Tutorial 11: An Introduction to SQL Server Analysis Services and Data Warehousing

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1 Deliverable 1

User would like to use **drill down** to see the contribution to the total sales for a specific kind of product, or a specific category of products. An example question that drill down can answer is "In my total sales, how much does Washington Apple Juice contribute to the sales?"

User would like to use **roll up** to see the summarized statistics, such as total sales and total expenses. An example question that roll up can answer is "Given the salary of each employee, how much does the company pay in total for all the salaries?"

2 Deliverable 2

Drill down on the drink products and find *Washington Apple Juice*

1. The grand total of all daily unit sales is **1554**.
2. (a) **Monday** has the highest number of sales for that product (265).
   (b) The sales are not evenly distributed. Monday 265, Tuesday 197, Wednesday 244, Thursday 184, Friday 214, Saturday: 221, Sunday: 229. So Friday, Saturday, and Sunday's sales are roughly 220, Monday and Wednesday have more than 240, but Tuesday and Thursday have below 200 sales.
3. A business want to track the total number of unit sales on a particular day to determine how many sales they made on that day. For example, if the business has a promotion event on that particular day, the business would like to measure how effective the promotion is.
4. A business want to identify outliers because they don't want to make business decisions imprecisely on these outliers. For example, Washington Apple Juice is very unpopular in a retail shop. One day, a rich man who happen to travel to the city and goes into the shop and buys all the Washington Apple Juice, this data should be excluded because the Washington Apple Juice is unpopular for the shop's daily customers.

