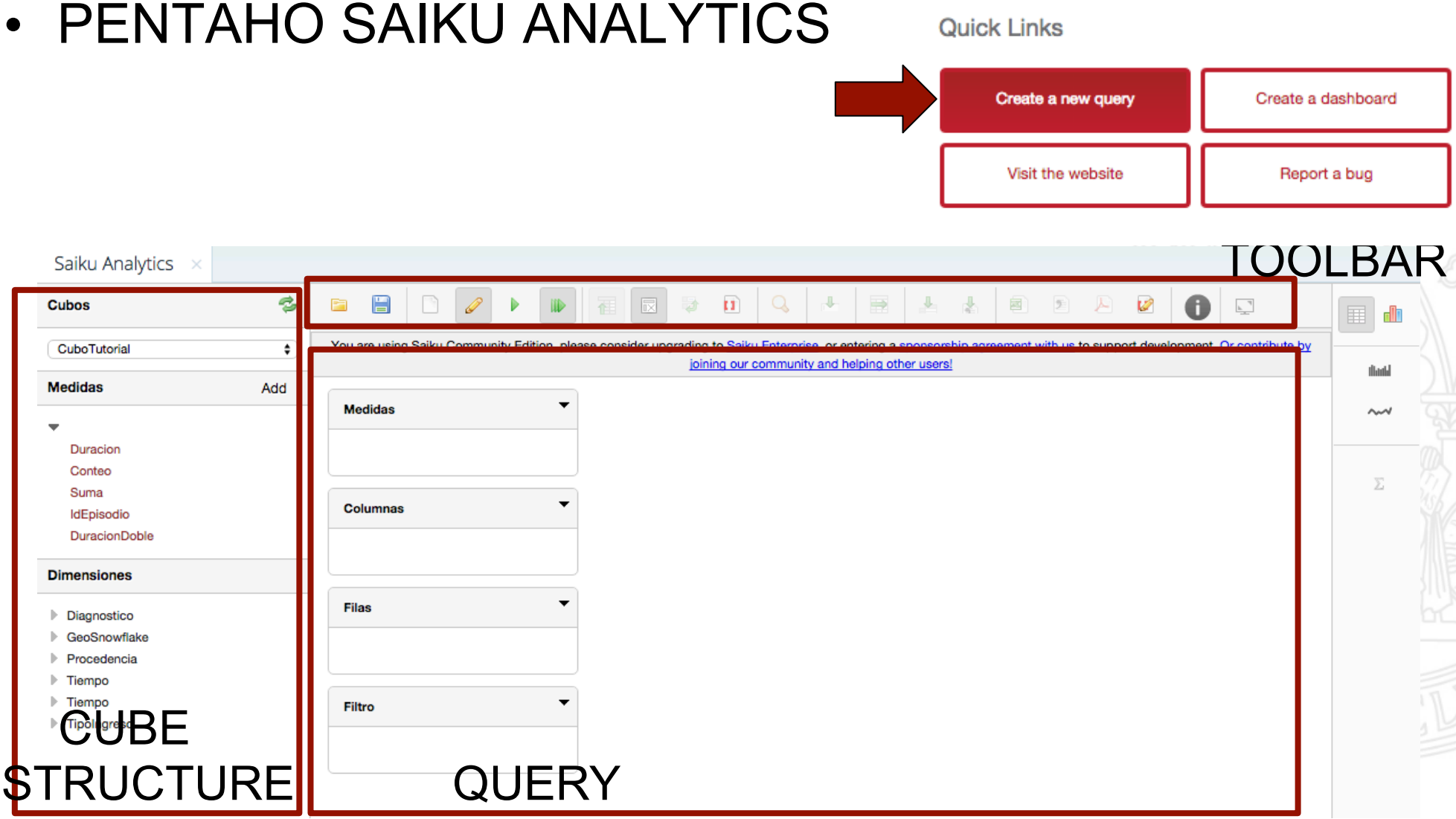
- PENTAHO SAIKU ANALYTICS



MDX: lab

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- PENTAHO SAIKU ANALYTICS
- TOOLBAR

