DATA ANALYTICS WITH COGNOS-GROUP 2

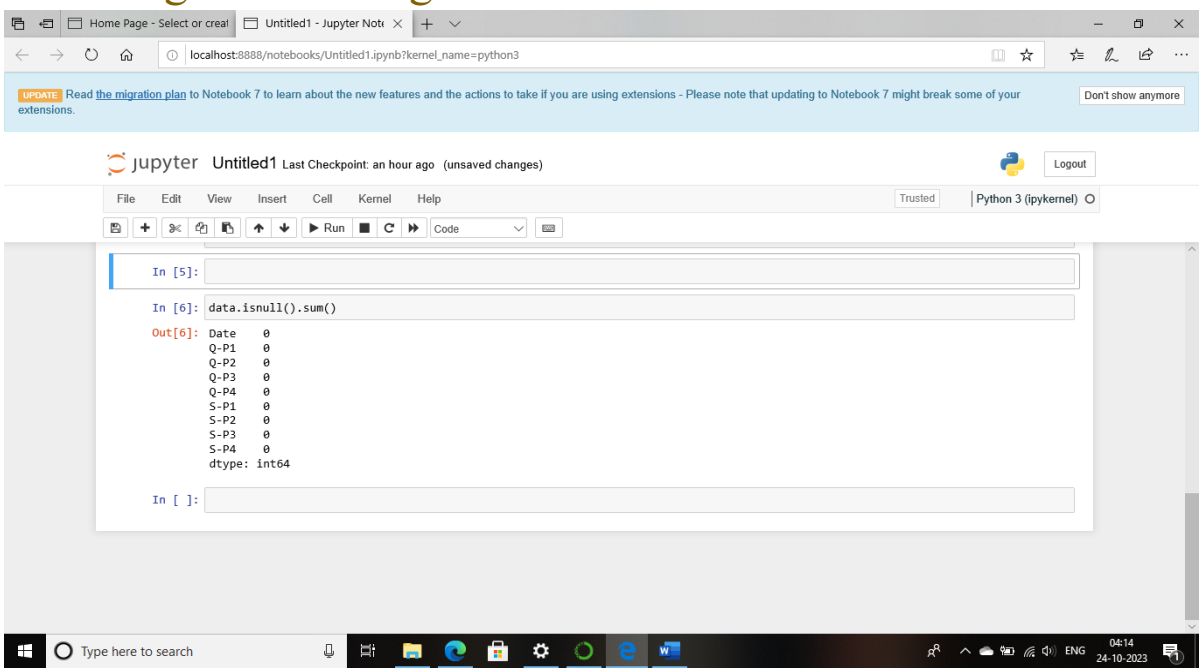
PROJECT 5: Product Sales Analysis

Phase 4: Development Part 2

Introduction:

In the fourth phase, we continued our journey of exploring and analyzing our product information. The main focus of this phase was to use IBM Cognos for detailed visualization and to gain actionable insights from our dataset. It was about creating interactive dashboards and reports to give us a clear picture of sales data, to identify bestsellers, analyze products and understand customer preferences.

Checking For Missing Values:

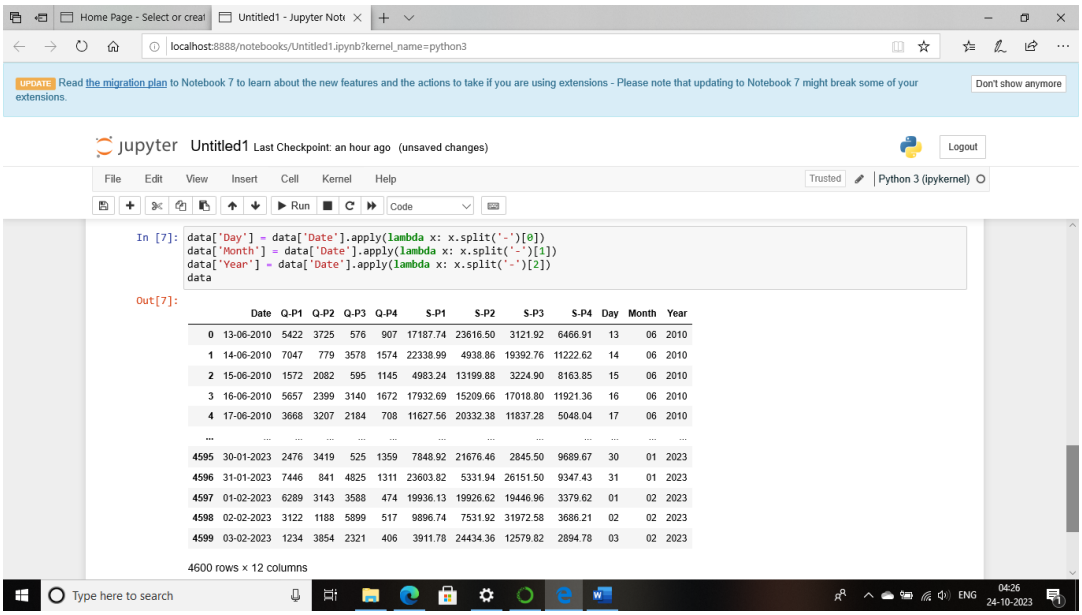


From this we can see that our dataset has no missing values.

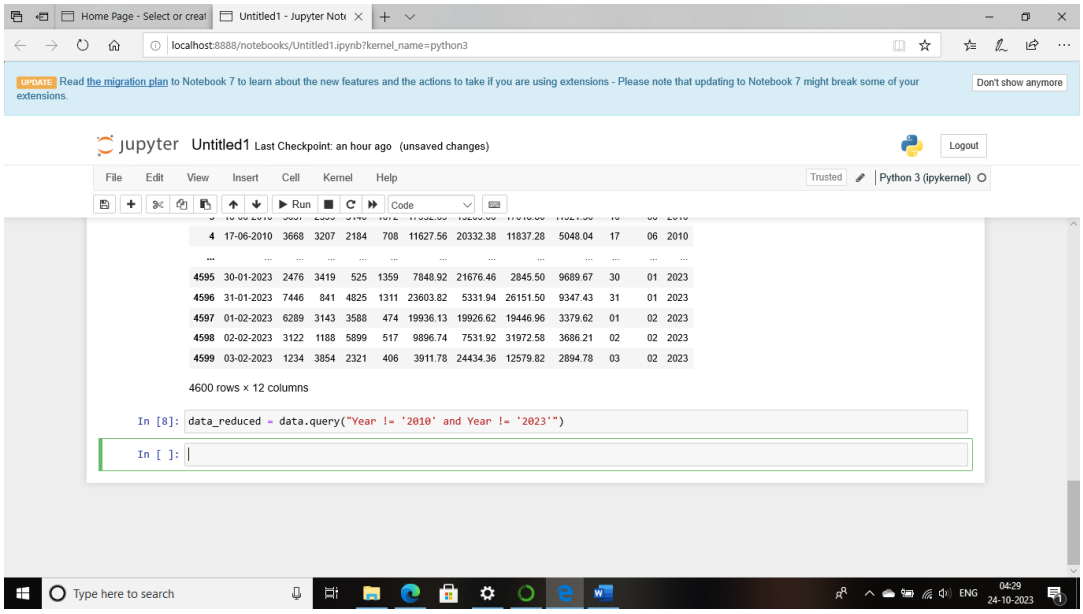
EDA Exploratory Data Analysis:

EDA is normally carried out as a preliminary step before undertaking extra formal statistical analyses or modelling.

