

**ASSIGNMENT 3 FOR THE COURSE
DATA MANAGEMENT, BUSINESS INTELLIGENCE and
VISUALIZATION
“CREATE A REPORT WITH INTERESTING VISUALS IN
POWER BI FROM THE SSAS MD CUBE WE CREATED IN
ASSIGNMENT 2”**

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Prologue

For the third project task, I connected the cube I had created through visual studio to power bi and created a report with visuals that seemed interesting to me.

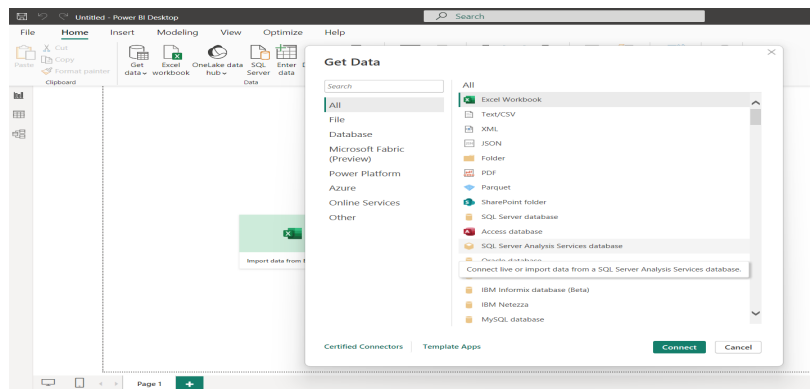
The first finding was that power bi, at least in its current version, when connected to a SQL multi dimensional project, cannot create new metrics, combine additional data through the query editor, and implement the natural query language and some charts such as the decomposition tree.

Also, my data concerns salaries and costs in different countries of the world, so they do not have the dimension of time and I did not use it in my charts. If I had the same data for previous years (and not as a n instant picture) I could create very interesting graphs on wage and price developments.

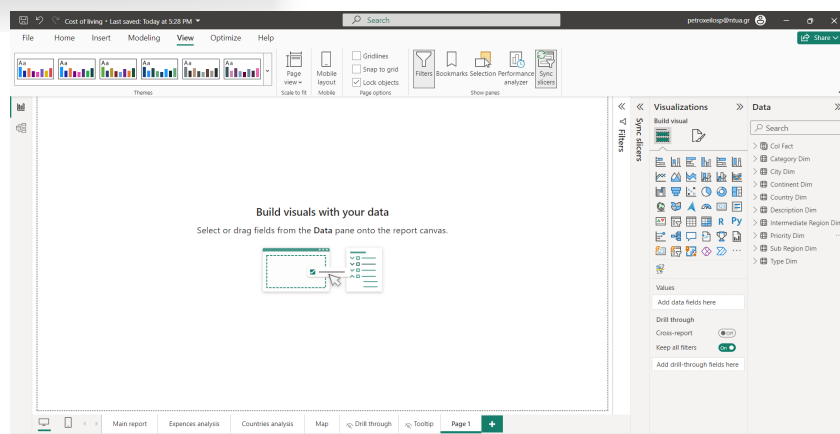
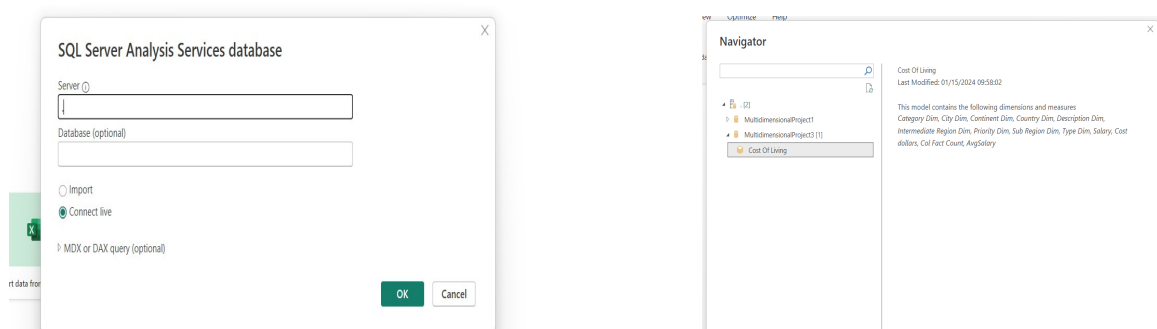
However, the report has many interesting facts, which are highlighted through power bi.

Connect to the SSAS MD project.

