

Week 9 – Business Analytics Fundamentals – Sydney Campus

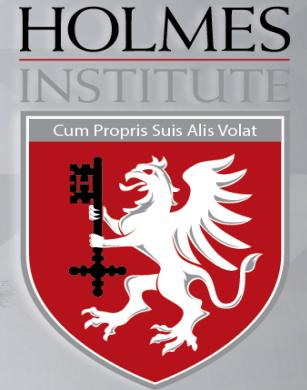


1. Lecture 8
2. Tutorial Week 9 – step-by-step instruction
3. Attendance & Tutorial Questions - Recognising student participation and engagement specifically identifying those who are most actively involved!

Lecturer/Tutor: Dr. Farshid Keivanian

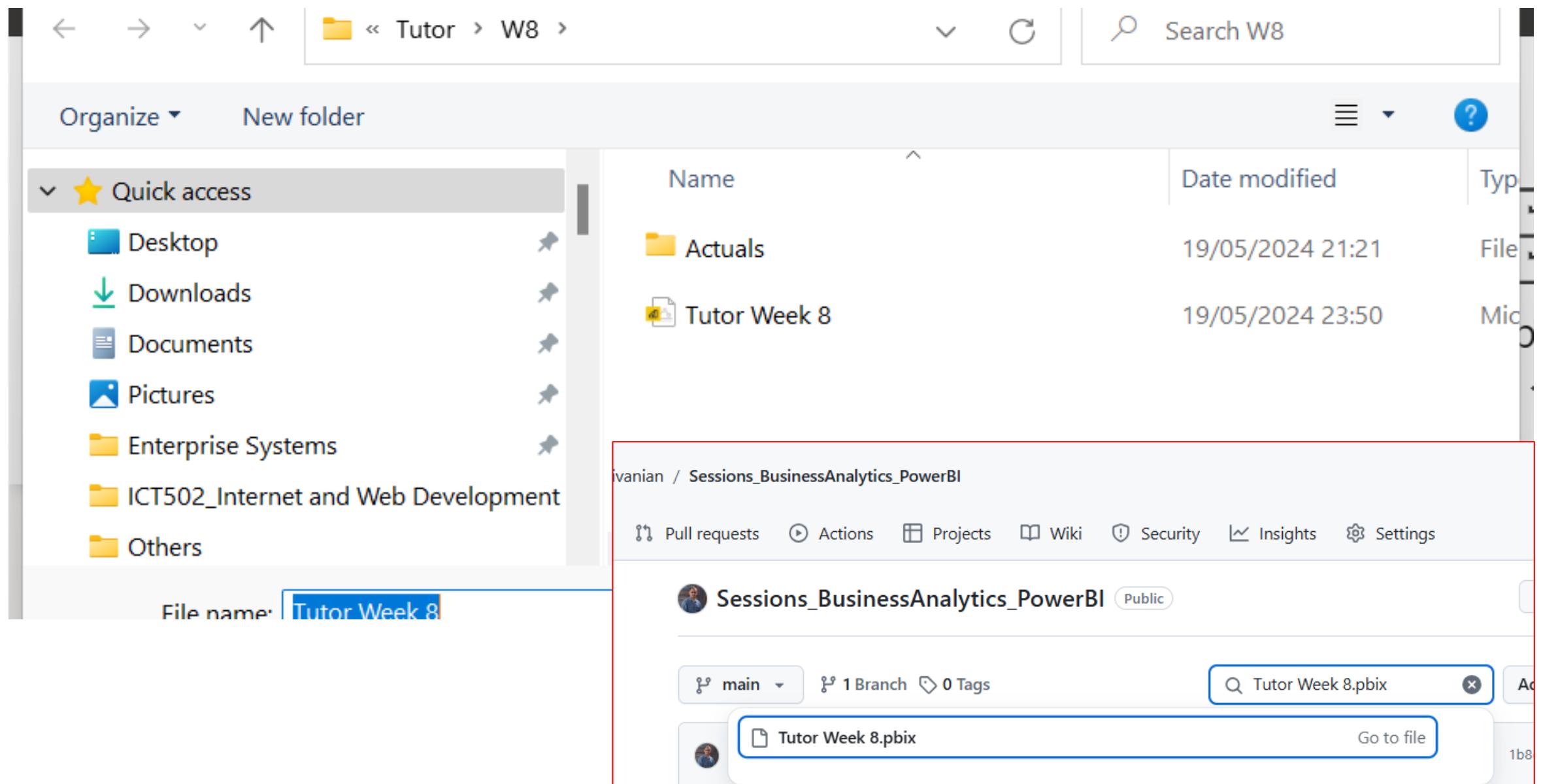
HI6037 Fundamentals of Business Analytics

Lecture 8



Open Tutorial Week 8

- Save it as Tutorial Week 9 and start working on it



- We need to calculate budget vs forecast and the budget versus forecast percentage difference
- From the ellipses beside budget >> Click on ... >> Select New Quick Measure

The screenshot shows the Microsoft Power BI desktop interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab has options like Excel workbook, OneLake data hub, and SQL Server. The Data tab has options like Paste, Get data, Enter data, Transform, Refresh data, New visual, Text box, More visuals, New measure, Quick measure, and Calculations. The Format tab has options for styling. The Data / Drill tab has options for sensitivity analysis.

A yellow banner at the top left indicates "There are pending changes" with buttons for "Apply changes" and "Discard changes".

The main workspace displays a chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". The chart shows a blue line for Actual RT and a blue shaded area for Budget RT. A value of "21,603,896" is highlighted in yellow. Below the chart, there are summary values: 144,618,653 (Sum of Actual), 155,309,019 (Sum of Budget), and 20,660,778 (Goal). The chart has a legend for Sum of Actual, Sum of Budget, and Sum of Forecast.

The Filters pane on the right lists measures: Budget (selected), Σ Budget, Budget RT (checked), CostElement, Country, Date, IT Dep., and Calendar. The "Budget" entry has an ellipsis button (three dots) which is highlighted with a red box.

The bottom navigation bar includes icons for monitor, smartphone, and other controls, followed by "Page 1" and a plus sign.

- We need to calculate budget vs forecast and the budget versus forecast percentage difference
- From the ellipses beside budget >> Click on ... >> Select New Quick Measure

The screenshot shows the Microsoft Power BI desktop interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, Format, and Data / Drill. The Home tab has options like Excel workbook, OneLake data hub, SQL Server, and Recent sources. The Format tab is active, showing a context menu with "Select", "New measure", "New column", and "New quick measure" (which is highlighted with a red box). Below the ribbon is a clipboard section with Paste, Get data, and SQL Server options. The main workspace displays a chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". The chart includes a legend for "Sum of Actual" (blue), "Sum of Budget" (orange), and "Sum of Forecast" (red). It features a running total line and a bar chart below it. A large value "21,603,896" is highlighted in yellow. The bottom of the screen shows a navigation bar with icons for monitor, mobile, back, forward, and a plus sign, along with "Page 1".

Context Menu Options:

- Select
- New measure
- New column
- New quick measure** (highlighted)
- Refresh data
- New quick measure** (highlighted)
- Edit query
- Manage relationships
- Incremental refresh
- Manage aggregations
- Rename
- Delete from model
- Hide
- Mark as date table
- View hidden
- Unhide all
- Collapse all
- Expand all
- > Calendar

- Or While the Budget RT is selected >> Click on Budget then from Table Tools >> Select Quick Measure

Tutor Week 8 • Last saved: 5/22/2024 at 5:05 PM

Farshid Keivaniyan

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server

Clipboard Data

Enter data OneLake data hub Dataverse Recent sources

Transform Refresh data

New visual Text box More visuals

New measure Quick measure

Sensitivity

Choose from a list of common calculations and add the results to the selected table.

Build visual

Filters

Search

Actuals

Budget

- Budget RT
- \sum Budget
- CostElement
- Country
- Date
- IT Den

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

21,603,896 Goal: 21,603,896, 20,660,778

144,618,853 Sum of Actual 155,309,019 Sum of Budget

Running Total (RT)

Jan 2020 Apr 2020 Jul 2020 Oct 2020

Page 1 +

- In the dialogue box, choose the type of calculation: Subtraction

Tutor Week 8 • Last saved: 5/10/2024 10:45 AM

Farshid Keivanian

File Home Insert Mode

Paste Get data SQL Server

Clipboard

Apply Discard changes

Filters

Running total

Total for category (filters applied)

Total for category (filters not applied)

Mathematical operations

Addition

Subtraction

Multiplication

Division

Percentage difference

Select a calculation

More visuals New measure Quick measure Calculations

Sensitivity Sensitivity

Visual General

Text color

Search

Budget

Σ

fx

13%

Page 1 of 1

The screenshot shows a Microsoft Power BI application window. The ribbon at the top has tabs for File, Home, Insert, Mode, and others. The Home tab is currently selected. A context menu is open from a 'More' button in the ribbon, specifically from the 'Mathematical operations' section. The 'Subtraction' option is highlighted with a red box. Other options in this section include Addition, Multiplication, Division, and Percentage difference. Below this menu, there's a 'Select a calculation' dropdown. To the right of the menu, there's a 'Data / Drill' ribbon tab with various icons for data manipulation. On the left, there's a sidebar with sections for Visualizations and Data, and a search bar. At the bottom, there's a navigation bar with icons for desktop, mobile, and refresh, along with a page number indicator.