MDX: lab

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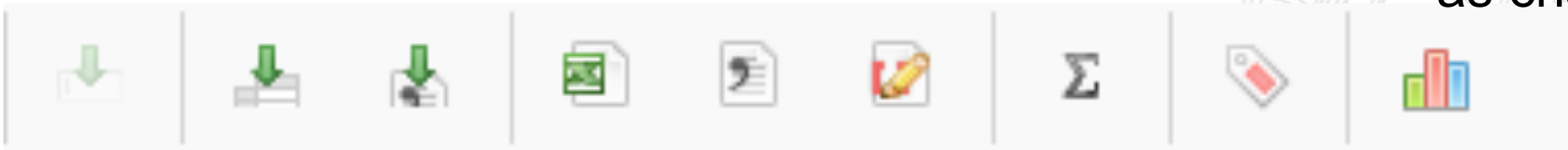
- PENTAHO SAIKU ANALYTICS
- Toolbar

Show query result as charts

Move to MDX mode



Drill through on cell

Apply some function aggregations

MDX: lab

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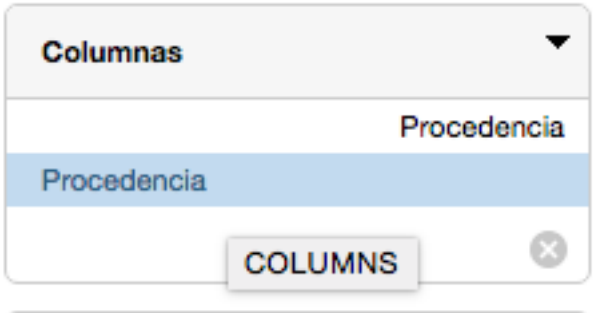
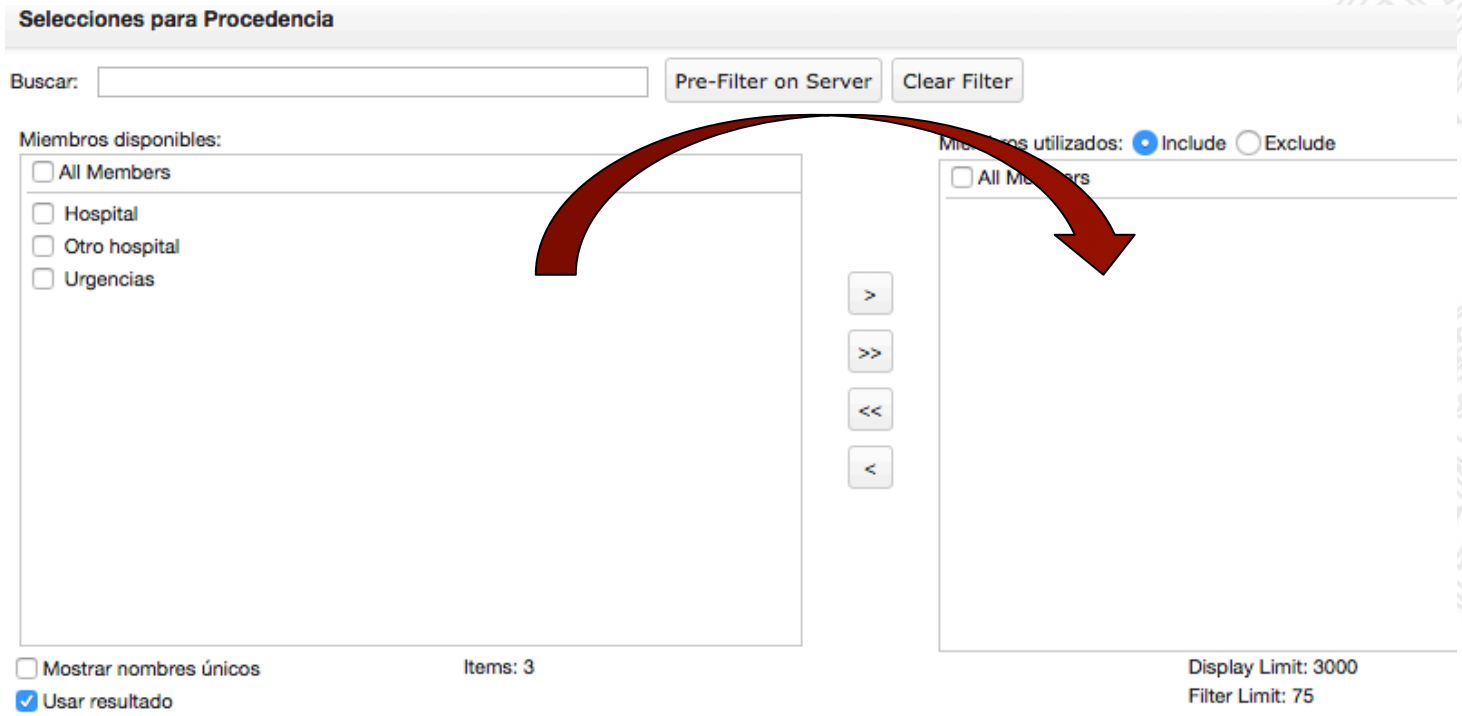
- PENTAHO SAIKU ANALYTICS
- Choose members of a dimension





MDX: lab

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- PENTAHO SAIKU ANALYTICS
  - QUERY 1: graphic tool

```
SELECT
   {[Origin]} ON COLUMNS
   {[Month]} ON ROWS
FROM [IN_student]
```

Why missing values?

