

# Lab 2

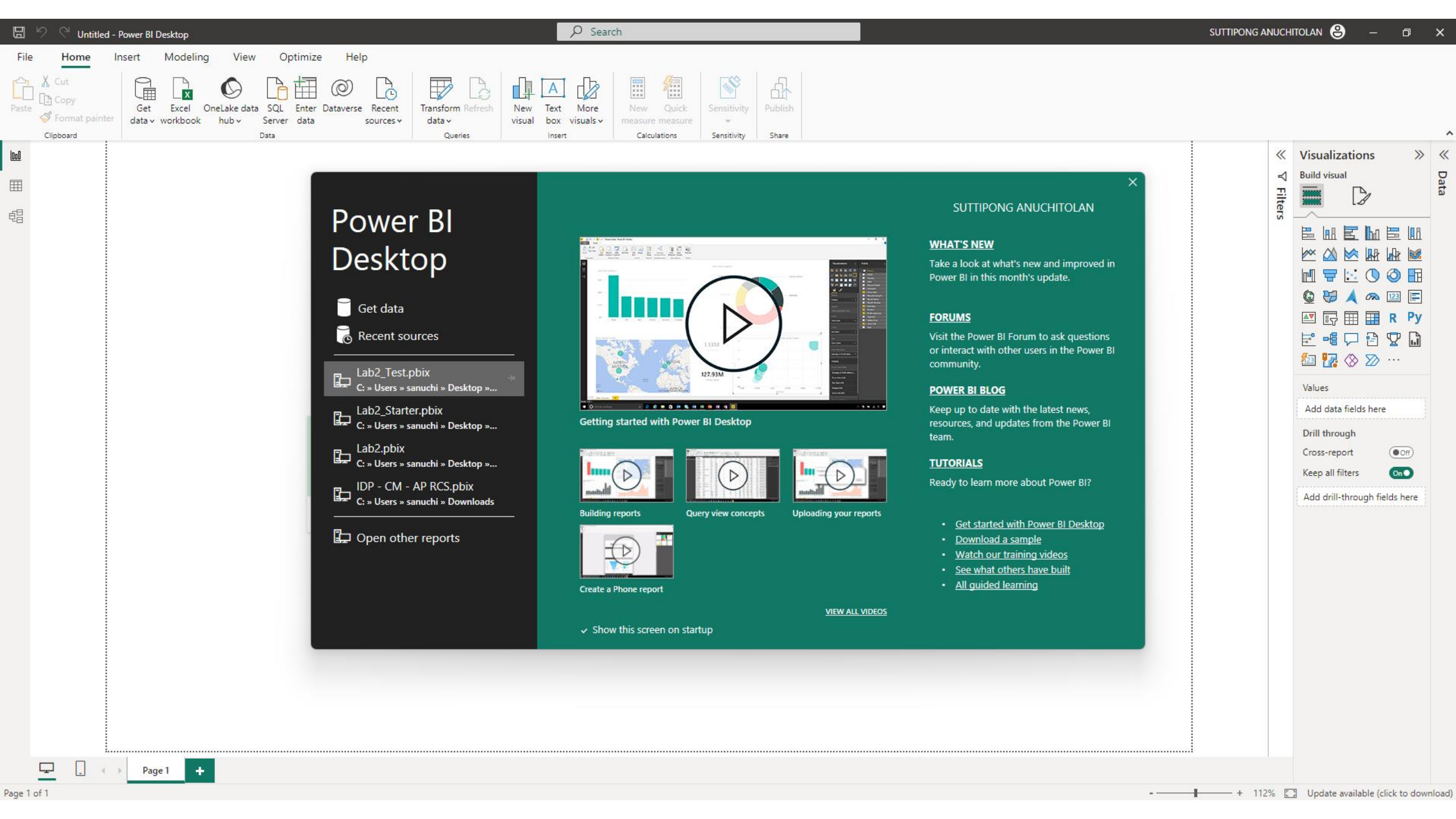
## Visualization

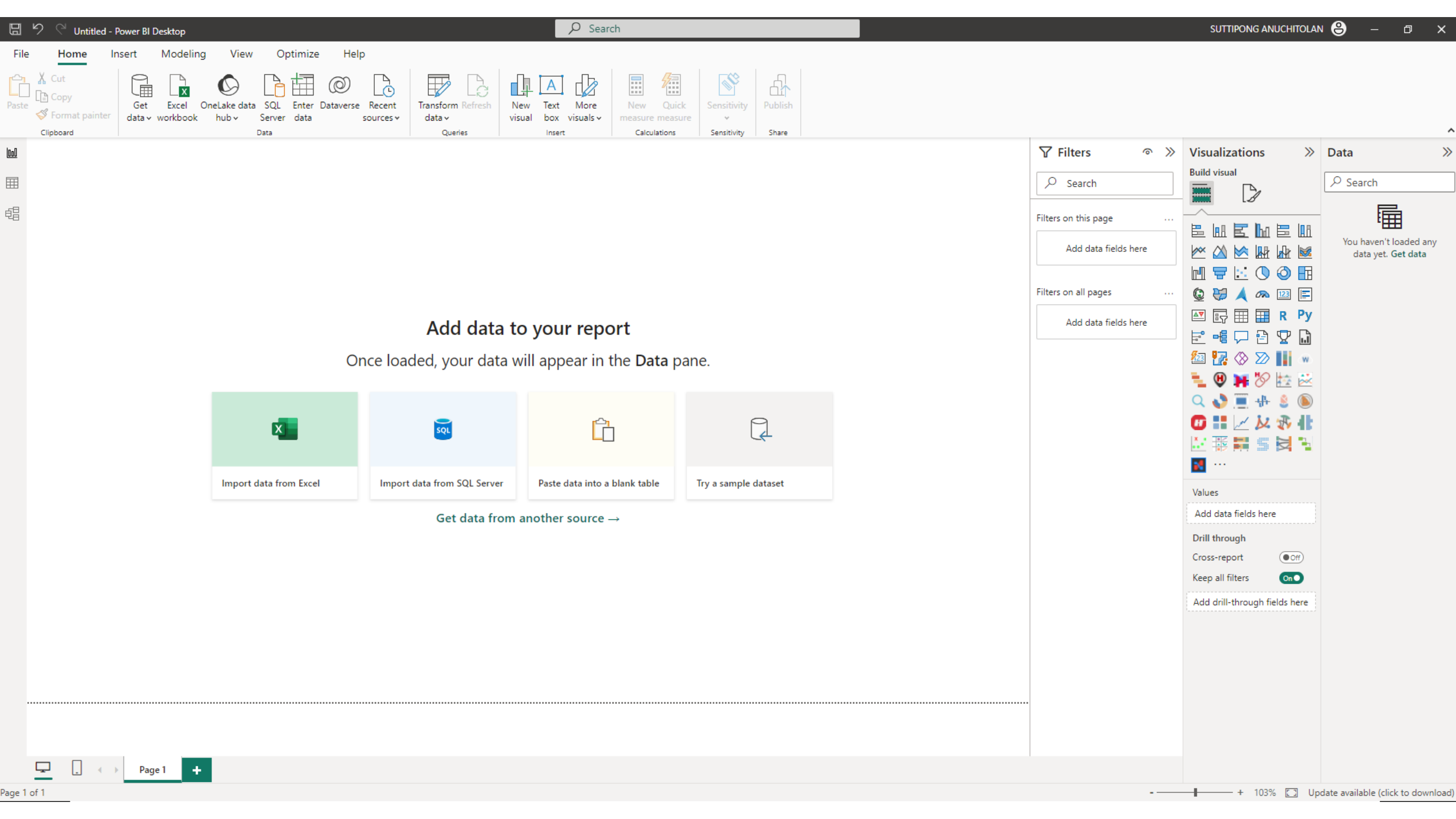
“How well Mr.A Company run the company?”