- The base value is going to be the budget: So drag and release budget in Base Value

The screenshot shows the Microsoft Power BI desktop interface. The top navigation bar includes 'File', 'Home' (selected), 'Insert', 'Modeling', 'View', 'Optimize', 'Help', 'Format', 'Data / Drill', and a 'Share' button. The 'Home' tab has several options: 'Excel workbook', 'Enter data', 'Transform Refresh data', 'New visual', 'Text box', 'More visuals', 'New measure', 'Quick measure', and 'Calculations'. Below the ribbon, there's a 'Clipboard' section with icons for Paste, Get data, and SQL Server. The main workspace displays a 'Quick measure' dialog titled 'Base value' with a red box around it, followed by 'Value to subtract'. To the right, there are sections for 'Visualizations' (Format visual, Search, Visual, General) and 'Data' (Search, Budget, Σ, etc.). On the far left, there's a sidebar with various icons and a preview of a chart showing a value of 21,603.896.

The base value is going to be the budget: Drag and release budget in Base Value

Tutor Week 8 • Last saved: 5/22/2024 at 5:05 PM Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server OneLake data hub Data Refresh Transform Recent sources New visual Text box More visuals New measure Quick Sensitivity

Clipboard

Quick measure Subtraction Calculate the difference between two values. Learn more

Filters

Base value Sum of Budget

Value to subtract

+Add data

Visualizations Build visual

Data

Search

Actuals

Budget

Budget

\sum Budget

Budget RT

CostElement

Country

Date

Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server OneLake data hub Data Refresh Transform Recent sources New visual Text box More visuals New measure Quick Sensitivity

Clipboard

Quick measure Subtraction Calculate the difference between two values. Learn more

Filters

Base value Sum of Budget

Value to subtract

+Add data

Visualizations Build visual

Data

Search

Actuals

Budget

Budget

\sum Budget

Budget RT

CostElement

Country

Date

- The value to subtract is the forecast

Tutor Week 8 • Last saved: 5/22/2024 at 5:05 PM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server Enter data OneLake data hub Dataverse Recent sources Transform Refresh data New visual Text box More visuals New measure Quick measure Sensitivity

Clipboard Data

Quick measure Calculate the difference between two values. [Learn more](#)

Filters Base value Sum of Budget /value to subtract +Add data \sum Forecast Name 'Forecast'[Forecast]

Visualizations Build visual

Data Search

Costs Countries Data Sources \sum Forecast Forecast IT Departments Regions

- Click OK or Add

Tutor Week 9 • Last saved: Today at 8:29 PM ▾

Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share ▾

Paste Get data ▾ SQL Server OneLake data hub ▾ Dataverse Enter data Recent sources ▾ Transform Refresh data ▾ New visual Text box More visuals ▾ New measure measure Quick Sensitivity ▾

Clipboard Data Queries Insert Calculations Sensitivity ▾

Quick measure

Base value ⓘ Sum of Budget

Value to subtract ⓘ Sum of Forecast

Add

Filters

Visualizations

Build visual

Search

Region

DAX

21,603.896

Sum of Actual, Sum of Forecast, and Sum of Budget for 2024

Goal: 21,000,000, 20,400,778

164,416,623 155,300,019

Sum of Actual Sum of Budget

Pa +

- If you look at the formula bar you can see Power BI has written the formula for us

Screenshot of the Microsoft Power BI interface showing the creation of a quick measure.

The ribbon menu is visible with the "Measure tools" tab selected. The "Name" field contains "Budget minus Fore..." and the "Home table" field contains "Actuals". The "Format" section shows "Whole number" selected. The "Data category" is set to "Uncategorized".

The "Structure" pane on the left displays the DAX formula:

```
1 Budget  
minus  
Forecast  
=  
2 SUM  
( 'Budget'  
'  
[Budget]  
) - SUM  
( 'Foreca' - )
```

A red box highlights the first two lines of the formula: "1 Budget minus Forecast =".

The main workspace shows the "Quick measure" configuration:

- Base value:** Sum of Budget
- Value to subtract:** Sum of Forecast

An "Add" button is located at the bottom right of the workspace.

The "Visualizations" pane on the right lists various chart types, and the "Data" pane on the far right shows a search bar and navigation links for different data sources.

- Let's change this to say budget v forecast, press enter or tick to commit it

Tutor Week 9 • Last saved: Today at 8:29 PM

Farshid Keivanian

File Home Insert Modeling Format Data / Drill Table tools Measure tools Share

Name: Budget minus Fore...

Home table: Actuals

Commit

Format: Whole number

Data category: Uncategorized

New measure

Quick measure

Calculations

Quick measure

Base value

Sum of Budget

Value to subtract

Sum of Forecast

Add

DAX:

```
1 Budget
v
Forecast
=
2 SUM
('Budget'
'
[Budget]
) - SUM
('Foreca
```

The screenshot shows the Power BI interface with the 'Measure tools' tab selected. A 'Quick measure' is being created to calculate the difference between 'Budget' and 'Forecast'. The 'Base value' is set to 'Sum of Budget' and the 'Value to subtract' is set to 'Sum of Forecast'. The DAX code for the measure is visible on the left, enclosed in a red box. The 'Commit' button is highlighted with a red box.

- You will see it in the field list (right side)

The screenshot shows the Microsoft Power BI DAX Studio interface. The top navigation bar includes File, Home, Insert, Modeling, Format, Data / Drill, Table tools, Measure tools, Share, and a search bar. The Measure tools tab is selected.

In the left sidebar, there are sections for Structure, Formatting, Properties, and Calculations. The Structure section shows a visual representation of the measure definition, which is:

```
=  
2 SUM  
( 'Budget'  
'  
[Budget]  
) - SUM  
( 'Foreca  
st'  
[Forecas  
t])
```

The Formatting section shows the current format as Whole number, with options for thousands separator (,) and decimal places (0).

The Properties section shows the Data category as Uncategorized.

The Calculations section contains buttons for New measure and Quick measure.

The main area displays the Visualizations and Data sections. The Visualizations section shows various chart icons. The Data section shows a list of data sources and measures, with "Actuals" checked. A red box highlights the "Budget v Forecast" measure, which is also listed in the Data section.

- You will see it in the field list (right side)

The screenshot shows the Microsoft Power BI DAX Studio interface. On the left, the DAX editor displays a measure definition:

```
= SUM('Budget') - SUM('Forecast')
```

The 'Format' tab in the ribbon is selected, showing the current format as 'Whole number'. The 'Measure tools' tab is also selected, showing the 'Data category' as 'Uncategorized'. In the 'Calculations' section, a measure named 'Budget v Forecast' is listed under 'Actuals', with a red box highlighting it. The 'Add' button at the bottom right is visible.

- We need one more which is the budget v forecast percent
 - Click on Budget >> Click on Quick Measure (while Budget RT placeholder is selected)

The screenshot shows the Microsoft Power BI desktop interface. The top navigation bar includes 'File', 'Home', 'Insert', 'Modeling', 'View', 'Optimize', 'Format', 'Data / Drill', and 'Table tools'. The 'Format' tab is currently selected. In the 'Data / Drill' section, there is a 'Quick measure' button, which is highlighted with a red box. A tooltip for this button states: 'Choose from a list of common calculations and add the results to the selected table.' On the left side, there's a 'Structure' pane with icons for 'Tables', 'Calendars', and 'DAX'. Below it, a visual area displays a chart titled 'Sum of Budget by Date' with a value of 21,603,896. To the right of the visual are 'Filters' and 'Build visual' sections. The 'Build visual' section contains various chart and report icons. On the far right, there's a search bar and a list of measures: 'Country', 'Date', 'IT Department', 'Budget' (which is checked), and others like 'Σ Budget', 'Budget RT', 'CostElement', and 'Country'. The 'Budget' measure is also highlighted with a red box.

