

sale information BI report - Power BI Desktop

Yong Liu

File Home Insert Modeling View Help Format Data / Drill

New page \* Pages New visual Visuals More Q&A Key influencers Decomposition tree Power Apps Text box Buttons Shapes Image Elements AI visual Power Platform

Purpose of this video is to show how to use analytic function of Power BI, including:

1. Visualize correlation and add regression trend line
2. Time series forecast

Filters

Visualizations

Fields

Search

General

Title Off

Background On

Lock specific Off

Border Off

Shadow Off

Visual highlight Off

Search

Search

Search

buyPrice

MSRP

productCode

productDes...

productLine

productNa...

productScale

productVen...

Profit

quantityInSt...

Total\_expect...

payments in CSV

time series forecas...

TSLA

Segoe UI

10

A

B

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U

Page 1 Page 2 Page 3 Page 4 Page 5 +

Page 3 of 5

11:07 28/12/2020

sale information BI report - Tow E Desktop

Yong Liu

File Home Insert Modeling View Help

New page Visuals More visual... Q&A Key influencers Decomposition tree Power Apps Test box Buttons Shapes Image

Visuals All visual... Power Platform Elements

Filters

Search

Add data fields here

Filters on all pages

Add data fields here

Values

Add data fields here

Drill through

Cross-report

Off

Keep all filters

On

Add drill-through fields here

Visualizations

Search

Scatter chart

Line chart

Bar chart

Donut chart

Map

Table

Card

Gauge

Image

Power BI

Fields

Search

d55555 custom...

d555555 orders

d55555 products

Σ buyPrice

Σ MSRP

productCode

productDes...

productLine

productN...

productScale

productVen...

Profit

Σ quantityInS...

Σ Total\_expec...

payments in CSV

time series forecas...

TSLA

Build visuals with your data

Select or drag fields from the Fields pane onto the report canvas.

Page 1 Page 2 Page 3 Page 4 Page 5 Page 6 +

Page 6 of 6

Windows Taskbar

sale information BI report Power BI Desktop

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File Home Insert Modeling View Help Format Data / Drill

New page Visuals New visual visual Q&A Key influences Decomposition tree Power Apps Test Buttons Shapes Image box Power Platform Elements

Select or drag fields to populate this visual

Filters

Visualizations

Fields

Add data fields here

Add data fields here

Add data fields here

Name: 'd55555 products'[Total\_expected\_profit]

Size

Play Axis

Tooltips

Drill through

Cross-report

Off

Keep all filters

On

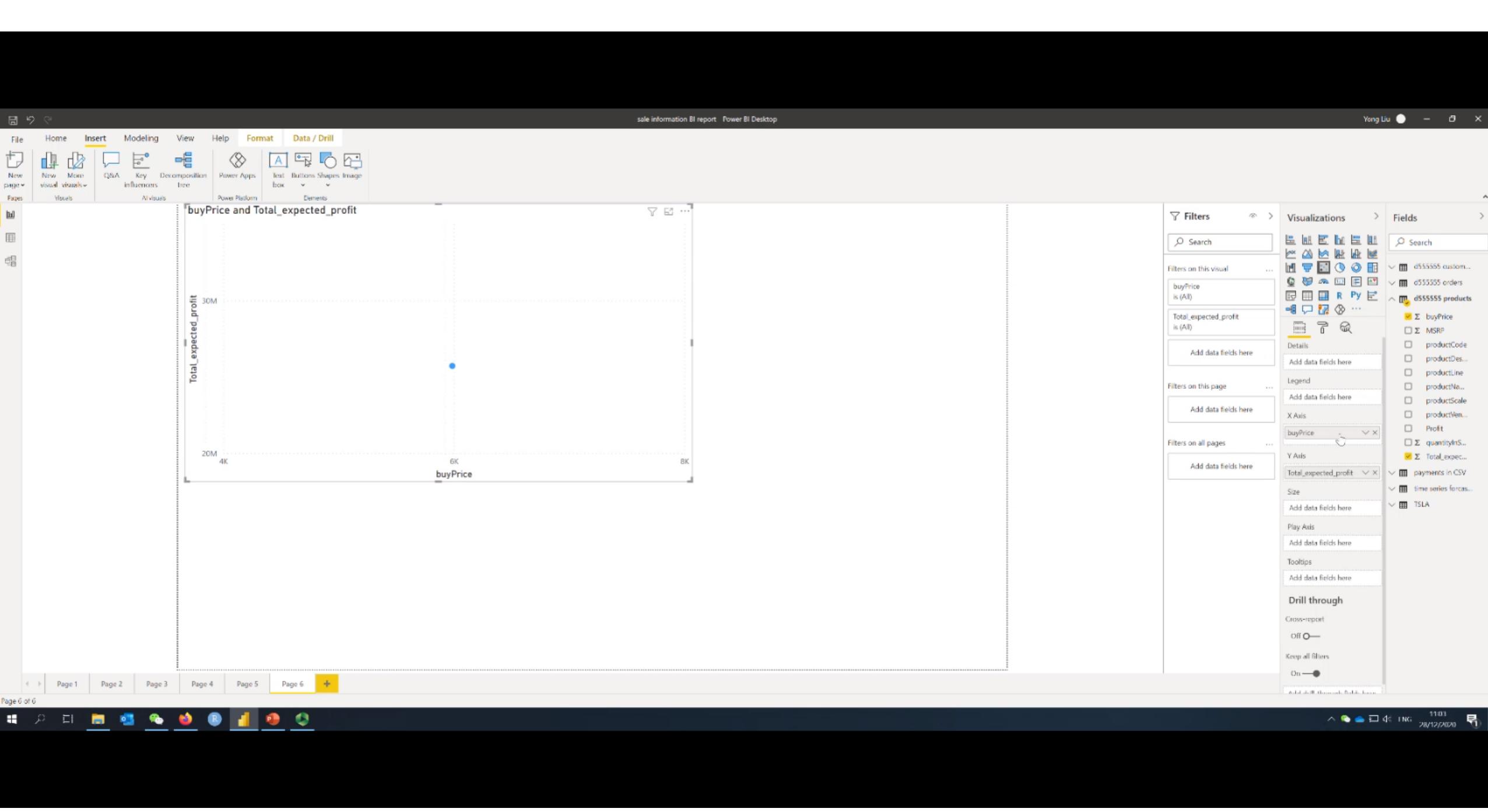
Add drill through fields here

Pages: Page 1 Page 2 Page 3 Page 4 Page 5 Page 6

Page 6 of 6

Windows taskbar icons: File Explorer, Edge, File, Settings, Task View, Firefox, R, Power BI, File, Settings, Task View, Edge, File, Settings, Task View, Firefox, R, Power BI.

System tray: 11:03, 28/7/2020, battery icon.



sale information BI report Power BI Desktop

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File Home Insert Modeling View Help Format Data / Drill

New page New visual visual Q&A Key influencers Decomposition tree Power Apps Text Buttons Shapes Image box Power Platform Elements

buyPrice and Total\_expected\_profit

Total\_expected\_profit

30M

20M

4K 6K 8K

buyPrice

Filters

Search

Filters on this visual

buyPrice is (All)

Total\_expected\_profit is (All)

Add data fields here

Details

Add data fields here

Legend

Add data fields here

X Axis

buyPrice

Filters on this page

Add data fields here

Filters on all pages

Add data fields here

Y Axis

Total\_expected\_profit

Remove field

Rename for this visual

Move to

Don't summarize

Sum

Average

Minimum

Maximum

Count (Distinct)