## **Prerequisite Steps**

- 1.Import CSV file generated from Lab1
- 2.Clean up data (if needed)
- 3.Create needed calculated field (if needed)
- 4.Create Relationship between models using Keys
- 5.Let's Go!

Let's Quickly Go through PowerBI





Lab2\_Test - Power BI Desktop

Search

SUTTIPONG ANUCHITOLAN

FileHomeHelpTable tools

NameLinItem

Structure

Mark as date table

Manage relationships

New measure

Quick measure

New column

New table

L\_ORDERKEY

L\_PARTKEY

L\_SUPPKEY

L\_LINENUMBER

L\_QUANTITY

L\_EXTENDEDPRICE

L\_DISCOUNT

L\_TAX

L\_RETURNFLAG

L\_LINESTATUS

L\_SHIPDATE

L\_COMMITDATE

L\_RECEIPTDATE

L\_SHIPINS\*

605185

21356

1357

1

7

8941.45

0.07

0.02

R

F

Saturday, July 10, 1993

Thursday, June 17, 1993

Thursday, July 29, 1993

COLLECT

609154

60564

5577

1

8

12196.48

0.09

0.02

R

F

Sunday, April 4, 1993

Friday, April 16, 1993

Tuesday, April 20, 1993

COLLECT

615969

17225

4729

1

1

1142.22

0.09

0.02

R

F

Wednesday, August 26, 1992

Sunday, September 6, 1992

Thursday, September 10, 1992

COLLECT

624993

190272

7830

1

15

20434.05

0

0.02

R

F

Thursday, March 26, 1992

Sunday, April 12, 1992

Monday, April 6, 1992

COLLECT

634147

9991

7492

1

38

72237.62

0.08

0.02

R

F

Saturday, November 28, 1992

Saturday, January 9, 1993

Wednesday, December 9, 1992

COLLECT

639655

67465

4984

1

24

34379.04

0.04

0.02

R

F

Monday, March 6, 1995

Sunday, March 19, 1995

Thursday, March 30, 1995

COLLECT

641062

149714

9715

1

16

28219.36

0.09

0.02

R

F

Tuesday, August 30, 1994

Saturday, August 27, 1994

Thursday, September 1, 1994

COLLECT

645511

152270

9816

1

31

40990.37

0.06

0.02

R

F

Saturday, June 5, 1993

Friday, July 2, 1993

Friday, June 11, 1993

COLLECT

656421

147537

52

1

20

31690.6

0.03

0.02

R

F

Monday, May 25, 1992

Tuesday, June 30, 1992

Monday, June 15, 1992

COLLECT

663876

186389

8908

1

1

1475.38

0.05

0.02

R

F

Monday, January 27, 1992

Wednesday, March 25, 1992

Sunday, February 23, 1992

COLLECT

668416

18852

1354

1

27

47812.95

0.09

0.02

R

F

Thursday, March 31, 1994

Monday, May 16, 1994

Friday, April 8, 1994

COLLECT

684674

140861

3376

1

40

76074.4

0.02

0.02

R

F

Sunday, April 4, 1993

Wednesday, February 24, 1993

Saturday, April 24, 1993

COLLECT

685478

77234

4756

1

33

39970.59

0.1

0.02

R

F

Friday, April 8, 1994

Sunday, April 17, 1994

Friday, April 22, 1994

COLLECT

685955

165465

5466

1

12

18365.52

0.02

0.02

R

F

Thursday, August 20, 1992

Saturday, October 3, 1992

Monday, September 7, 1992

COLLECT

689733

24210

6713

1

13

14744.73

0.07

0.02

R

F

Thursday, January 30, 1992

Thursday, March 26, 1992

Friday, February 14, 1992

COLLECT

693025

150273

5304

1

20

26465.4

0.06

0.02

R

F

Monday, August 16, 1993

Sunday, November 7, 1993

Friday, August 20, 1993

COLLECT

707527

127234

2259

1

19

23963.37

0.07

0.02

R

F

Thursday, December 9, 1993

Sunday, December 12, 1993

Saturday, December 11, 1993

COLLECT

709156

75961

3483

1

28

54234.88

0.08

0.02

R

F

Saturday, June 18, 1994

Saturday, July 9, 1994

Tuesday, July 12, 1994

COLLECT

714210

83335

3336

1

39

51414.87

0.08

0.02

R

F

Friday, October 22, 1993

Sunday, December 19, 1993

Saturday, October 23, 1993

COLLECT

715331

2628

2629

1

32

48979.84

0.1

0.02

R

F

Tuesday, November 2, 1993

Friday, November 26, 1993

Sunday, November 7, 1993

COLLECT

716933

106106

1127

1

18

20017.8

0.1

0.02

R

F

Sunday, November 29, 1992

Tuesday, December 15, 1992

Saturday, December 12, 1992

COLLECT

720071

180915

3434

1

35

69856.85

0.07

0.02

R

F

Thursday, January 19, 1995

Monday, December 12, 1994

Saturday, February 4, 1995

COLLECT

724512

81886

9411

1

45

84054.6

0.05

0.02

R

F

Tuesday, August 9, 1994

Saturday, September 3, 1994

Wednesday, September 7, 1994

COLLECT

728546

98506

6034

1

21

31594.5

0.03

0.02

R

F

Thursday, October 21, 1993

Tuesday, August 3, 1993

Monday, October 25, 1993

COLLECT

731045

182854

409

1

14

27115.9

0.03

0.02

R

F

Wednesday, May 4, 1994

Friday, May 13, 1994

Sunday, May 22, 1994

COLLECT

734114

113124

658

1

31

35250.72

0.05

0.02

R

F

Sunday, January 8, 1995

Thursday, February 23, 1995

Sunday, January 22, 1995

COLLECT

734435

199536

7094

1

37

60514.61

0.08

0.02

R

F

Friday, July 10, 1992

Monday, June 8, 1992

Friday, July 24, 1992

COLLECT

738566

51480

6491

1

49

70142.52

0.03

0.02

R

F

Thursday, September 10, 1992

Monday, August 10, 1992

Wednesday, September 30, 1992

COLLECT

745920

142876

5391

1

28

53728.36

0.04

0.02

R

F

Saturday, November 26, 1994

Sunday, January 1, 1995

Thursday, December 15, 1994

COLLECT

746177

24256

9261

1

46

54291.5

0

0.02

R

F

Wednesday, August 5, 1992

Sunday, July 12, 1992

Thursday, September 3, 1992

COLLECT

763872

151918

4434

1

24

47277.84

0.07

0.02

R

F

Wednesday, April 20, 1994

Sunday, May 1, 1994

Saturday, April 23, 1994

COLLECT

764227

38279

8280

1

46

55994.42

0.07

0.02

R

F

Wednesday, March 1, 1995

Sunday, March 12, 1995

Wednesday, March 29, 1995

COLLECT

765121

70233

234

1

48

57755.04

0.02

0.02

R

F

Monday, February 22, 1993

Saturday, January 23, 1993

Sunday, February 28, 1993

COLLECT

767616

185922

5923

1

47

94372.24

0.09

0.02

R

F

Thursday, February 27, 1992

Tuesday, February 25, 1992

Monday, March 16, 1992

COLLECT

774951

141155

1156

1

29

34688.35

0.02

0.02

R

F

Friday, September 17, 1993

Tuesday, October 19, 1993

Friday, September 24, 1993

COLLECT

779073

121219

8756

1

12

14882.52

0.02

0.02

R

F

Saturday, August 8, 1992

Monday, September 7, 1992

Tuesday, August 18, 1992

COLLECT

781313

197588

5146

1

45

75851.1

0.02

0.02

R

F

Monday, May 31, 1993

Sunday, June 6, 1993

Monday, June 14, 1993

COLLECT

Search

LinItem

Order\_Customer\_Nation\_Region

Part

Part\_Supplier

Supplier\_Nation\_Region

Table: LinItem (816,160 rows)

