

RLS (Row Level Security)

Scenario: You work for an oil and gas company called "PetroCorp" that operates multiple drilling rigs across different regions. PetroCorp is interested in optimizing its drilling operations and monitoring the performance of its drilling rigs. To achieve this, they have collected data from various sensors and equipment on the drilling rigs and stored it in a SQL Server database. Your task is to create a T-SQL database script and provide business reporting solutions to help PetroCorp make data-driven decisions.

Problem Statement: PetroCorp wants to analyze drilling rig performance data to identify trends and anomalies, track the progress of ongoing drilling operations, and generate daily reports summarizing key metrics for each drilling rig.

Business Reporting Requirements:

1. **Daily Summary Report:** PetroCorp needs a daily summary report for each drilling rig, including the following information:
 - Rig Name
 - Date
 - Total Drilled Depth (in meters) for the day
 - Average Drilling Speed (in meters per hour) for the day
 - Total Operating Hours for the day
 - Number of Drill Bit Changes for the day
2. **Anomaly Detection:** PetroCorp wants to identify drilling rigs that have experienced an unusually high number of drill bit changes in the last week. They need a report listing the rig names and the number of drill bit changes for each rig over the last seven days.
3. **Progress Tracking:** PetroCorp wants to track the progress of an ongoing drilling operation. They need a report that shows the drilling depth achieved each day for a specific rig, starting from a given date.

The screenshot shows the Microsoft Power BI desktop interface. The ribbon at the top includes File, Home, Insert, Modeling, View, Help, Format, Data / Drill, and a ribbon bar with various icons. The main area displays a data grid with the following data:

RigName	Date	Sum of DrilledDepth	Average of DrillingSpeed	Sum of OperatingHours	Sum of DrillBitChanges
Rig A	Friday, September 01, 2023	100.00	20.00	10.00	1
Rig A	Saturday, September 02, 2023	200.00	18.00	12.00	2
Rig A	Sunday, September 03, 2023	300.00	22.00	9.00	0
Rig A	Monday, September 04, 2023	400.00	19.00	11.00	1
Rig A	Tuesday, September 05, 2023	500.00	21.00	8.00	0
Rig B	Friday, September 01, 2023	150.00	25.00	9.00	0
Rig B	Saturday, September 02, 2023	250.00	24.00	10.00	1
Rig B	Sunday, September 03, 2023	350.00	26.00	8.00	0
Rig B	Monday, September 04, 2023	450.00	23.00	11.00	2
Rig B	Tuesday, September 05, 2023	550.00	27.00	7.00	0
Total		3,250.00	22.50	95.00	7

The right side of the screen shows the Fields pane with a tree view of fields categorized under DrillingData, Date, and DrillingRigs. The Fields pane also includes a search bar and a preview section showing the data grid above.

DAX Editor

```

1 DAX = CALCULATE(
2     SUM(DrillingData[DrillBitChanges]),
3     FILTER(
4         DrillingData,
5         DrillingData[Date]>=TODAY() - 10 && DrillingData[Date] <= TODAY()
6     )
7

```

Formatting

Properties

Calculations

Visualizations

Fields

Drill through

Page 2 of 2

130% Update available (click to download)

Home

Clipboard

RigName	Date	Sum of DrilledDepth
Rig A	Friday, September 01, 2023	100.00
Rig A	Saturday, September 02, 2023	200.00
Rig A	Sunday, September 03, 2023	300.00
Rig A	Monday, September 04, 2023	400.00
Rig A	Tuesday, September 05, 2023	500.00
Rig B	Friday, September 01, 2023	150.00
Rig B	Saturday, September 02, 2023	250.00
Rig B	Sunday, September 03, 2023	350.00
Rig B	Monday, September 04, 2023	450.00
Rig B	Tuesday, September 05, 2023	550.00
Total		3,250.00