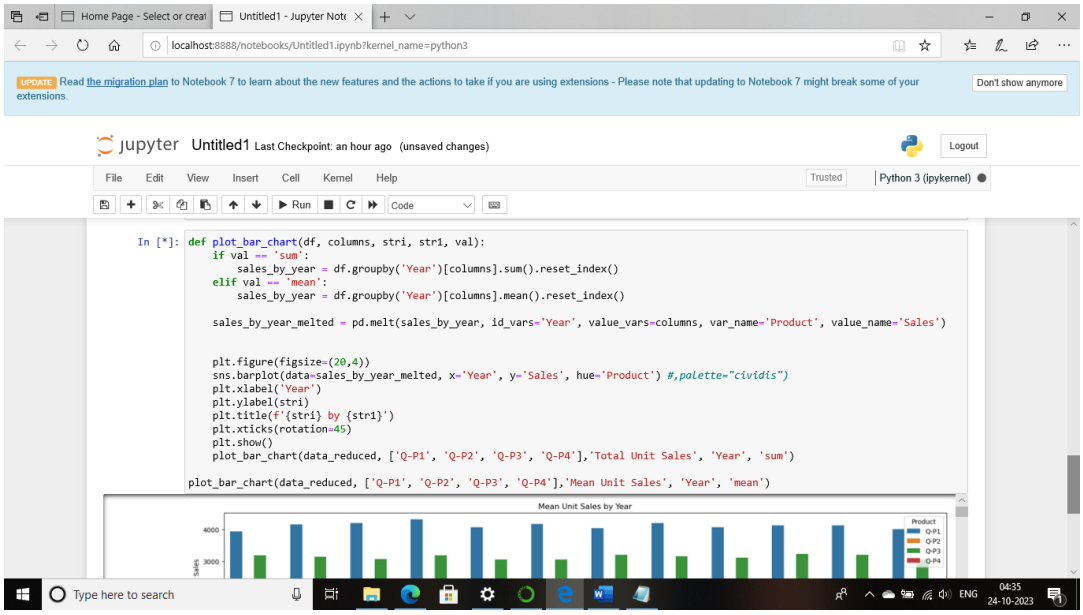
Let us extract the Year, Month and day



Let us Drop Rows for Years 2010 and 2023



Graph Representation of TOTAL and MEAN of Each Product's Unit Sold



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Run Code

```
    plt.title(f'{stri} by {str1}')
    plt.xticks(rotation=45)
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    plot_bar_chart(data_reduced, ['Q-P1', 'Q-P2', 'Q-P3', 'Q-P4'],'Total Unit Sales', 'Year', 'sum')

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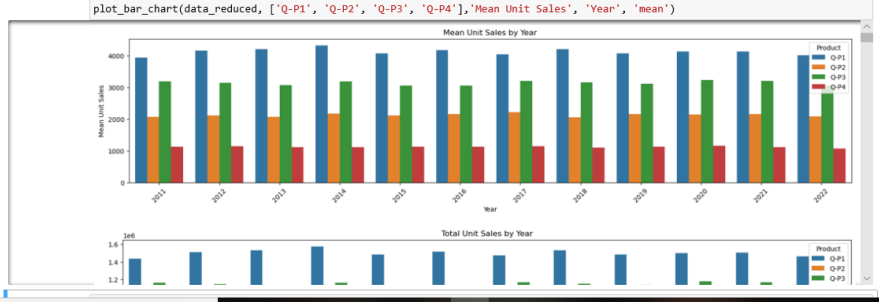

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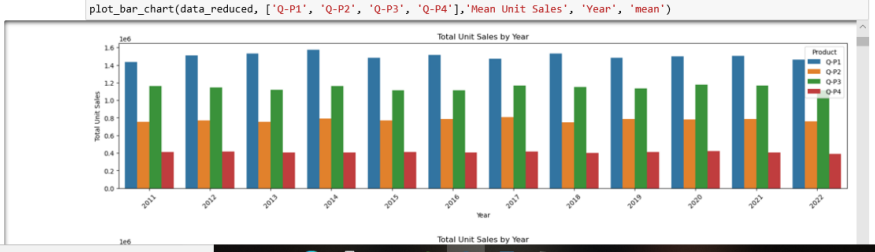

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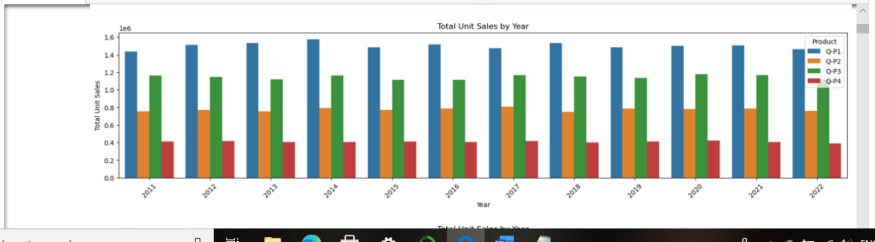

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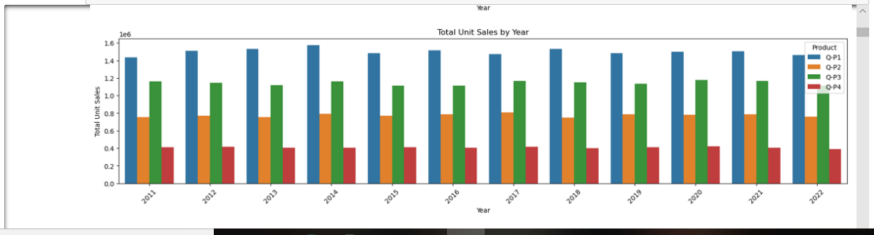

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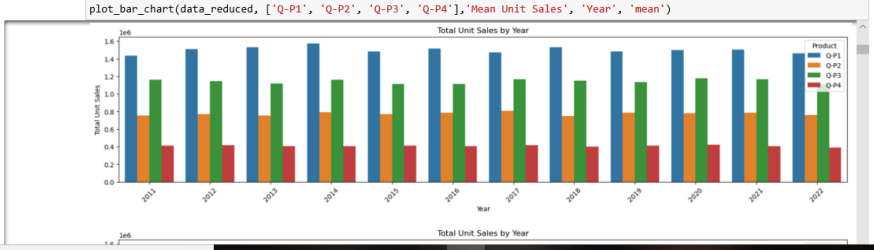

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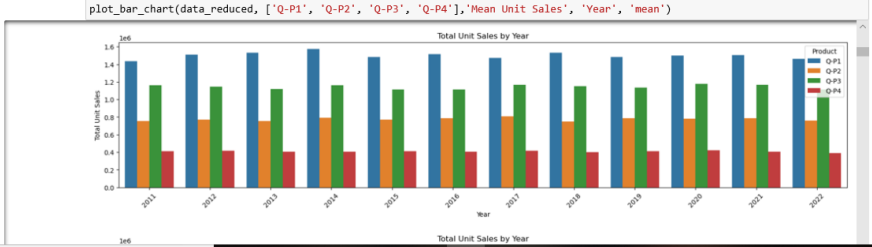