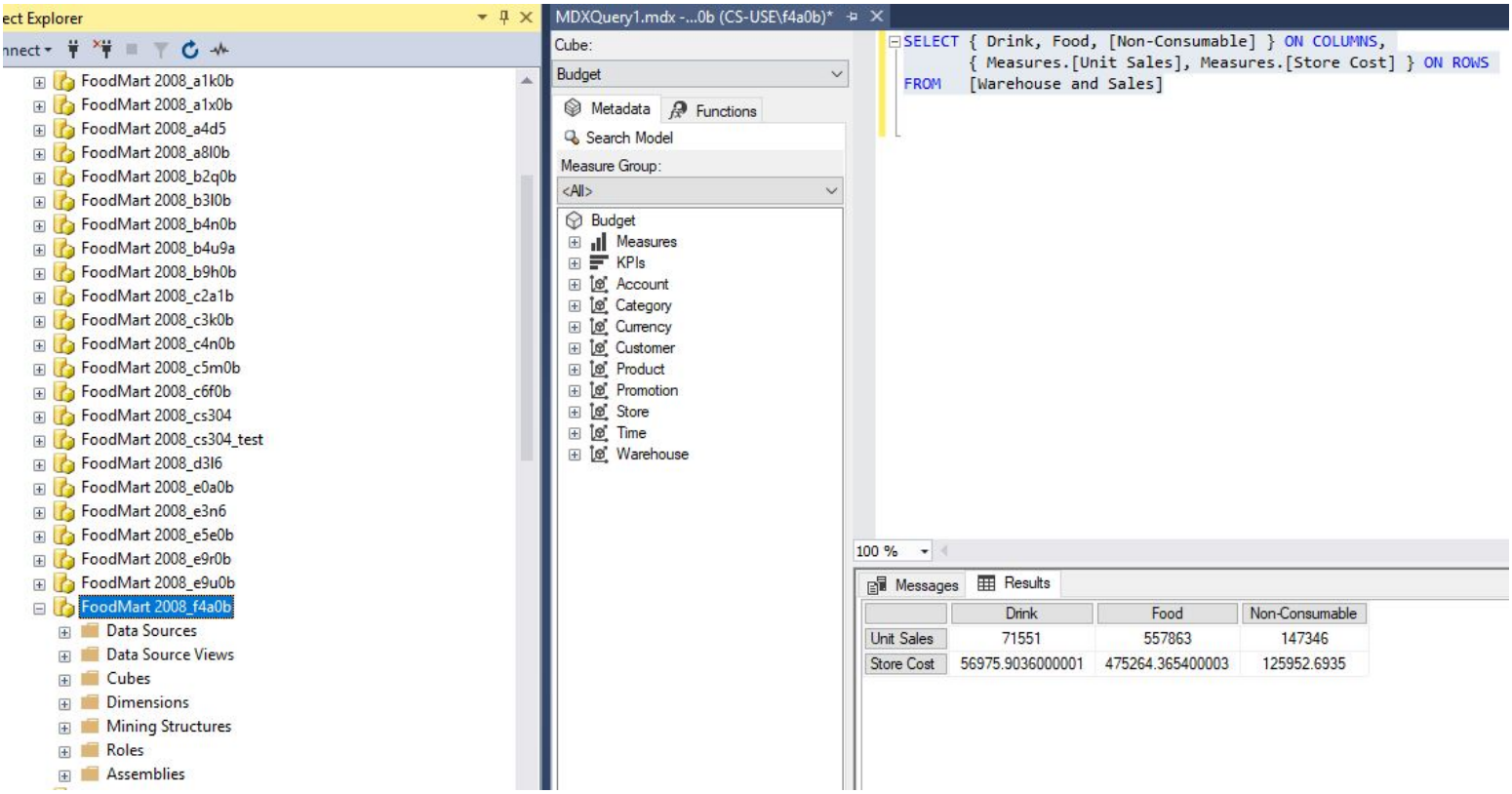
3 Deliverable 3

- the Data Cube in specified in the"FROM" clause in MDX.
- the drill down dimensions and filter expressions are specified in the "ON COLUMNS" list in MDX.
- the data we would like to see for particular filters is selected in the "ON ROWS" list in MDX.

The MDX query results are a drill-down of the total unit sales in the Data Cube from Step 4. It drills down the total unit sales to three categories — drink, food, and non-consumable.

