MDX QUERIES

1. **Which cities see the highest demand for scooter rentals for the analyzed month compared to the previous month?**

```
WITH
MEMBER [Measures].[CurrentMonthRentals] AS
   (
      [Measures].[Number of rentals facts],
      [End date].[Hierarchy].CURRENTMEMBER
   )
MEMBER [Measures].[PreviousMonthRentals] AS
   (
      [Measures].[Number of rentals facts],
      [End date].[Hierarchy].CURRENTMEMBER.PREVMEMBER
   )
MEMBER [Measures].[RentalsChange] AS
   [Measures].[CurrentMonthRentals] - [Measures].[PreviousMonthRentals]
SET [OrderedCities] AS
   ORDER(
      [End State - Area].[City].CHILDREN,
      [Measures].[RentalsChange],
      DESC
   )
SELECT
   {[Measures].[RentalsChange], [Measures].[CurrentMonthRentals],
[Measures].[PreviousMonthRentals]} ON COLUMNS,
   [OrderedCities] ON ROWS
FROM [Scooters DW]
WHERE [End date].[Hierarchy].&[2018].&[July];
```

2. **What is the number of rentals per age group for the analyzed month and for the previous month?**

```
WITH
  SET [SelectedPeriod] AS
  {
    ([End Date].[Hierarchy].[2018].[June]),
    ParallelPeriod ([End date].[Hierarchy].[Month], 1, [End
Date].[Hierarchy].[2018].[June])
  }
SELECT NON EMPTY { [Measures].[Number of rentals facts] } ON COLUMNS,
```

```
NON EMPTY { [Customers DT].[Age Category].[Age Category].ALLMEMBERS *
[SelectedPeriod] } ON ROWS
FROM [Scooters DW]
```

3. **Give the average number of rentals per user, per month.**

```
SELECT NON EMPTY { [Measures].[Average number of rentals per user] } ON
COLUMNS,
NON EMPTY { ([End Date].[Year].CHILDREN) * ([End Date].[Month].CHILDREN) }
ON ROWS
FROM [Scooters DW]
```

4. **Give the average battery life remaining on a scooter at the start of each rental in the current and previous month.**

```
WITH
  SET [SelectedPeriod] AS
  {
    ([End Date].[Year].[2018], [End Date].[Month].[June]),
    ([End Date].[Year].[2018], [End Date].[Month].[July])
  }
SELECT NON EMPTY { [Measures].[Average start battery percentage] } ON
COLUMNS ,
{[SelectedPeriod]} ON ROWS
FROM [Scooters DW]
```

5. **Compare the percentage distribution of rentals depending on gender for the current month with the percentage distribution for the previous mo**nth.

```
WITH
  SET [SelectedPeriod] AS
  {
    ([End Date].[Year].[2018], [End Date].[Month].[June]),
    ([End Date].[Year].[2018], [End Date].[Month].[July])
  }
  MEMBER [Measures].[CurrentMonthTotalRentals] AS
    Sum([SelectedPeriod].Item(1), [Measures].[Number of rentals facts])
  MEMBER [Measures].[PreviousMonthTotalRentals] AS
    Sum([SelectedPeriod].Item(0), [Measures].[Number of rentals facts])
  MEMBER [Measures].[Change] AS
   [Measures].[CurrentMonthTotalRentals] - [Measures].[PreviousMonthTotalRentals]
SELECT NON EMPTY
{
  [Measures].[PreviousMonthTotalRentals],
  [Measures].[CurrentMonthTotalRentals],
  [Measures].[Change]
} ON COLUMNS,
```

```
{
  [Gender].[Gender].MEMBERS
} ON ROWS
FROM [Scooters DW]
```

We cannot show the percentage distribution, because we don't see the possibility to get the number of all rentals for the current month if we specify Gender members in the columns. It is always trying to divide each gender's number by itself, no matter what we tried. We show the distribution in numbers instead.

6. **Compare the average expected travel distance at the end of the rental between cities.**

```
SELECT NON EMPTY { [Measures].[Average expected end distance] } ON COLUMNS,
NON EMPTY { ([End State - Area].[Hierarchy].[City].ALLMEMBERS ) } ON ROWS
FROM [Scooters DW]
```

7. **What is the average rental duration this month compared to the previous month?**

```
WITH
 SET [SelectedPeriod] AS
 {
  ([End Date].[Year].[2018], [End Date].[Month].[June]),
  ([End Date].[Year].[2018], [End Date].[Month].[July])
 }
SELECT NON EMPTY { [Measures].[Average rental duration] } ON COLUMNS ,
{[SelectedPeriod]} ON ROWS
FROM [Scooters DW]
```