Visualizations

Fields

Drill through

Page 3 of 3

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Table tools

Name: DimSalesTerritory

Structure

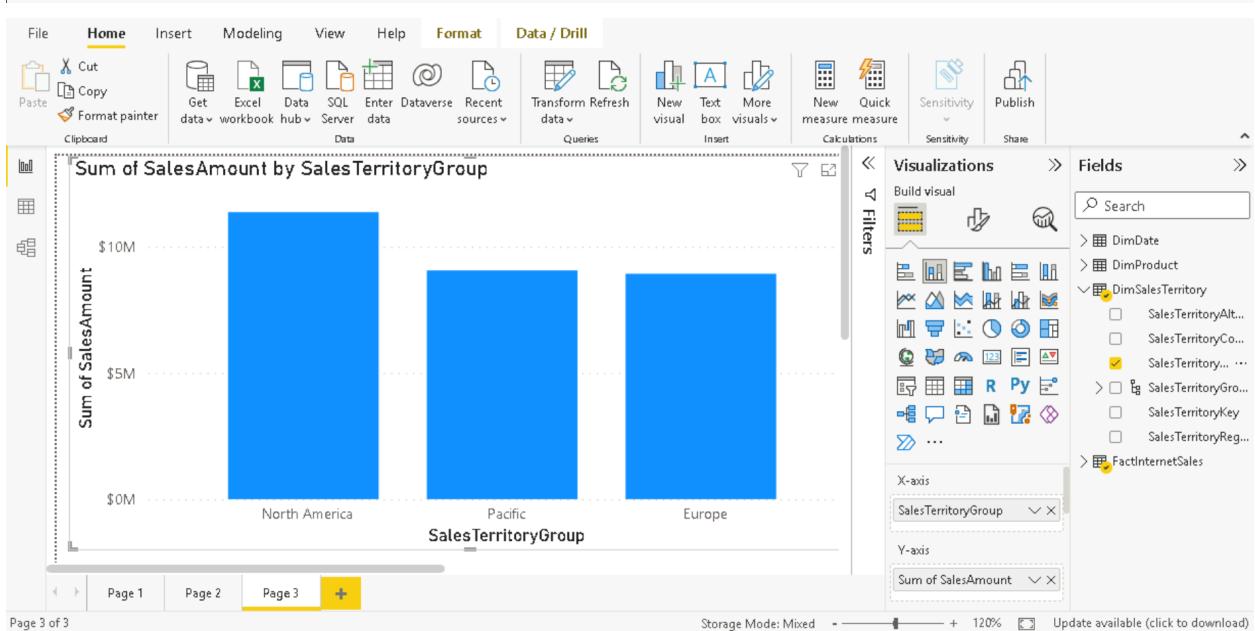
SalesTerritoryKey	SalesTerritoryAlternateKey	SalesTerritoryRegion	SalesTerritoryCountry	SalesTerritoryGroup
1	2	Northwest	United States	North America
2	2	Northeast	United States	North America
3	3	Central	United States	North America
4	4	Southwest	United States	North America
5	5	Southeast	United States	North America
6	6	Canada	Canada	North America
7	7	France	France	Europe
8	8	Germany	Germany	Europe
9	9	Australia	Australia	Pacific
10	10	United Kingdom	United Kingdom	Europe
21	0	NA	NA	NA