Why only 12 months?

MDX: lab

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- 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

MDX: lab

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- 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

MDX: lab

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- 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

MDX: lab

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- 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

MDX: lab

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- 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

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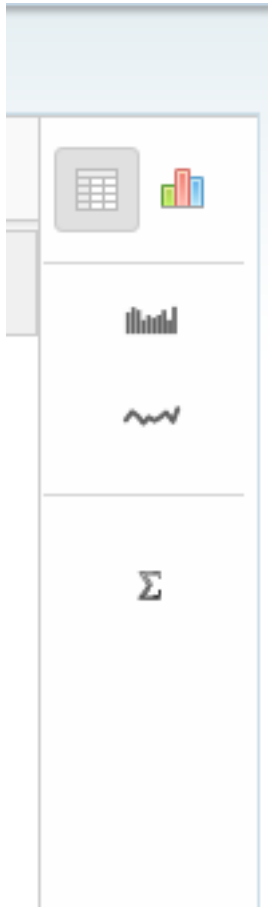
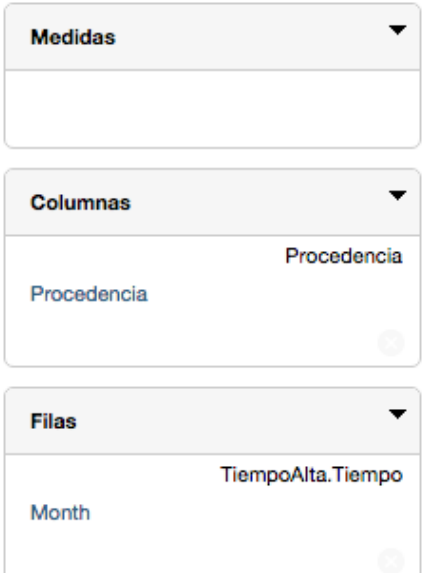
- PENTAHO SAIKU ANALYTICS
  - OTHER TOOLS FOR VISUALISING MDX QUERIES