- You will see this

The screenshot shows the Microsoft Power BI Data Editor interface. The top navigation bar includes 'File', 'Home', 'Insert', 'Modeling', 'View', 'Optimize', 'Format', 'Data / Drill', 'Table tools', and 'Share'. A search icon and user profile 'Farshid Keivanian' are also present. The main area has a left sidebar with icons for 'Structure', 'Calendars', 'Relationships', 'Calculations', 'Visualizations', 'Data', and 'DAX'. The 'Calculations' section is highlighted with a red box. It contains a 'Quick measure' card with instructions to select a calculation to create a measure or describe the measure you need. Below it is a 'Suggestions with Copilot' section and a 'Select a calculation' input field. To the right, there's a preview pane showing a visualization and data details like 'Name: Budget', 'Storage mode: Import', and 'Data refreshed: 5/20/2024, 2:10:02 PM'. The bottom navigation bar features icons for 'Table', 'Card', 'Matrix', 'List', 'Row', 'Column', 'Pivot', and 'Group'.

• Select Percentage Difference

Screenshot of Microsoft Power BI showing the 'Table tools' context menu open, with the 'Mathematical operations' section displayed. The 'Percentage difference' option is highlighted with a red box.

The screenshot shows the Microsoft Power BI interface with the following elements:

- Top Bar:** Includes icons for Home, Refresh, Undo, Redo, and Save, followed by the text "Tutor Week 9 • Last saved: Today".
- Header:** Shows the current file name "Budget" and the user "Farshid Keivani".
- File Menu:** Standard Microsoft Office-style menu.
- Home Tab:** Contains sections for Structure, Filters, and Data.
- Table Tools Context Menu:** Opened from the 'Table tools' tab, showing options like Total for category, Mathematical operations, and various calculations.
- Visualizations Panel:** Shows a list of available visualizations.
- Data Panel:** Shows a search bar and a list of data sources and measures.

The 'Percentage difference' option in the 'Mathematical operations' section is highlighted with a red box.

- The base field is the forecast
- Drag and release it in the Base Value

Tutor Week 9 • Last saved: Today at 8:35 PM

Farshid Keivanian

File Home Insert Modeling View Optimize Format Data / Drill Table tools Share

Name: Budget

Mark as date table Manage relationships New measure New measure column New table

Calendars Relationships Calculations

Structure

Backward arrow Forward arrow

Quick measure

Percentage difference

Calculate the percentage difference between two values.

[Learn more](#)

Use value

+Add data \sum Forecast

Value to compare

Visualizations

Build visual

Search

Cost Element

Department

Forecast

Cost Element

Count

Date

\sum Forecast

Forecast

Pivot

Table

Report

Page

+

- The value to compare is the Budget

Tutor Week 9 • Last saved: Today at 8:35 PM ▾

File Home Insert Modeling View Optimize Format Data / Drill Table tools Share ▾

Name Budget

Structure

Mark as date table Calendars Manage relationships Relationships New measure Quick New measure column Calculations

Filters

< k measure >

Value ⓘ

Forecast

Value to compare ⓘ

+Add data \sum Budget

Visualizations

Build visual

Data

Search

Budget

\sum Budget

Budget

Budget

CostElen

Country

Date

IT Dep.

Pa + ks ⓘ

- Click on OK or Add to commit the change

Tutor Week 9 • Last saved: Today at 8:35 PM

Farshid Keivanian

File Home Insert Modeling View Optimize Format Data / Drill Table tools Share

Name Budget

Structure

Mark as date table Manage relationships New measure Quick New measure column New table Calculations

Quick measure

Value to compare Sum of Budget

Blanks Produce blanks in the output

Add

Visualizations

Data

Search

Budget

DAX

Filters

OK or Add

- Now it is in the field list
- Click on it to see the formula Power BI has written for us

Tutor Week 9 • Last saved: Today at 8:35 PM

Farshid Keivani

Format **Data / Drill** **Table tools** **Measure tools**

Name: Budget % differenc... **Format:** Percentage **Data category:** Uncategorized

Home table: Budget **New measure:** **Quick measure:**

Structure: **Formatting:** **Properties:** **Calculations:**

DAX:

```

1 Budget
%
difference from
Forecast
=
2 VAR
__BASELINE_VALUE
= SUM
  
```

Visualizations: Build visual

Data: Search: Budget

Budget % difference from Forecast

Budget RT

CostElement

Country

Date

- Let's give it a better name
- Click on Tick to commit the change

The screenshot shows the Microsoft Power BI interface with the 'Measure tools' ribbon selected. In the 'Structure' section, a measure named 'Budget % difference from Budget RT' is being edited. A red box highlights the '✓' button and the formula editor, which contains the following DAX code:

```
1 Budget
v
Forecas
% =
VAR
__BASELINE_VALUE
= SUM
('Forecast'
)
```

The 'Formatting' section shows the measure is set to 'Percentage' format with two decimal places. The 'Properties' section indicates the 'Data category' is 'Uncategorized'. The 'Calculations' section shows the measure is part of the 'Budget' group.

- Collapse Field and Quick Measure
- Let's build the next visual: A clustered column and line combo chart
- Expand Visualisation

Tutor Week 9 • Last saved: Today at 8:35 PM

Farshid Keivani

File Home Insert Modeling View Optimize Help Share

Paste Get data SQL Server Enter data OneLake data hub Dataverse Recent sources Transform Refresh data New visual Text box More visuals New measure Quick measure Calculations Sensitivity

Clipboard Data

Visualizations Build visual Filters Quick measure Line and clustered column chart

Line and clustered column chart

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

21,603,896 Goal: 21,603,896, 20,660,778

144,618,853 155,309,019

Sum of Actual Sum of Budget

Jan 2020 Apr 2020 Jul 2020 Oct 2020

Running Total (RT)

Actual RT Budget RT

Period	Actual RT	Budget RT
Jan 2020	0.0bn	0.0bn
Apr 2020	0.0bn	0.0bn
Jul 2020	0.0bn	0.0bn
Oct 2020	0.0bn	0.0bn

- Collapse Field and Quick Measure
- Expand Visualisation
- Let's build the next visual: A clustered column and line combo chart

Tutor Week 9 • Last saved: Today at 8:35 PM

Farshid Keivani

File Home Insert Modeling View Optimize Help Share ▾

Paste Get data ▾ SQL Server Enter data OneLake data hub ▾ Dataverse Recent sources ▾ Transform Refresh data ▾ New visual Text box More visuals ▾ New measure Quick measure Calculations Sensitivity ▾

Clipboard Data

Visualizations Build visual Filters Line and clustered column chart

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Jan 2020 Apr 2020 Jul 2020 Oct 2020

80M
60M
40M
20M

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

Jan 2020 Apr 2020 Jul 2020 Oct 2020

0.2bn
0.0bn

21,603,896 Goal: 21,603,896, 20,660,778

144,618,853 155,309,019

Sum of Actual Sum of Budget

- Bring it down below the other charts

Tutor Week 9 • Last saved: Today at 8:35 PM ▾

File Home Insert Modeling View Optimize Help

Paste Get data ▾ SQL Server

Clipboard Data Queries

Transform Refresh data ▾ New visual

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Sum of Actual Sum of Budget Sum of Forecast

80M
60M
40M
20M

Jan 2020 Apr 2020 Jul 2020 Oct 2020

Running Total (RT)

Actual RT Budget RT

0.2bn
0.0bn

Jan 2020 Apr 2020 Jul 2020 Oct 2020

144,618,853 155,309,019

Sum of Actual Sum of Budget

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

① Select or drag fields to populate this visual

21,603,896

The screenshot shows the Microsoft Power BI desktop interface. The ribbon menu is visible at the top, with 'Home' selected. Below the ribbon, there are several data source options: 'Excel workbook', 'OneLake data hub', 'SQL Server', and 'Recent sources'. On the right side of the ribbon, there are buttons for 'Transform data' and 'Refresh data'. The main workspace displays three charts. The top chart is a line chart titled 'Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter', showing three lines (blue, orange, red) from Jan 2020 to Oct 2020. The middle chart is titled 'Running Total (RT)' and shows two stacked areas (blue and purple) from Jan 2020 to Oct 2020. The bottom chart is a bar chart titled 'Sum of Forecast, Sum of Forecast and Sum of Budget by Date', showing bars for 'Sum of Actual' and 'Sum of Budget'. A large red box highlights the bottom chart area, which contains the text '① Select or drag fields to populate this visual'.