Count

Standard deviation

Variance

Median

Show value as

New quick measure

Play Axis

Add data fields here

Tooltips

Add data fields here

Drill through

Cross-import

Off

Show value as

New quick measure

Keep all filters

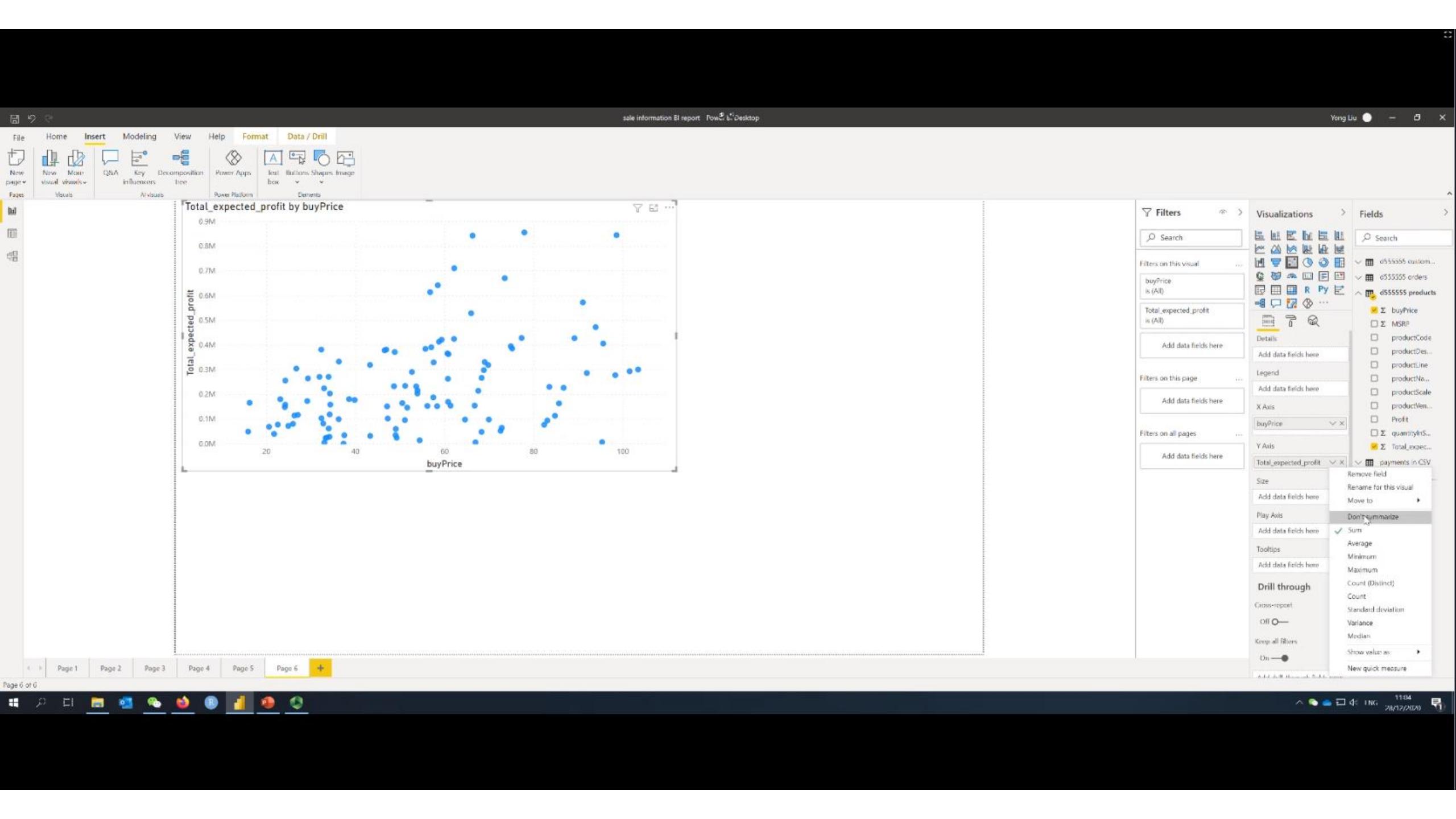
On

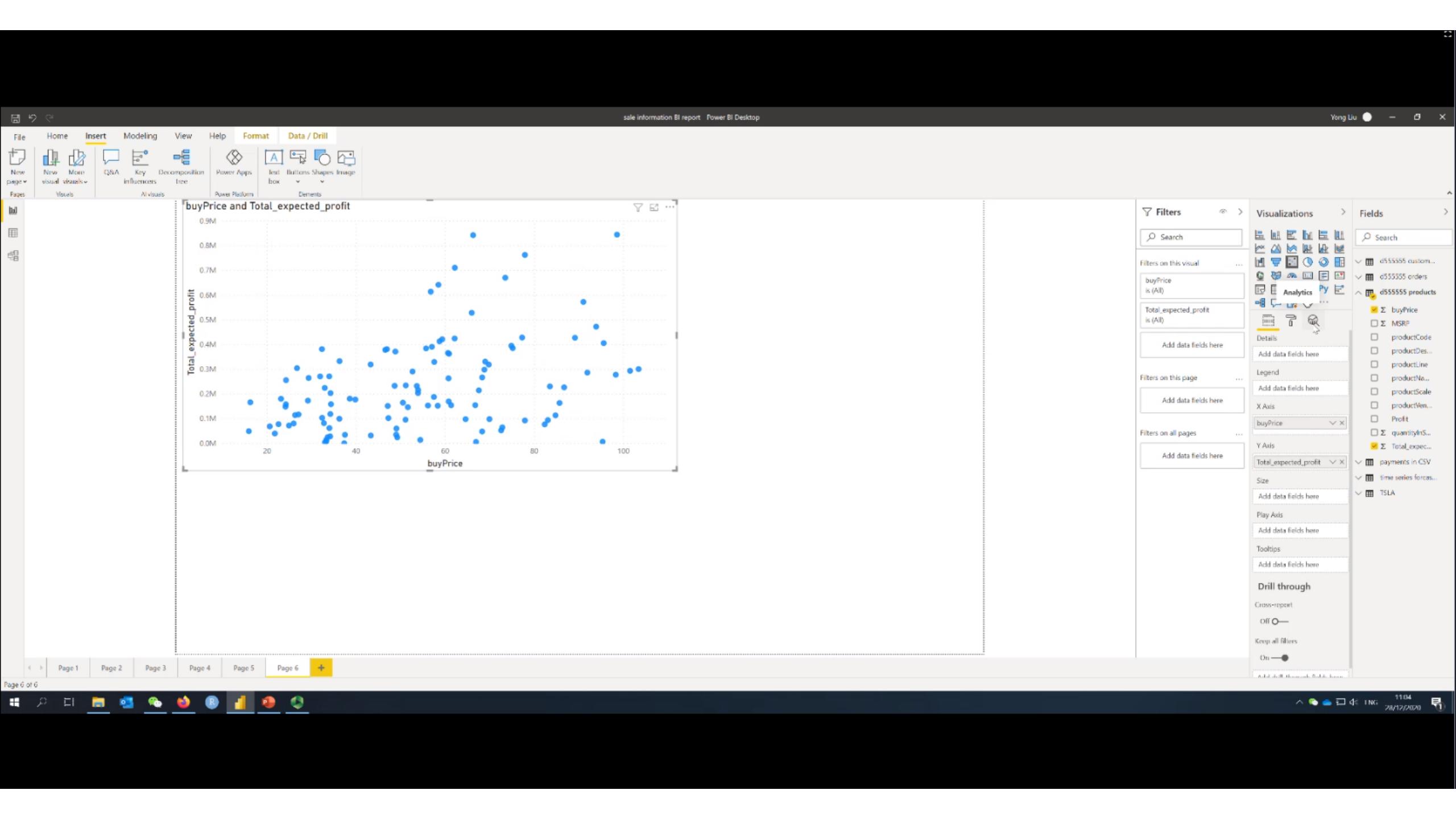
Page 1 Page 2 Page 3 Page 4 Page 5 Page 6