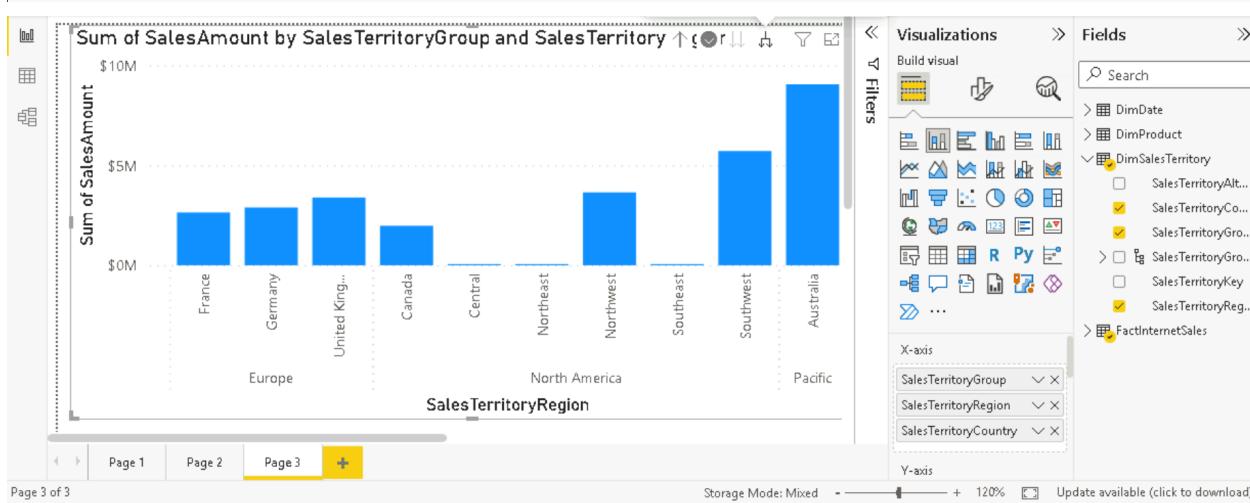
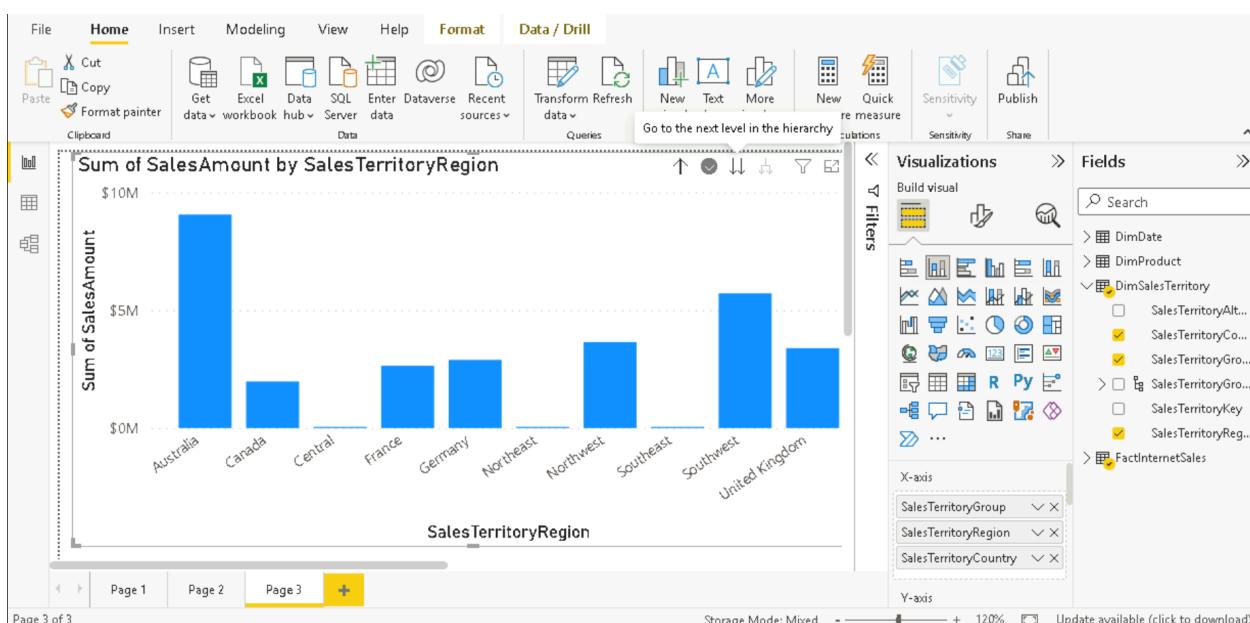
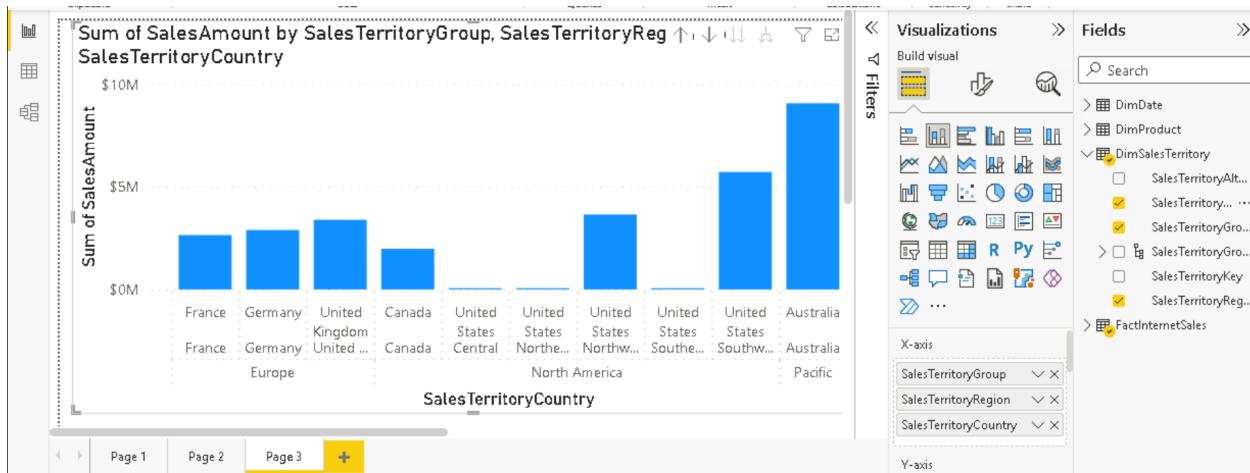
Fields