- **Expand Data Field**
- **Click on Date**

Tutor Week 9 • Last saved: Today at 8:35 PM

Farshid Keivanian

Home

Clipboard

Data

Queries

Insert

Modeling

View

Optimize

Help

Format

Data / Drill

Share

Paste

Get data

Excel workbook

OneLake data hub

SQL Server

Enter data

Dataverse

Recent sources

Transform

Refresh data

New visual

Text box

More visuals

New measure

Quick measure

Sensitivity

Calculated fields

Sensitivity

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

Running Total (RT)

21,603,896

Goal: 21,603,896, 20,660,778

Filters

Visualizations

Quick measure

Data

Search

Actuals

Budget

Calendar

Date

Date Hierarchy

CostElements

Departments

Forecast

Page 1

- **Budget v Forecast (Column Values) Or Drag and Release it to Y-axis**

The screenshot shows the Microsoft Power BI interface with the following details:

- Header:** Tutor Week 9 • Last saved: Today at 8:35 PM
- Top Bar:** File, Home, Insert, Modeling, Format, Data / Drill, Table tools, Measure tools, Share.
- Left Sidebar:** Structure, Formatting, Properties, Calculations.
- Main Area:** A card titled "Budget v Forecast" displays the DAX formula:

```
1 Budget v Forecast =  
2 SUM('Budget'[Budget]) - SUM  
('Forecast'[Forecast])
```

A chart below shows "Running Total (RT)" for "Actual RT" and "Budget RT" from Jan 2020 to Oct 2020. The chart has two sections: one from Jan to Jul 2020 where Actual RT is higher than Budget RT, and another from Jul to Oct 2020 where Actual RT is lower than Budget RT.
A red box highlights the value **21,603,896** at the bottom left of the card.
- Quick Measure Panel:** Shows the formula and a "Filters" button.
- Visualizations Panel:** Format visual, Search, Visual, General, ...
- Data Panel:** Search, Actuals, Sum of Forecast, Sum of Forecast Year, and Sum of Budget by Date, Budget v Forecast (highlighted with a red box), Cost Element, Country.

- **Budget v Forecast Percent (Line Values) Or Drag and Release it to X-axis**

The screenshot shows the Microsoft Power BI DAX Studio interface. The top navigation bar includes File, Home, Insert, Modeling, Format, Data / Drill, Table tools, Measure tools (which is underlined in green), and Share. On the left, there's a sidebar with icons for Structure, Home table (set to Actuals), and a DAX editor window containing the following DAX code:

```
1 Budget v Forecast =  
2 SUM('Budget'[Budget]) - SUM  
('Forecast'[Forecast])
```

Below the DAX editor is a chart titled "Budget v Forecast and Budget v Forecast % by Year". The chart displays two series: "Actual RT" (blue line) and "Budget RT" (orange line). The Y-axis shows values from 0M to 60M. The X-axis shows dates from Jan 2020 to Oct 2020. A legend indicates "Sum of Forecast, Sum of Forecast and Sum of Budget by Date". The chart value is highlighted in yellow as **21,603,896**, with a goal of **21,603,896, 20,660,778**.

A red box highlights the "Budget v Forecast % by Year" card in the chart area. A red arrow points from this card to the "Budget v Forecast %" item in the "Data" pane on the right, which is also highlighted with a red box. The "Data" pane lists various items with checkboxes, and the "Budget v Forecast %" checkbox is checked.

- Title off for x-axis
- Title on for secondary axis

Tutor Week 9 • Last saved: Today at 8:35 PM

Farshid Keivanian

File Home Insert Modeling Format Data / Drill Table tools Measure tools Share

Name: Budget v Forecast
Home table: Actuals

Format: Whole number
\$ % , .00 0

Data category: Uncategorized

Calculations: New measure Quick measure

Structure:

```

1 Budget v Forecast =
2 SUM('Budget'[Budget]) - SUM
  ('Forecast'[Forecast])
  
```

Formatting:

Properties:

Visualizations:

Format visual:

Filters:

Quick measure:

Data:

Search:

Visual General ...

Secondary y-axis

Range

DAX:

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

21,603,896. Goal: 21,603,896, 20,660,778

Running Total (RT)

Jan 2020 Apr 2020 Jul 2020 Oct 2020

Actual RT Budget RT

141,612,853 155,200,812 0.2bn

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

21,603,896. Goal: 21,603,896, 20,660,778

Page 1 +

Budget

- \sum Budget
- \sum Budget RT
- \sum Budget v Forecast %
- CostElement

- Title off for x-axis
- Title on for secondary axis

Tutor Week 9 • Last saved: Today at 8:35 PM

Farshid Keivanian

Format

Name: Budget v Forecast

Home table: Actuals

Format: Whole number

Structure

Formatting

Properties

Calculations

Measure tools

Data category: Uncategorized

New measure

Quick measure

Visualizations

Budget v Forecast =
2 SUM('Budget'[Budget]) - SUM('Forecast'[Forecast])

Running Total (RT)
Actual RT Budget RT

Sum of Forecast, Sum of Forecast and Sum of Budget by Date
Goal: 21,603,896, 20,660,778

21,603,896

Filters

Quick measure

Data

Search:

Date

IT Department

Budget

Σ Budget

Budget RT

Budget v Forecast %

CostElement

Visual General ...

Title On

Title text: Auto

Page 1

• Add Clustered Bar Chart

The screenshot shows the Microsoft Power BI desktop interface. The top navigation bar includes icons for back, forward, search, and user profile, followed by the title "Tutor Week 9 • Last saved: Today at 10:53 PM". The ribbon menu is open with the "Home" tab selected. The "Data" pane on the left displays three cards: "Running Total (RT)" comparing Actual RT and Budget RT, "Sum of Actual" and "Sum of Budget" values, and "Sum of Forecast, Sum of Forecast and Sum of Budget by Date". The "Visualizations" pane in the center has a "Quick measure" section with a "Clustered bar chart" icon highlighted by a red box. The "Data" pane on the right shows a search bar and a list of data items including Date, IT Department, and Budget measures.

Tutor Week 9 • Last saved: Today at 10:53 PM

File Home Insert Modeling View Optimize Help Share

Paste Get data SQL Server Enter data OneLake data hub Dataverse Recent sources Transform Refresh data New visual Text box More visuals New measure Quick measure Sensitivity

Clipboard Data Queries Insert Calculations Sensitivity

Running Total (RT)

Actual RT Budget RT

144,618,853 Sum of Actual 155,309,019 Sum of Budget

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

21,603,896 Goal: 21,603,896, 20,660,778

Visualizations

Build visual

Clustered bar chart

Filters

Quick measure

Search

Date

IT Department

Budget

Σ Budget

Budget RT

Budget v Forecas %

• Move it here

The screenshot shows the Microsoft Power BI desktop application interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab has sections for Data (Paste, Get data from, OneLake data hub, Dataverse, Recent sources), Queries (Transform, Refresh data), Insert (New visual, Text box, More visuals), and Calculations (New measure, Quick measure). The main workspace displays two visualizations: a line chart and a bar chart. A third visualization, a bar chart, is currently selected and highlighted with a red border. To the right of the workspace are sections for Visualizations (Build visual, Quick measure, various chart icons), Filters (checkboxes for Date, IT Department, Budget), and Data (Search bar, checkboxes for Budget, Budget RT, Budget v Forecast %, etc.).

Tutor Week 9 • Last saved: Today at 10:53 PM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data from OneLake data hub Dataverse Recent sources

Transform Refresh data New visual Text box More visuals

New measure Quick measure

Sensitivity

Clipboard Data

Visualizations

Build visual

Filters

Quick measure

Date

IT Department

Budget

Σ Budget

Budget RT

Budget v Forecast %

Search

Jul 2020 Oct 2020

Sum of Forecast by Year and

Sum of Forecast

Oct 2020

Jul 2020 Oct 2020

123

R

- Move it here
- Collapse Visualisations
- Tidy up the list like this

Tutor Week 9 • Last saved: Today at 10:53 PM

Farshid Keivanian

File Home Insert Modeling View Optimize Format Data / Drill Table tools Share

Name Forecast

Mark as date table

Manage relationships

New measure

Quick measure

New measure column

New table

Calculations

Structure Calendars Relationships

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Jan 2020 Apr 2020 Jul 2020 Oct 2020

80M 60M 40M 20M 0M

Sum of Actual Sum of Budget Sum of Forecast

Running Total (RT)

Jan 2020 Apr 2020 Jul 2020 Oct 2020

0.2bn 0.0bn

Actual RT Budget RT

Select or drag fields to populate this vi...

Filters Quick measure Visualizations Data

Search

Actualls Budget Calendar CostElements Departments Forecast Regions

- Select Regions in the Axis
- Drag and Release it to the Axis

Tutor Week 9 • Last saved: Today at 10:53 PM

File Home Insert Modeling Format Data / Drill Table tools Column tools Share

Region Text \$ % Auto

Text \$ % , .00 Auto

Properties Sort by column Sort Data groups Groups Manage relationships New column Calculations

Structure Formatting

Visualizations Analytics Data

Sum of Forecast by Year and Region

Select or drag fields to populate this visual

Jul 2020 Oct 2020

Analytics features aren't available for this visual

Learn more

Search Budget Calendar CostElements Departments Forecast Regions Country Region

Page 1 +

A screenshot of the Microsoft Power BI interface. The top navigation bar includes File, Home, Insert, Modeling, Format, Data / Drill, Table tools, Column tools, and Share. The Column tools tab is selected. The left sidebar shows various data sources like 'Sum of Forecast by Year and Region' and 'DAX'. The main area displays a chart with two bars for 'Jul 2020' and 'Oct 2020'. A red box highlights the 'Region' field in the 'Filters' pane, which is part of the 'Quick measure' section. Below the chart, a message states 'Analytics features aren't available for this visual'. The bottom right corner shows a 'Region' button.