Update available (click to download)

FileHomeHelpTable tools

NameLinItem

Structure

Mark as date table  
Calendars

Manage relationships  
Relationships

New measure

Quick measure

New column

New table

Calculations

L_ORDERKEY	L_PARTKEY	L_SUPPKEY	L_LINENUMBER	L_QUANTITY	L_EXTENDEDPRICE	L_DISCOUNT	L_TAX	L_RETURNFLAG	L_LINESTATUS	L_SHIPDATE	L_COMMITDATE	L_RECEIPTDATE	L_SHIPINSTRUCTIONS
605185	21356	1357	1	7	8941.45	0.07	0.02	R	F	Saturday, July 10, 1993	Thursday, June 17, 1993	Thursday, July 29, 1993	COLLECT
609154	60564	5577	1	8	12196.48	0.09	0.02	R	F	Sunday, April 4, 1993	Friday, April 16, 1993	Tuesday, April 20, 1993	COLLECT
615969	17225	4729	1	1	1142.22	0.09	0.02	R	F	Wednesday, August 26, 1992	Sunday, September 6, 1992	Thursday, September 10, 1992	COLLECT
624993	190272	7830	1	15	20434.05	0	0.02	R	F	Thursday, March 26, 1992	Sunday, April 12, 1992	Monday, April 6, 1992	COLLECT
634147	9991	7492	1	38	72237.62	0.08	0.02	R	F	Saturday, November 28, 1992	Saturday, January 9, 1993	Wednesday, December 9, 1992	COLLECT
639655	67465	4984	1	24	34379.04	0.04	0.02	R	F	Monday, March 6, 1995	Sunday, March 19, 1995	Thursday, March 30, 1995	COLLECT
641062	149714	9715	1	16	28219.36	0.09	0.02	R	F	Tuesday, August 30, 1994	Saturday, August 27, 1994	Thursday, September 1, 1994	COLLECT
645511	152270	9816	1	31	40990.37	0.06	0.02	R	F	Saturday, June 5, 1993	Friday, July 2, 1993	Friday, June 11, 1993	COLLECT
656421	147537	52	1	20	31690.6	0.03	0.02	R	F	Monday, May 25, 1992	Tuesday, June 30, 1992	Monday, June 15, 1992	COLLECT
663876	186389	8908	1	1	1475.38	0.05	0.02	R	F	Monday, January 27, 1992	Wednesday, March 25, 1992	Sunday, February 23, 1992	COLLECT
668416	18852	1354	1	27	47812.95	0.09	0.02	R	F	Thursday, March 31, 1994	Monday, May 16, 1994	Friday, April 8, 1994	COLLECT
684674	140861	3376	1	40	76074.4	0.02	0.02	R	F	Sunday, April 4, 1993	Wednesday, February 24, 1993	Saturday, April 24, 1993	COLLECT
685478	77234	4756	1	33	39970.59	0.1	0.02	R	F	Friday, April 8, 1994	Sunday, April 17, 1994	Friday, April 22, 1994	COLLECT
685955	165465	5466	1	12	18365.52	0.02	0.02	R	F	Thursday, August 20, 1992	Saturday, October 3, 1992	Monday, September 7, 1992	COLLECT
689733	24210	6713	1	13	14744.73	0.07	0.02	R	F	Thursday, January 30, 1992	Thursday, March 26, 1992	Friday, February 14, 1992	COLLECT
693025	150273	5304	1	20	26465.4	0.06	0.02	R	F	Monday, August 16, 1993	Sunday, November 7, 1993	Friday, August 20, 1993	COLLECT
707527	127234	2259	1	19	23963.37	0.07	0.02	R	F	Thursday, December 9, 1993	Sunday, December 12, 1993	Saturday, December 11, 1993	COLLECT
709156	75961	3483	1	28	54234.88	0.08	0.02	R	F	Saturday, June 18, 1994	Saturday, July 9, 1994	Tuesday, July 12, 1994	COLLECT
714210	83335	3336	1	39	51414.87	0.08	0.02	R	F	Friday, October 22, 1993	Sunday, December 19, 1993	Saturday, October 23, 1993	COLLECT
715331	2628	2629	1	32	48979.84	0.1	0.02	R	F	Tuesday, November 2, 1993	Friday, November 26, 1993	Sunday, November 7, 1993	COLLECT
716933	106106	1127	1	18	20017.8	0.1	0.02	R	F	Sunday, November 29, 1992	Tuesday, December 15, 1992	Saturday, December 12, 1992	COLLECT
720071	180915	3434	1	35	69856.85	0.07	0.02	R	F	Thursday, January 19, 1995	Monday, December 12, 1994	Saturday, February 4, 1995	COLLECT
724512	81886	9411	1	45	84054.6	0.05	0.02	R	F	Tuesday, August 9, 1994	Saturday, September 3, 1994	Wednesday, September 7, 1994	COLLECT
728546	98506	6034	1	21	31594.5	0.03	0.02	R	F	Thursday, October 21, 1993	Tuesday, August 3, 1993	Monday, October 25, 1993	COLLECT
731045	182854	409	1	14	27115.9	0.03	0.02	R	F	Wednesday, May 4, 1994	Friday, May 13, 1994	Sunday, May 22, 1994	COLLECT





	1.2.3 L_ORDERKEY	1.2.3 L_PARTKEY	1.2.3 L_SUPPKEY	1.2.3 L_LINENUMBER	1.2.3 L_QUANTITY	1.2 L_EXTENDEDPRICE	1.2 L_DISCOUNT	1.2 L_TAX
1	600001	112520	7543	1	27	41378.04	0.1	
2	600001	114063	1597	2	8	8616.48	0.06	
3	600001	46739	4252	3	20	33714.6	0.02	
4	600002	79540	7062	1	30	45586.2	0.09	
5	600002	24776	4777	2	8	13606.16	0.01	
6	600002	199892	4931	3	43	85651.27	0.02	
7	600003	177859	2894	1	4	7747.4	0	
8	600003	73006	5514	2	15	14685	0.02	
9	600003	11419	1420	3	10	13304.1	0.05	
10	600003	107975	2996	4	30	59489.1	0.08	
11	600003	126345	8858	5	28	38397.52	0.02	
12	600003	67895	7896	6	22	40983.58	0.03	
13	600003	103355	5866	7	9	12225.15	0.06	
14	600005	40403	2908	1	29	38958.6	0.08	
15	600005	52765	5271	2	41	70428.16	0.1	
16	600005	4890	9891	3	47	84359.83	0.05	
17	600005	179820	4855	4	6	11398.92	0	
18	600005	33712	8719	5	29	47725.59	0.09	
19	600005	190649	8207	6	15	26094.6	0.01	
20	600005	37646	5156	7	47	74431.08	0	
21	600006	113310	5822	1	5	6616.55	0.06	
22	600006	185100	137	2	31	36738.1	0.05	
23	600006	159028	4059	3	43	46741.86	0.01	
24	600006	51908	6919	6	28	52077.2	0.01	
25	600006	10425	5428	7	6	8012.52	0.07	
26	600007	7270	9771	1	38	44736.26	0.03	
27	600007	159652	2168	3	45	77024.25	0.08	
28	600032	97212	4740	1	22	26602.62	0	
29	600033	89876	9877	1	9	16792.83	0.03	
30	600033	131754	6781	2	1	1785.75	0.08	
31	600033	177668	5220	3	24	41895.84	0.02	
32	600033	62694	7707	4	14	23193.66	0.01	
33	600033	89332	1841	5	32	42282.56	0.01	
34	600034	154935	4936	3	12	23879.16	0.04	
35	600034	190435	7993	4	24	36610.32	0.03	
36	600034	34921	7425	5	10	18559.2	0.01	
37	600035	9960	9961	1	10	18699.6	0.08	
38	600035	60033	60033	2	35	40073	0.07	