Tiny little charts within the tables

Goal:
Fast preview of rows



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	

MDX: lab

- PENTAHO SAIKU ANALYTICS
  - OTHER TOOLS FOR VISUALISING MDX QUERIES

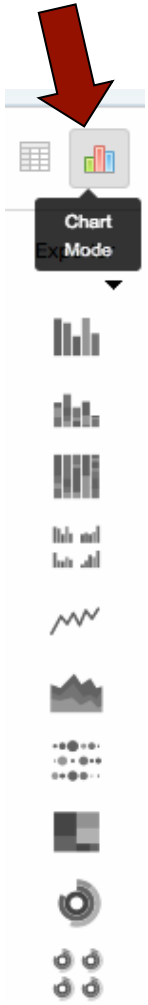


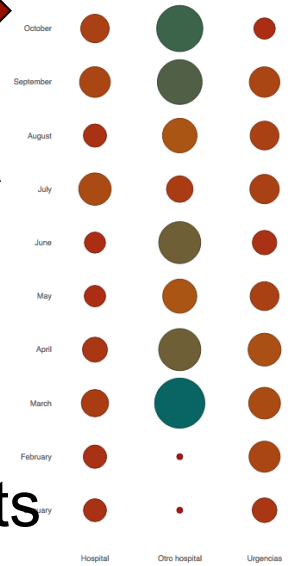
Chart mode

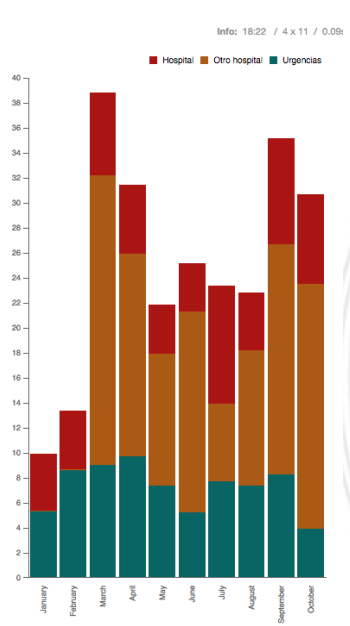
myriad of charts

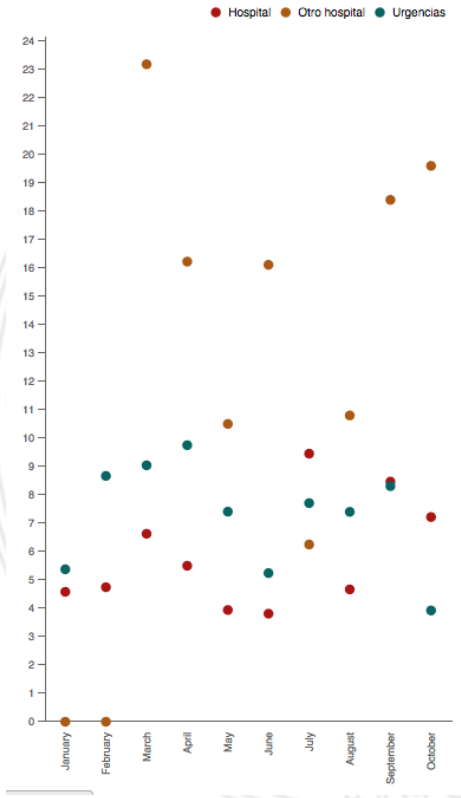
Goals:

Query understanding

Fast preview of results







MDX: lab

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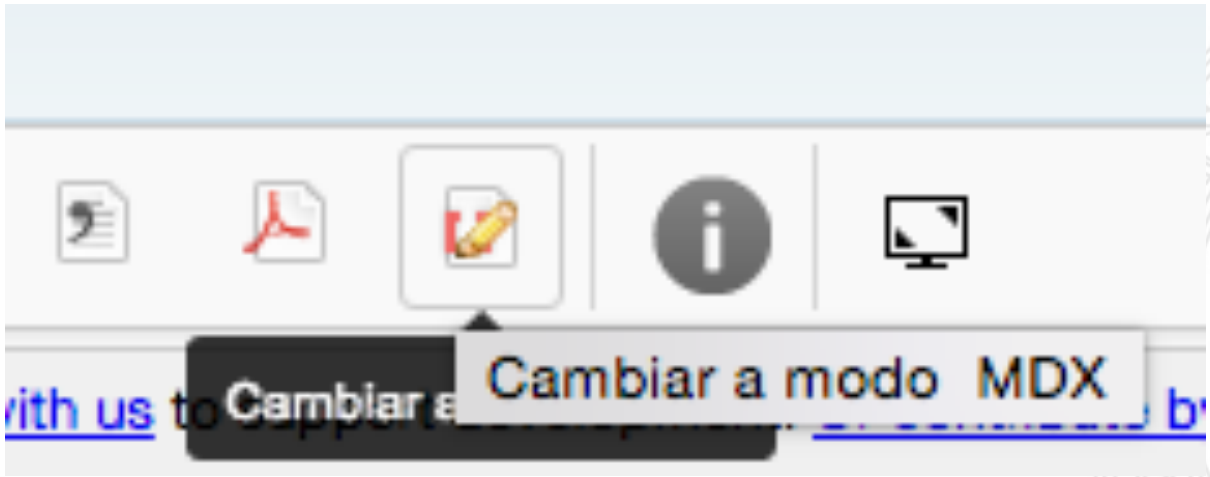
- PENTAHO SAIKU ANALYTICS
  - QUERY 7-12: USE MDX QUERY



MDX: lab

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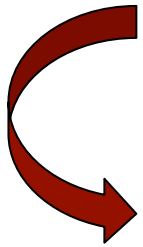
- PENTAHO SAIKU ANALYTICS
  - QUERY 7: MDX mode
  - Add a MDX command to the following query in order to obtain the same results but showing data of each year.

```
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

MDX: lab

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

	Médico		Quirúrgico no programado		Quirúrgico programado	
Year	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

MDX: lab

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- 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:

	Hospital			Otro hospital			Urgencias		
Year	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**,

MDX: lab

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

	Hospital			Otro hospital			Urgencias		
Year	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**)

MDX: lab

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

SYNTAX

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

MDX: lab

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- 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]***

MDX: lab

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- 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

MDX: lab

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- 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.

MDX: lab

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

MDX: lab

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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