When you open Power bi, it asks us to give it data or select a project that we have saved. In this particular case, I chose sql analysis services as my source



Then I chose my computer's server with a dot and the cube I had created. In this way, the fact table and the various dimensions were passed as available tables for editing in Power BI.

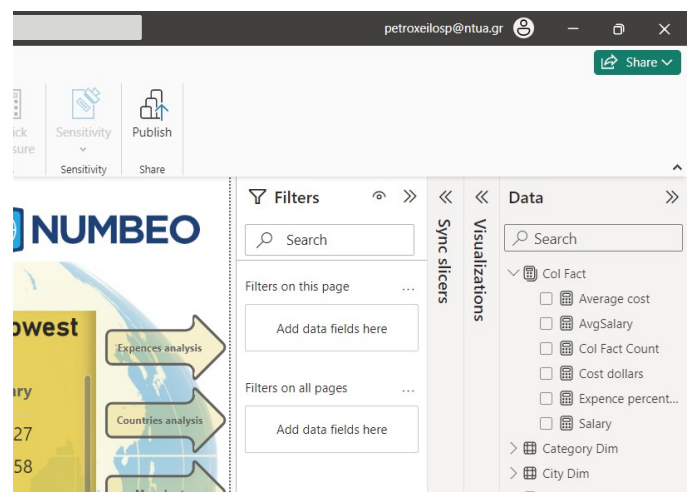
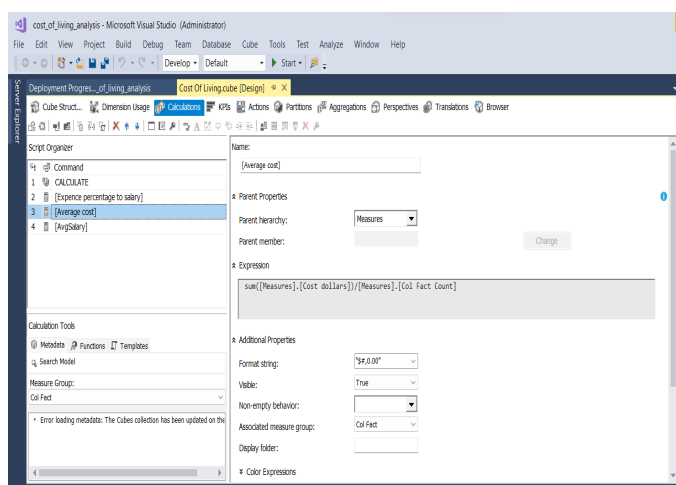
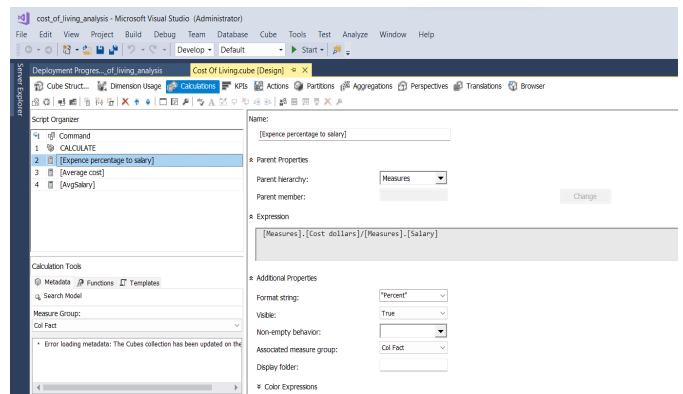
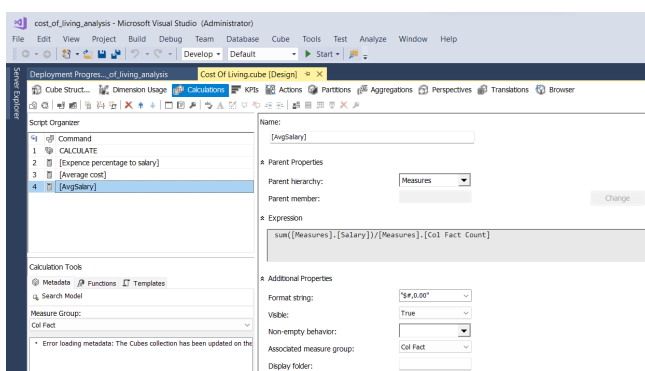


General parameters

In the report, I used as background a clipart of the Globe that I found on the internet, the signal of the site numbeo from where the data was drawn and I entered a text box with the title of the report