×

## Name

LineItem

## Source

+

4

Removed Column



Lab2\_Test - Power BI Desktop

Search

SUTTIPONG ANUCHITOLAN

FileHomeHelp

PasteCutCopy

Get dataExcelOneLake data hubSQL ServerEnter dataDataverseRecent sources

Transform Refresh dataQueriesManage relationshipsRelationshipsNew measure columnNew tableCalculationsManage rolesView asSecurityQ&A setupLanguage Linguistic schemaSensitivityPublish

ClipboardDataQueriesRelationshipsCalculationsSecurityQ&A SensitiveShare

Order\_Customer\_Nation\_R...

C\_ACCTBALC\_ADDRESSC\_MKTSEGMENTC\_NAMEC\_NATIONC\_NATIONKEYC\_PHONEC\_REGION

MthO\_CLERKO\_COMMENTO\_CUSTKEYO\_ORDERDATEO\_ORDERKEYO\_ORDERPRIORITYO\_ORDERSTATUSO\_SHIPPRIORITYO\_TOTALPRICECLVGrowth RateLast\_Month\_Sales

Collapse

Part\_Supplier

PS\_AVAILQTYPS\_COMMENTPS\_PARTKEYPS\_SUPPKEYPS\_SUPPLYCOST

Collapse

Supplier\_Nation\_Region

S\_ACCTBALS\_ADDRESSS\_COMMENTS\_NAMES\_NATIONS\_NATIONKEYS\_PHONES\_REGIONS\_SUPPKEY

Collapse

LinItem

L\_COMMENTL\_COMMITDATEL\_DISCOUNTL\_EXTENDEDPRICEL\_LINENUMBERL\_LINESTATUSL\_ORDERKEYL\_PARTKEYL\_QUANTITYL\_RECEIPTDATEL\_RETURNFLAGL\_SHIPDATEL\_SHIPINSTRUCTL\_SHIPMODE

Collapse

Part

DeadStockP\_BRANDP\_COMMENTP\_CONTAINERP\_MFGRP\_NAMEP\_PARTKEYP\_RETAILPRICEP\_SIZE

Collapse

Expand

Data

Search

C\_MKTSEGMENTC\_NAMEC\_NATIONC\_NATIONKEYC\_PHONEC\_REGIONCLVGrowth RateLast\_Month\_SalesMthO\_CLERKO\_COMMENTO\_CUSTKEYO\_ORDERDATEO\_ORDERKEYO\_ORDERPRIORITYO\_ORDERSTATUSO\_SHIPPRIORITYO\_TOTALPRICE

Part

DeadStockP\_BRANDP\_COMMENTP\_CONTAINERP\_MFGRP\_NAMEP\_PARTKEYP\_RETAILPRICEP\_SIZE

Part\_SupplierSupplier\_Nation\_Region

All tables

+

80%

Update available (click to download)

# Power BI Keywords

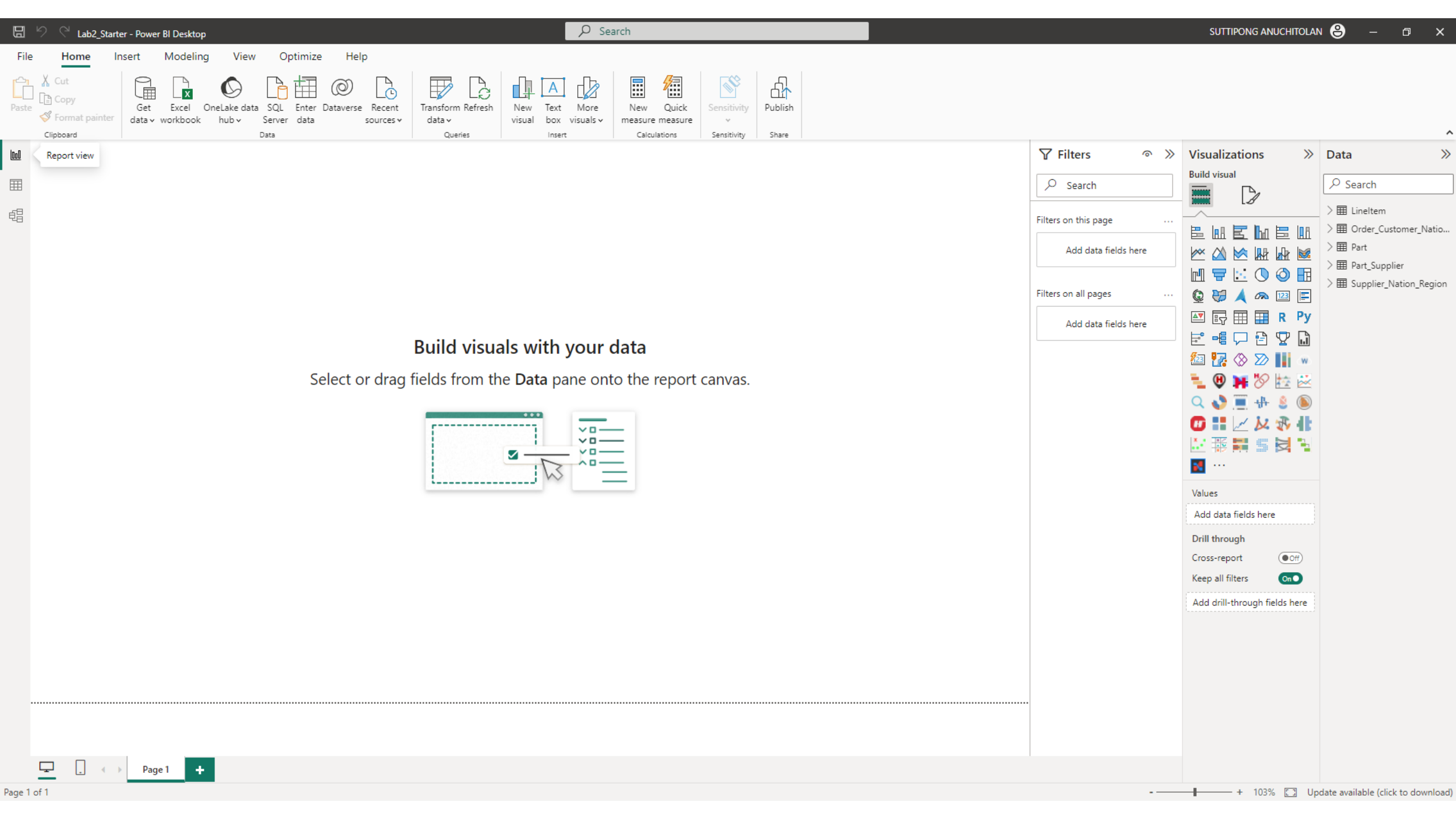
Concept	Description
Table	A collection of data organized into rows and columns, similar to a database table.
Column	A vertical set of data values in a table, representing a specific attribute or field.
Primary Key	A unique identifier for each row in a table. Used to create relationships between tables.
Foreign Key	A column or set of columns in one table that refers to the primary key in another table.
Relationship	A connection between two tables that allows you to combine data from both.
Cardinality	The type of relationship between two tables. Can be one-to-one (1:1), one-to-many (1:∞), or many-to-many (∞:∞).