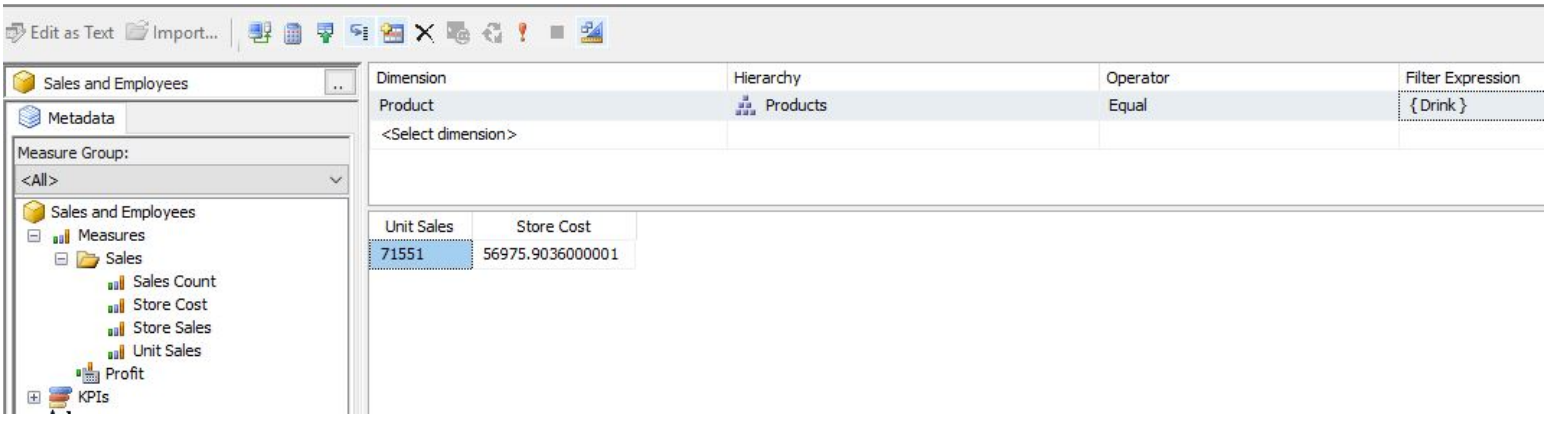
4 Deliverable 4

My user id is: **f4a0b**

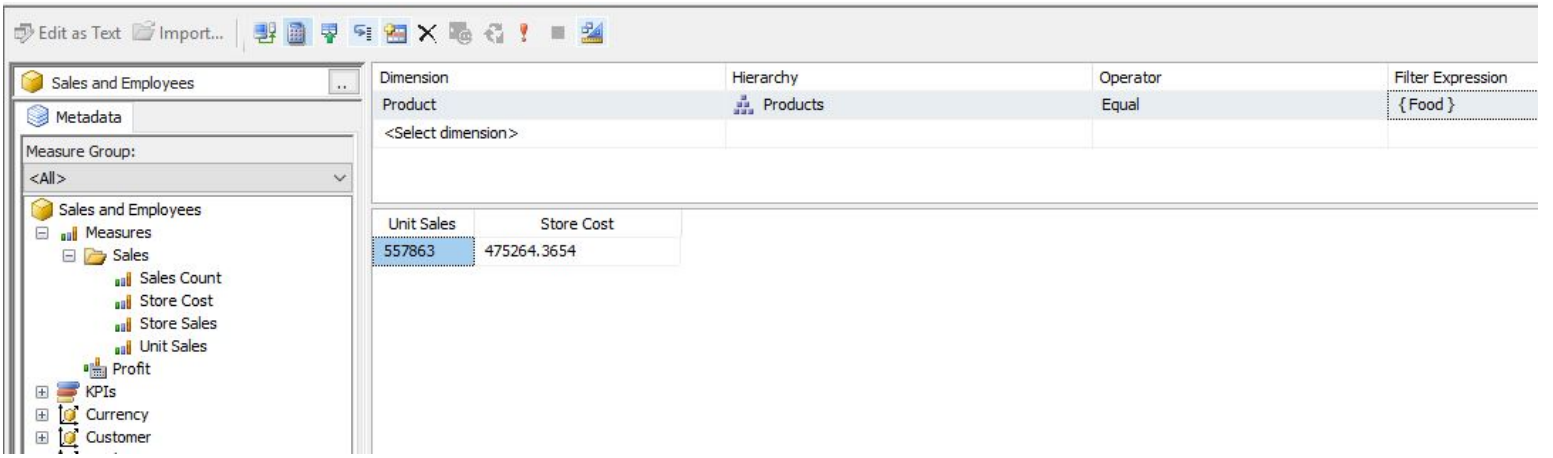


5 Deliverable 5

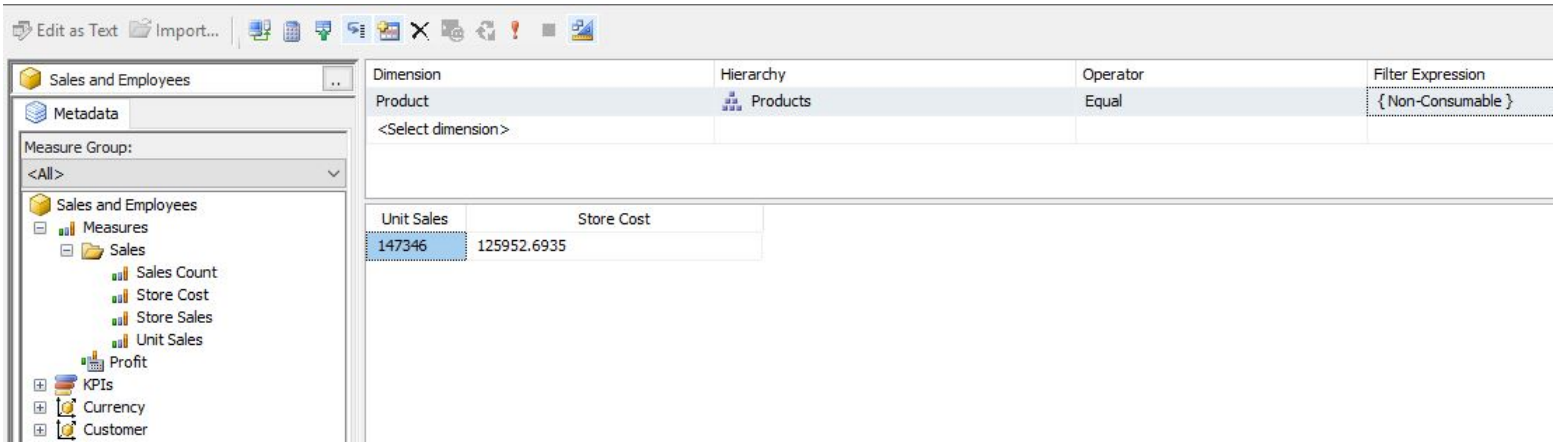
a) Query Unit Sales and Store Cost of "Drink".