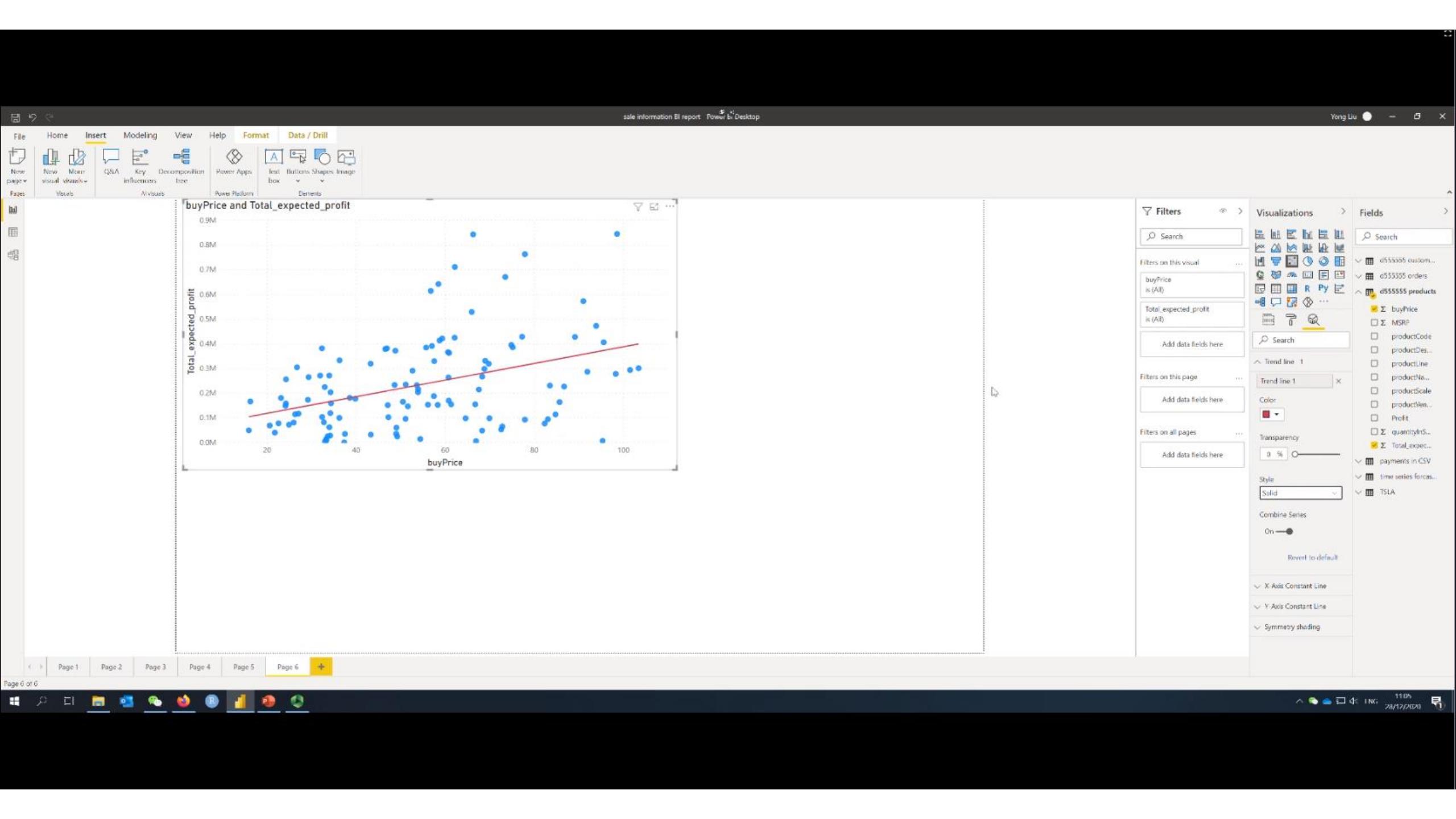
Page 6 of 6

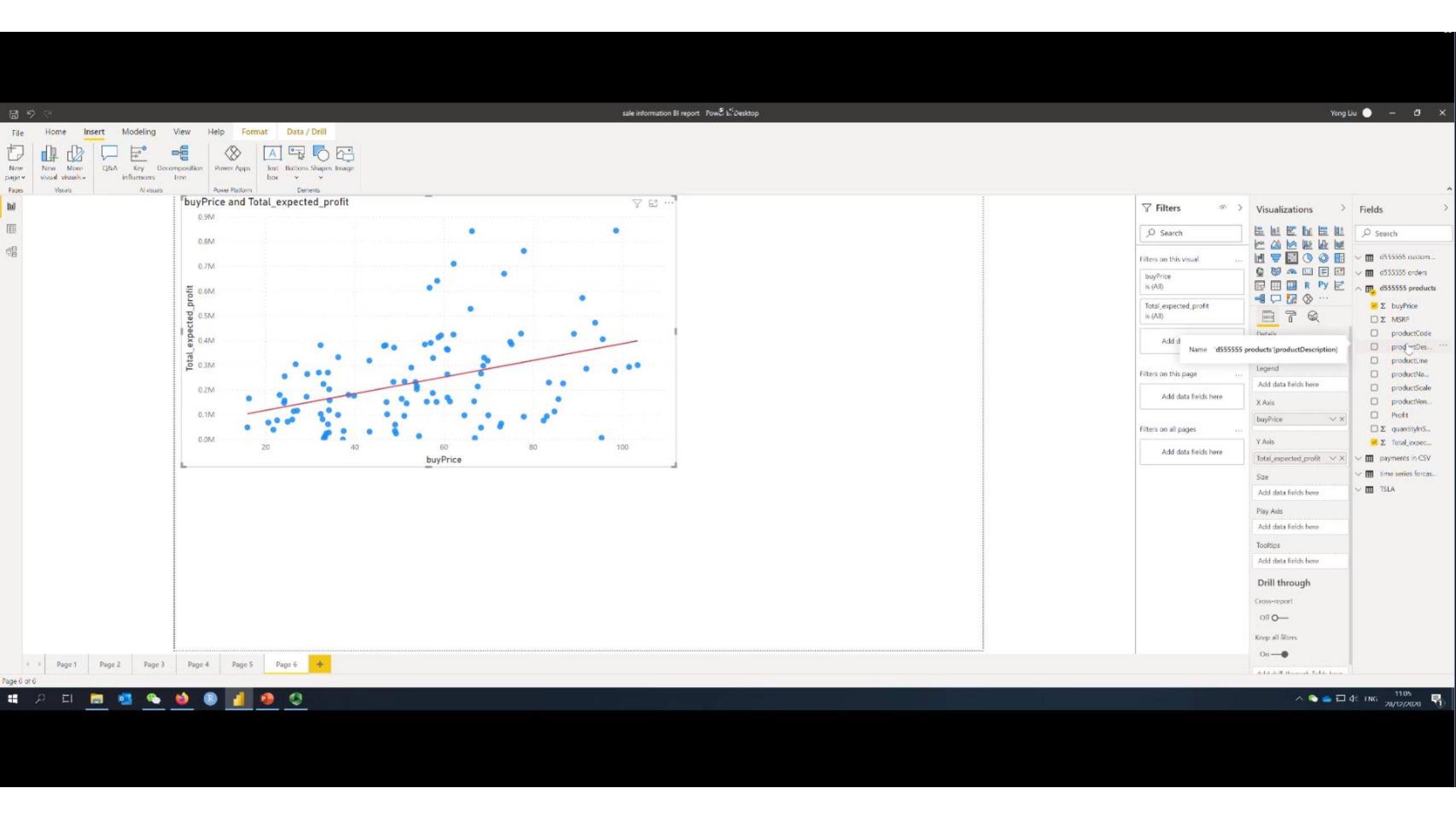
11:04 28/11/2020

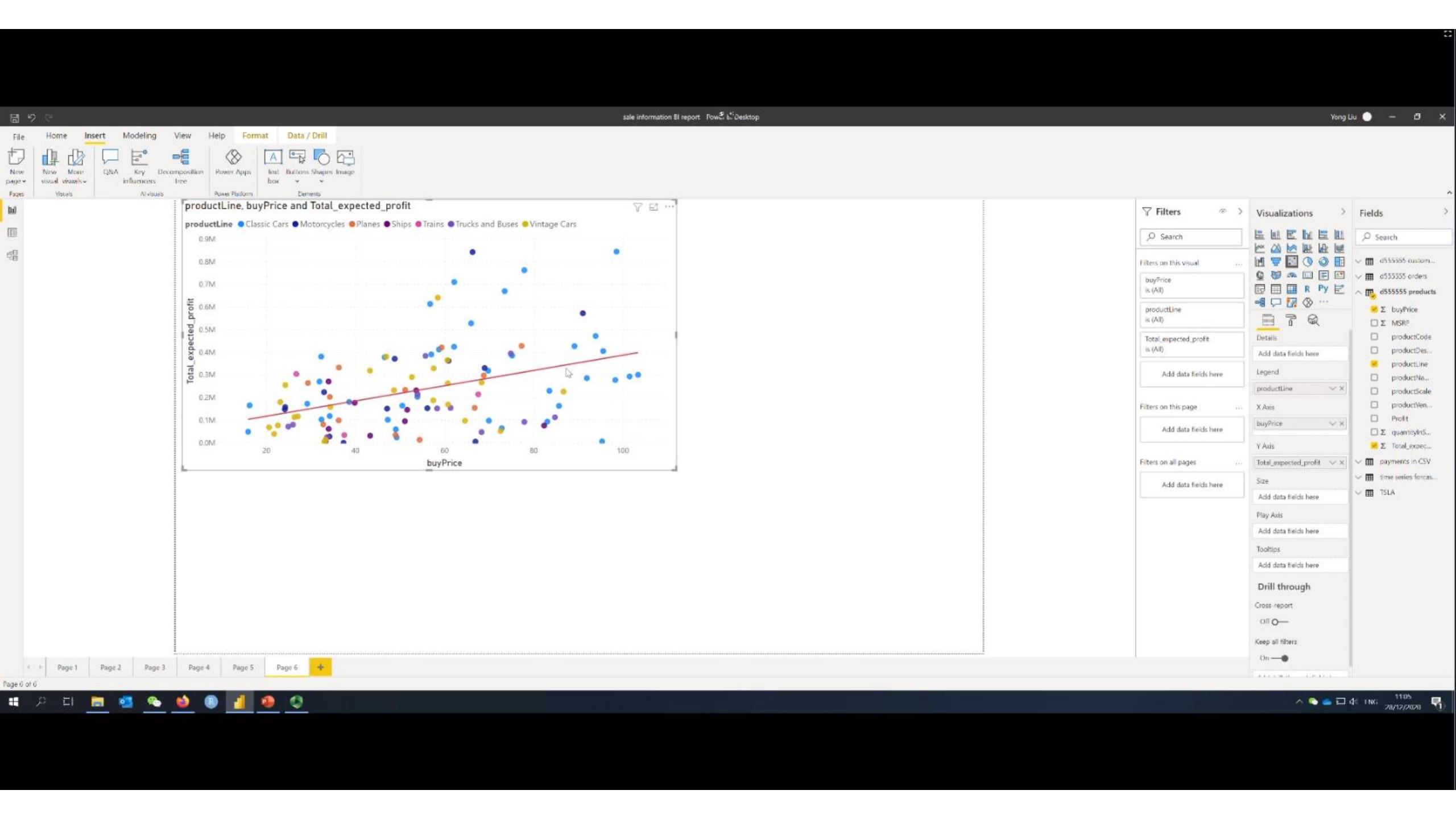
Fields

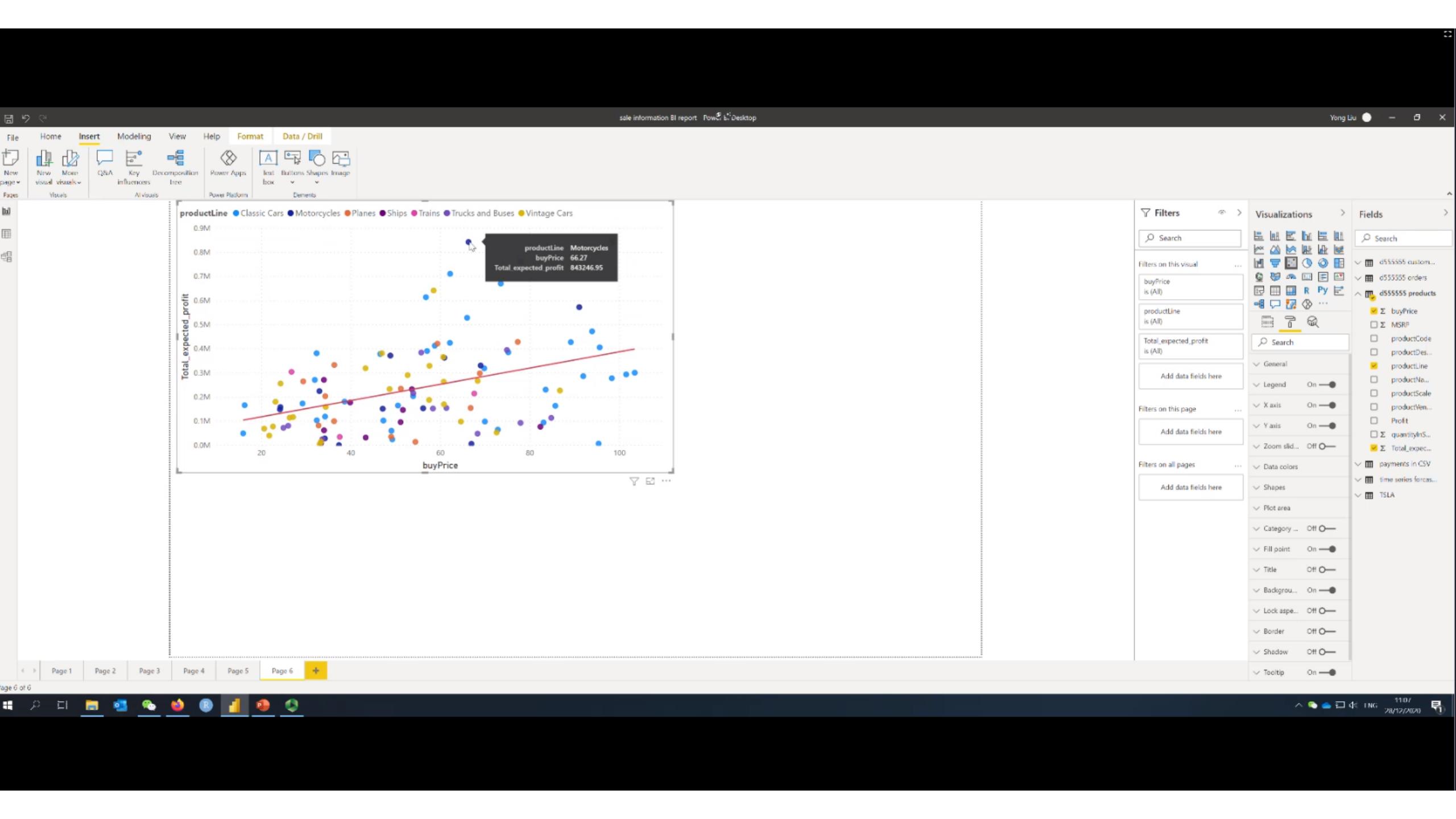


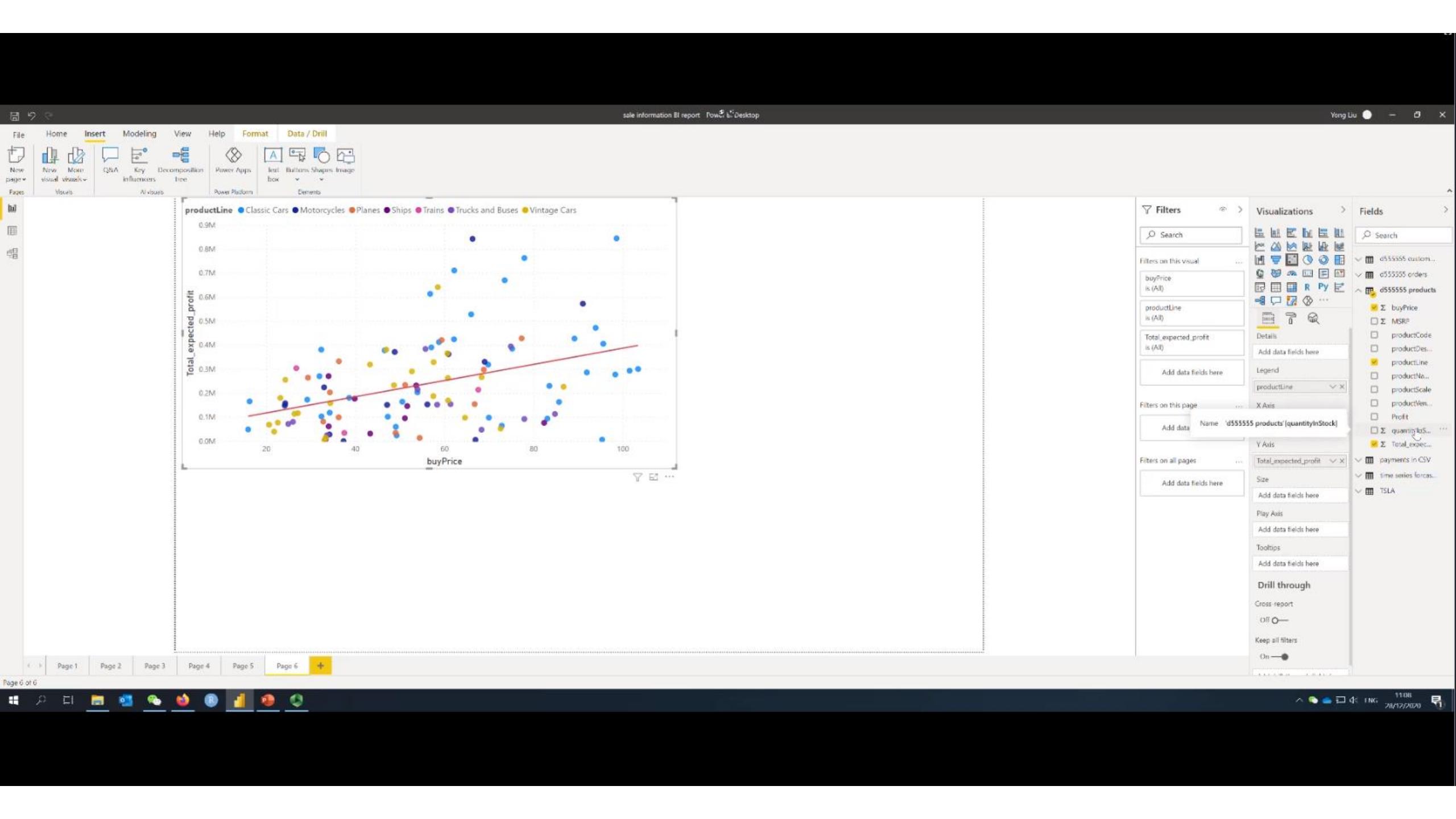


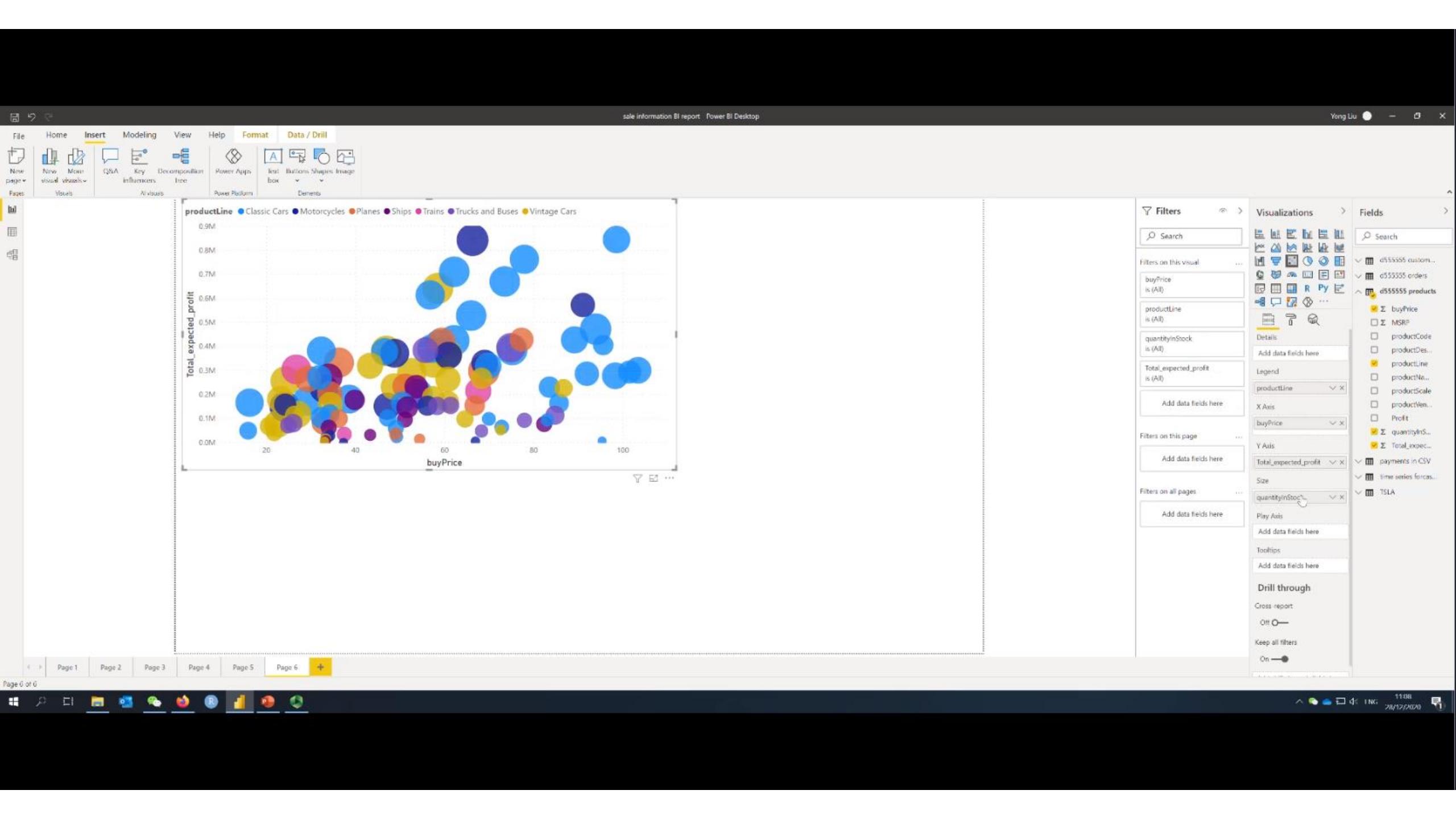












# Time series

- A time series is a series of data points indexed (or listed or graphed) in time order.
- Most commonly, a time series is a sequence taken at successive equally spaced points in time.
- Time Series analysis can be useful to see how a given variable changes over time. Examples of time series are heights of ocean tides, counts of sunspots, stock prices.