# Power BI Keywords

Concept	Description
Direction	Indicates the flow of data filtering between related tables. Can be single (one-way) or both (two-way).
Cross Filter	Determines how filters applied in one table affect related tables. Single direction means only one table filters the other, while both directions allow filtering in both directions.
Active Relationship	The primary relationship used for filtering and calculations when there are multiple relationships between the same tables.
Inactive Relationship	Additional relationships between the same tables that are not actively used unless explicitly specified in DAX (Data Analysis Expressions) calculations.
Direction	Indicates the flow of data filtering between related tables. Can be single (one-way) or both (two-way).
Cross Filter	Determines how filters applied in one table affect related tables. Single direction means only one table filters the other, while both directions allow filtering in both directions.

# Relationship Types

Relationship Type	Description	Example
One-to-One (1:1)	Each row in Table A is related to one and only one row in Table B, and vice versa.	Table A: Employees - EmployeeID - Name  Table B: EmployeeDetails - EmployeeID - Address
One-to-Many (1:∞)	Each row in Table A can be related to one or more rows in Table B, but each row in Table B is related to only one row in Table A.	Table A: Departments - DepartmentID - DepartmentName  Table B: Employees - EmployeeID - Name - DepartmentID
Many-to-Many (∞:∞)	Each row in Table A can be related to one or more rows in Table B, and each row in Table B can be related to one or more rows in Table A.	Table A: Students - StudentID - StudentName  Table B: Courses - CourseID - CourseName  Table C: Enrollments (bridge table) - StudentID - CourseID



# Lab 2.1 (Sales KPI Dashboard)

- How well Mr.A Company has been running?
  - Sales Amount over time
    - By Segment
    - By Nation
  - Sales Growth Rate (Delta from Past Month)
  - Customer Numbers overtime
  - Active Sales Rep
  - Best Seller Product
  - Etc;

# Mr.A Sales KPI

0

1

109.94M

Total Sales Amount

726

Total Customers

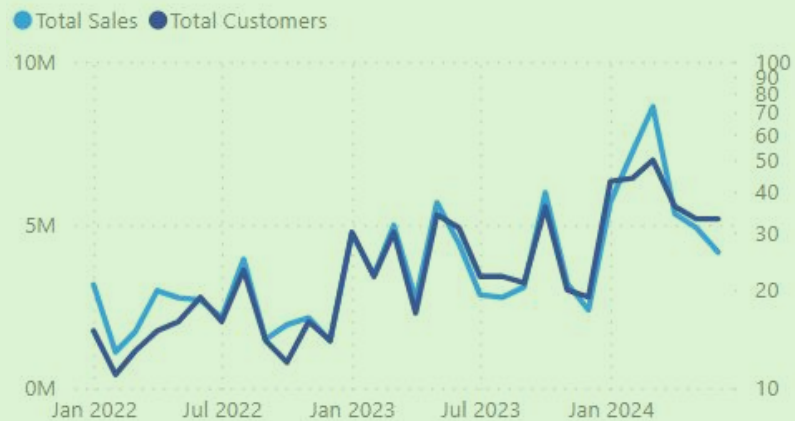
25

Total Customer Countries

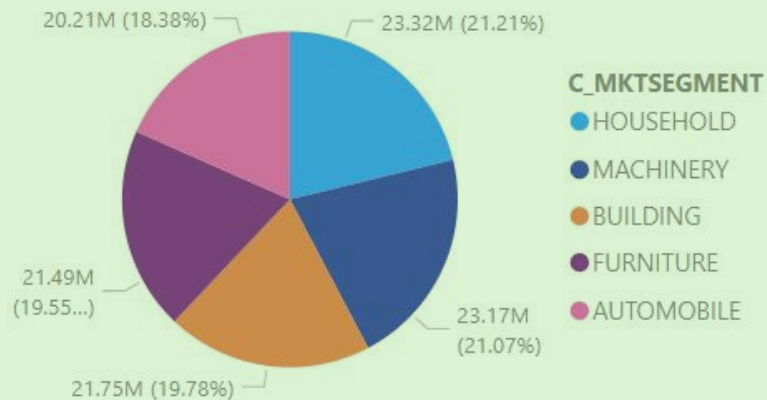
528

Total Active Sales Rep

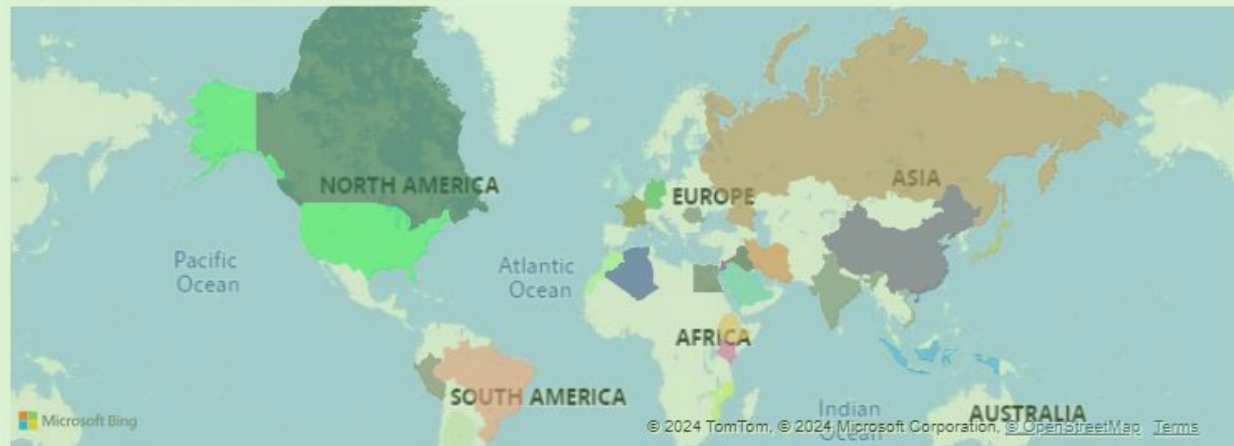
Total Sales and Total Customers by Year and Month