- Budget V Forecast percent
- Drag and Drop it in the Values

Tutor Week 9 • Last saved: Today at 10:53 PM

Farshid Keivaniyan

File Home Insert Modeling Format Data / Drill Table tools Column tools Share

Region Text \$ % , .00 Auto

Properties Sort by column Sort Data groups Groups Manage relationships New column Calculations

Structure Formatting

Visualizations Analytics Data

Budget v Forecast %

Search Budget

\sum Budget

\sum Budget RT

Budget v Forecast %

CostElement

Country

Date

IT Dep.

Page 1 +

- Click on ...
- Sort it in Ascending Order

Sensitivity

Clipboard Data

File Home Insert Modeling View Optimize Help Format Data / Drill Share ▾

Paste Get data ▾ SQL Server

Excel workbook OneLake data hub ▾ Dataverse Recent sources ▾

Enter data Transform Refresh data ▾

New visual Text box More visuals ▾

New measure Quick measure

Sensitivity

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Jan 2020 Apr 2020 Jul 2020 Oct 2020

80M
60M
40M
20M
0M

Sum of Actual Sum of Budget Sum of Forecast

Budget v Forecast % by Region

Region Latin A... Canada USA

0% 10%

Export data Show as a table Remove Spotlight Sort axis

Running Total (RT)

Actual RT Budget RT

Jan 2020 Apr 2020 Jul 2020

0.2bn
0.0bn

144,618,853 155,309,019

Sum of Actual Sum of Budget

Sum of Forecast, Sum of Forecast

Budget v Forecast and Budget v

Sort axis

Region

Budget v Forecast %

Sort descending

Sort ascending

Visualizations

Data

Sort axis

Sort ascending

Sort axis

Sort ascending

- You will see this

Tutor Week 9 • Last saved: Today at 10:53 PM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Share

Clipboard Data Queries Insert Calculations Sensitivity

Paste Get data SQL Server Enter data OneLake data hub Dataverse Recent sources Transform Refresh data New visual Text box More visuals New measure Quick measure Sensitivity

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

● Sum of Actual ● Sum of Budget ● Sum of Forecast

Running Total (RT)

● Actual RT ● Budget RT

Budget v Forecast % by Region

Region

Region	Budget v Forecast %
Europe	~1%
Aus and...	~1%
USA	~1%

144,618,853 155,309,019

Sum of Actual Sum of Budget

Sum of Forecast, Sum of Forecast

Budget v Forecast and Budget v

Page 1 +

- While the placeholder is selected, we Turn off the title for the Y-axis

Tutor Week 9 • Last saved: Today at 10:53 PM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server

Clipboard

Excel workbook OneLake data hub Dataverse Recent sources

Enter data Transform Refresh data

New visual Text box More visuals

New measure Quick measure

Sensitivity

Transform Refresh data

Insert

Calculations

Sensitivity

Visualizations

Format visual

Quick measure

Filters

Data

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

● Sum of Actual ● Sum of Budget ● Sum of Forecast

80M
60M
40M
20M

Jan 2020 Apr 2020 Jul 2020 Oct 2020

Budget v Forecast % by Region

Europe Aus and... USA 0% 10%

Running Total (RT)

● Actual RT ● Budget RT

144,618,853 155,309,019

Sum of Actual Sum of Budget

0.bn 0.2bn 0.bn

Jan 2020 Apr 2020 Jul 2020 Oct 2020

Visual General ...

> Title Off

Search

- While the placeholder is selected, we Turn off the Values and Title for the X-axis

Tutor Week 9 • Last saved: Today at 10:53 PM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server Enter data OneLake data hub Dataverse Recent sources Transform Refresh data New visual Text box More visuals New measure measure Quick Sensitivity Calculations Sensitivity

Clipboard Data

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

80M
60M
40M
20M

Jan 2020 Apr 2020 Jul 2020 Oct 2020

● Sum of Actual ● Sum of Budget ● Sum of Forecast

Budget v Forecast % by Region

Europe Aus and... USA Canada

Running Total (RT)

0.2bn
0.0bn

Jan 2020 Apr 2020 Jul 2020 Oct 2020

● Actual RT ● Budget RT

144,618,853 Sum of Actual 155,309,019 Sum of Budget

Visual General ...

Format visual

Search

Values Off

Title Off

Page 1 +

Page 1 of 1

50%

The screenshot shows a Microsoft Power BI interface. On the left, there's a vertical ribbon with icons for Paste, Get data, OneLake data hub, Recent sources, Transform, Refresh data, New visual, Text box, More visuals, New measure, Quick measure, and Sensitivity. Below the ribbon, there are two line charts: one showing the sum of actual, budget, and forecast values over time, and another showing the running total. To the right of the charts is a 'Visualizations' pane containing a bar chart titled 'Budget v Forecast % by Region'. A red box highlights this chart. Below the charts is a 'Format visual' section with a 'Format' button (circled in red) and a search bar. At the bottom right is a 'Values' section with a 'Off' switch (also circled in red), and further down is a 'Title' section with another 'Off' switch.

- Because we are going to add **data labels**
- Turn in on

Tutor Week 9 • Last saved: Today at 11:43 PM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server

Clipboard

Excel workbook OneLake data hub Dataverse Recent sources

Enter data Transform Refresh data

New visual Text box More visuals

New measure Quick measure

Sensitivity Sensitivity

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

80M
60M
40M
20M

Jan 2020 Apr 2020 Jul 2020 Oct 2020

● Sum of Actual ● Sum of Budget ● Sum of Forecast

Budget v Forecast % by Region

Europe Aus and... USA Canada

Running Total (RT)

Actual RT Budget RT

0.2bn
0.0bn

Jan 2020 Apr 2020 Jul 2020 Oct 2020

144,618,853 155,309,019

Sum of Actual Sum of Budget

Visual General ...

> Data labels

Format visual

Search

Data

Filters

Quick measure

Visualizations

• You will see this

Tutor Week 9 • Last saved: Today at 11:43 PM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server OneLake data hub Dataverse Enter data Recent sources Transform data Refresh data New visual Text box More visuals New measure measure Quick Sensitivity Calculations Sensitivity

Clipboard Data

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

80M
60M
40M
20M

Jan 2020 Apr 2020 Jul 2020 Oct 2020

● Sum of Actual ● Sum of Budget ● Sum of Forecast

Budget v Forecast % by Region

Europe -2.94%
Aus and... -2.60%
USA -0.77%
Canada -0.07%

Running Total (RT)

0.2bn
0.0bn

Jan 2020 Apr 2020 Jul 2020 Oct 2020

● Actual RT ● Budget RT

144,618,853 155,309,019

Sum of Actual Sum of Budget

Visual General ...

Data labels On

Page 1 +

Filter

Quick measure

Search

Plot area background

- Update the Title: **Budget v Forecast %**
- It is obviously that it is by the region, and we do not need to point that out as well in the title

Tutor Week 9 • Last saved: Today at 12:00 AM

Farshid Keivanian

Home

File Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server Enter data OneLake data hub Dataverse Recent sources Transform Refresh data New visual Text box More visuals New measure measure Quick Sensitivity Calculations Sensitivity

Clipboard Data Queries Insert Visualizations Data

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Running Total (RT)

Budget v Forecast % by Region

Filters

Quick measure

Visual General

Title

Text

Budget v Forecast %

- You will see this

The screenshot shows the Microsoft Power BI desktop interface. The ribbon menu is visible at the top, with the "Home" tab selected. The "Data" section of the ribbon contains icons for Paste, Get data (with options for Excel workbook, OneLake data hub, and SQL Server), and Recent sources. The "Queries" section includes Transform and Refresh data. The "Insert" section features New visual, Text box, More visuals, New measure, Quick measure, and Calculations. The "Sensitivity" section has an icon for Sensitivity.

The main workspace displays a dashboard with two visualizations:

- A line chart titled "Actual, Sum of Budget and Sum of Forecast by Year and Month". The chart compares "Sum of Budget" (blue line) and "Sum of Forecast" (orange line) over time from April 2020 to October 2020. A blue trend line is also shown. The legend indicates: Sum of Budget (blue dot) and Sum of Forecast (orange dot).
- A bar chart titled "Budget v Forecast % by Region". The chart shows the percentage difference between budget and forecast for four regions: Europe (-2.94%), Aus and... (-2.60%), USA (-0.77%), and Canada (-0.07%).