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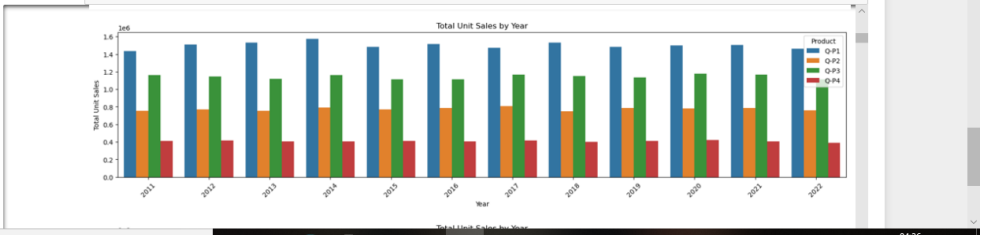

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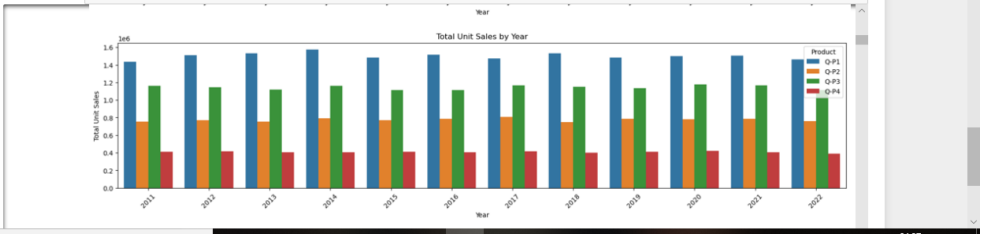

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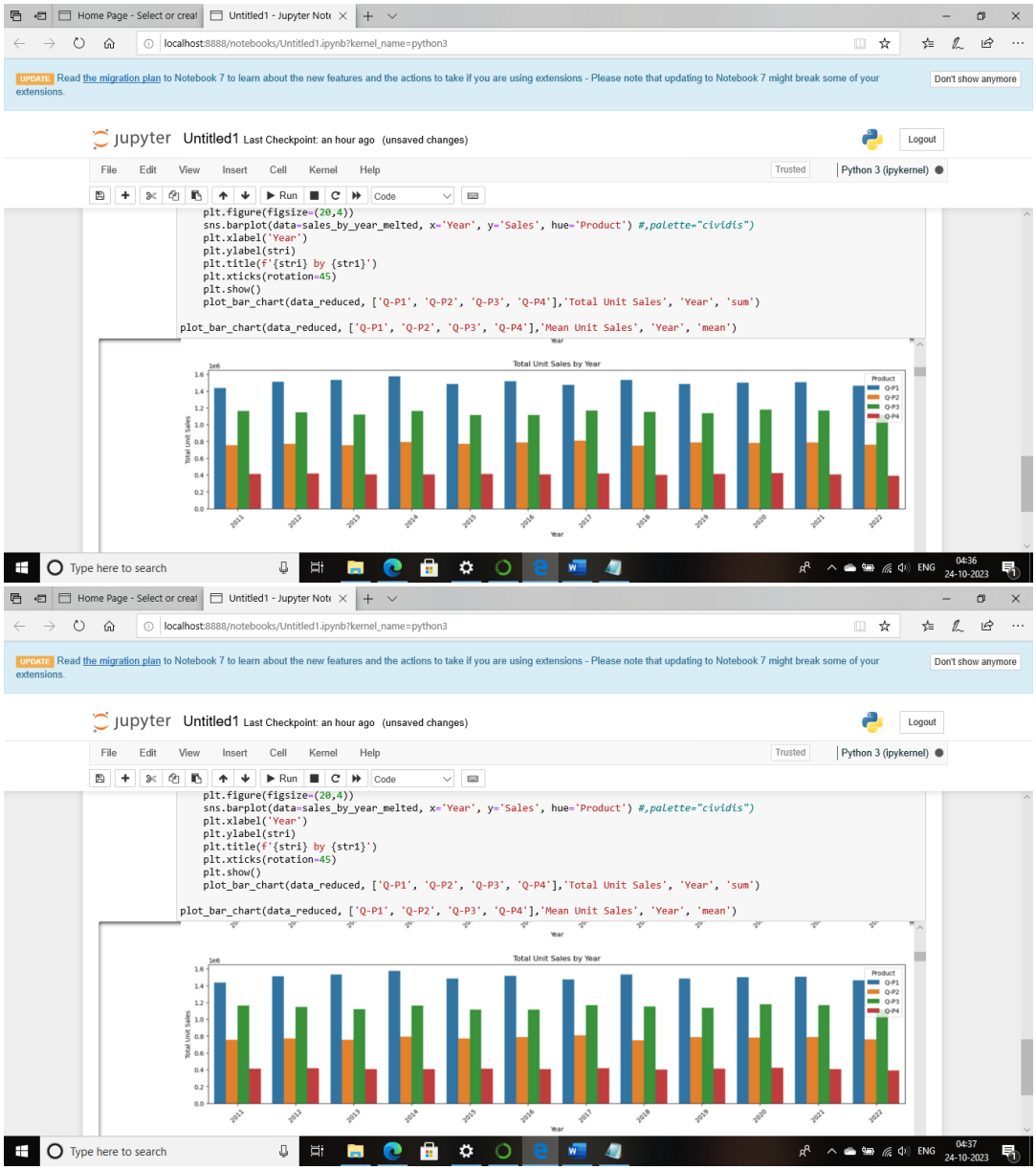
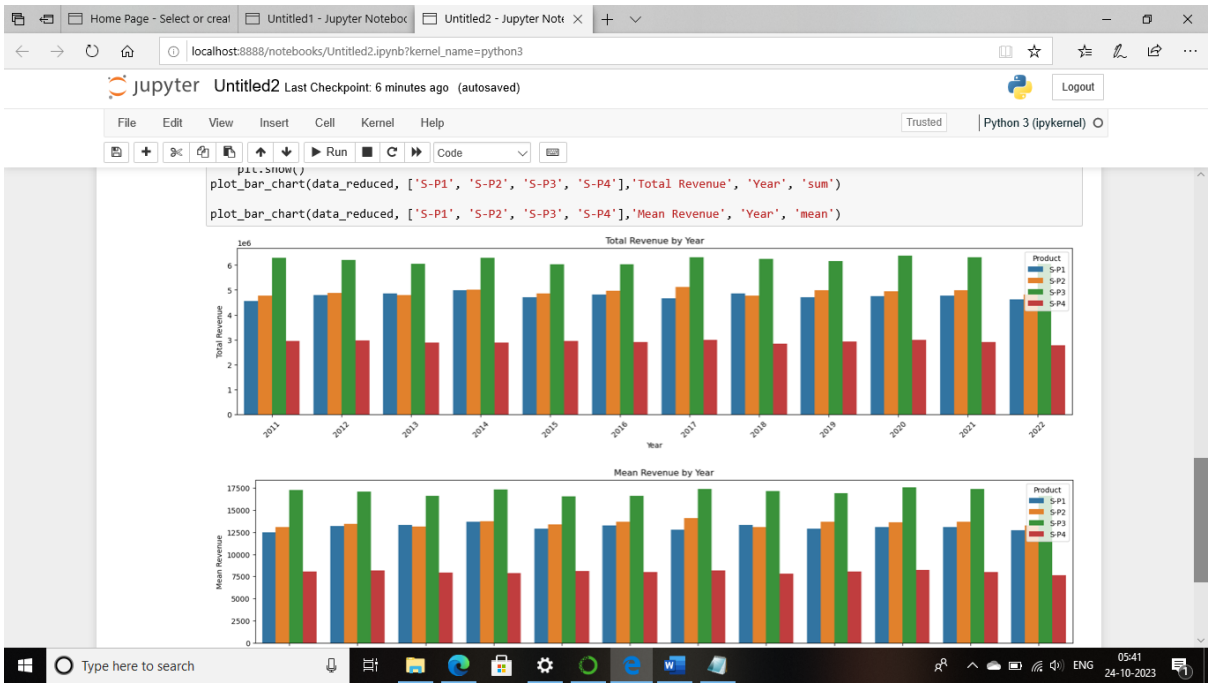


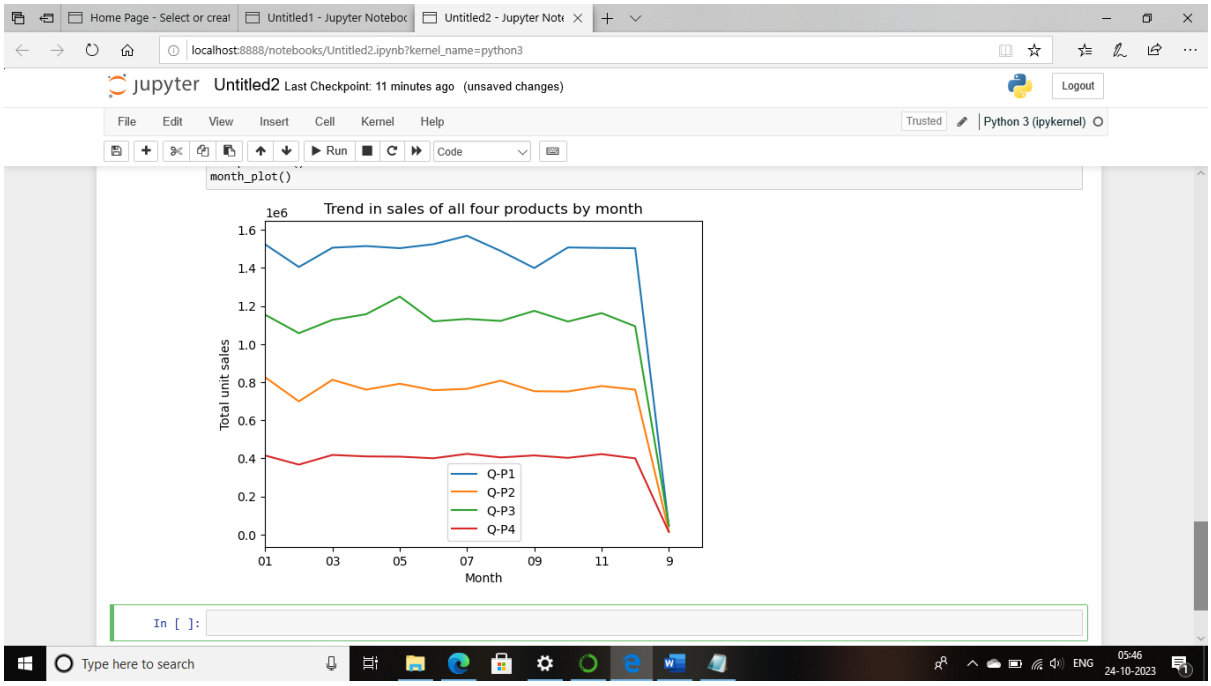
- We can see that the product P1 is the Highest Unit Sold for Each Year.
  - P1 Sold Highest in the Year 2014
  - P4 is the Lowest sold Product of all the Years.

Graph Representation of TOTAL and MEAN of Revenue of Each Product

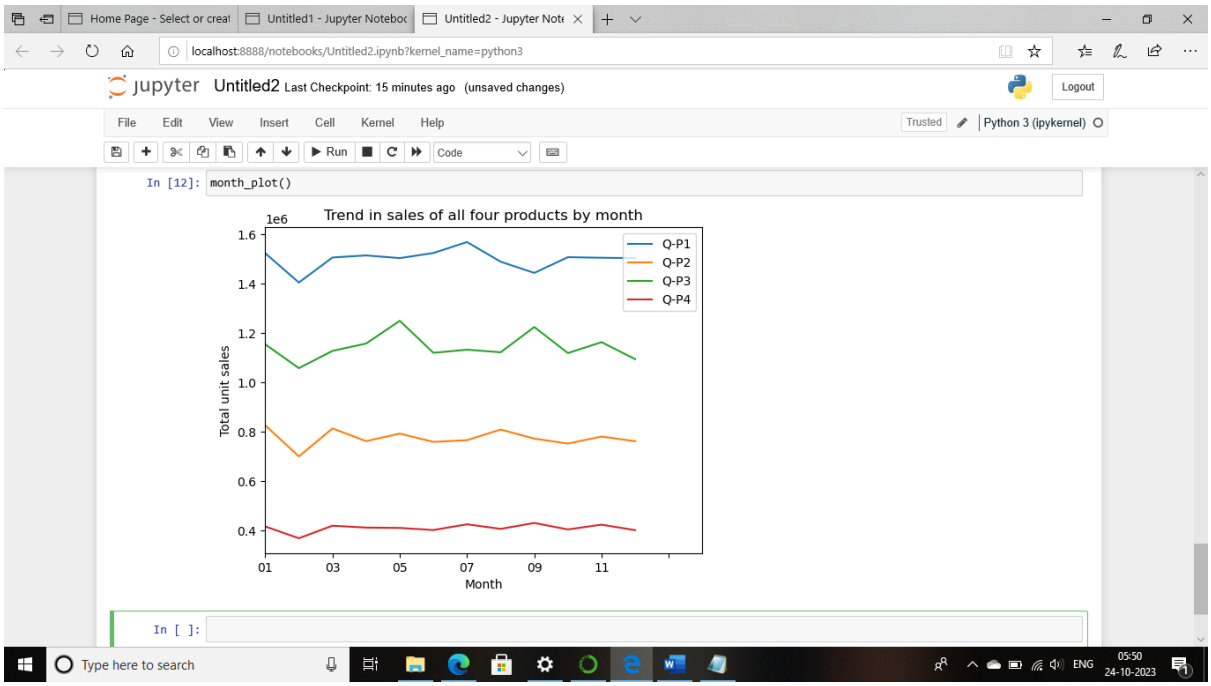


- We can see that P3 brought us the most revenue.
- We can observe than P1 and P2 brought in similar revenues for each year. With P2 bringing in slightly more.
- P1 despite having the most unit sold, brought in the second lowest revenue each year.

Trend in Sales of all the Four Products:



We can see that all the product's sales decrease massively in February.



We can see that the Months February and December is the lowest rate of product sold for all the Four.