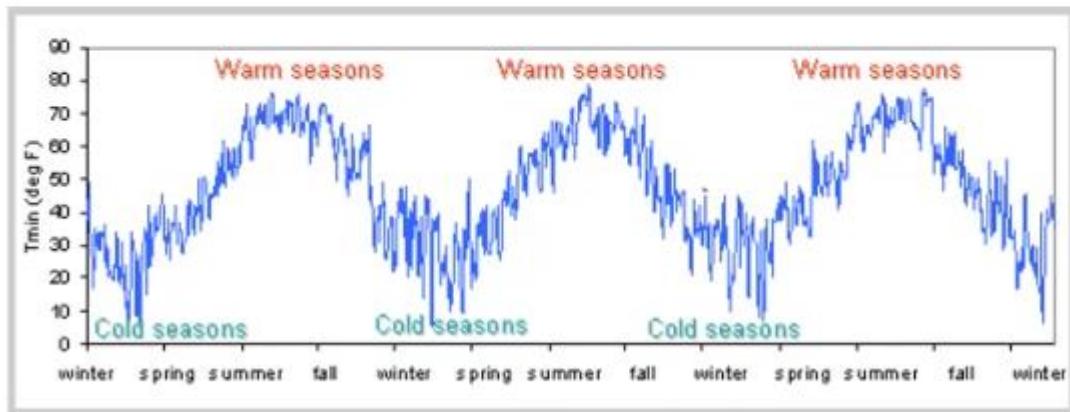


Source: [https://en.wikipedia.org/wiki/Time\\_series](https://en.wikipedia.org/wiki/Time_series)

<https://www.kdnuggets.com/2020/01/stock-market-forecasting-time-series-analysis.html>

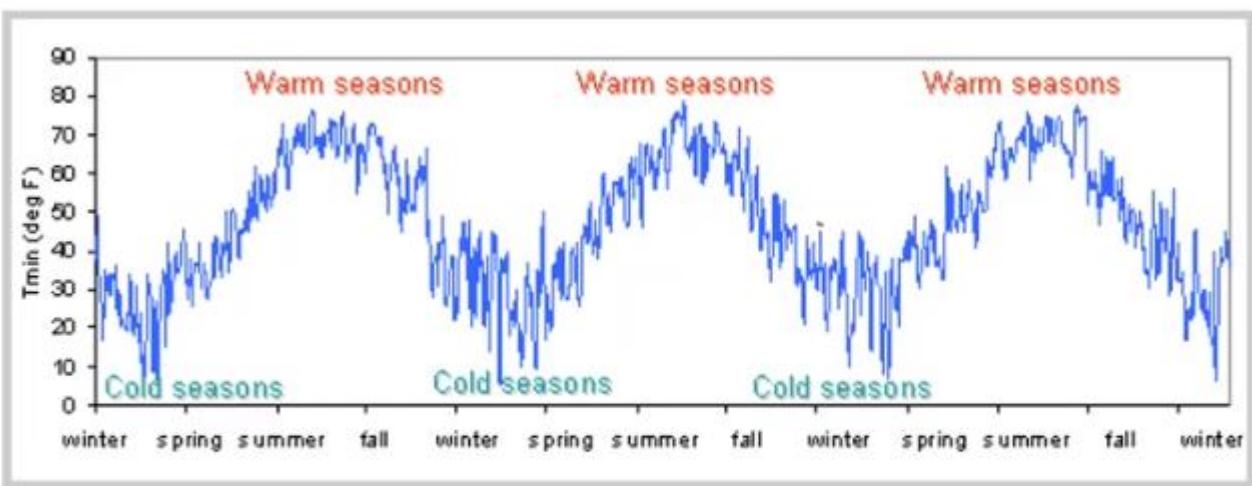
# Seasonality

In time series data, **seasonality** is the presence of variations that occur at specific regular intervals less than a year, such as weekly, monthly, or quarterly. Seasonality may be caused by various factors, such as weather, vacation, and holidays and consists of periodic, repetitive, and generally regular and predictable patterns in the levels of a time series.