- Search
- > DimDate
- > DimProduct
- > DimSalesTerritory
 - SalesTerritoryAlternateKey
 - SalesTerritoryCountry
 - SalesTerritoryGroup
 - SalesTerritoryGroup Hierarchy
 - SalesTerritoryGroup
 - SalesTerritoryRegion
 - SalesTerritoryCountry
 - SalesTerritoryKey
 - SalesTerritoryRegion
- > FactInternetSales

Table: DimSalesTerritory (11 rows)

Update available (click to download)





PowerBITraining - Power BI Desktop

Manage roles

Roles

- North America

Tables

- DimDate
- DimProduct
- DimSalesTerritory
- FactInternetSales

Table filter DAX expression

Add filter... Hide all rows

- [SalesTerritoryKey]
- [SalesTerritoryAlternateKey]
- [SalesTerritoryRegion]
- [SalesTerritoryCountry]
- [SalesTerritoryGroup]

Filter the data that this role can see by entering a DAX filter expression that returns a True/False value. For example: [Entity ID] = "Value"

Save Cancel

Sum of SalesAmount

\$10M
\$5M
\$0M

Page 1

Storage Mode: Mixed 120% Update available (click to download)

12:08 PM 9/14/2023

Sum of SalesAmount

\$10M
\$5M
\$0M

Page 1

Manage roles

Roles

- Europe
- North America
- Pacific

Tables

- DimDate
- DimProduct
- DimSalesTerritory
- FactInternetSales

Table filter DAX expression

[SalesTerritoryGroup] = "Pacific"

Filter the data that this role can see by entering a DAX filter expression that returns a True/False value. For example: [Entity ID] = "Value"

Save Cancel

Sum of SalesAmount

\$10M
\$5M
\$0M

Page 1

Storage Mode: Mixed 120% Update available (click to download)

12:08 PM 9/14/2023

Sum of SalesAmount

\$10M
\$5M
\$0M

Page 1

Modeling tab selected.