The "Visualizations" pane on the right lists various visualization types such as Bar chart, Line chart, Map, and Gauge. The "Data" pane on the far right shows a list of data sources including "123", "R", "Py", and "DAX".

At the bottom, there are navigation icons for monitor, smartphone, and a plus sign, along with a page number indicator "Page 1".

Region	Budget v Forecast %
Europe	-2.94%
Aus and...	-2.60%
USA	-0.77%
Canada	-0.07%

- Ctrl + C (Copy the visual)
- Ctrl + V (Paste it down) – We will modify this – which will use the cost element!

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Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server Enter data OneLake data hub Dataverse Recent sources Transform Refresh data New visual Text box More visuals New measure Quick measure Sensitivity Calculations Sensitivity

Budget v Forecast % by Region

Visualizations Data

Build visual

Region	Value
Europe	-2.94%
Aus and...	-2.60%
USA	-0.77%
Canada	-0.07%

Budget v Forecast % by Region

Filters Quick measure

DAX

Budget RT

Actual, Sum of Budget and Sum of Forecast by Year and

Data

Budget v Forecast % by Region

Apr 2020 Jul 2020 Oct 2020

Apr 2020 Jul 2020 Oct 2020

- Collapse Visualisation
- Expand Data
- Add Cost element group to the Axis

Tutor Week 9 • Last saved: Today at 12:00 AM

Farshid Keivanian

Home

File Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server Enter data OneLake data hub Dataverse Recent sources Transform Refresh data New visual Text box More visuals New measure measure Quick Sensitivity

Clipboard Data Actual, Sum of Budget and Sum of Forecast by Year and

Budget v Forecast % by Re

Actual ● Sum of Budget ● Sum of Forecast

2020 Apr 2020 Jul 2020 Oct 2020

Total (RT) T ● Budget RT

2020 Apr 2020 Jul 2020 Oct 2020

Cost Element Group

Europe -2.94%
Aus and... -2.60%
USA -0.77%
Canada -0.07%

Quick measure

Data

Search

Actualls
Budget
Calendar
CostElements
Business Area
Cost Element
Cost Element Group
Departments

Visualizations

Page 1 +

- While the placeholder is selected, Untick the Region from the Data Pane

The screenshot shows the Microsoft Power BI interface with the following details:

- Top Bar:** Includes icons for Home, Back, Forward, Refresh, and Save. The status bar indicates "Tutor Week 9 • Last saved: Today at 12:00 AM".
- Header:** Shows the current user "Farshid Keivaniyan" and navigation icons.
- Home Tab:** Selected tab, showing options like Paste, Get data, Enter data, OneLake data hub, Dataverse, and Recent sources.
- Format Tab:** Shows Transform, Refresh data, New visual, Text box, More visuals, New measure, Quick measure, and Calculations.
- Data / Drill Tab:** Shows Share and Sensitivity options.
- Clipboard:** Shows chart and matrix icons.
- Data:** Shows two charts: "Actual, Sum of Budget and Sum of Forecast by Year and Month" and "Budget v Forecast % by Region".
- Visualizations:** Shows a visualization titled "Budget v Forecast % by Cost Element Group" which is highlighted with a red box. This visualization displays data for Europe, Aus and..., USA, and Canada.
- Filters:** Shows a funnel icon.
- Data Pane:** Shows the "Data" section with a search bar and a list of filters:
 - Business Area
 - Cost Element
 - Cost Element Group
 - > Departments
 - > Forecast
 - > Regions
 - Country
 - Region
- Bottom:** Shows page navigation icons and a page number "Page 1".

- Ctrl + C the second one and Ctrl + V to create the third one

Tutor Week 9 • Last saved: Today at 12:00 AM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Share

Paste Get data SQL Server Enter data OneLake data hub Dataverse Recent sources Transform Refresh data New visual Text box More visuals New measure Quick measure Calculations Sensitivity

Clipboard Data Queries Insert Calculations Sensitivity

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Running Total (RT)

Budget v Forecas % by Region

Budget v Forecas % by Cost Element Group

Budget v Forecast and Budget v Forecas % by Year

21,603,896 Goal: 21,603,896, 20,660,778

Business Area

Cost Element

Cost Element Group

Departments

Forecast

Regions

Country

Search

Filters

Quick measure

Visualizations

Data

- You will see this

Tutor Week 9 • Last saved: Today at 12:00 AM

Farshid Keivanian

Share

File Home Insert Modeling View Optimize Help

Paste Get data SQL Server

Clipboard

Excel workbook OneLake data hub Data

Enter data Dataverse Recent sources

Transform Refresh data

New visual Text box More visuals

New measure Quick measure

Sensitivity

Sensitivity

Budget v Forecast % by Cost Element Group

Cost El... ● Administrative ● CAPEX

Category	Budget	Forecast	Variance
Administrative	-10.54%	6.23%	148.51%
CAPEX	96.60%	96.60%	

Budget v Forecast % by Cost Element Group

Cost El... ● Administrative ● CAPEX

Category	Budget	Forecast	Variance
Administrative	-10.54%	6.23%	148.51%
CAPEX	96.60%	96.60%	

Business Area

Cost Element

Cost Element Group

Departments

Forecast

Regions

Country

Filters

Quick measure

Visualizations

Data

Search

- You will see this
- Select the third placeholder
- Find IT Department from Departments, and IT Area to the Axis

Tutor Week 9 • Last saved: Today at 12:00 AM ▾

Farshid Keivanian

Share ▾

File Home Insert Modeling View Optimize Help

Paste Get data ▾ SQL Server

Clipboard

Excel workbook OneLake data hub ▾ Dataverse Recent sources ▾

Enter data Transform Refresh data ▾ New visual Text box More visuals ▾

New measure Quick measure

Sensitivity ▾

Sensitivity ▾

Budget v Forecast % by Cost Element Group

Cost El... ● Administrative ● CAPEX

Cost Element Group	Budget	Forecast	Variance (%)
Administrative	148.51%	96.60%	-10.54%
CAPEX	6.23%	148.51%	142.28%

Budget v Forecast % by Cost Element Group

Cost El... ● Administrative ● CAPEX

Cost Element Group	Budget	Forecast	Variance (%)
Administrative	148.51%	96.60%	-10.54%
CAPEX	6.23%	148.51%	142.28%

Business Area

Cost Element

Cost Element Group

Departments

Forecast

Regions

Country

Filters

Quick measure

Visualizations

Data

Search

- You will see this
- Select the third placeholder
- Find IT Department from Departments

Tutor Week 9 • Last saved: Today at 12:00 AM

Farshid Keivanian

Home

Paste Get data SQL Server

Clipboard

Excel workbook OneLake data hub Data

Enter data Dataverse Recent sources

Transform Refresh data

New visual Text box More visuals

New measure Quick measure

Sensitivity

File Insert Modeling View Optimize Help Format Data / Drill Share

Canada -0.07% 12.35%

Latin A... 12.35%

Budget v Forecast % by Cost Element Group

Cost El... ● Administrative ● CAPEX

-10.54% 6.23% 148.51%

Budget v Forecast % by Cost Element Group

Cost El... ● Administrative ● CAPEX

-10.54% 6.23% 148.51%

IT Area 96.60%

Filters Quick measure Visualizations

Search

Budget

Calendar

CostElements

Departments

Dept. Manager

IT Area

IT Department

Forecast

Deselect Cost Element Group

Tutor Week 9 • Last saved: Today at 12:00 AM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server Enter data OneLake data hub Dataverse Recent sources Transform Refresh data New visual Text box More visuals New measure Quick measure Sensitivity

Clipboard Data

Canada -0.07%
Latin A...
Apr 2020 Jul 2020 Oct 2020

Budget v Forecas % by Cost Element Group

Cost El... ● Administrative ● CAPEX

Budget v Forecas % by Cost Element Group

-10.54% 6.23% 148.51%

Budget v Forecas % by IT Area

Infrastru... -5.09%
Govern... -2.45%
BU Sup... -0.90%
Functio... 1.20%

Data

Search

Calender

CostElements

Business Area

Cost Element

Cost Element Group

Departments

Dept. Manager

IT Area

Page 1

+

- You will see this

Tutor Week 9 • Last saved: Today at 12:00 AM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Share

Paste Get data v SQL Server Enter data OneLake data hub v Dataverse Recent sources v Transform data v Refresh New visual Text box More visuals v New measure Quick measure Sensitivity v Calculations Sensitivity v Quick measure Filters Visualizations Data

Data

60M
40M
20M
Jan 2020 Apr 2020 Jul 2020 Oct 2020

Running Total (RT)
Actual RT Budget RT

309,019
n of Budget
of Forecast Date

896.
0,660,778

Budget v Forecast % by Cost Element Group

Cost El...	Administrative	CAPEX
Canada	-0.07%	
Latin A...	12.35%	

Budget v Forecast % by IT Area

Infrastru...	Govern...	BU Sup...	Functio...
-5.09%	-2.45%	-0.90%	1.20%
148.51%	96.60%	6.23%	-10.54%