The months March and July is the highest sold month for the Product P1

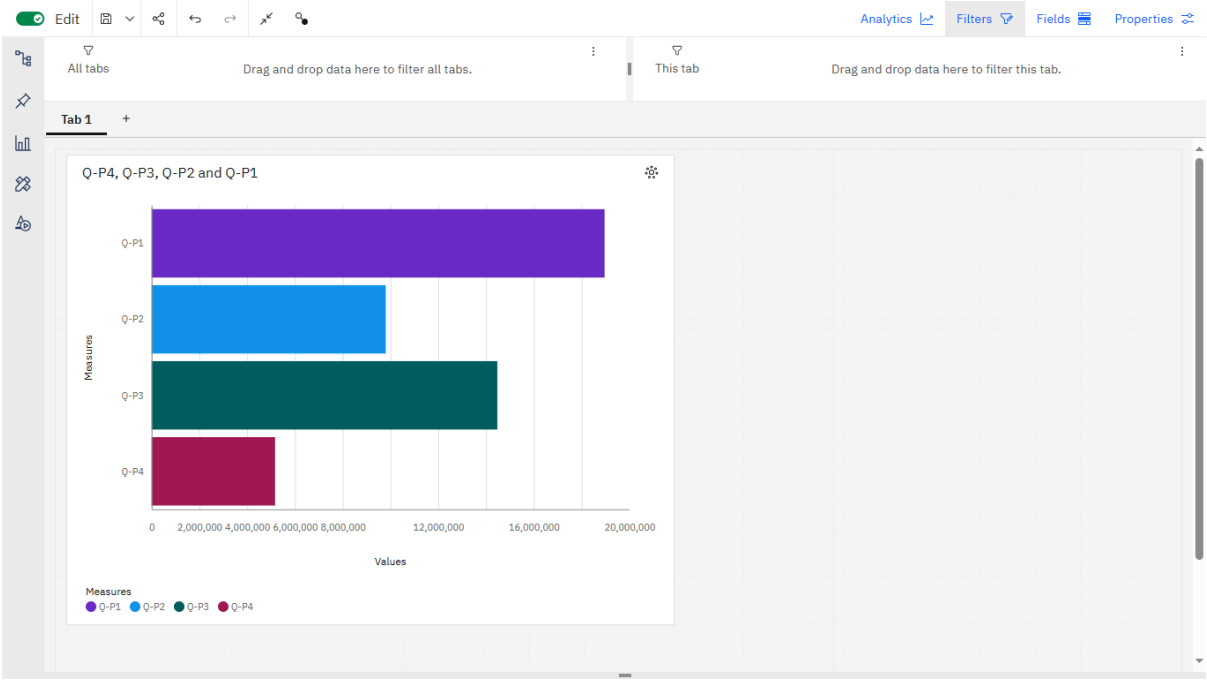
The months January, March and August is the highest sold month for the Product P2

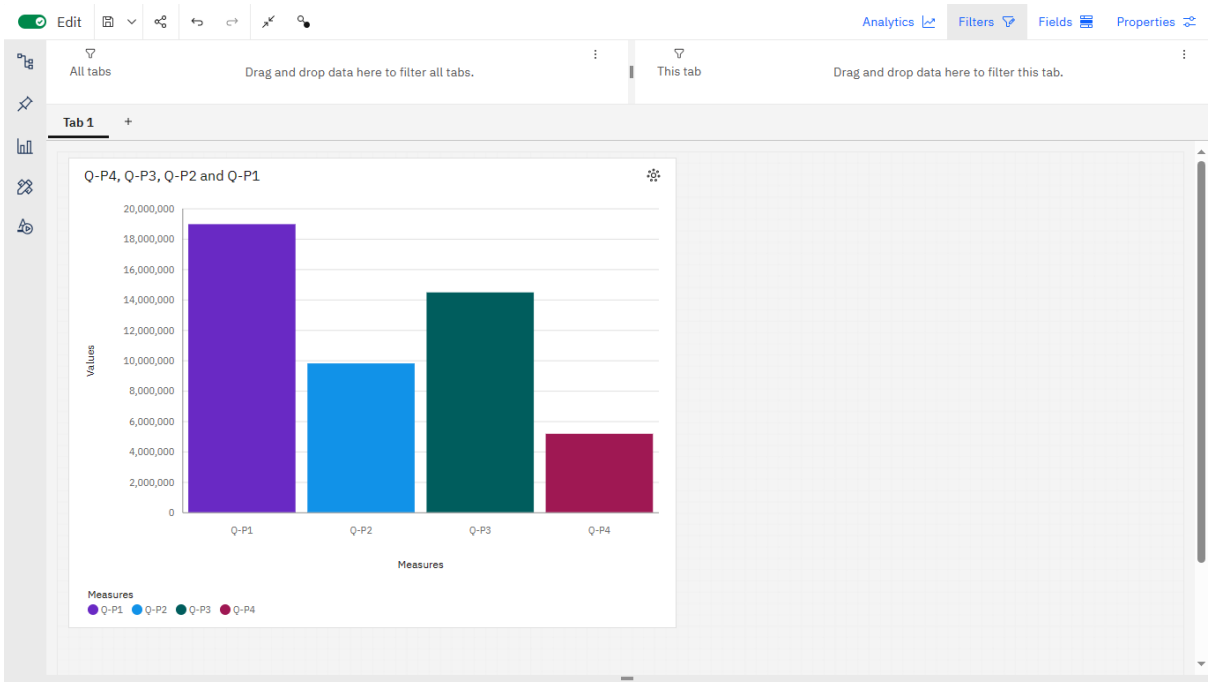
The months May and September is the highest sold month for the Product P3

From the month January to December the Product P4 has Uniform Sales.

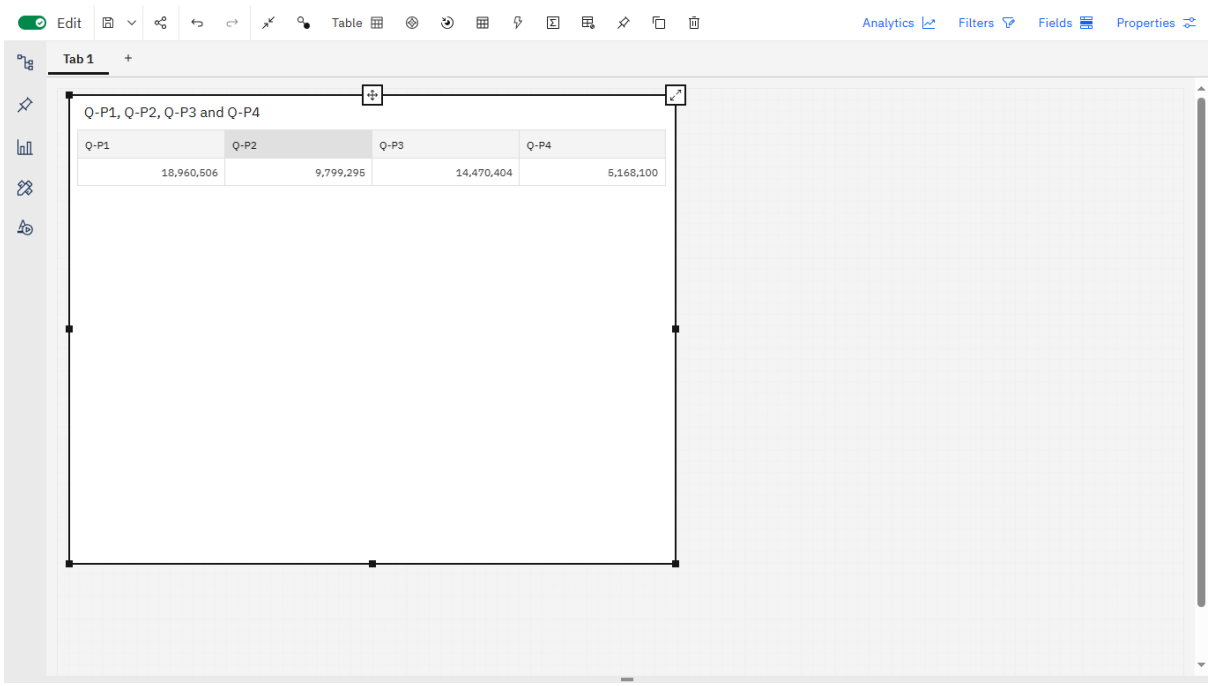
Data Visualisation in IBM Cognos Analytics:

Representation on highest sold products over the years





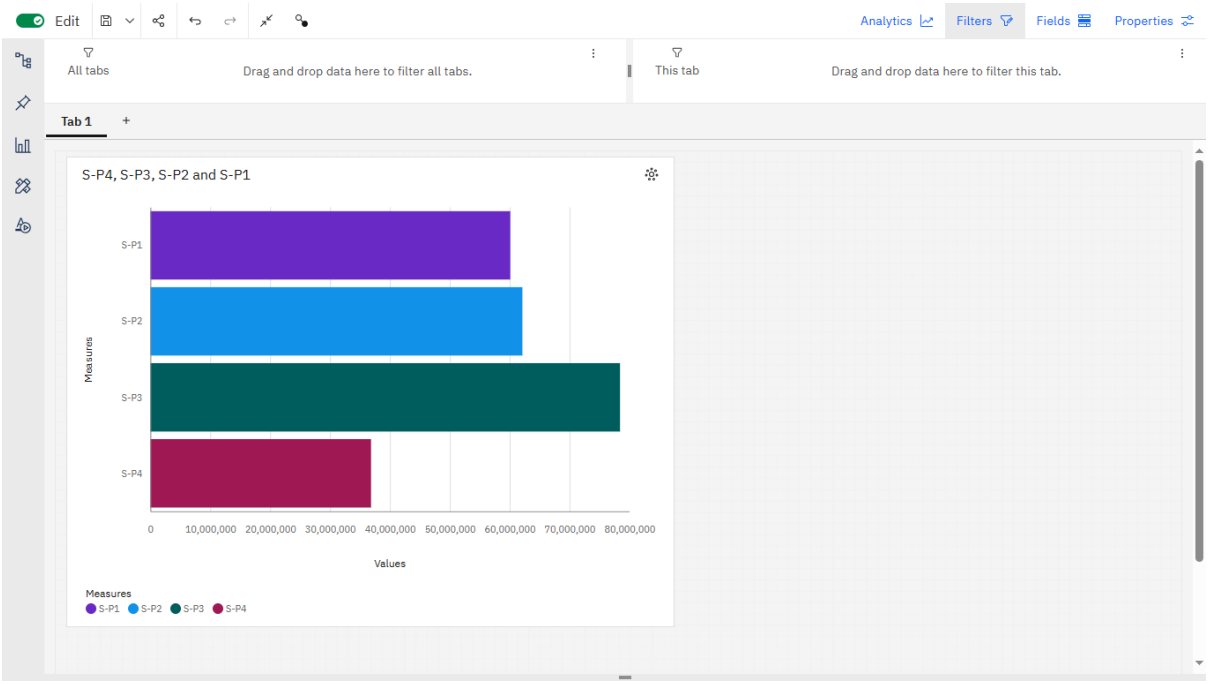
Total sum of units sold of each product Q-P1, Q-P2, Q-P3, Q-P4

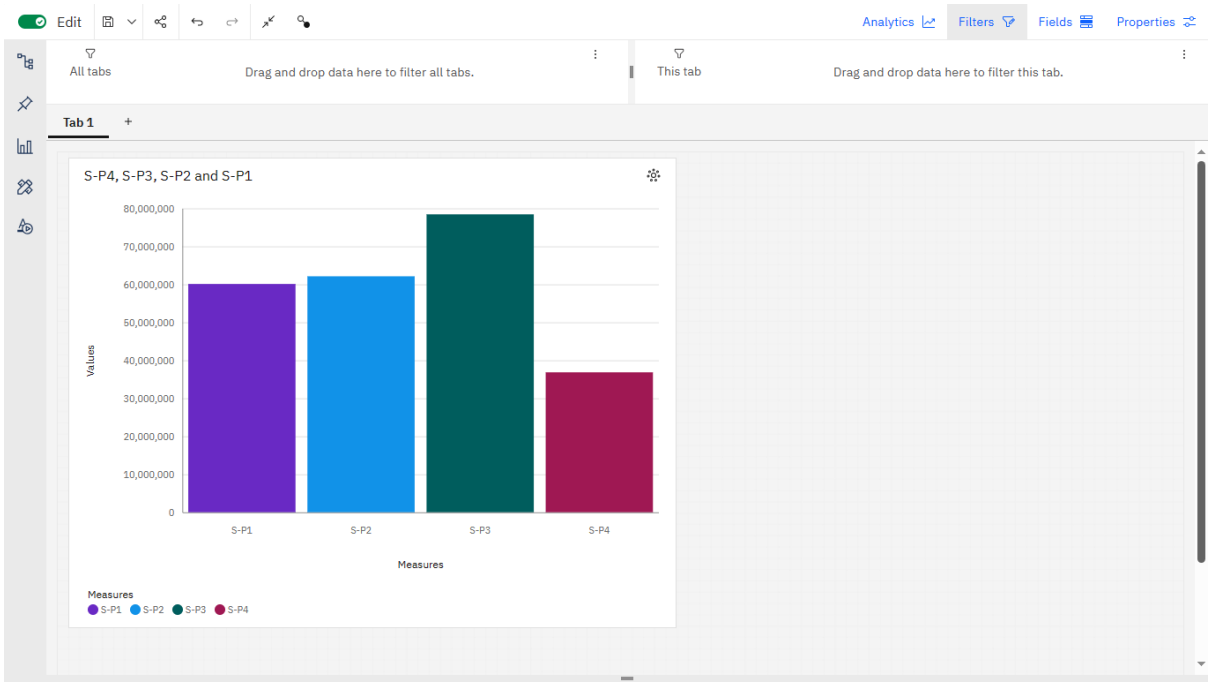


From these we can say that the P1 is the highest sold product

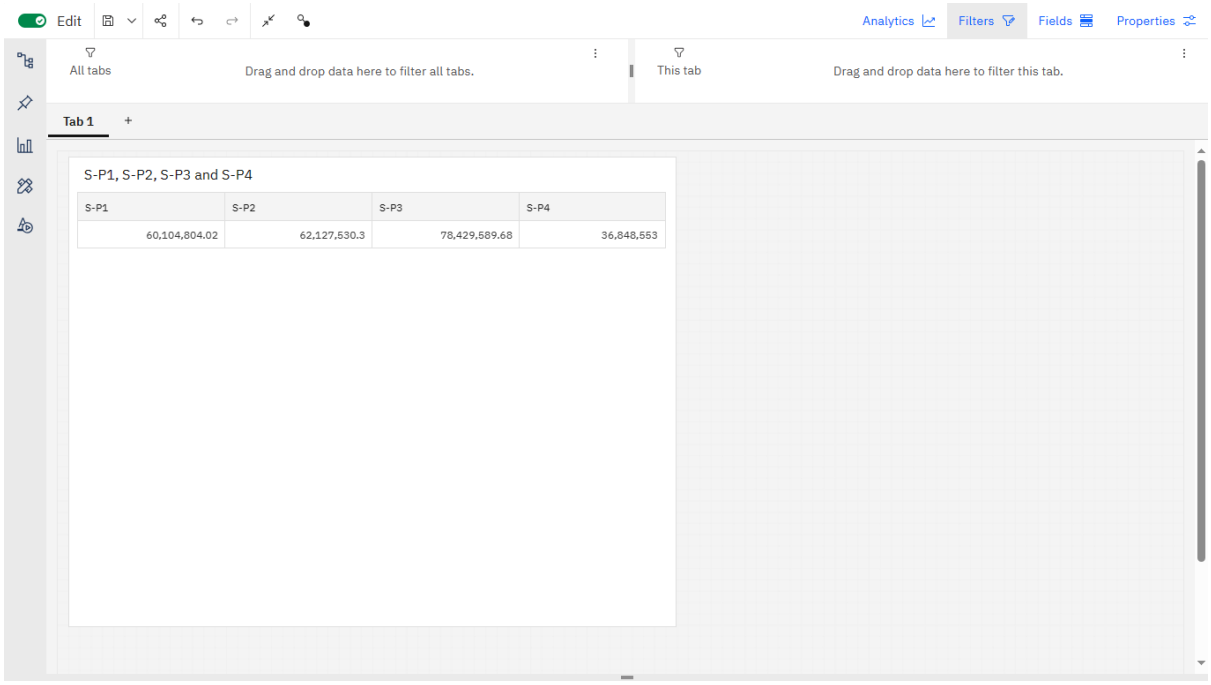