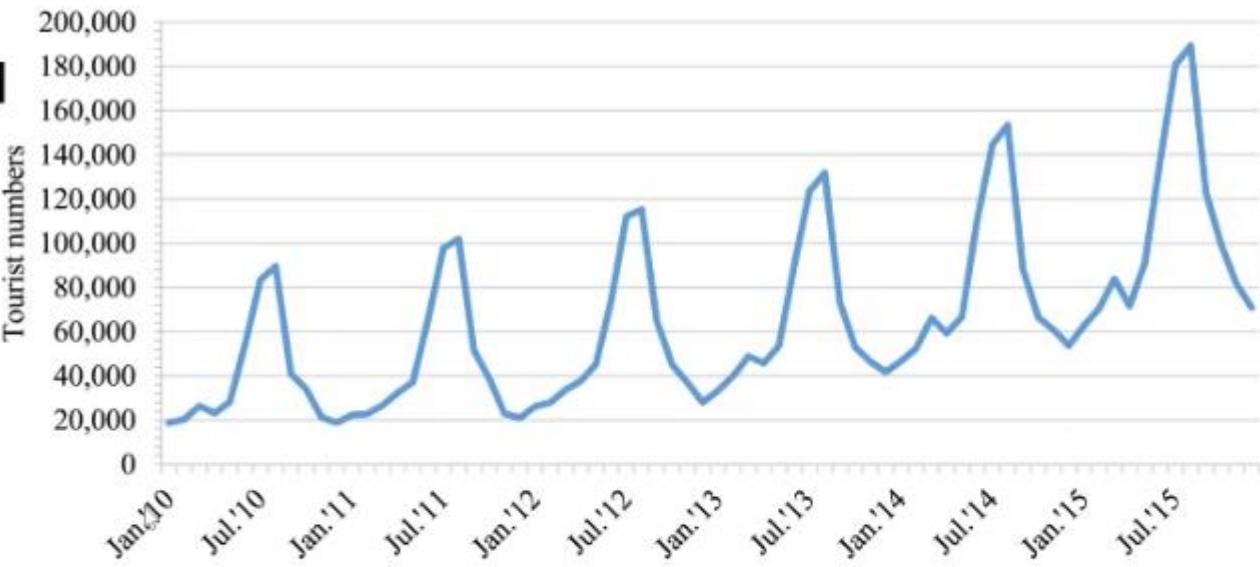


Source: <https://en.wikipedia.org/wiki/Seasonality>

## Seasonality of temperature

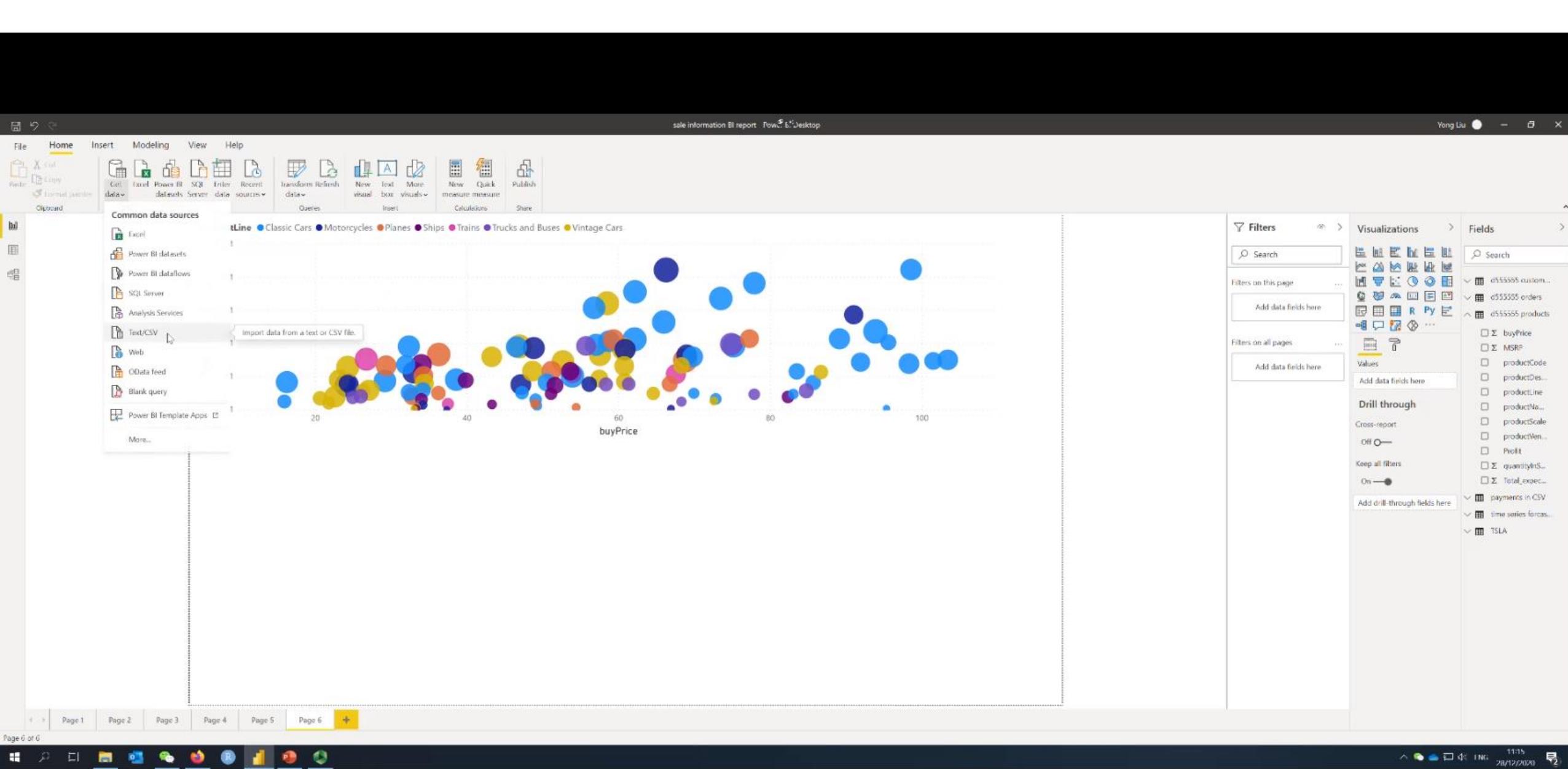


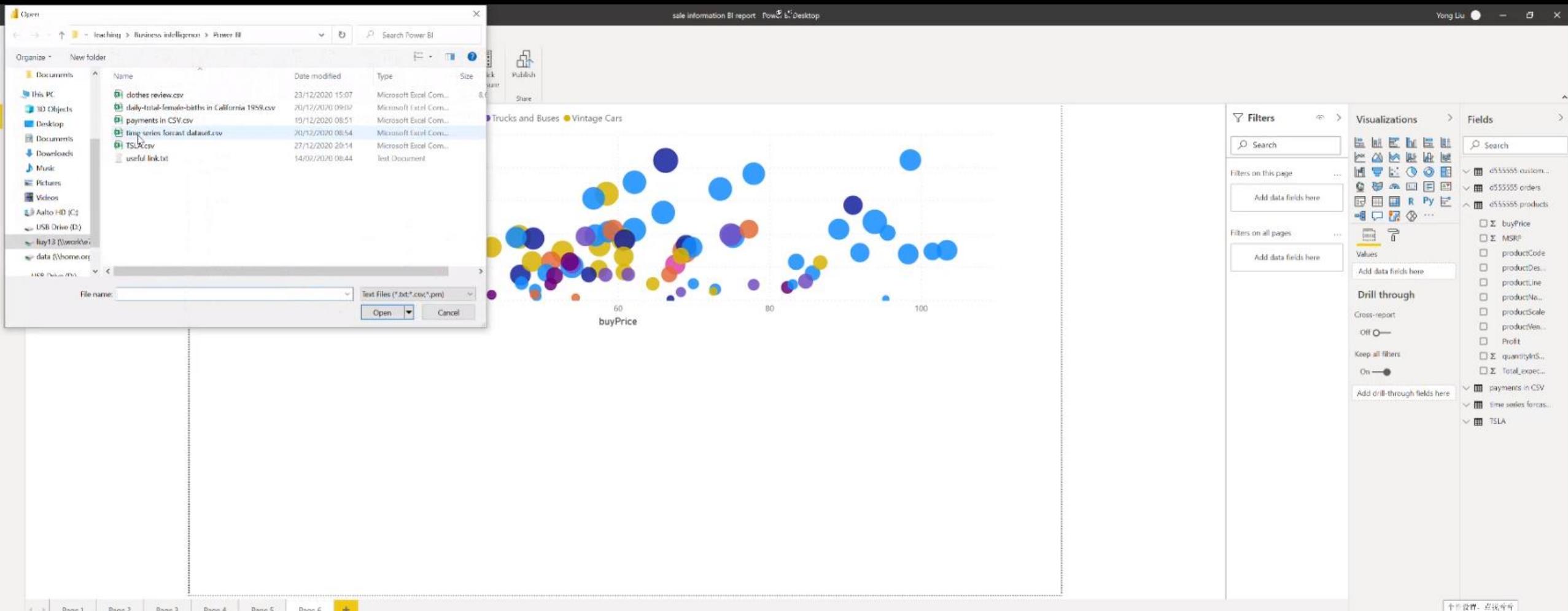
## Seasonality of tourism in Iceland



Source: [https://training.weather.gov/pds/climate/pcu2/statistics/Stats/part1/CTS\\_SeaVar.htm](https://training.weather.gov/pds/climate/pcu2/statistics/Stats/part1/CTS_SeaVar.htm)

Gyða Þórhallsdóttir, Rögnvaldur Ólafsson (2017). A method to analyse seasonality in the distribution of tourists in Iceland, Journal of Outdoor Recreation and Tourism, Volume 19, Pages 17-24





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Yong Liu

File Home Insert Modeling View Help

Get data Excel Power BI datasets Server Import data Recent sources Transform data Refresh data New visual Text box More visuals Insert Now measure Quick measure Calculators Share

productLine ● Classic Cars ● Motorcycles ● Planes ● Ships ● Trains ● Trucks

Total\_expected\_profit

time series forecast dataset.csv

File Origin Delimiter Data Type Detection

1252: Western European (Windows) Comma Based on first 200 rows

Month	Sunspots
1749-01	58
1749-02	62.6
1749-03	70
1749-04	55.7
1749-05	85
1749-06	83.5
1749-07	94.8
1749-08	66.3
1749-09	75.9
1749-10	75.5
1749-11	258.6
1749-12	85.2
1750-01	73.3
1750-02	75.9
1750-03	89.2
1750-04	88.3
1750-05	90
1750-06	100
1750-07	85.4
1750-08	103

The data in the preview has been truncated due to size limits.