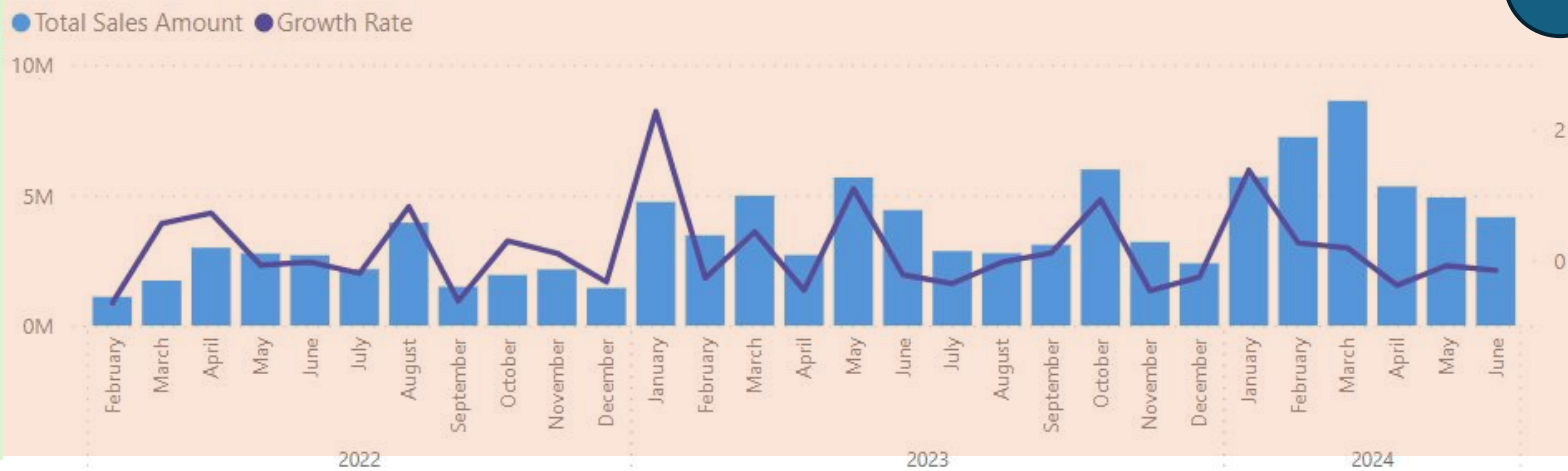
Total Sales Amount by Segment



Total Sales Amount by Countries



Growth Rate by Month

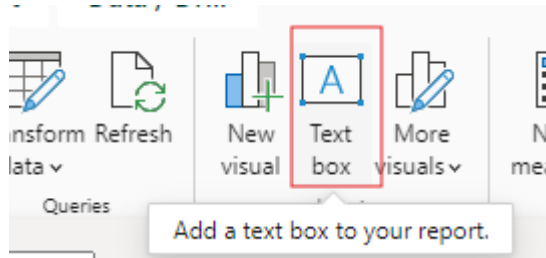


3

4



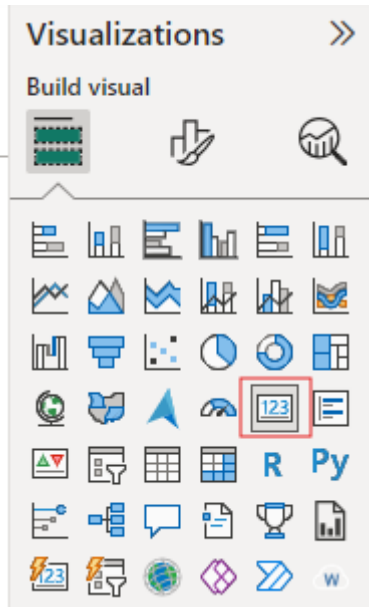
# Step 0) Create Dashboard Title



Select Home -> Text box -> Type "Mr.A Sales KPI".

Then move the text box to the middle top of the dashboard, by clicking at the border of box and drag to the middle.

# Step 1) Create Card Icon Visualization



Select the Card Icon under Visualizations.  
Try drag O\_TOTAL\_PRICE to the fields.

Right click at O\_TOTAL\_PRICE then select “Sum”.

# Step 1) Create Card Icon for each fields

For each of the card viz, use below fields and aggregate logic.

112.61bn  
Sum of O\_TOTALPRICE

Fields

Sum of O\_TOTALPRICE ▾ ×

Drill through

Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

98.79K  
Count of O\_CUSTKEY

Fields

Count of O\_CUSTKEY ▾ ×

Drill through

Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

25  
Count of C\_NATIONKEY

Fields

Count of C\_NATIONKEY ▾ ×

Drill through

Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

1000  
Count of O\_CLERK

Fields

Count of O\_CLERK ▾ ×

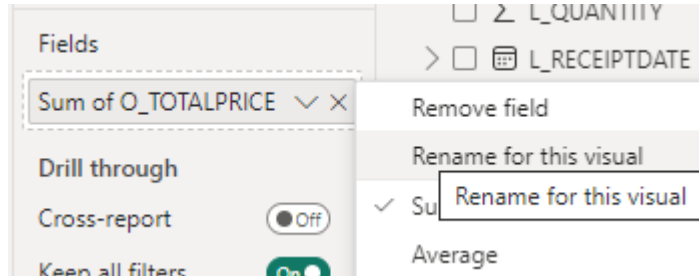
Drill through

Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

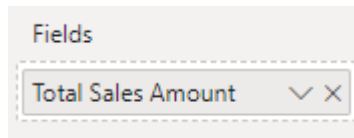
# Step 1) Card Icon – Rename to Total Sales Amount



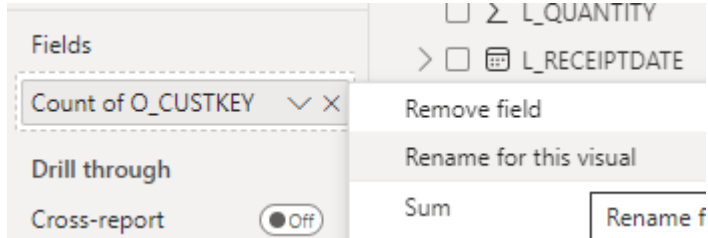
Click Sum of O\_TOTALPRICE card.

Then on the Visualizations, right click at “Sum of O\_TOTALPRICE” field and select Rename for this visual.

Change name to “Total Sales Amount”



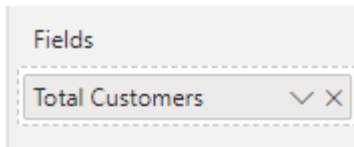
# Step 1) Card Icon – Rename to Total Customers



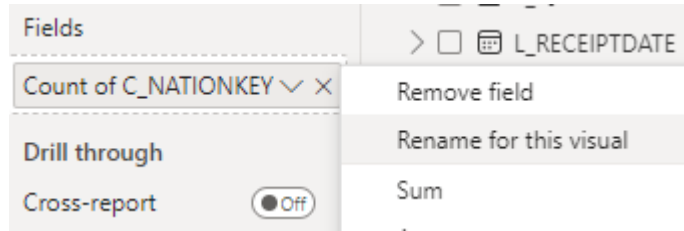
Click Sum of Count of O\_CUSTKEY card.

Then on the Visualizations, right click at “Sum of Count of O\_CUSTKEY” field and select Rename for this visual.

Change name to “Total Customers”



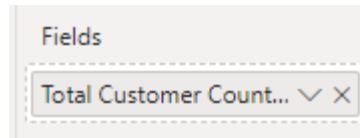
# Step 1) Card Icon – Rename to Total Customer Countries



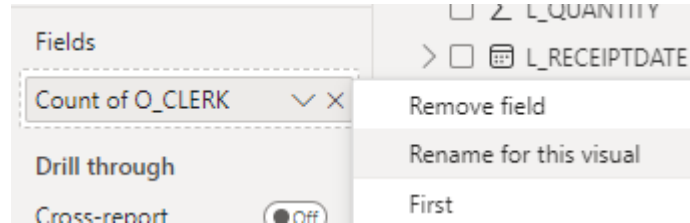
Click Count of C\_NATIONKEY card.

Then on the Visualizations, right click at “Count of C\_NATIONKEY” field and select Rename for this visual.

Change name to “Total Customer Countries”



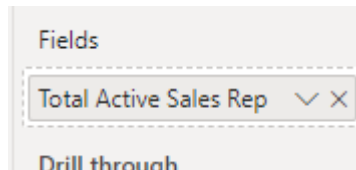
# Step 1) Card Icon - Rename to Total Active Sales Rep



Click Sum of Count of O\_CLERK card.

Then on the Visualizations, right click at “Count of O\_CLERK” field and select Rename for this visual.