FIRST HIGHEST SOLD PRODUCT	P1
SECOND HIGHEST SOLD PRODUCT	P3
THIRD HIGHEST SOLD PRODUCT	P2
FOURTH HIGHEST SOLD PRODUCT	P4

Representation on highest Revenue generated products over the years





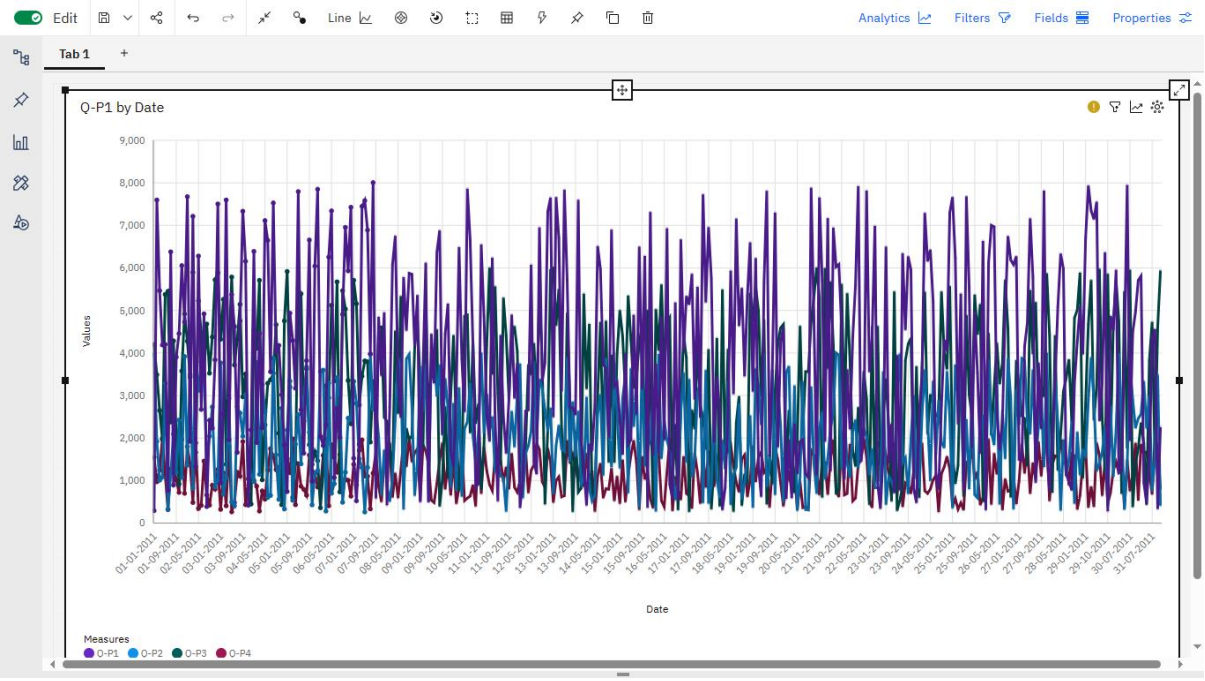
Total sum of revenue generated by each product



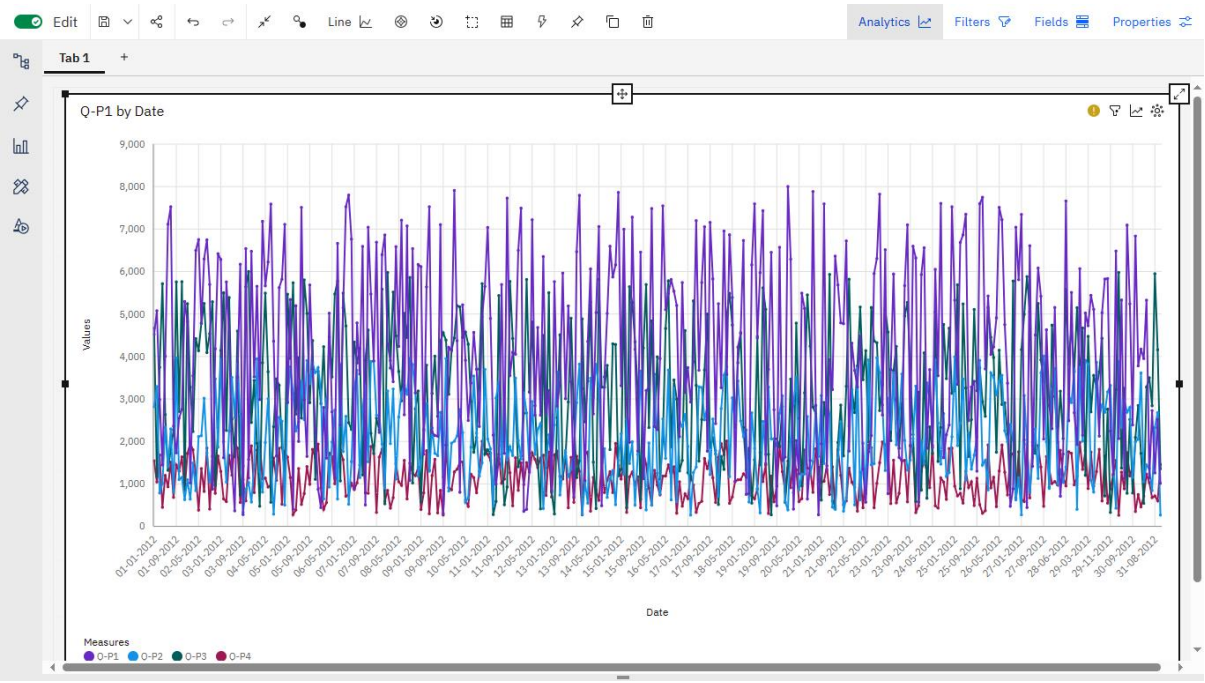
FIRST HIGHEST REVENUE GENERATED PRODUCT	P3
SECOND HIGHEST REVENUE GENERATED PRODUCT	P2
THIRD HIGHEST REVENUE GENERATED PRODUCT	P1
FOURTH HIGHEST REVENUE GENERATED PRODUCT	P4

Line Chart Over Time to find Peak Sales

In 2011 for Q-P1, Q-P2, Q-P3, Q-P4



In 2012 for Q-P1, Q-P2, Q-P3, Q-P4



In 2013 for Q-P1, Q-P2, Q-P3, Q-P4

SALES TREND:

By analysing all the years sales of all products, we can say that,

- All Products unit sale drop in February month.