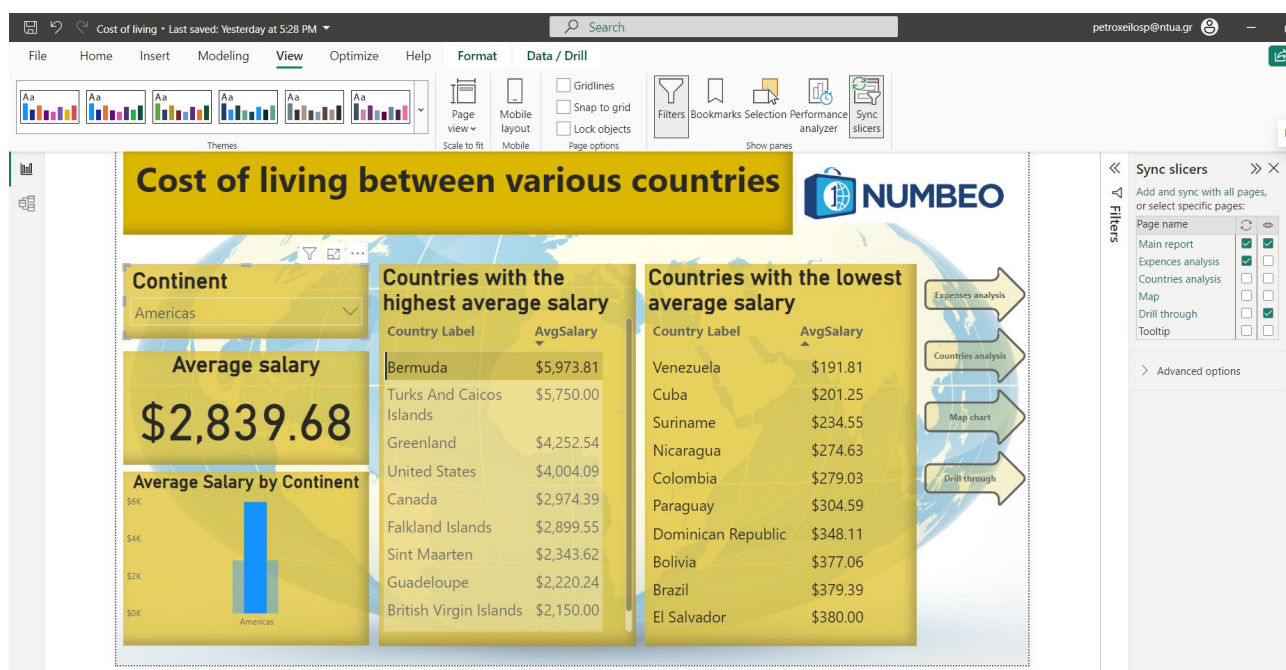
Also, since I couldn't do it in power bi with dax commands, I created three new metrics in ssas with mdx syntax. These are the average salary, the ratio of each expense to the salary, and the average cost of expense. Then I reprocessed the cube.



Main report



The main report shows a data card with the average salary worldwide, a bar chart with the average salary per continent and two tables. The first shows the countries with the highest salary worldwide (Average as my data refers to cities). In essence it is a table with a top N filter (10) in the average salary per country, ranked from highest to lowest. The latter does the same for countries with lower wages. In the report there is also a slicer with which we can choose Continent. In this case, the same data will appear but only for the respective Continent. The same happens if we choose a continent from the bar chart. If we choose a country, the report shows us in the bar chart its average salary compared to that of the Continent. In this report it was not convenient to have connection of the slicer with the rest of the pages but I only connected it to the expenses analysis that I will refer to later.



Drill through page

On the main page, if we select either Country or Continent, the drill through arrow on the right of the screen will be activated. With ctrl + click on the specific arrow, we are transferred to the corresponding hidden page (It does not appear in the report on the site). On the page there is a table with all the data related to this option (eg if it is Continent, all expenses per type, city and country, their cost, their respective salary and their percentage against it). On the page there are also all the slicers to customize the table as we want and a button to clean them. These slicers are not linked to the rest of the pages. Finally on the page there is a back button to return to the page where we came from.