Load Transform Data Cancel

Filters Visualizations Fields

Add data fields here

Add data fields here

Add data fields here

Add drill-through fields here

Drill through

Cross-report

Off

Keep all filters

On

values

buyPrice

MSRP

productCode

productDes...

productLine

productN...

productSale

productVen...

Profit

quantityInSt...

Total\_expec...

payments\_in\_CSV

time\_series\_for...

TSLA

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11:15 28/12/2020

sale information BI report - Power BI Desktop

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File Home Insert Modeling View Help

Get data Data Sources Recent

Queries

Close & Apply New Rename Data Manage Refresh Advanced Editor Properties Choose Columns Remove Rows Keep Rows Remove Rows Reduce Rows Sort Split Column Group By Data Type Text Decimal Number Fixed decimal number Whole Number Percentage Date/Time Date Time Date/Time/Timezone Duration Text True/False Binary Merge Queries Append Queries Text Analytics Vision Combine Files Azure Machine Learning Combine AI insights

There are pending changes in your queries that haven't been applied.

1.0M  
0.8M  
0.6M  
0.4M  
0.2M  
0.0M Total expected profit

20 1.2 Sunsets

Month

	Month	Total expected profit
1	1749-01	58
2	1749-02	62.6
3	1749-03	70
4	1749-04	55.7
5	1749-05	85
6	1749-06	88.5
7	1749-07	94.8
8	1749-08	66.3
9	1749-09	75.9
10	1749-10	75.5
11	1749-11	158.6
12	1749-12	85.2
13	1750-01	73.3
14	1750-02	75.9
15	1750-03	89.2
16	1750-04	88.3
17	1750-05	90
18	1750-06	100
19	1750-07	85.4
20	1750-08	103
21	1750-09	91.2
22	1750-10	65.7
23	1750-11	68.3
24	1750-12	75.4
25	1751-01	70
26	1751-02	43.5
27	1751-03	45.8
28	1751-04	56.4
29	1751-05	60.7
30	1751-06	50.7
31	1751-07	66.8
32	1751-08	59.8
33	1751-09	21.5

2 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 11:15

Visualizations Fields

Search

d55555 custom...  
d55555 orders  
d55555 products  
Σ buyPrice  
Σ MSRP  
productCode  
productDes...  
productLine  
productNo...  
productScale  
productVen...  
Profit  
quantityInSt...  
Σ Total\_expec...  
payments in CSV  
time series forcas...  
TSLA

Add data fields here

Drill through

Cross-report

Off

Keep all filters

On

Add drill-through fields here

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Page 6 of 6

Windows Taskbar

11:16 28/12/2020

sale information BI report - Power BI Desktop

Yong Liu

File Home Insert Modeling View Help

Get data: Excel, Power BI, SQL Server, Data sources, Clipboard, External provider

Queries [7]

1.0M  
0.8M  
0.6M  
0.4M  
0.2M  
0.0M

Total\_expected\_profit

20

1.0M  
0.8M  
0.6M  
0.4M  
0.2M  
0.0M

1.1. Month 1.2. Sunspots

	1.1. Month	1.2. Sunspots
1	1749-01	58
2	1749-02	62.6
3	1749-03	70
4	1749-04	55.7
5	1749-05	85
6	1749-06	88.5
7	1749-07	94.8
8	1749-08	66.3
9	1749-09	
10	1749-10	
11	1749-11	
12	1749-12	
13	1750-01	
14	1750-02	
15	1750-03	
16	1750-04	
17	1750-05	
18	1750-06	100
19	1750-07	85.4
20	1750-08	103
21	1750-09	91.2
22	1750-10	65.7
23	1750-11	63.8
24	1750-12	75.4
25	1751-01	70
26	1751-02	43.5
27	1751-03	45.8
28	1751-04	56.4
29	1751-05	60.7
30	1751-06	50.7
31	1751-07	66.8
32	1751-08	59.8
33	1751-09	21.5

2 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 11:15

Change Column Type

The selected column has an existing type conversion. Would you like to replace the existing conversion, or preserve the existing conversion and add the new conversion as a separate step?

Replace current Add new step Cancel

Visualizations Fields

Properties Name: time series forecast dataset (2)

Applied Steps Source Promoted Headers Changed Type

Drill through Cross-report Off Keep all filters On

Add drill-through fields here

Values Add data fields here

payments in CSV d55555 customers d55555 orders d55555 products TSLA

buyPrice MSRP productCode productDes... productLine productN... productScale productVen... Profit quantityInSt... Total\_expec...

payments in CSV time series forecast dataset (2) TSLA

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11:16 28/12/2020

sale information BI report - Power BI Desktop

Yong Liu

File Home Insert Modeling View Help

Get data: Excel, Power BI datasets, Server, data sources, Data, Transform Refresh, Queries

There are pending changes in your queries that haven't been applied.

1.0M  
0.8M  
0.6M  
0.4M  
0.2M  
0.0M Total\_expected\_profit

20 Month

1.2. Sunspots

Close & Apply Close the Query Editor window and apply any pending changes.

1 d55555 customers  
2 d55555 orders  
3 d55555 products  
4 TSLA  
5 time series forecast dataset  
6 time series forecast dataset

Month	Sunspots
01/01/1749	58
01/02/1749	62.6
01/03/1749	70
01/04/1749	55.7
01/05/1749	85
01/06/1749	83.5
01/07/1749	94.8
01/08/1749	66.3
01/09/1749	25.9
01/10/1749	25.5
01/11/1749	158.6
01/12/1749	85.7
01/01/1750	73.3
01/02/1750	25.9
01/03/1750	89.7
01/04/1750	88.3
01/05/1750	90
01/06/1750	100
01/07/1750	85.4
01/08/1750	103
01/09/1750	91.2
01/10/1750	65.7
01/11/1750	63.3
01/12/1750	75.4
01/01/1751	70
01/02/1751	43.5
01/03/1751	45.3
01/04/1751	56.4
01/05/1751	60.7
01/06/1751	50.7
01/07/1751	66.3
01/08/1751	59.8
01/09/1751	21.5

2 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 11:16

Visualizations Fields

Properties Name: time series forecast dataset (2)

Applied Steps Source: Promoted Headers: Changed Type

Values Add data fields here

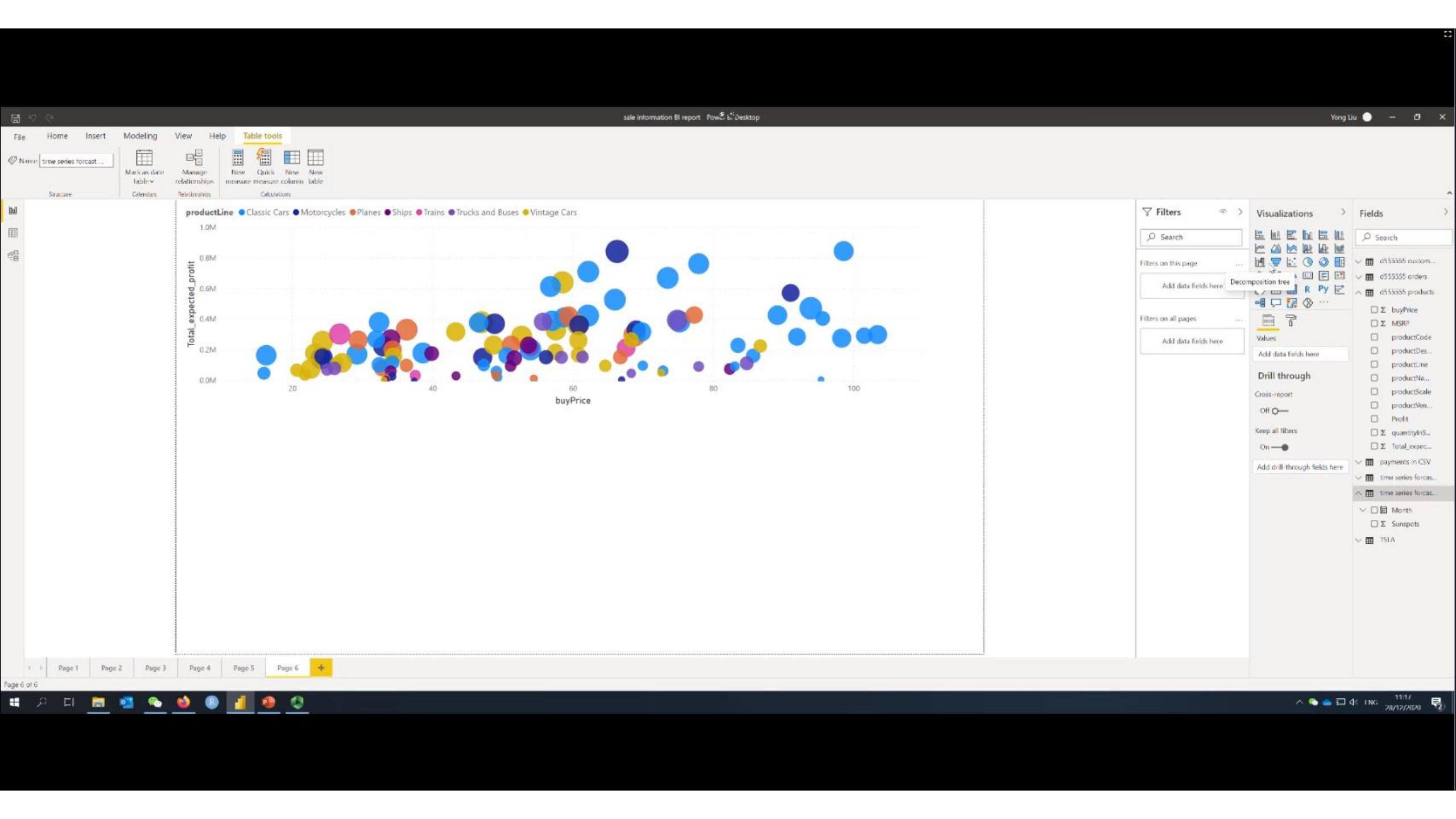
Drill through Cross-report Off Keep all filters On Add drill-through fields here