- In all the years the month January, March, August has peak sale for the product P2.
- In all the years the month May, September has peak sale for the product P3.
- The Product P4 has a uniform sales all over the Years.

CUSTOMER PREFERENCES:

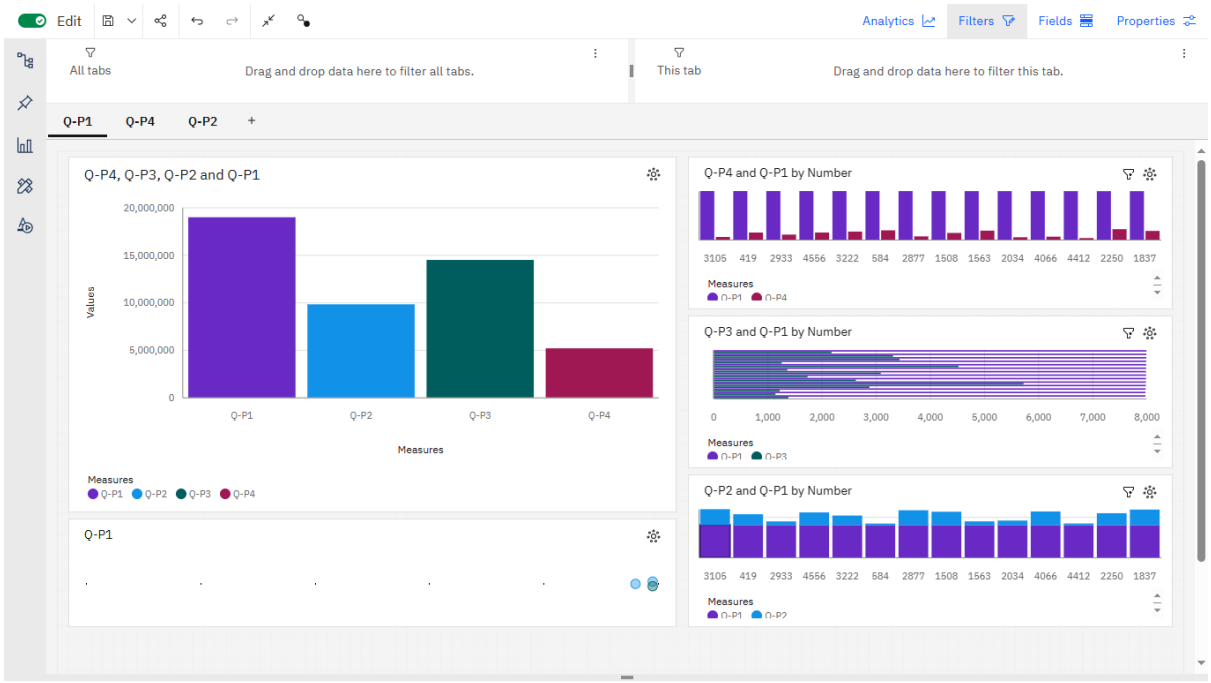
By these analysis and the visualisations we can see the customers prefers the,

Product P1 the most and

Product P3 is the next preferred, and

P2 and P4 as next.

DASHBOARDS: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Filters
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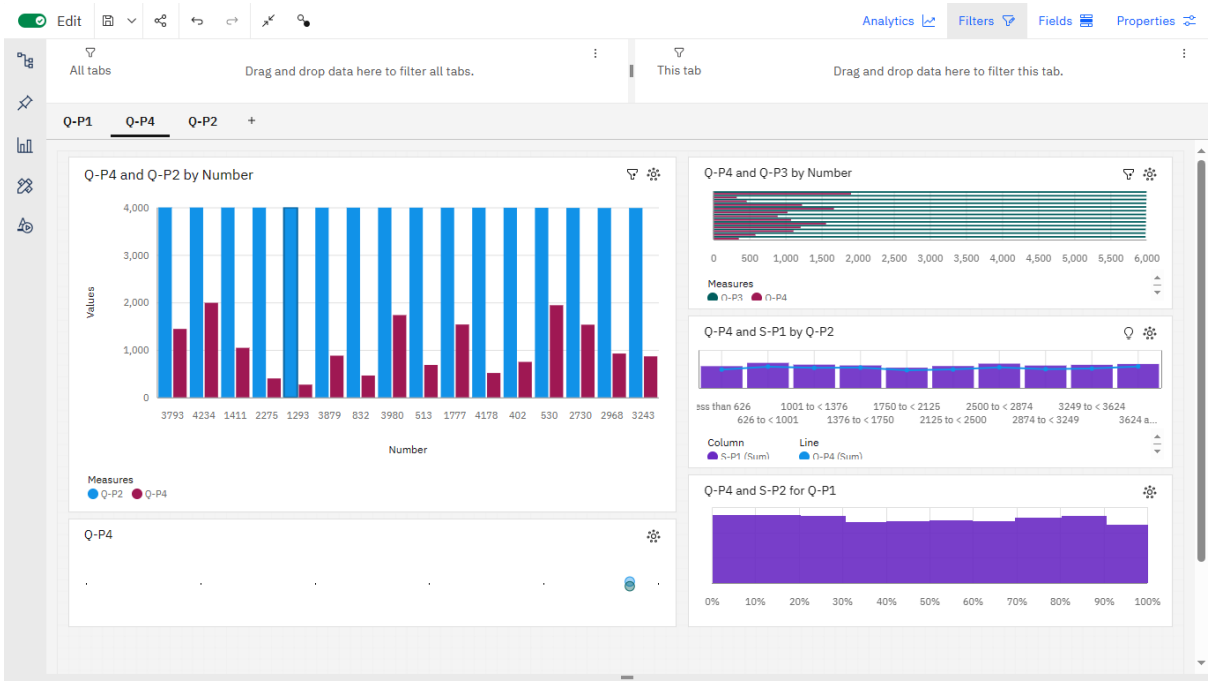
Properties
All tabs
Drag and drop data here to filter all tabs.
This tab
Drag and drop data here to filter this tab.
Q-P1
Q-P4
Q-P2
Q-P4, Q-P3, Q-P2 and Q-P1
Values
Measures
Q-P1
Q-P2
Q-P3
Q-P4
Q-P4 and Q-P1 by Number
Q-P3 and Q-P1 by Number
Q-P2 and Q-P1 by Number
Q-P1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This tab
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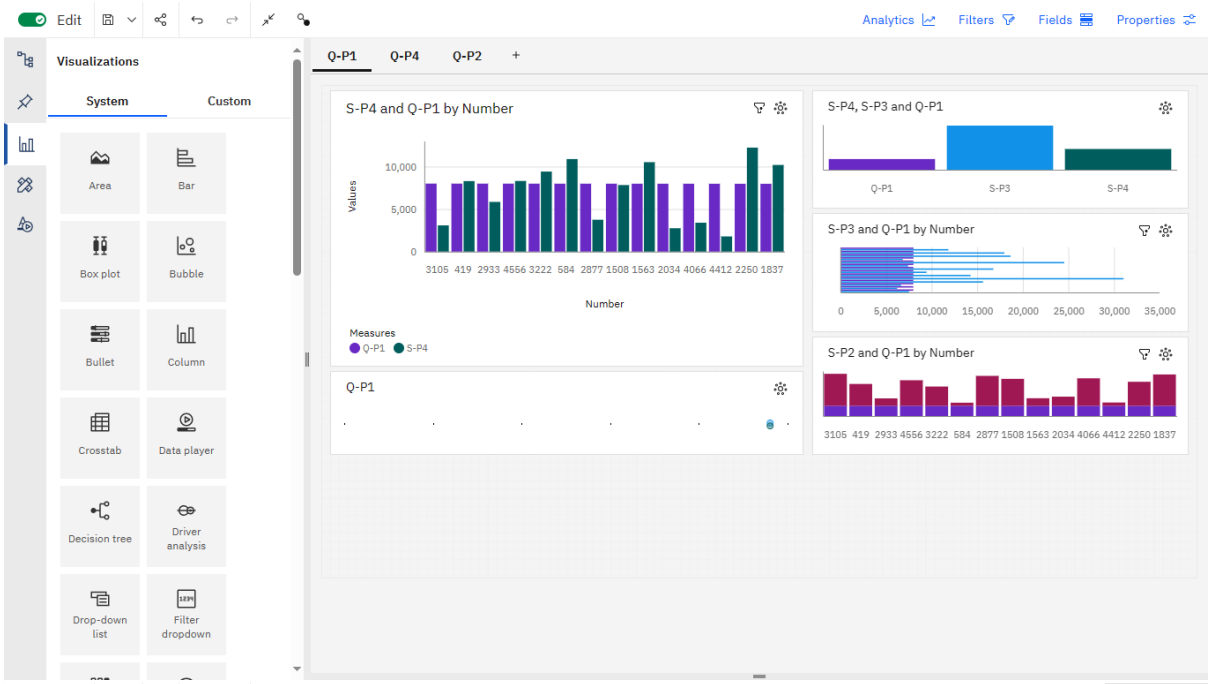
Q-P1
Q-P4
Q-P2
Q-P4 and Q-P2 by Number
Values
Number
Measures
Q-P2
Q-P4
Q-P4 and Q-P3 by Number
Q-P4 and S-P1 by Q-P2
Column
Line
Q-P4 and S-P2 for Q-P1
Q-P4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Visualizations
System
Custom
Area
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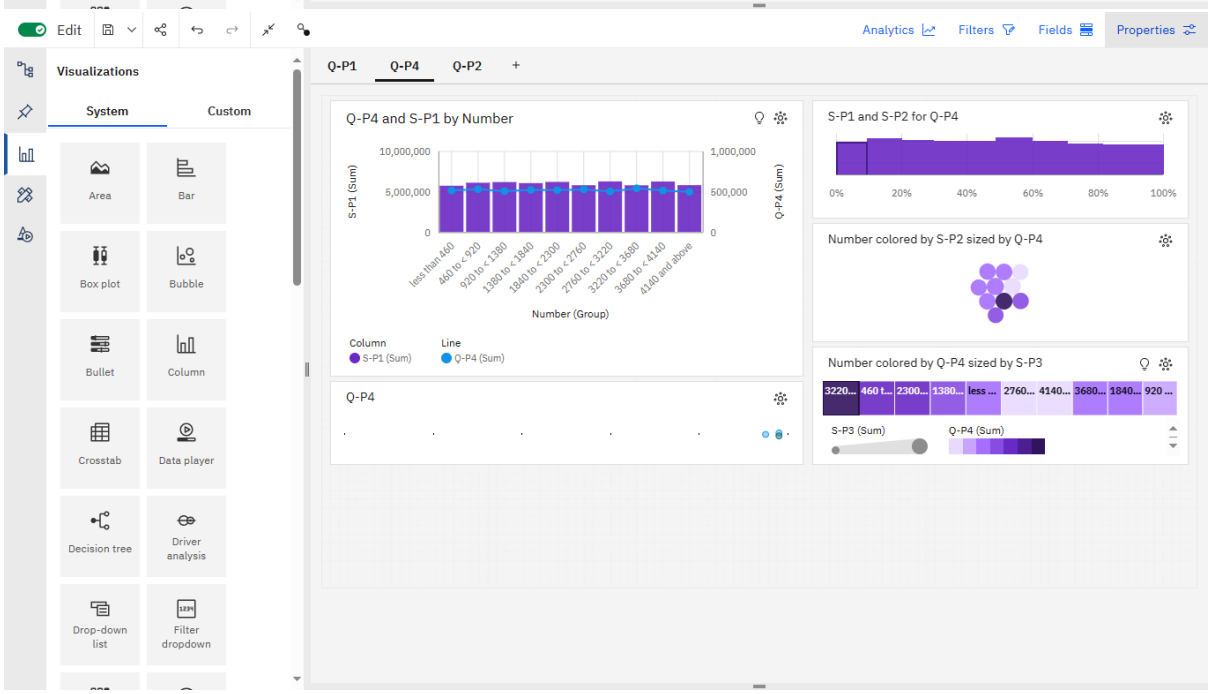
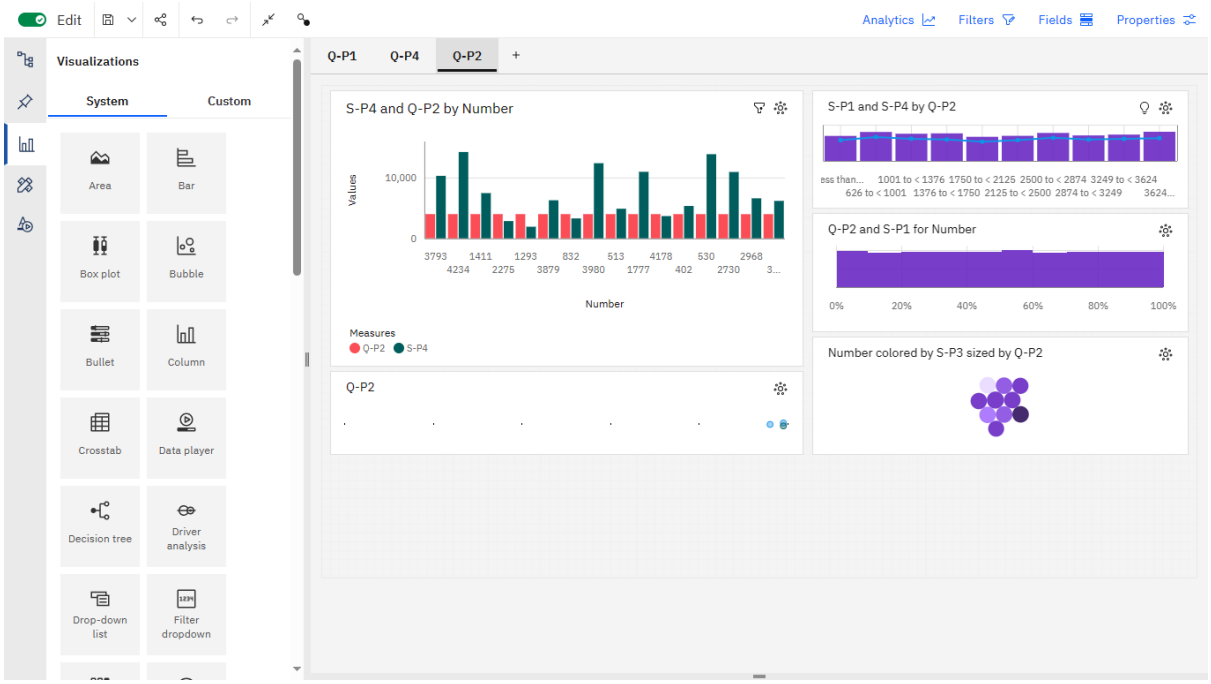
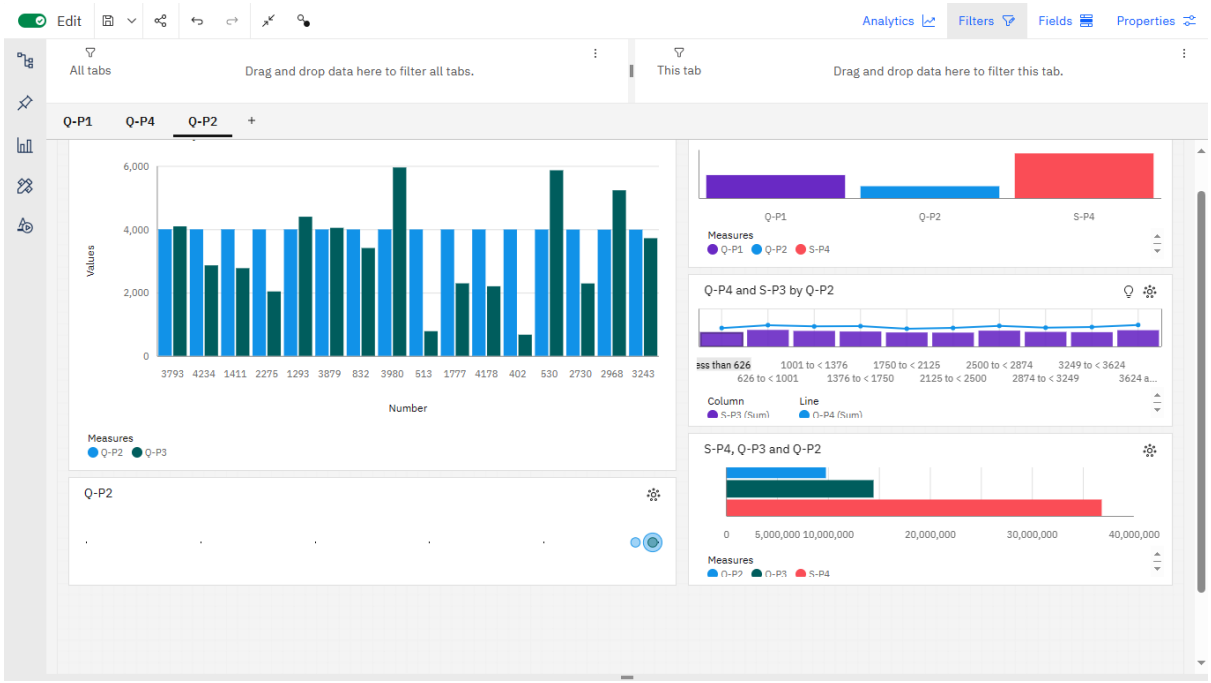
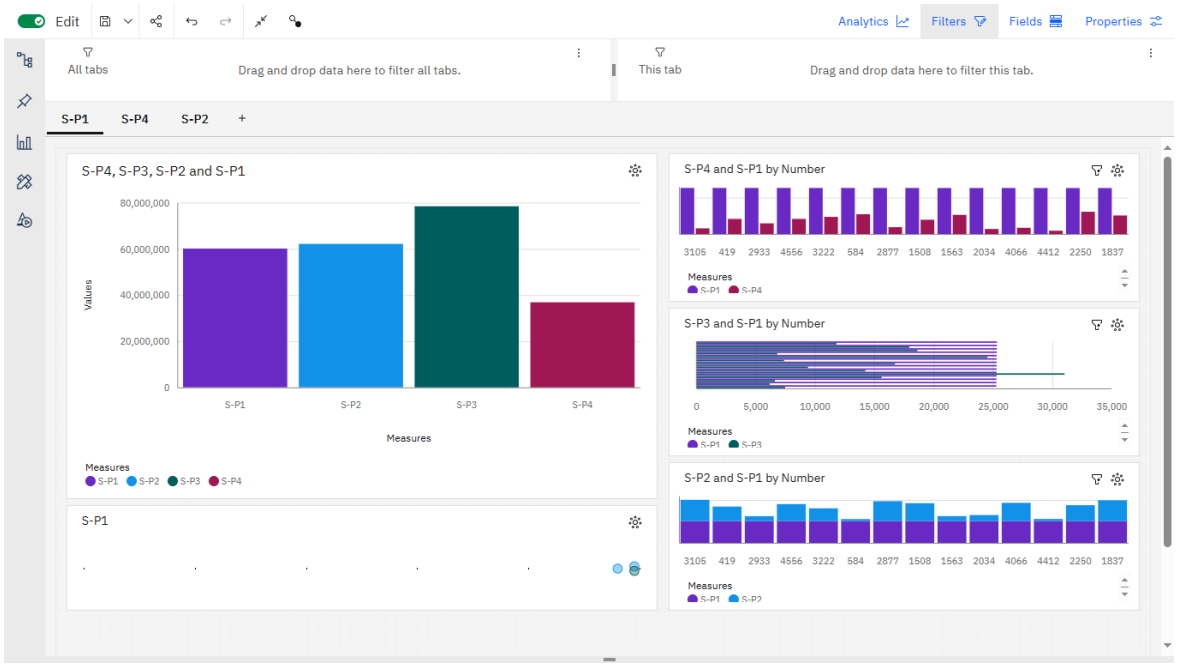
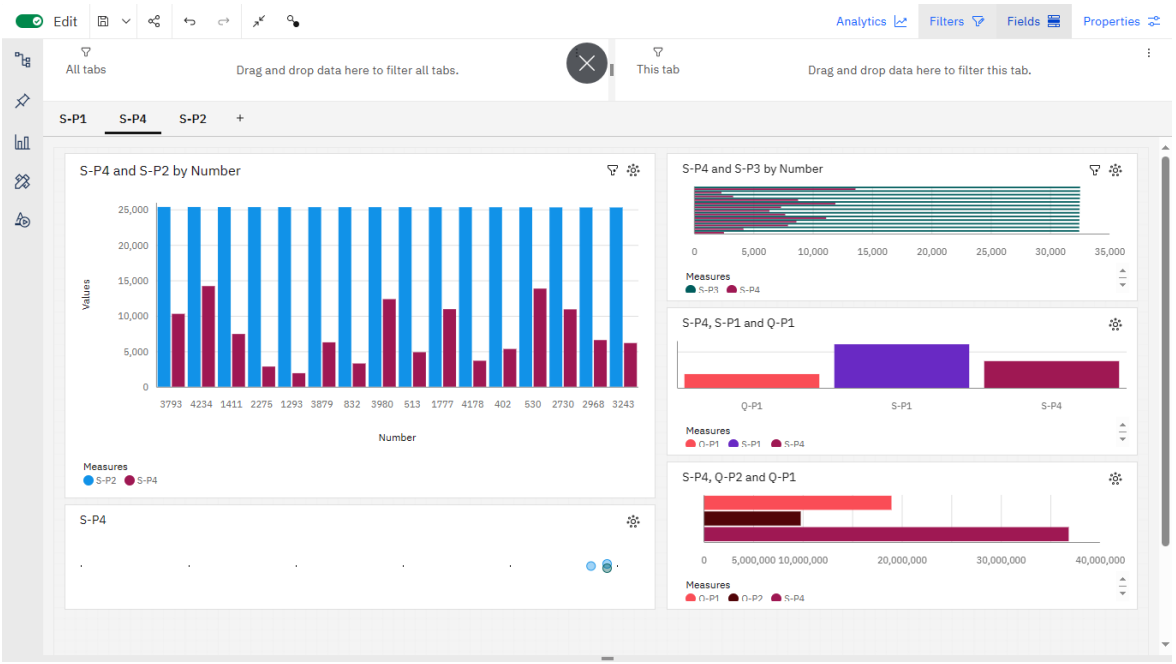
Box plot
Bubble
Bullet
Column
Crosstab
Data player
Decision tree
Driver analysis
Drop-down list
Filter dropdown
Q-P1
Q-P4
Q-P2
S-P4 and Q-P1 by Number
Values
10,000