b) Query Unit Sales and Store Cost of "Food".



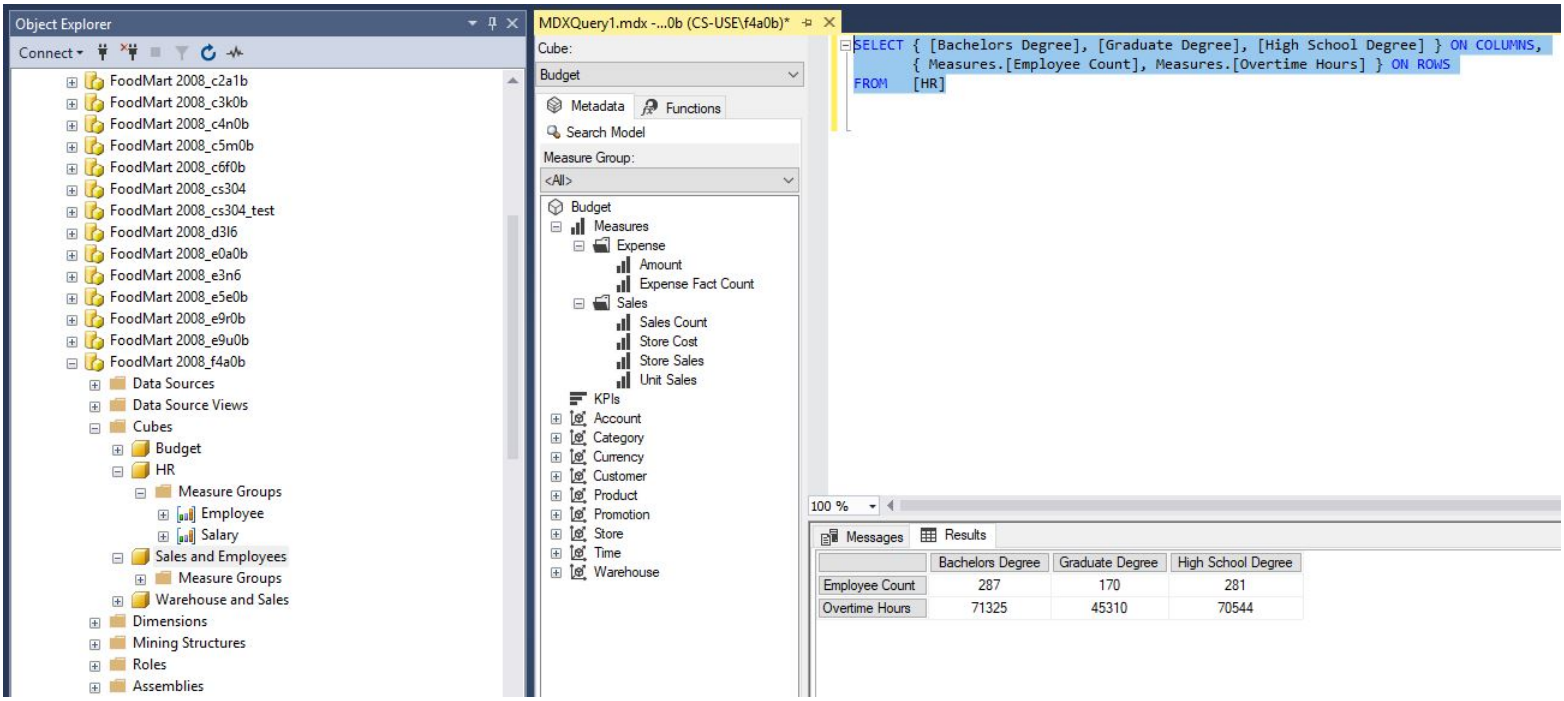
c) Query Unit Sales and Store Cost of "Non-Consumable".