Continent Label	Country Label	City Label	Description Label	Cost dollars	AvgSalary	Expenditure percentage to salary
Oceania	Australia	Port Douglas	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.42	\$5,946.32	0.01 %
Oceania	Fiji	Suva	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.12	\$1,597.77	0.01 %
Oceania	Australia	Bundaberg	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.20	\$2,548.42	0.01 %
Oceania	New Zealand	Manukau City	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.27	\$3,420.80	0.01 %
Oceania	New Zealand	Taupo	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.29	\$3,383.97	0.01 %
Oceania	New Zealand	Napier	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.28	\$3,232.79	0.01 %
Oceania	New Zealand	Lower Hutt	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.27	\$3,046.65	0.01 %
Oceania	Australia	Darwin	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.42	\$4,728.33	0.01 %
Oceania	Australia	Brisbane	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.38	\$4,082.97	0.01 %
Oceania	Australia	Sydney	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.45	\$4,683.94	0.01 %
Oceania	New Zealand	Invercargill	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.29	\$2,908.46	0.01 %
Oceania	New Zealand	Whakatane	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.35	\$3,383.97	0.01 %
Oceania	New Zealand	Whangarei	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.29	\$2,745.19	0.01 %
Oceania	New Zealand	Palmerston North	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.29	\$2,725.95	0.01 %
Oceania	New Zealand	Tauranga	1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	0.28	\$2,597.67	0.01 %

Expenses analysis page

If we press the corresponding button in the main report, we are taken to that page. The page contains a slicer in which we can select one or more expenses and see how much they cost and their percentage in relation to salary for each country. This slicer is not linked to the rest of the pages. If on the main page we have selected a specific Continent, only the countries of that Continent will appear (see photo). Finally, on the page there are back to main page buttons and drill through that is activated if we select a country.



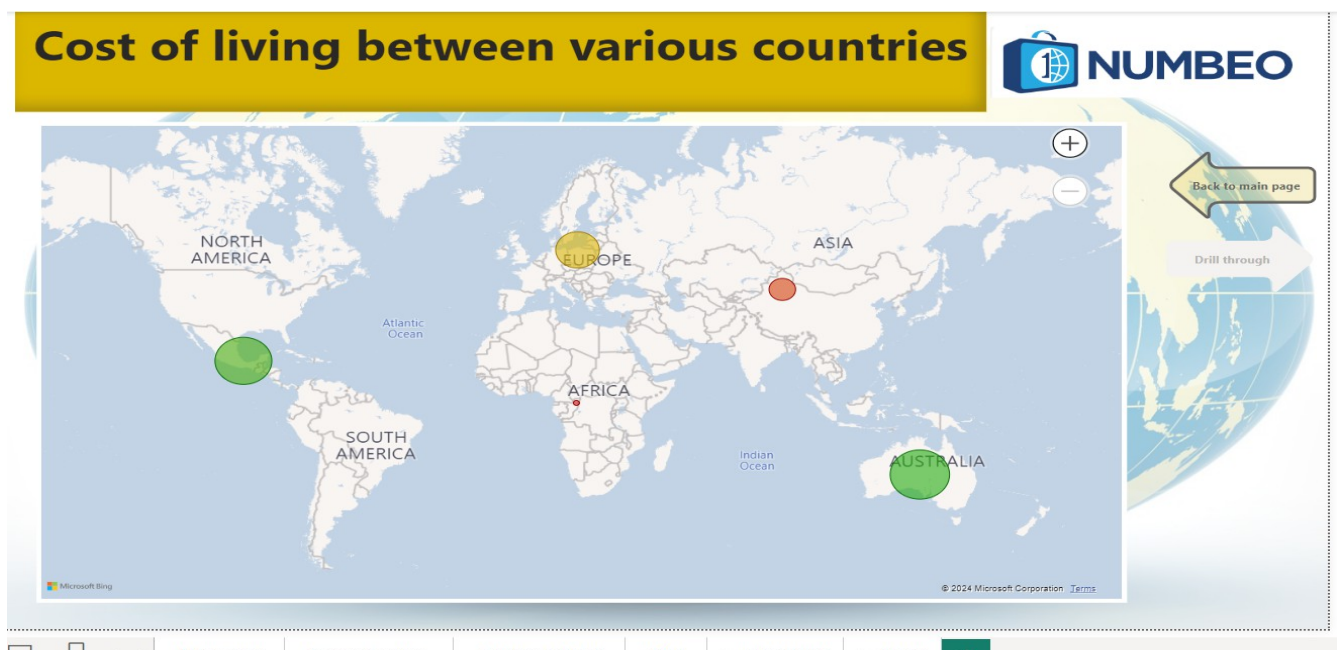
Type of expense	Country Label	Average cost	Expense percentage to salary
<input checked="" type="checkbox"/> Select all	Greenland	\$198.45	4.67 %
<input type="checkbox"/> 1 min. of Prepaid Mobile Tariff Local (No Discounts or Plans)	Dominica	\$148.01	30.35 %
<input type="checkbox"/> 1 Pair of Jeans (Levis 501 Or Similar)	Bermuda	\$142.50	2.39 %
<input type="checkbox"/> 1 Pair of Men Leather Business Shoes	Martinique	\$136.99	6.54 %
<input checked="" type="checkbox"/> 1 Pair of Nike Running Shoes (Mid-Range)	Barbados	\$134.38	10.08 %
<input type="checkbox"/> 1 Summer Dress in a Chain Store (Zara, H&M, i34,...)	Montserrat	\$129.51	7.78 %
<input type="checkbox"/> Apartment (1 bedroom) in City Centre	Saint Lucia	\$124.88	9.08 %
<input type="checkbox"/> Apartment (1 bedroom) Outside of Centre	French Guiana	\$115.91	5.50 %
<input type="checkbox"/> Apartment (3 bedrooms) in City Centre	British Virgin Islands	\$110.00	5.12 %
<input type="checkbox"/> Apartment (3 bedrooms) Outside of Centre	Aruba	\$109.20	7.23 %
<input type="checkbox"/> Apples (1kg)	Bahamas	\$106.62	5.87 %
<input type="checkbox"/> Banana (1kg)			
<input type="checkbox"/> Basic (Electricity, Heating, Cooling, Water, Garbage) for 85m2 Apartment			
<input type="checkbox"/> Beef Round (1kg) (or Equivalent Back Leg Red Meat)			
<input type="checkbox"/> Bottle of Wine (Mid-Range, at the market)			
<input type="checkbox"/> Cappuccino (regular, in restaurants)			
<input type="checkbox"/> Chicken Fillets (1kg)			
<input type="checkbox"/> Cigarettes 20 Pack (Marlboro)			