5,000
0
3105 419 2933 4556 3222 584 2877 1508 1563 2034 4066 4412 2250 1837
Number
Measures
Q-P1
S-P4
S-P4, S-P3 and Q-P1
Q-P1
S-P3
S-P4
S-P3 and Q-P1 by Number
0 5,000 10,000 15,000 20,000 25,000 30,000 35,000
S-P2 and Q-P1 by Number
3105 419 2933 4556 3222 584 2877 1508 1563 2034 4066 4412 2250 1837
Q-P1

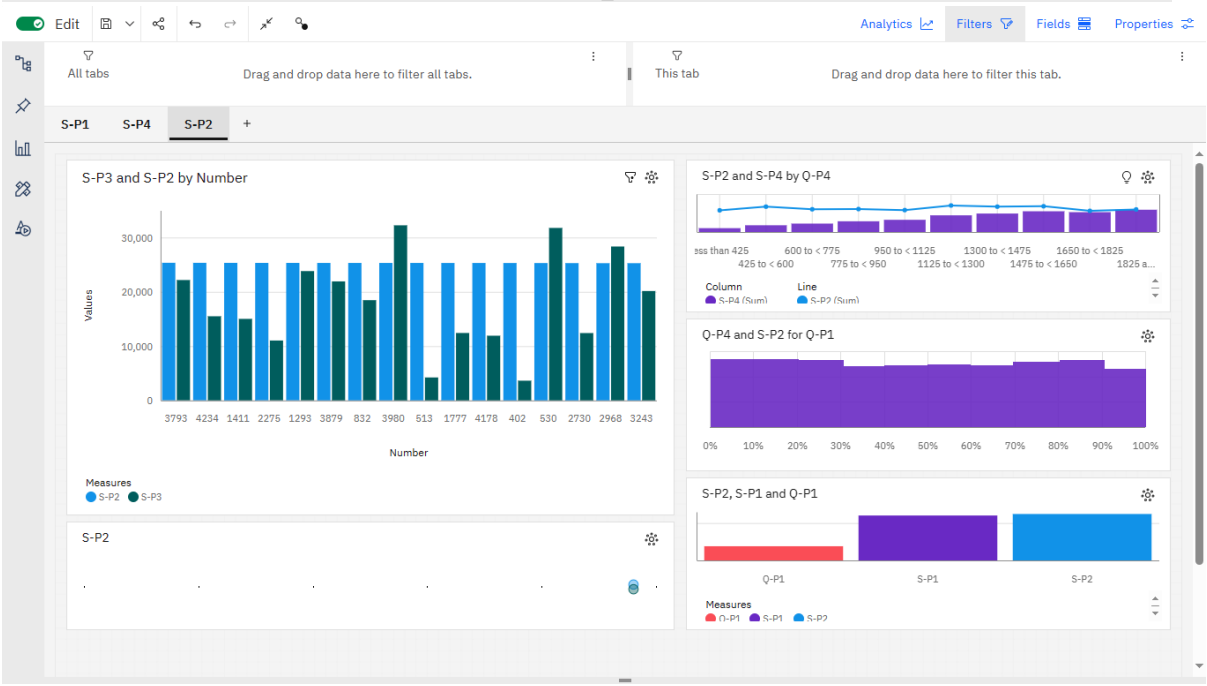

Edit
Analytics
Filters
Fields
Properties
Visualizations
System
Custom
Area
Bar
Box plot
Bubble
Bullet
Column
Crosstab
Data player
Decision tree
Driver analysis
Drop-down list
Filter dropdown
Q-P1
Q-P4
Q-P2
Q-P4 and S-P1 by Number
S-P1 (Sum)
10,000,000
5,000,000
0
1,000,000
500,000
0
Q-P4 (Sum)
less than 460
460 to < 920
920 to < 1380
1380 to < 1840
1840 to < 2300
2300 to < 2760
2760 to < 3220
3220 to < 3680
3680 to < 4140
4140 and above
Number (Group)
Column
S-P1 (Sum)
Line
Q-P4 (Sum)
Q-P4
S-P1 and S-P2 for Q-P4
0%
20%
40%
60%
80%
100%
Number colored by S-P2 sized by Q-P4
Number colored by Q-P4 sized by S-P3
3220...
460 t...
2300...
1380...
less ...
2760...
4140...
3680...
1840...
920 ...
S-P3 (Sum)
Q-P4 (Sum)


Edit
Analytics
Filters
Fields
Properties
Visualizations
System
Custom
Area
Bar
Box plot
Bubble
Bullet
Column
Crosstab
Data player
Decision tree
Driver analysis
Drop-down list
Filter dropdown
Q-P1
Q-P4
Q-P2
S-P4 and Q-P2 by Number
Values
10,000
0
3793 1411 1293 832 513 4178 530 2968
4234 2275 3879 3980 1777 402 2730 3...
Number
Measures
Q-P2
S-P4
S-P1 and S-P4 by Q-P2
Q-P2 and S-P1 for Number
0% 20% 40% 60% 80% 100%
Number colored by S-P3 sized by Q-P2
Q-P2


Edit
Analytics
Filters
Fields
Properties
All tabs
Drag and drop data here to filter all tabs.
This tab
Drag and drop data here to filter this tab.
Q-P1
Q-P4
Q-P2
6,000
4,000
