Andrew McMahon Lab Project #2- MDX

Query 1 – For each state in the US, the total of annual internet-based sales and retail sales, for each year:

```
SELECT[Measures].[Sales Amount] on columns,
[Sales Territory].[State Province Name].members on rows
from [Adventure Works DW] where ([Sales Territory].[Country Region Code].&[US])|
```

State Province Name	Sales Amount
Arizona	29358677.2...
California	29358677.2...
Colorado	29358677.2...
Connecticut	29358677.2...
Florida	29358677.2...
Georgia	29358677.2...
Idaho	29358677.2...
Illinois	29358677.2...
Indiana	29358677.2...
Kentucky	29358677.2...
Maine	29358677.2...
Maryland	29358677.2...
Massachusetts	29358677.2...
Michigan	29358677.2...
Minnesota	29358677.2...
Mississippi	29358677.2...
Missouri	29358677.2...
Montana	29358677.2...

Query 2 – All the measures for each state in the US, for each quarter:

```
SELECT {
[Measures].[Sales Amount],
[Measures].[Fact Internet Sales Reason Count],
[Measures].[Sales Amount Quota],
[Measures].[End Of Day Rate],
[Measures].[Fact Internet Sales Count],
[Measures].[Freight],
[Measures].[Order Quantity],
[Measures].[Product Standard Cost]
} on columns,
FILTER(
([Sales Territory].[State Province Name].members, [Order Date].[Calendar Quarter].members),
[Measures].[Sales Amount] > 0
) on rows
from [Adventure Works DW] where ([Sales Territory].[Country Region Code].&[US])
```

State Province Name	Calendar Quarter	Sales Amount	Fact Internet Sales Reason Count	Sales Amount Quota	End Of Day Rate	Fact Internet Sales Count	Freight	Order Quantity	Product Standard (
(null)	1	45694.7200...	64515	95714000	7475.74267850...	1970	1142....	1970	20141.7824000001
Alabama	(null)	29358677.2...	64515	95714000	7475.74267850...	60398	73396...	60398	17277793.5756991
Alabama	4	43421.0364	64515	95714000	7475.74267850...	14	1085....	14	25572.064
Alabama	1	1421357.4772	64515	95714000	7475.74267850...	438	35533...	438	851289.150400001
Alabama	2	1801595.143	64515	95714000	7475.74267850...	561	45039...	561	1077906.5721
Alabama	3	1814387.9894	64515	95714000	7475.74267850...	566	45359...	566	1086094.4667
Alabama	4	2038185.3195	64515	95714000	7475.74267850...	651	50954...	651	1216172.0018
Alabama	1	1375841.3191	64515	95714000	7475.74267850...	724	34396...	724	818005.4503
Alabama	2	1314373.64...	64515	95714000	7475.74267850...	744	32859...	744	770684.177300001
Alabama	3	1454653.05...	64515	95714000	7475.74267850...	809	36366...	809	844365.586200001
Alabama	4	1697617.16...	64515	95714000	7475.74267850...	1120	42440...	1120	981422.955500002
Alabama	1	2678946.04...	64515	95714000	7475.74267850...	9202	66974...	9202	1568899.17780011
Alabama	2	3973793.48...	64515	95714000	7475.74267850...	13403	99345...	13403	2331916.97870017
Alabama	3	4370237.06...	64515	95714000	7475.74267850...	14152	10925...	14152	2562664.9042002
Alabama	4	5328573.76...	64515	95714000	7475.74267850...	16044	13321...	16044	3122658.30830019
Alabama	1	45694.7200...	64515	95714000	7475.74267850...	1970	1142....	1970	20141.7824000001
Arizona	(null)	29358677.2...	64515	95714000	7475.74267850...	60398	73396...	60398	17277793.5756991

Query 3 – For each year, the total (retail) sales amount per department and for each married employee:

```
SELECT
[Measures].[Sales Amount] on columns,
{[Dim Date].[Calendar Year].members * [Dim Employee].[Department Name].[Department Name]} on rows
from [Adventure Works DW]
where [Dim Employee].[Marital Status].&[M]
```

Calendar Year	Department Name	Sales Amount
2012	Sales	29358677.2...
2012	Shipping and Rec...	29358677.2...
2012	Tool Design	29358677.2...
2013	Document Control	29358677.2...
2013	Engineering	29358677.2...
2013	Executive	29358677.2...
2013	Facilities and Mai...	29358677.2...
2013	Finance	29358677.2...
2013	Human Resources	29358677.2...
2013	Information Servi...	29358677.2...
2013	Marketing	29358677.2...
2013	Production	29358677.2...
2013	Production Control	29358677.2...
2013	Purchasing	29358677.2...
2013	Quality Assurance	29358677.2...
2013	Research and De...	29358677.2...
2013	Sales	29358677.2...
2013	Shipping and Rec...	29358677.2...
2013	Tool Design	29358677.2...
2014	Document Control	29358677.2...
2014	Engineering	29358677.2...
2014	Executive	29358677.2...
2014	Facilities and Mai...	29358677.2...
2014	Finance	29358677.2...
2014	Human Resources	29358677.2...
2014	Information Servi...	29358677.2...
2014	Marketing	29358677.2...
2014	Production	29358677.2...
2014	Production Control	29358677.2...