Countries Analysis page

If we press the corresponding button on the main report, we are transferred to that page. The page contains a slicer in which we can select only one Country and see how much the various expenses cost in it as well as their percentage in relation to its average salary. On the page there are back to main page and drill through buttons. In this case the drill through is activated by selecting an expense. By clicking on the button, we are transferred to the corresponding page where the detail table is configured based on the specific choice.

Country	Description Label	Average cost	Expense percentage to salary
<input type="radio"/> Afghanistan	Water (1.5 liter bottle, at the market)	\$2.16	0.12 %
<input type="radio"/> Albania	Water (0.33 liter bottle, in restaurants)	\$1.94	0.11 %
<input type="radio"/> Algeria	Volkswagen Golf 1.4 90 KW Trendline (Or Equivalent New Car)	\$37,500.00	2,063.47 %
<input type="radio"/> American Samoa	Toyota Corolla Sedan 1.6l 97kW Comfort (Or Equivalent New Car)	\$44,500.00	2,448.65 %
<input type="radio"/> Andorra	Tomato (1kg)	\$4.57	0.25 %
<input type="radio"/> Angola	Tennis Court Rent (1 Hour on Weekend)	\$60.00	3.30 %
<input type="radio"/> Anguilla	Taxi Start (Normal Tariff)	\$5.50	0.30 %
<input type="radio"/> Antigua And Barbuda	Taxi 1km (Normal Tariff)	\$2.86	0.16 %
<input type="radio"/> Argentina	Taxi 1hour Waiting (Normal Tariff)	\$95.00	5.23 %
<input type="radio"/> Armenia	Rice (white), (1kg)	\$4.49	0.25 %
<input type="radio"/> Aruba			
<input type="radio"/> Australia			
<input type="radio"/> Austria			
<input type="radio"/> Azerbaijan			
<input checked="" type="radio"/> Bahamas			
<input type="radio"/> Bahrain			
<input type="radio"/> Bangladesh			
<input type="radio"/> Barbados			

Map chart page



If we press the corresponding button in the main report, we are transferred to the specific page where an interactive map is located. Bubbles first describe the average salary on each continent. Depending on how large or small it is relative to the general average, the bubble changes size and colour from red to green. If we click on a bubble of a Continent, we zoom in and see the corresponding bubbles for each country. If we drag the mouse to one of these bubbles, a graphical tooltip appears. This tooltip concerns two charts that are located on a hidden page and have for filter, the specific country. First is a table with the name and average salary of the country and the second is a pie chart with the costs of various expenses by basic category in dollars. To make this graph more representative, a filter has been applied to it and some of the expenses, such as the cost of a car and the cost of housing or a private kindergarten, have been deselected (see photo). On the page there are back to main page and drill through buttons. Unfortunately the drill through button is disabled when the drill down button is enabled on the map, but we can go to the corresponding page by right-clicking on a country and selecting it.