Change name to “Total Active Sales Rep”





# Step 1) Card Icon – Put Everything together

End results should look like this

11.35bn

Total Sales Amount

Fields

Total Sales Amount ▾ ×

Drill through

Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

51.27K

Total Customers

Fields

Total Customers ▾ ×

Drill through

Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

25

Total Customer Countries

Fields

Total Customer Count... ▾ ×

Drill through

Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

1000

Total Active Sales Rep

Fields

Total Active Sales Rep ▾ ×

Drill through

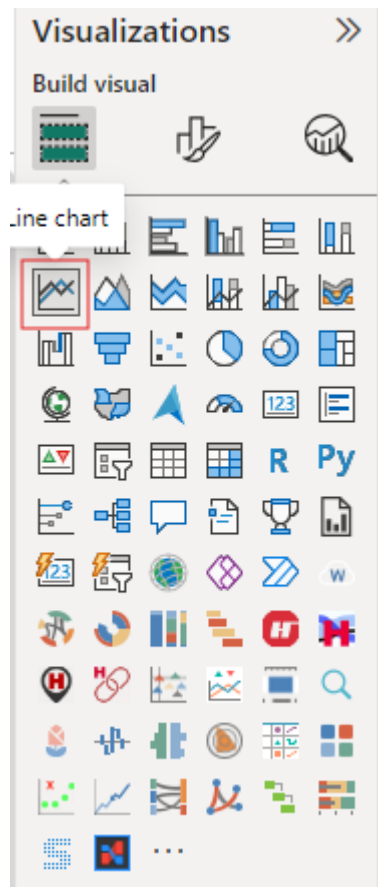
Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

## Step 2) Total Sales and Total Customers by Year and Month

Select Line Chart



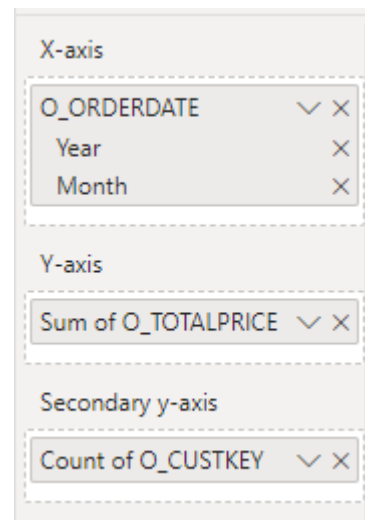
Under Visualizations, select Line chart

Then use the following Settings:

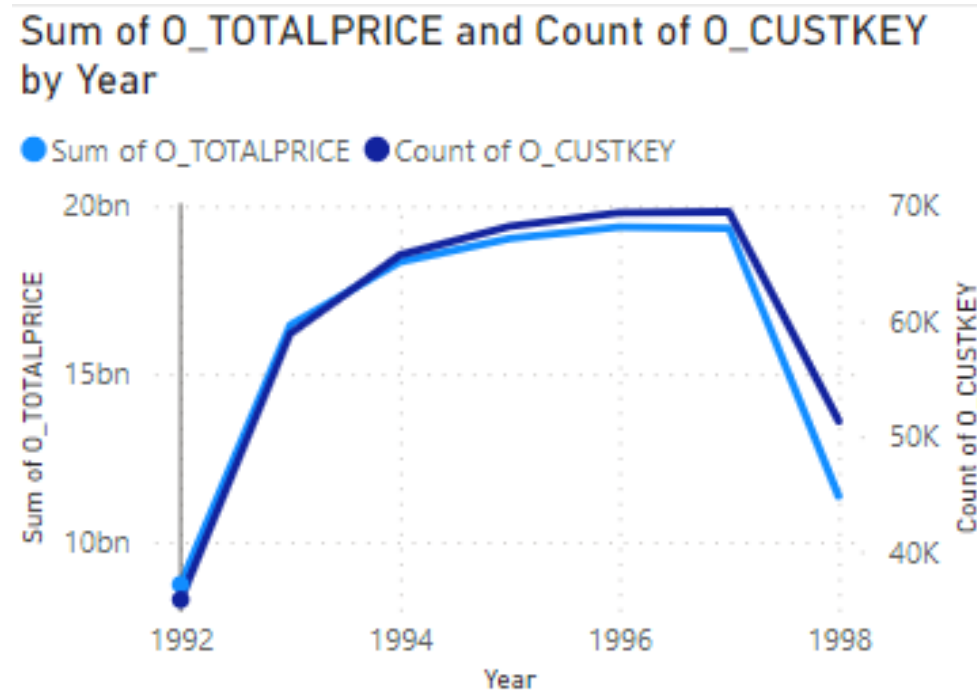
**X-axis:** O\_ORDERDATE

**Y-axis:** Sum of O\_TOTALPRICE

**Secondary y-axis:** Count of O\_CUSTKEY

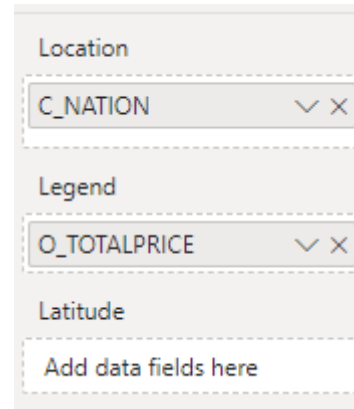
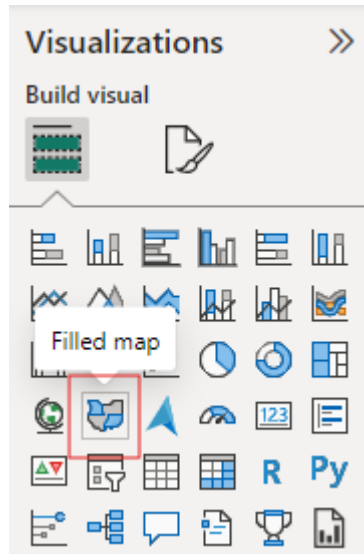


## Step 2) Total Sales and Total Customers by Year and Month



The result should be similar to the left image.

## Step 2) Map - Total Sales Amount by Countries



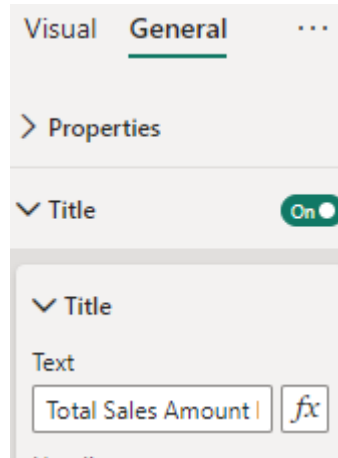
Under Visualizations, select Filled map

Then use the Following Settings:

**Legend:** C\_NATION

**Values:** Sum of O\_TOTALPRICE

## Step 2) Map – Rename Title



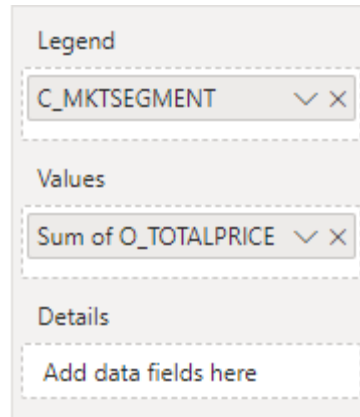
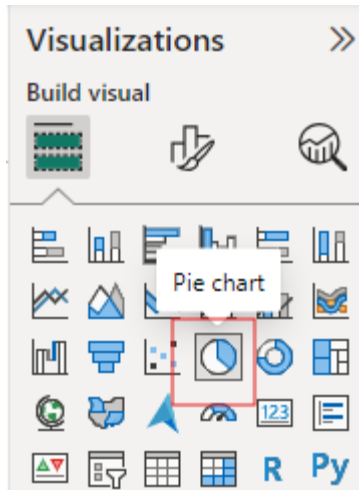
Under General, change title text to “Total Sales Amount by Countries”

## Step 2) Map - Total Sales Amount by Countries



The result should be similar to the left image.