• Expand Visualisation and Add Slice for the region

The screenshot shows the Microsoft Power BI desktop interface with the following details:

- Top Bar:** Includes icons for Home, Insert, Modeling, View, Optimize, Help, and Share.
- Clipboard:** Contains Paste, Get data, and SQL Server options.
- Data Sources:** Shows OneLake data hub, Dataverse, and Recent sources.
- Transform Data:** Includes Transform and Refresh data options.
- Insert:** Contains New visual, Text box, More visuals, New measure, Quick measure, and Calculations.
- Queries:** Displays regional data for Canada (-0.07%) and Latin America (12.35%).
- Visualizations:** A list of available visual types including Slicer.
- Current Visuals:** Three visualizations are displayed:
 - Running Total (RT):** Compares Actual RT and Budget RT from Jan 2020 to Oct 2020.
 - Budget v Forecast % by Cost Element Group:** Compares Budget and Forecast percentages across Cost Elements.
 - Budget v Forecast % by IT Area:** Compares Budget and Forecast percentages across IT Areas.
- Bottom Navigation:** Includes monitor, smartphone, and plus icons, along with a "Page 1" button.

A red box highlights the **Slicer** icon in the **Visualizations** list on the right side of the screen.

- Check the region box from Regions in Data Pane while Slice is selected

The screenshot shows the Microsoft Power BI desktop application interface. The ribbon at the top has tabs: File, Home (selected), Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab has sections for Clipboard (Paste, Get data from, SQL Server), Data (Excel workbook, OneLake data hub, Dataverse, Recent sources), Queries (Transform data, Refresh data), Insert (New visual, Text box, More visuals), Calculations (New measure, Quick measure), and Sensitivity. On the left, there are icons for Table, Matrix, Cube, and DAX. The main area displays a line chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". The chart has three lines: blue for Sum of Actual, dark blue for Sum of Budget, and orange for Sum of Forecast. The Y-axis ranges from 60M to 80M. To the left of the chart is a "Region" quick measure slicer with options: (Blank), Africa & Asia, Aus and NZ, and Canada. Below the chart is a legend: Sum of Actual (blue dot), Sum of Budget (dark blue dot), and Sum of Forecast (orange dot). The Data pane on the right shows a tree view with nodes: Search, Budget, Calendar, CostElements, Departments, Forecast, Regions (which is checked), and Country. A red box highlights the "Region" checkbox under Regions.

Tutor Week 9 • Last saved: Today at 12:28 AM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data from SQL Server

Clipboard

Region

- (Blank)
- Africa & Asia
- Aus and NZ
- Canada

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

- Sum of Actual
- Sum of Budget
- Sum of Forecast

80M
60M

Region

Search

- Budget
- Calendar
- CostElements
- Departments
- Forecast
- Regions
- Country

Region

Page 1

- By default, it gives us a checklist, but we change it to dropdown
- Visualisation >> Format Your Visual >> Style (Dropdown)

The screenshot shows the Microsoft Power BI desktop application interface. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, Help, Format (which is selected), and Data / Drill. A Share button is also present. The left sidebar contains icons for Visualizations, Filters, Quick measure, and Data. A search bar and a user profile for Farshid Keivani are at the top right.

In the center, there is a chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". The chart displays three lines: "Sum of Actual" (blue), "Sum of Budget" (dark blue), and "Sum of Forecast" (orange). The Y-axis ranges from 0.2M to 0.4M. A dropdown filter for "Region" is applied, showing "All".

The "Format" tab is active, and the "Style" section is currently set to "Dropdown". A red box highlights the "Style" dropdown menu, which is open to show the "Dropdown" option.

- Squash it down to take less space

The screenshot shows the Microsoft Power BI desktop interface. The ribbon at the top has tabs: File, Home, Insert, Modeling, View, Optimize, Help, Format (which is underlined in green), Data / Drill, and Share. On the left, there are icons for Edit interactions, Interactions, DAX, and a dropdown for Apply drill down filters to 'Entire page'. The main area displays a chart titled 'Running Total (RT)' comparing Actual RT and Budget RT from January to October 2020. A red box highlights the 'Region' filter settings in the context menu for this chart. To the right, the Visualizations pane shows a 'Filters' section with a dropdown for 'Region' set to 'All'. The Data pane is visible on the far right.

- We like a Card in the top left just telling that what period is year to date that this report is based on
- Select Card Visual

File **Home** Insert Modeling View Optimize Help Share ▾

Paste Get data ▾ Excel workbook Enter data
OneLake data hub ▾ Dataverse
SQL Server Recent sources ▾

Clipboard

Data Queries Insert Calculations Sensitivity

Transform Refresh data ▾ New visual Text box More visuals ▾ New measure Quick measure

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Region: All

Jan 2020 Apr 2020 Jul 2020 Oct 2020

Sum of Actual Sum of Budget Sum of Forecast

Running Total (RT)

Actual RT Budget RT

Jan 2020 Apr 2020 Jul 2020 Oct 2020

Sum of Forecast Sum of Forecast Budget v Forecast and Budget v

Filters Quick measure

Visualizations

Build visual

Card

The screenshot shows a Power BI desktop interface with a ribbon menu at the top. The 'Home' tab is selected. Below the ribbon, there are sections for Data, Queries, Insert, Calculations, and Sensitivity. A sidebar on the left has icons for various data sources and DAX. The main area displays a dashboard with two line charts and a card visual. The card visual is a small rectangular box in the bottom right corner of the dashboard area, which is highlighted with a red border. The dashboard also includes filters and other visualization options.

- We need to add a measure for this
- Collapse Visualisation and Expand Data Pane

File **Home** Insert Modeling View Optimize Help

Paste Excel workbook Enter data
 OneLake data hub Dataverse
 SQL Server Recent sources

Transform Refresh data
 New visual Text box More visuals
 New measure Quick measure
 Sensitivity

Clipboard Data Queries Insert Calculations Sensitivity

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter
Legend: Sum of Actual (Blue), Sum of Budget (Dark Blue), Sum of Forecast (Orange)
X-axis: Jan 2020, Apr 2020, Jul 2020, Oct 2020
Y-axis: 0.0M, 0.2M, 0.4M

Running Total (RT)
Legend: Actual RT (Blue), Budget RT (Dark Blue)
X-axis: Jan 2020, Apr 2020, Jul 2020, Oct 2020
Y-axis: 0M, 1M

Region: All
Sum of Actual: 524,931 Sum of Budget: 677,260
Sum of Forecast: 524,931 Budget v Forecast and Budget v: -20.63

Visualizations
Build visual Card

Data

Page 1 +

- **Actuals >> Click on ...**
- **Select New Measure**

The screenshot shows the Microsoft Power BI desktop interface. The ribbon is visible at the top with tabs: File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and a context menu tab. The context menu is open over a chart visual, specifically under the 'Data' tab. The menu items include:

- Select
- New measure (highlighted with a red box)
- New column
- New measure (highlighted with a red box)
- Refresh data
- Edit query
- Manage relationships
- Incremental refresh
- Manage aggregations
- Rename
- Delete from model
- Hide
- Mark as date table
- View hidden
- Unhide all
- Collapse all
- Expand all
- Date

The chart visual below the menu shows three data series: Sum of Actual (blue), Sum of Budget (dark blue), and Sum of Forecast (orange). The Y-axis ranges from 0.2M to 0.4M. The X-axis shows years and quarters. A tooltip indicates "Select or drag fields to populate this visual".

- We are using the format function to format the maximum date in the actual table and we are formatting it with mmm yyyy and we are concatenating year to date to the end

YTD Month = **FORMAT(MAX(Actuals[Date]), "mmm yyyy") & " YTD"**

- Click on Tick (or Press Enter) to commit the change

The screenshot shows the Power BI interface with the following details:

- Name:** YTD Month
- Home table:** Actuals
- Structure:** Shows the measure definition: `YTD Month = FORMAT(MAX(Actuals[Date]), "mmm yyyy") & " YTD"`. A red box highlights the checkmark icon next to the measure name.
- Formatting:** Set to \$%.
- Data category:** Not specified.
- Properties:** Shows the measure definition again.
- Calculations:** Buttons for New measure and Quick measure.
- Visualizations:** Shows a chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". The chart displays three stacked area series: Actual (blue), Budget (dark blue), and Forecast (orange). The Y-axis ranges from 60M to 80M.
- Data:** A sidebar showing the "Actuals" table with columns: \sum Actual, Actual RT, Budget v Forecast, Cost Element, and Country.
- Message:** A tooltip message "Too few arguments were passed to the FORMAT function. The minimum argument count is 2." is displayed near the measure definition.