8. **Give the average battery life remaining on scooters at the end of each rental.**

```
SELECT NON EMPTY { [Measures].[Average end battery percentage] } ON COLUMNS
FROM [Scooters DW]
```

9. **What is the average travel distance per rental from each month for the last year?**

```
SELECT NON EMPTY { [Measures].[Average travel distance] } ON COLUMNS,
NON EMPTY { ([End Date].[Hierarchy].&[2018].CHILDREN ) } ON ROWS
FROM [Scooters DW]
```

10. Which day of the week has the highest scooter usage for the last month?

```
SELECT NON EMPTY { [Measures].[Number of rentals facts] } ON COLUMNS,
NON EMPTY {
   (
      [End Date].[Year].[2018],
      [End Date].[Month].[June],
      [End Date].[Day Of Week].[Day Of Week].ALLMEMBERS
   )
} ON ROWS
FROM [Scooters DW]
```

11. How many rentals does a scooter have on average per day in the current and previous month?

```
WITH
  SET [SelectedPeriod] AS
  {
    ([End Date].[Year].[2018], [End Date].[Month].[June]),
    ([End Date].[Year].[2018], [End Date].[Month].[July])
  }
  MEMBER [Measures].[AverageRentalsPerScooterPerDayCurrentMonth] AS
   [Measures].[Number of rentals facts] / [Measures].[Number of scooters]
  MEMBER [Measures].[AverageRentalsPerScooterPerDayPreviousMonth] AS
   [Measures].[Number of rentals facts] / ([SelectedPeriod].Item(0),
[Measures].[Number of scooters])
SELECT NON EMPTY
{
  [Measures].[AverageRentalsPerScooterPerDayCurrentMonth],
  [Measures].[AverageRentalsPerScooterPerDayPreviousMonth]
} ON COLUMNS
FROM [Scooters DW]
```

12. Compare the share of rentals between various models of scooters for the last year.

```
SELECT NON EMPTY { [Measures].[Number of rentals facts] } ON COLUMNS,
NON EMPTY { ([End Date].[Year].[2018] * [Scooters
DT].[Producer].[Producer].ALLMEMBERS * [Scooters
DT].[Model].[Model].ALLMEMBERS ) }
ON ROWS FROM [Scooters DW]
```

Again, the same situation as in query number 5. It is not possible to compute the share, we show the number of facts for each.

13. Compare the number of rentals between various areas in cities.

```
SELECT NON EMPTY { [Measures].[Number of rentals facts] } ON COLUMNS,
NON EMPTY { ([End State - Area].[City].CHILDREN) * ([End State -
Area].[Name].CHILDREN) } ON ROWS
FROM [Scooters DW]
```

14. Show TOP 10 months according to the number of rentals. (additional to use TOP)

```
SELECT NON EMPTY { [Measures].[Number of rentals facts] } ON COLUMNS,
NON EMPTY {
        TOPCOUNT (
                [End Date].[Year].CHILDREN * [End Date].[Month].CHILDREN,
                10,
                [Measures].[Number of rentals facts]
        )
} ON ROWS
FROM [Scooters DW]
```

KPIs:

1. ***MonthlyRentals***

Value: *[Measures].[Number of rentals facts]*

Goal: *([Measures].[Number of rentals facts], ParallelPeriod ([End Date].[Hierarchy].[Month], 1, [End Date].[Hierarchy].CurrentMember)) * 1.0025*

Status: *IIF([Measures].[Number of rentals facts] >= ([Measures].[Number of rentals facts], ParallelPeriod ([End Date].[Hierarchy].[Month], 1, [End Date].[Hierarchy].CurrentMember)) * 1.0025, "on target", "off target")*

Trend: *([Measures].[Number of rentals facts] / ([Measures].[Number of rentals facts], ParallelPeriod ([End Date].[Hierarchy].[Month], 1, [End Date].[Hierarchy].CurrentMember))) - 1*

2. ***AvgScooterRentalTime***

Value: *[Measures].[Average rental duration]*

Goal: *([Measures].[Average rental duration],ParallelPeriod ([End Date].[Hierarchy].[Day of Month No], 1, [End Date].[Hierarchy].CurrentMember)) * 1.001*

Status: *IIF([Measures].[Average rental duration] >= ([Measures].[Average rental duration],ParallelPeriod ([End Date].[Hierarchy].[Day of Month No], 1, [End Date].[Hierarchy].CurrentMember)) * 1.001, "on target", "off target")*

Trend: *([Measures].[Average rental duration] / ([Measures].[Average rental duration],ParallelPeriod ([End Date].[Hierarchy].[Day of Month No], 1, [End Date].[Hierarchy].CurrentMember))) - 1*