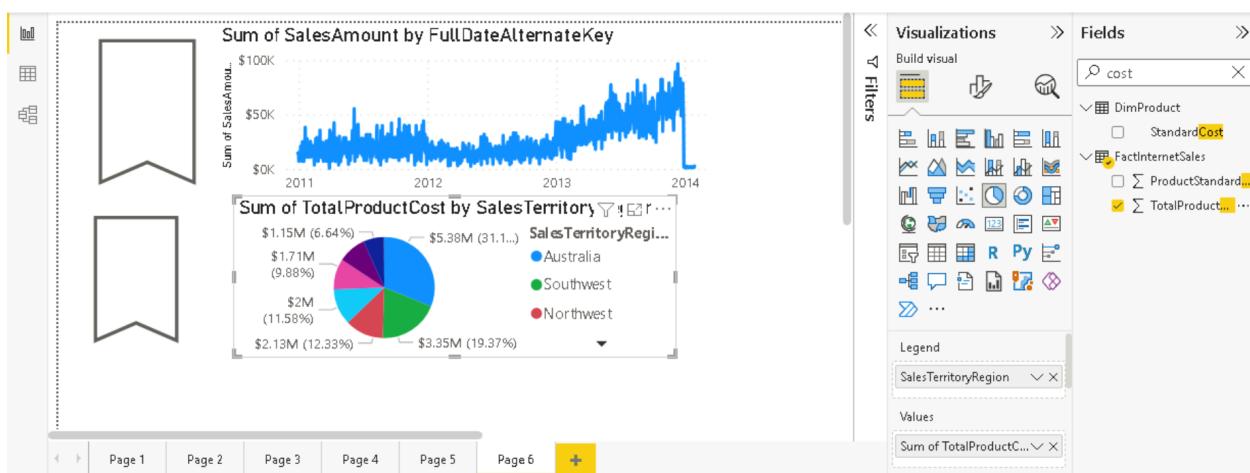
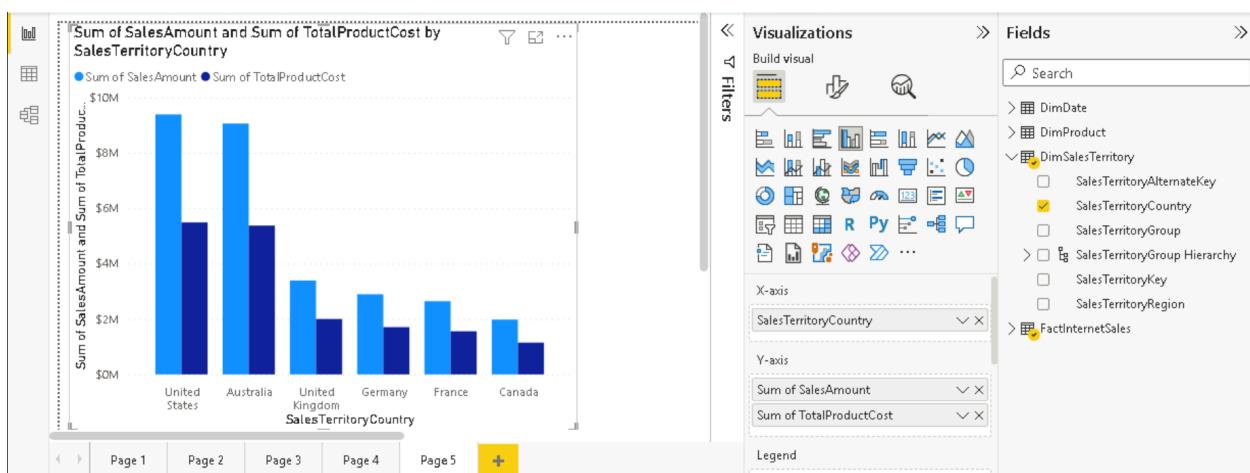
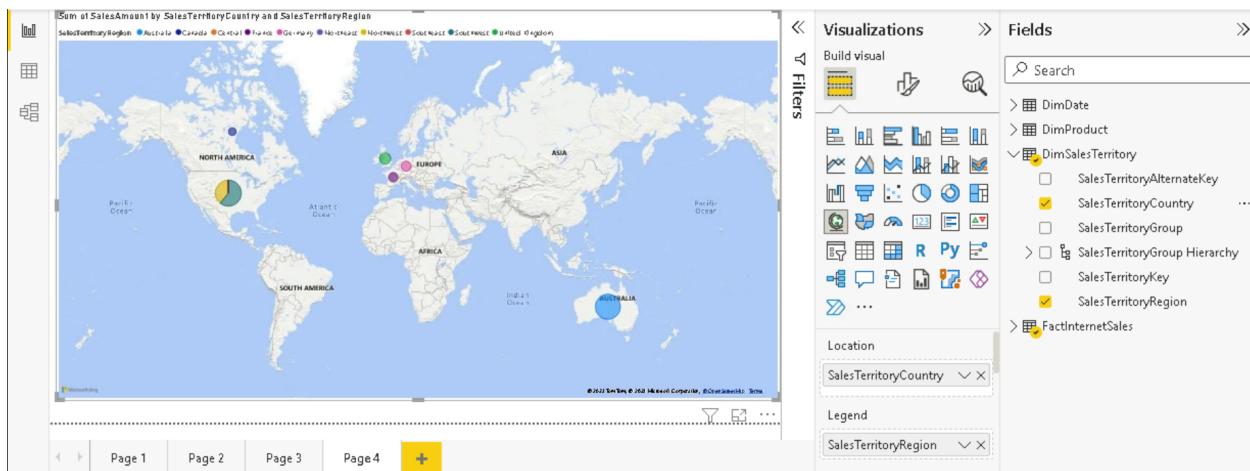
Visualizations pane:

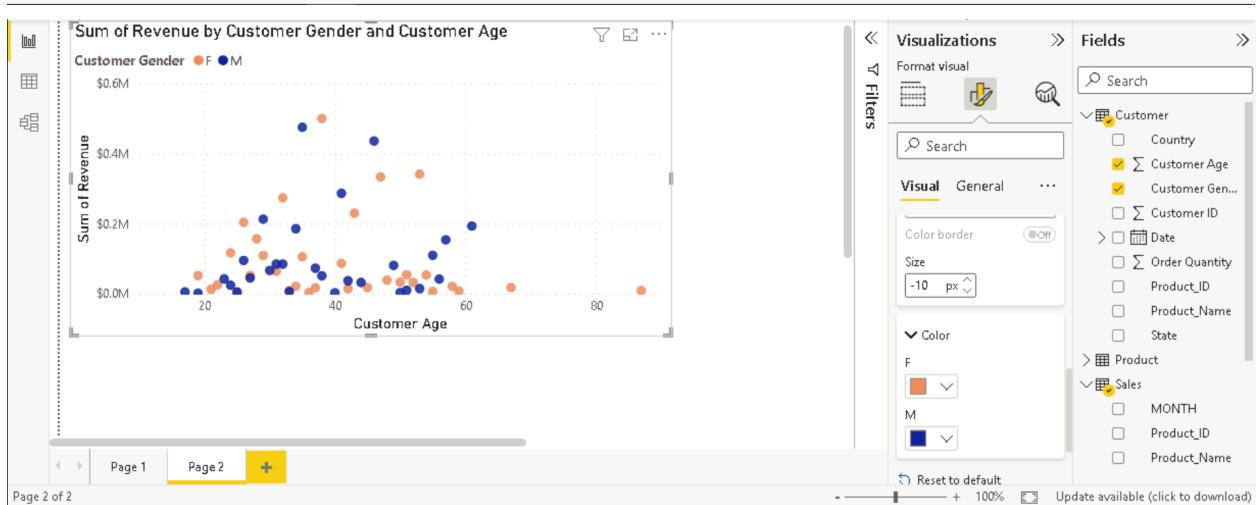
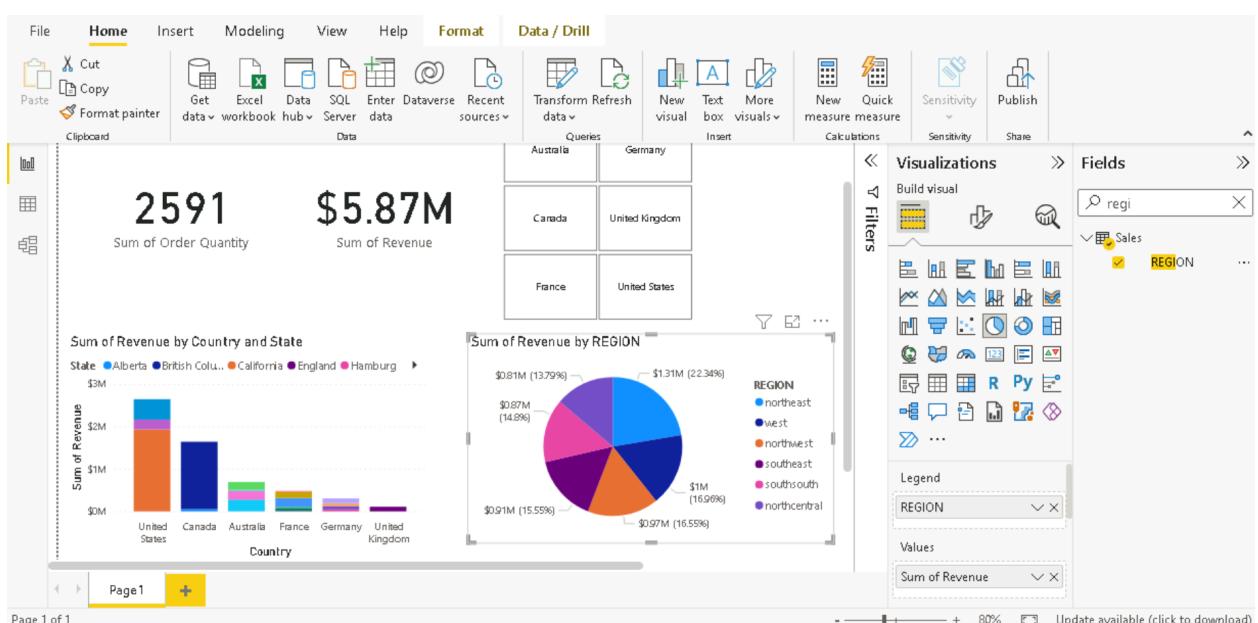
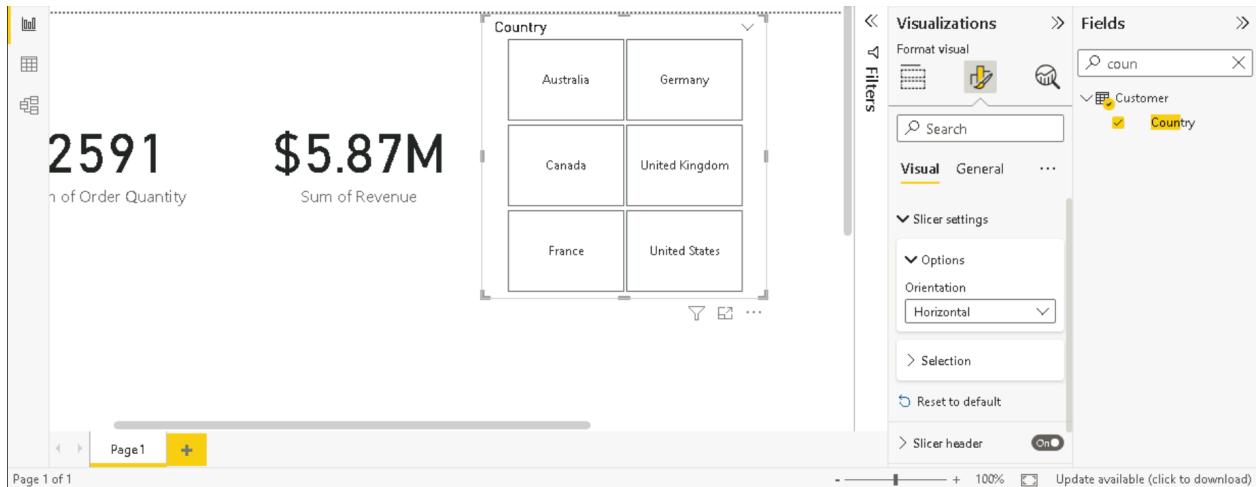
- Sum of SalesAmount by SalesTerritoryCountry (Bar chart)
- Sum of SalesAmount by SalesTerritoryRegion (Bubble map)
- Sum of SalesAmount by SalesTerritoryGroup (Bubble map)