• Add YTD to the visual

The screenshot shows the Microsoft Power BI desktop interface. The ribbon menu is open, with the 'Home' tab selected. The 'Data' tab is also visible. On the left, there's a vertical toolbar with icons for Paste, Get data, and DAX. The main area displays a chart titled 'Jul 2020 ...' with a subtitle 'YTD Month'. Below the chart, the text 'Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter' is displayed, followed by a legend for 'Sum of Actual' (blue), 'Sum of Budget' (dark blue), and 'Sum of Forecast' (orange). A blue arrow points from the 'Visualizations' section of the ribbon to the 'YTD Month' checkbox in the 'Data' pane. The 'Data' pane itself has a red border around the 'Search' bar and the 'YTD Month' checkbox.

Tutor Week 9 • Last saved: Today at 12:28 AM

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File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server OneLake data hub Dataverse Enter data Recent sources Transform Refresh data New visual Text box More visuals New measure Quick measure Sensitivity

Clipboard Data Queries Insert Calculations Sensitivity

Jul 2020 ...
YTD Month

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Sum of Actual Sum of Budget Sum of Forecast

80M
60M

Visualizations

Filters

Quick measure

Data

Search

Σ Actual

Actual RT

Budget v Forecast

Cost Element

Country

Date

IT Department

YTD Month

Page 1 +

- Turn the Category Label Off

The screenshot shows the Microsoft Power BI desktop interface. The ribbon at the top has tabs: File, Home, Insert, Modeling, View, Optimize, Help, Format (which is underlined in green), Data / Drill, and Share. On the left, there's a vertical toolbar with icons for Edit interactions, Interactions, DAX, and a chart icon. The main area displays a chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". The chart includes a legend for "Sum of Actual" (blue), "Sum of Budget" (dark blue), and "Sum of Forecast" (orange). The chart area has a red border. To the right of the chart is a "Visualizations" pane with sections for Quick measure, Filters, and Category label. The "Category label" section is highlighted with a red box and has a switch button labeled "Off". The status bar at the bottom shows "Page 1" and a plus sign.

File Home Insert Modeling View Optimize Help **Format** Data / Drill Share

Edit interactions

Interactions

DAX

Jul 2020
YTD

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

80M
60M

Category label Off

Font

Page 1 +

- Change the Font size to 35

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Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Edit interactions

Apply drill down filters to Entire page

Bring forward Send Selection Align Group

Interactions Arrange

Visualizations Data

Format visual

Search

Visual General ...

Font DIN 38

B I U

Jul 2020 YTD

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

80M

60M

Sum of Actual Sum of Budget Sum of Forecast

Page 1 +

The screenshot shows a Microsoft Power BI interface. A chart titled "Jul 2020 YTD" is displayed, showing three lines: "Sum of Actual" (blue), "Sum of Budget" (dark blue), and "Sum of Forecast" (orange). The chart area has a red border. In the bottom right corner of the Power BI window, there is a "Format" pane open. Within this pane, under the "Font" section, the font size is currently set to "38". This value is also highlighted with a red box, indicating it is the target for modification.

- Move it down

Edit interactions

Apply drill down filters to
Entire page

Bring forward ▾ backward ▾ Selection Align Group

Interactions

Arrange

Visualizations

Format visual

Filters

Quick measure

Data

Search

Visual General ...

Font

DIN 35

B I U

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Region: All

144,618,853 155,309,019

Sum of Actual Sum of Budget

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

Goal: 21,603,896

Jul 2020 YTD

Running Total (RT)

Budget v Forecast % by Region

Budget v Forecast % by Cost Element Group

Budget v Forecast % by IT Area

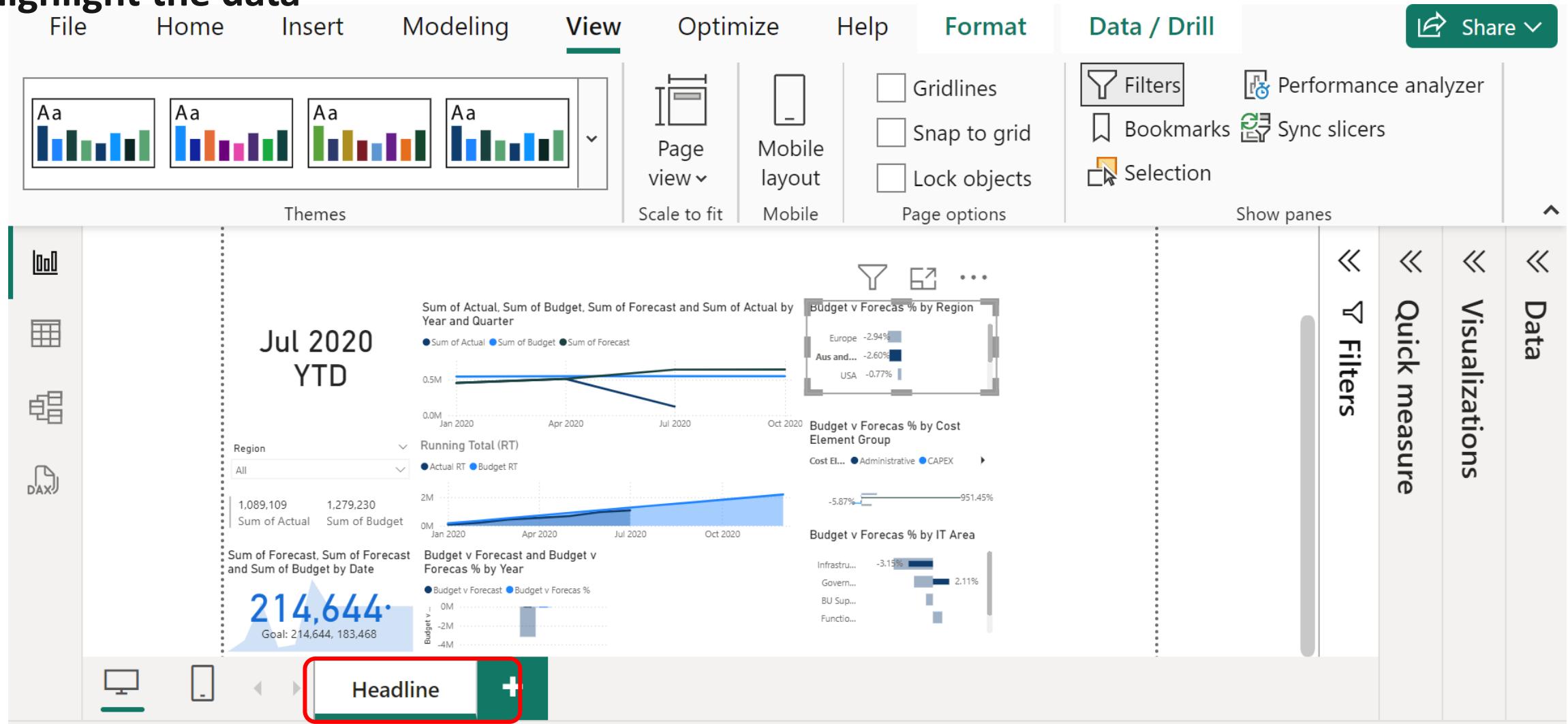
Page 1 +

40%

Page 1 of 1

The screenshot shows a Power BI dashboard with several visualizations. A red box highlights a card titled 'Jul 2020 YTD' which contains two line charts: 'Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter' and 'Running Total (RT)'. Below these charts are summary values for 'Sum of Actual' and 'Sum of Budget'. Another chart, 'Sum of Forecast, Sum of Forecast and Sum of Budget by Date', displays a value of '21,603,896' with a goal of '21,603,896, 20,660,778'. To the right of the dashboard are navigation and formatting tools, including 'Edit interactions', 'Apply drill down filters to Entire page', 'Arrange' tools (Bring forward/backward, Selection, Align, Group), and a 'Visualizations' pane with sections for 'Format visual', 'Filters', 'Quick measure', and 'Data'. The 'Visual' tab is selected in the 'Visual' section. At the bottom, there are page navigation controls ('Page 1', '+') and a zoom slider ('40%').

- Collapse Data and Visualisation
- Double Click and Name this sheet as Headline: It gives an overview of the IT spend across all areas of the business – Now we can use the built-in interactive features to cross filter and highlight the data



- Click to save your report as we might need to use it in the Tutor Week 10.
- Please always check the [FarshidKeivanian/Sessions_BusinessAnalytics_PowerBI: Business Analytics Fundamentals using Power BI \(github.com\)](#)
- **Take a screenshot of your dashboard and share it in discussion forum Tutorial Week 9**

Attendance & Tutorial Questions - Recognising student participation and engagement specifically identifying those who are most actively involved!

Thank you,
Happy a Learning
Day