2,000
0
Values
3793 4234 1411 2275 1293 3879 832 3980 513 1777 4178 402 530 2730 2968 3243
Number
Measures
Q-P2
Q-P3
Q-P1
Q-P2
S-P4
Measures
Q-P1
Q-P2
S-P4
Q-P4 and S-P3 by Q-P2
ess than 626
1001 to < 1376
1750 to < 2125
2500 to < 2874
3249 to < 3624
626 to < 1001
1376 to < 1750
2125 to < 2500
2874 to < 3249
Column
Line
S-P4, Q-P3 and Q-P2
0
5,000,000
10,000,000
20,000,000
30,000,000
40,000,000
Measures
Q-P2
Q-P3
S-P4


Edit
Analytics
Filters
Fields
Properties
All tabs
Drag and drop data here to filter all tabs.
This tab
Drag and drop data here to filter this tab.
S-P1
S-P4
S-P2
S-P4, S-P3, S-P2 and S-P1
80,000,000
60,000,000
40,000,000
20,000,000
0
Values
S-P1
S-P2
S-P3
S-P4
Measures
Measures
S-P1
S-P2
S-P3
S-P4
S-P4 and S-P1 by Number
3105 419 2933 4556 3222 584 2877 1508 1563 2034 4066 4412 2250 1837
Measures
S-P1
S-P4
S-P3 and S-P1 by Number
0 5,000 10,000 15,000 20,000 25,000 30,000 35,000
Measures
S-P1
S-P3
S-P2 and S-P1 by Number
3105 419 2933 4556 3222 584 2877 1508 1563 2034 4066 4412 2250 1837
Measures
S-P1
S-P2
S-P1


Edit
Analytics
Filters
Fields
Properties
All tabs
Drag and drop data here to filter all tabs.
This tab
Drag and drop data here to filter this tab.
S-P1
S-P4
S-P2
S-P4 and S-P2 by Number
Values
Number
Measures
S-P2
S-P4
S-P4 and S-P3 by Number
Measures
S-P3
S-P4
S-P4, S-P1 and Q-P1
Q-P1
S-P1
S-P4
Measures
S-P4, Q-P2 and Q-P1
Measures
S-P4


Edit
Analytics
Filters
Fields
Properties
All tabs
Drag and drop data here to filter all tabs.
This tab
Drag and drop data here to filter this tab.
S-P1
S-P4
S-P2
S-P3 and S-P2 by Number
Values
Number
Measures
S-P2
S-P3
S-P2 and S-P4 by Q-P4
Column
Line
Q-P4 and S-P2 for Q-P1
S-P2, S-P1 and Q-P1
Q-P1
S-P1
S-P2
Measures
S-P2