6 Deliverable 6

Choose (a) – creating and running an MDX query

```
SELECT { [Bachelor Degree], [Graduate Degree], [High School Degree] } ON COLUMNS,
       { Measures.[Employee Count], Measures.[Overtime Count] } ON ROWS
FROM   [HR]
```



Explanation:

This query result answers the question"How does education level of employees affect their overtime hours". We can see that 287 Bachelor employees work 71325 overtime hours – on average 249 hours/employee; 170 Graduate employees work 45310 overtime hours – on average 267 hours/employee; 281 High School employees work 70544 overtime hours – on average 251 hours/employee. So employees with Graduate degrees tend to work overtime more often.

7 Deliverable 7

I drilled down on the sales of soda drinks categorized by different brands and different quarters of year 1997.

	Column Labels									
	1997								1997 Store Cost	1997 Unit Sales
	Q1		Q2		Q3		Q4			
Row Labels	Store Cost	Sales	Store Cost	Unit Sales	Store Cost	Unit Sales	Store Cost	Unit Sales		
Drink	**4621.5034**	**5976**	**4728.4702**	**5895**	**4790.6555**	**6065**	**5336.6055**	**6661**	**19477.2346**	**24597**
Alcoholic Beverages	**1223.8054**	**1567**	**1389.208**	**1699**	**1363.9471**	**1696**	**1599.8247**	**1876**	**5576.7852**	**6838**
Beverages	**2701.4871**	**3333**	**2694.5243**	**3267**	**2753.9212**	**3376**	**2919.5976**	**3597**	**11069.5302**	**13573**
Carbonated Beverages	580.8618	789	642.2198	856	637.0986	882	624.4247	880	2484.6049	3407
Soda	**580.8618**	**789**	**642.2198**	**856**	**637.0986**	**882**	**624.4247**	**880**	**2484.6049**	**3407**
Excellent	128.0635	174	133.3952	192	141.737	211	106.8414	161	510.0371	738
Fabulous	111.5542	131	142.3873	168	121.9582	155	134.3854	178	510.2851	632
Skinner	107.4942	161	124.2646	167	136.5695	153	132.5334	174	500.8617	655
Token	91.9347	180	70.3428	152	84.2495	195	101.4649	208	347.9919	735
Washington	141.8152	143	171.8299	177	152.5844	168	149.1996	159	615.4291	647
Drinks	538.2722	617	524.6467	569	525.0815	562	659.1089	721	2247.1093	2469
Hot Beverages	927.6067	1090	907.3009	1037	899.8629	1037	973.3142	1137	3708.0847	4301
Pure Juice Beverages	654.7464	837	620.3569	805	691.8782	895	662.7498	859	2629.7313	3396
Dairy	**696.2109**	**1076**	**644.7379**	**929**	**672.7872**	**993**	**817.1832**	**1188**	**2830.9192**	**4186**
Food	**40446.8486**	**47809**	**38112.6264**	**44825**	**40545.0527**	**47440**	**44166.1958**	**51866**	**163270.7235**	**191940**
Non-Consumable	**10683.8885**	**12506**	**10123.1282**	**11890**	**10569.1612**	**12343**	**11503.0976**	**13497**	**42879.2755**	**50236**
Grand Total	**55752.2405**	**66291**	**52964.2248**	**62610**	**55904.8694**	**65848**	**61005.8989**	**72024**	**225627.2336**	**266773**