Fields pane:

- Visualizations** section:
 - DimSalesTerritory (selected)
 - FactInternetSales
- X-axis** section: SalesTerritoryGroup, SalesTerritoryRegion, SalesTerritoryCountry
- Y-axis** section: SalesTerritoryCountry
- Fields** section:
 - Search bar: SalesTerritoryCountry
 - DimSalesTerritory (selected):
 - SalesTerritoryAlt
 - SalesTerritoryCo...
 - SalesTerritoryGro...
 - FactInternetSales:
 - SalesTerritoryGro...
 - SalesTerritoryKey
 - SalesTerritoryReg...

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Customer Gender and Sum of Revenue by REP and Team

Team: Retail (Red), Wholesales (Yellow)

REP	Team	Sum of Revenue
Smith	Retail	\$0.71M
Andrews	Wholesales	\$0.60M
Morgan	Wholesales	\$0.54M
Parent	Retail	\$0.52M
Thompson	Wholesales	\$0.50M

Visualizations

Filters

Fields

Customer Gender and Sum of Revenue by REP and Team

Team: Retail (Red), Wholesales (Yellow)

REP	Team	Sum of Revenue
Smith	Retail	\$712.14K
Andrews	Wholesales	\$599.37K
Morgan	Wholesales	\$538.68K
Parent	Retail	\$519.77K
Thompson	Wholesales	\$504.13K

Visualizations

Filters

Fields

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

Interactions

Format

Customer Gender and Sum of Revenue by REP and Team

Customer ... F M

REP	Team	Sum of Revenue
Smith	Retail	\$712.14K
Andrews	Wholesales	\$599.37K
Morgan	Wholesales	\$538.68K
Parent	Retail	\$519.77K
Thompson	Wholesales	\$504.13K

Visualizations

Filters

Fields

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