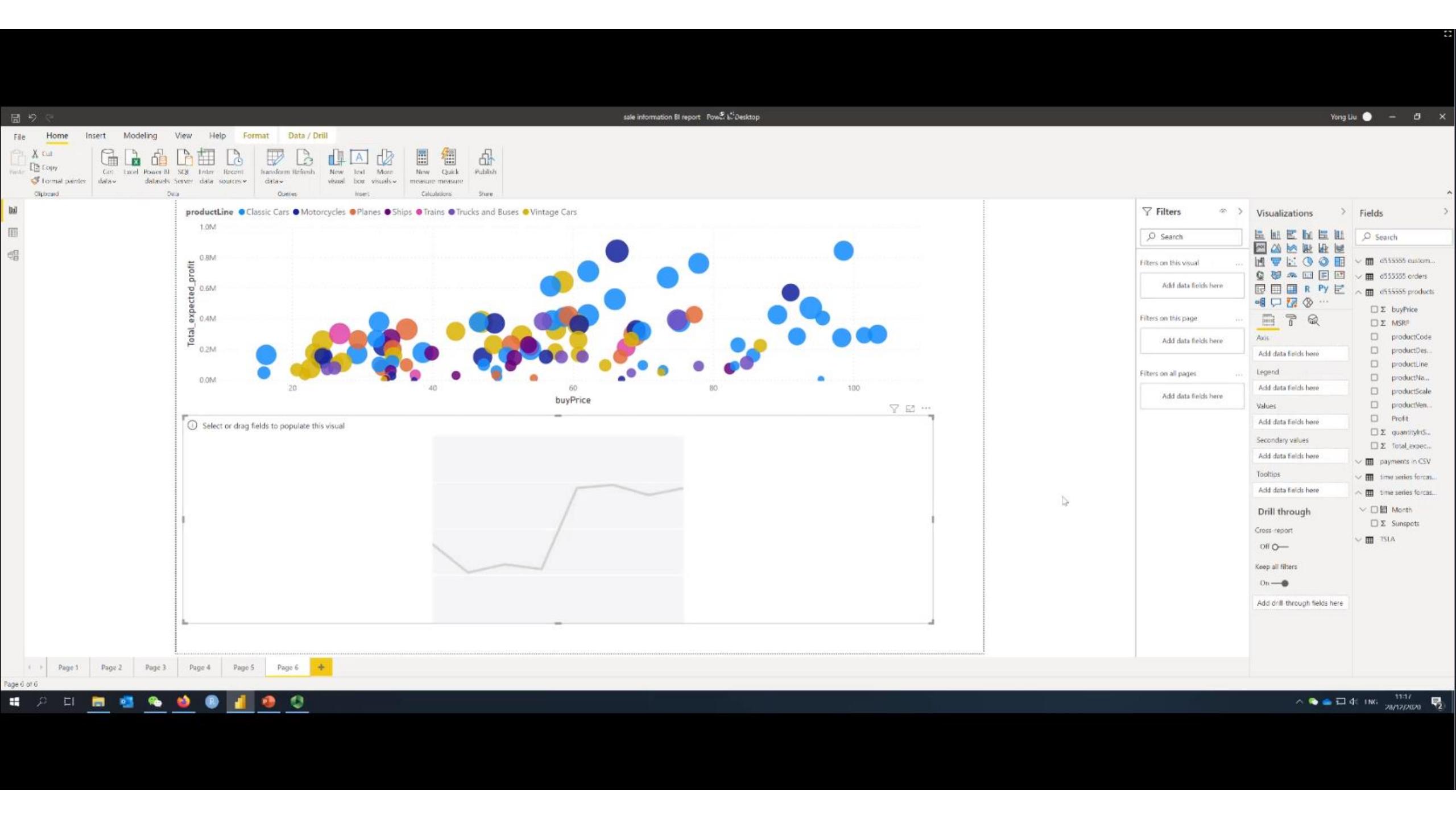
ds55555 custom... ds55555 orders ds55555 products

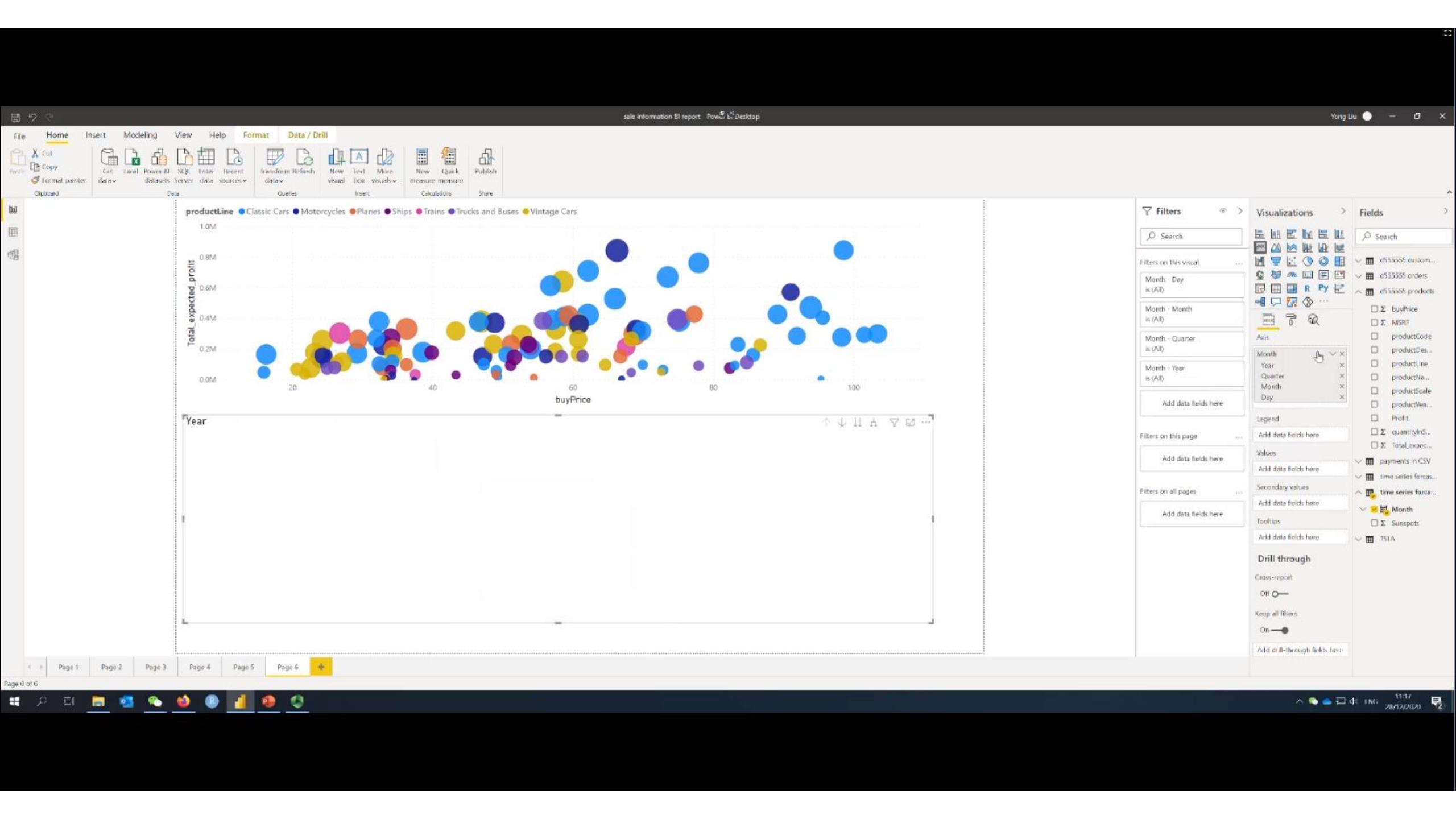
Σ buyPrice Σ MSRP productCode productDes... productLine productN... productScale productVen... Profit quantityInS... Σ Total\_expec... payments in CSV time series for... TSLA

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Windows Taskbar: Edge, File Explorer, Firefox, R, P, File, Home, View, Help, 11:17 28/12/2020







sale information BI report - Power BI Desktop

Yong Liu

File Home Insert Modeling View Help Format Data / Drill

Find Cut Copy Cell Data Power BI SCB Enter Recent transform New Insert More measure measure Publish

Normal editor Data Queries Insert Calculations Share

productLine ● Classic Cars ● Motorcycles ● Planes ● Ships ● Trains ● Trucks and Buses ● Vintage Cars

Total expected profit

buyPrice

Sunspots by Year

Year

Filters

Visualizations

Fields

Search

Filters on this visual

- Month - Day is (All)
- Month - Month is (All)
- Month - Quarter is (All)
- Month - Year is (All)
- Sunspots is (All)