Query 4 – Moving average over the last 3 months of the sales amount for each product:

```
WITH
MEMBER [Measures].[3 Month Moving Average] AS
  Avg(
    {[Dim Date].[English Month Name].CurrentMember.Lag(2):[Dim Date].[English Month Name].CurrentMember },
    [Measures].[Sales Amount]
  )
SELECT
  {[Measures].[3 Month Moving Average]} on columns,
  {[Dim Product].[English Product Name].members } on rows
FROM |
  [Adventure Works DW]
```

English Product Name	3 Month Moving Average
Road-550-W Yellow,...	293888.519999999
Road-550-W Yellow,...	290006.822499999
Road-550-W Yellow,...	334586.317499999
Road-550-W Yellow,...	312336.587499999
Road-550-W Yellow,...	283804.109999999
Road-650 Black, 44	47566.6422
Road-650 Black, 48	45553.2394
Road-650 Black, 52	66917.6805999999
Road-650 Black, 58	57997.1876
Road-650 Black, 60	57158.2696
Road-650 Black, 62	49048.7304
Road-650 Red, 44	54529.6604
Road-650 Red, 48	66721.9332
Road-650 Red, 52	46084.554
Road-650 Red, 58	56347.3158
Road-650 Red, 60	40072.3094
Road-650 Red, 62	57381.9812
Road-750 Black, 44	194396.399999999
Road-750 Black, 48	196016.369999999

Query 5 – Comparison of quarterly sales by state with respect to the quarterly sales in the previous year, for each state in the US:

```
WITH
MEMBER [Measures].[Sales in current quarter of previous year] as
  (
    [Measures].[Sales Amount],
    ParallelPeriod([Dim Date].[Calendar Quarter].[Calendar Quarter], 4, [Dim Date].[Calendar Quarter].CurrentMember)
  )
member [Measures].[Sales Growth] as
  ([Measures].[Sales Amount] - [Measures].[Sales Previous Year]) / [Measures].[Sales Previous Year],
  FORMAT_STRING = "Percent"|
SELECT
  {
    [Measures].[Sales in current quarter of previous year],
    [Measures].[Sales Growth]
  } ON COLUMNS,
  [Sales Territory].[State Province Name].members on rows
FROM
  [Adventure Works DW]
where ([Sales Territory].[Country Region Code].&[US])
```

State Province Name	Sales in current quarter of previous ...	Sales Growth
Alabama	(null)	(null)
Arizona	(null)	(null)
California	(null)	(null)
Colorado	(null)	(null)
Connecticut	(null)	(null)
Florida	(null)	(null)
Georgia	(null)	(null)
Idaho	(null)	(null)
Illinois	(null)	(null)
Indiana	(null)	(null)
Kentucky	(null)	(null)
Maine	(null)	(null)
Maryland	(null)	(null)
Massachusetts	(null)	(null)
Michigan	(null)	(null)
Minnesota	(null)	(null)
Mississippi	(null)	(null)
Missouri	(null)	(null)
Montana	(null)	(null)
Nevada	(null)	(null)

KPI (sorry for the small and/or blurry text):

```
⇧ KPI

    Name:
    KPI

    Associated measure group:
    <All>                                                        ⌄

⇧ Value Expression

    ([Measures].[Sales Amount] - ([Measures].[Product Standard Cost] + [Measures].[Freight]))


⇧ Goal Expression                                                                                                              ⓘ

    ((([Measures].[Sales Amount] - ([Measures].[Product Standard Cost] + [Measures].[Freight])), ParallelPeriod([Dim Date].[Calendar Year].[Calendar Year], 1, [Dim Date].[Calendar Year].CurrentMember))
        * 1.15

⇧ Status                                                                                                                        ⓘ

    Status indicator:          ▨▨▨ Thermometer            ⌄

    Status expression:
    CASE
    WHEN (KPIVALUE("Internet Sales Profit KPI") / KPIGOAL("Internet Sales Profit KPI")) >= 0.95 THEN 1
    WHEN (KPIVALUE("Internet Sales Profit KPI") / KPIGOAL("Internet Sales Profit KPI")) < 0.85 THEN -1
    ELSE 0
    END

⇧ Trend                                                                                                                        ⓘ

    Trend indicator:           ↑ Standard arrow             ⌄

    Trend expression:
    CASE
    WHEN KPIVALUE("Internet Sales Profit KPI") < (0.8 * KPIGOAL("Internet Sales Profit KPI")) THEN -1
    WHEN KPIVALUE("Internet Sales Profit KPI") > (1.1 * KPIGOAL("Internet Sales Profit KPI")) THEN 1
    ELSE 0
    END
```