Add data fields here

Axis

Month

Year

Quarter

Month

Day

Legend

Add data fields here

Values

Sunspots

Secondary values

Add data fields here

Filters on all pages

Add data fields here

Tooltips

Add data fields here

Drill through

Cross-report

Off

Keep all filters

On

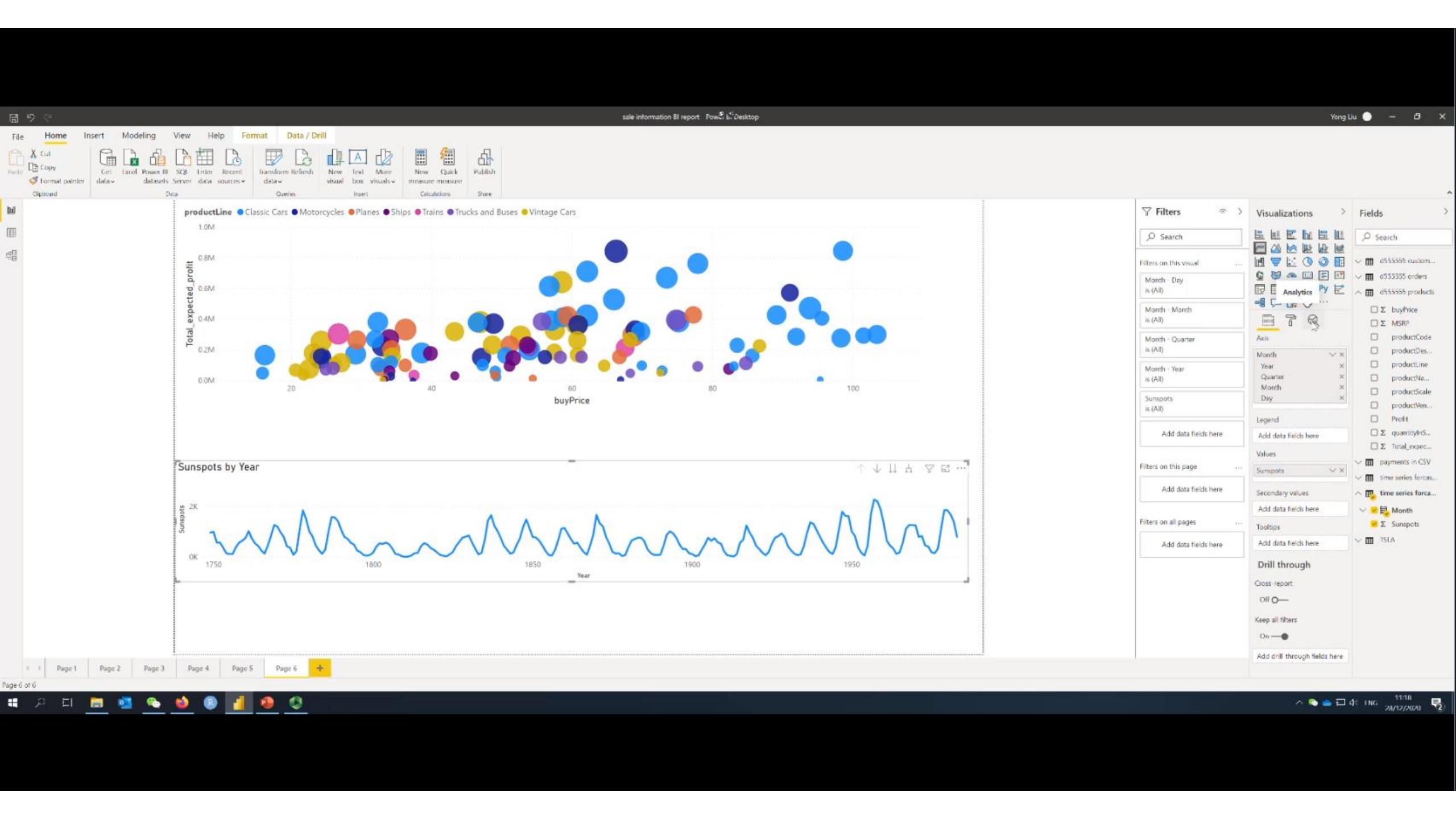
Add drill through fields here

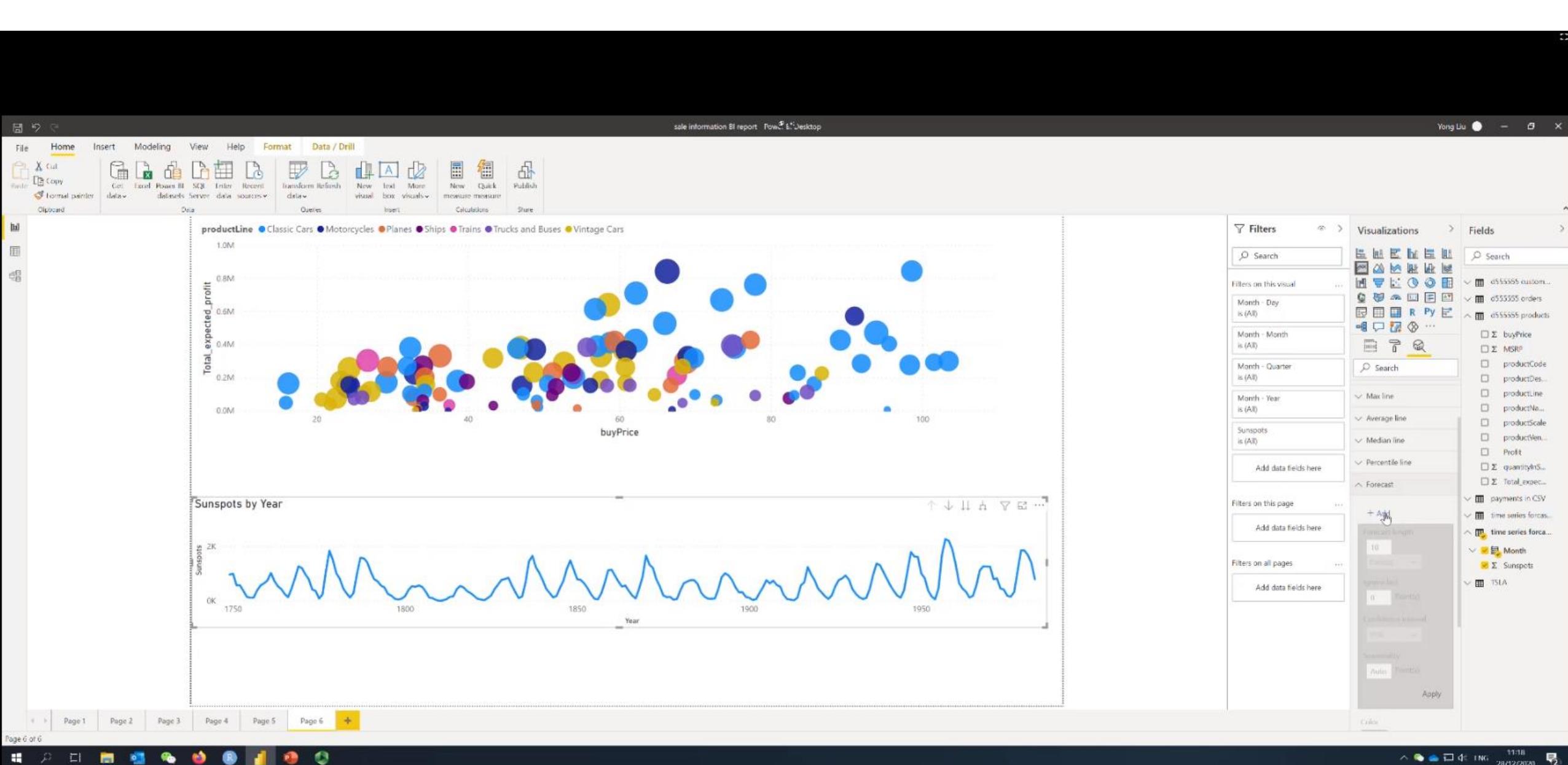
Page 1 Page 2 Page 3 Page 4 Page 5 Page 6 +

Page 6 of 6

11:17 28/12/2020

The screenshot displays the Microsoft Power BI Desktop application. At the top, the ribbon menu includes File, Home, Insert, Modeling, View, Help, Format, Data / Drill, and various data source and visualization icons. The main workspace contains two visualizations: a bubble chart titled "Total expected profit" with "buyPrice" on the x-axis and "Total expected profit" on the y-axis, and a line chart titled "Sunspots by Year" with "Year" on the x-axis and "Sunspots" on the y-axis. Below the charts, a navigation bar shows pages from 1 to 6, with "Page 6" highlighted. To the right of the workspace is the "Fields" pane, which lists data fields categorized under "Visualizations" and "Filters". The "Visualizations" section includes fields like "buyPrice", "MSRP", "productCode", etc., and the "Filters" section includes fields like "Month - Day", "Month - Month", "Month - Quarter", "Month - Year", and "Sunspots". The "Fields" pane also contains sections for "Add data fields here", "Values", "Secondary values", "Add data fields here", "Filters on all pages", "Add data fields here", "Tooltips", "Add data fields here", "Drill through", "Cross-report", "Off", "Keep all filters", "On", and "Add drill through fields here". The bottom of the screen shows the Windows taskbar with various pinned icons and the system clock indicating the time as 11:17 on December 28, 2020.











sale information BI report - Power BI Desktop

Yong Lu

File Home Help Table tools Column tools

Name: Month, Data type: Date, Format: 14 March 2001 (dd-mm-yy), Summarization: Don't summarize, Data category: Uncategorized, Sort by column, Sort, Data groups, Manage relationships, New column, Calculations.

Structure, Formating, Properties.

Month: Sunspots

Sort ascending, Sort descending, Clear sort, Clear filter, Clear all filters, Date filters.

(Select all), 01 January 1749, 01 February 1749, 01 March 1749, 01 April 1749, 01 May 1749, 01 June 1749, 01 July 1749, 01 August 1749, 01 September 1749, 01 October 1749, 01 November 1749, 01 December 1749, 01 January 1750, 01 February 1750, 01 March 1750, 01 April 1750, 01 May 1750, 01 June 1750, 01 July 1750, 01 August 1750, 01 September 1750, 01 October 1750, 01 November 1750, 01 December 1750, 01 January 1811, 01 February 1811, 01 March 1811, 01 April 1811, 01 May 1811, 01 June 1811, 01 August 1811, 01 April 1812, 01 January 1812, 01 December 1812.

Cancel, OK.

Fields

Search

d555555 custom..., d555555 orders, d555555 products, buyPrice, MSRP, productCode, productDescription, productLine, productName, productScale, productVendor, Profit, quantityInStock, Total\_expected\_pr..., payments in CSV, time series forcas..., time series forcas..., Month, Sunspots, TSLA.

Table: time series forecast dataset (2,820 rows) Column: Month (2,820 distinct values)

11:20 28/12/2020