## Step 2) Pie Chart - Total Sales Amount by Segment



Under Visualizations, select Pie chart

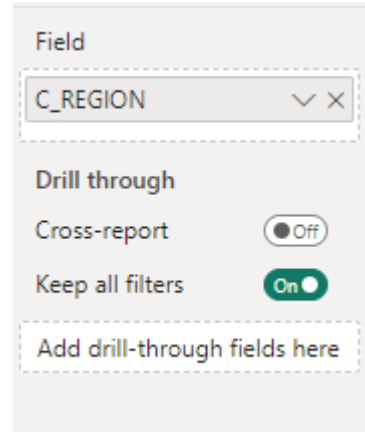
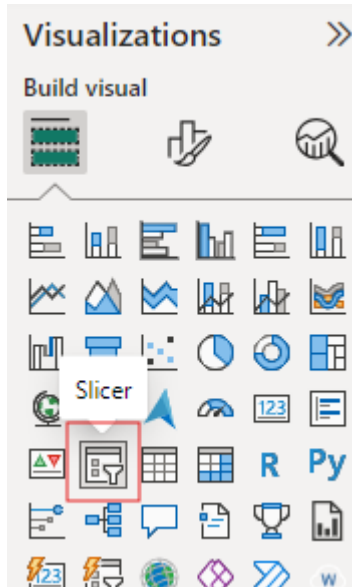
Then use the Following Settings:

**Legend:** C\_MKTSEGMENT

**Values:** Sum of O\_TOTALPRICE



## Step 3) Create Slicer - Region

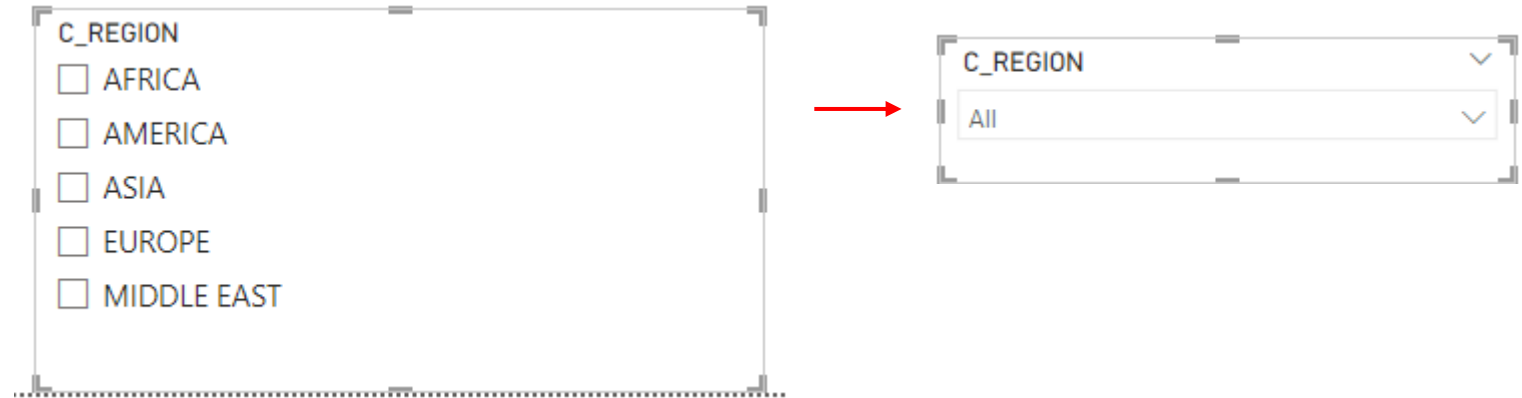
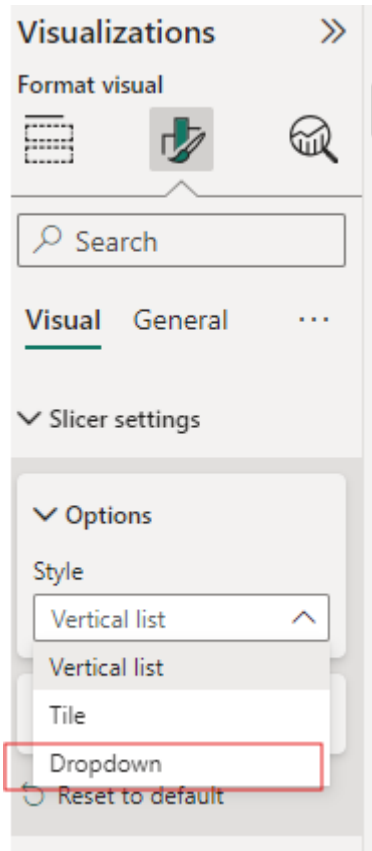


Under Visualizations, select Slicer

Then use the Following Settings:

**Field:** C\_REGION

## Step 3) Format Slicer - Region



Select Format Visual -> Visual -> Slicer Settings -> Options -> Style

Style is set to Vertical List by default which may consume many spaces, so change to Dropdown to save some space.

## Step 3) Create and format the rest of filters

Repeat previous process for all the C\_NATION, O\_ORDERDATE, C\_MKTSEGMENT as we will have total of 4 fields as slicers. All slicers' style should be Dropdown.

Field

C\_REGION ▼ ×

Drill through

Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

Field

C\_NATION ▼ ×

Drill through

Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

Field

O\_ORDERDATE ▼ ×

Year ×

Month ×

Drill through

Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

Field

C\_MKTSEGMENT ▼ ×

Drill through

Cross-report ☐ Off

Keep all filters ☒ On

Add drill-through fields here

## Step 3) Rearrange position of each Slicer

C\_REGION

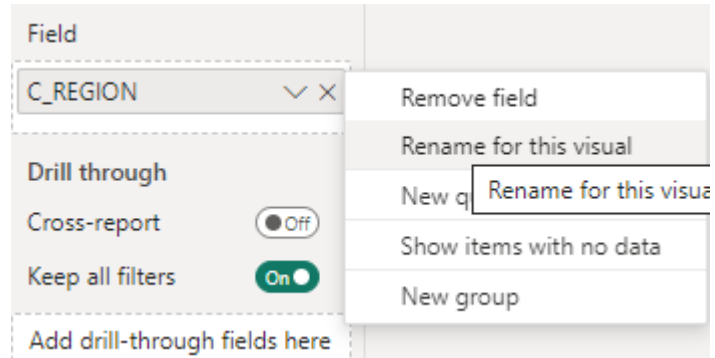
C\_MKTSEGMENT

C\_NATION

Year, Month

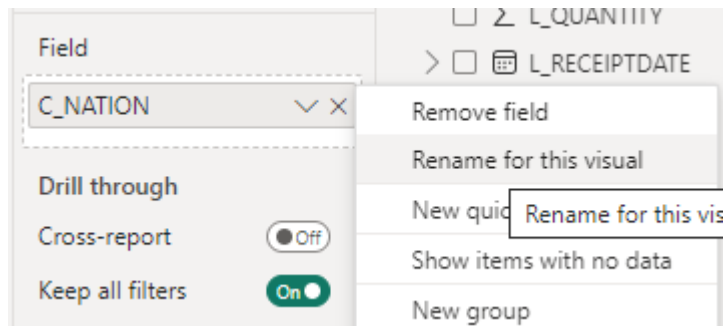
Re-arrange orders of the slicers as show in the image and put them to the middle right of dashboard.

## Step 3) Rename visual Slicer - Region



Right click at C\_REGION field and select Rename for this visual.

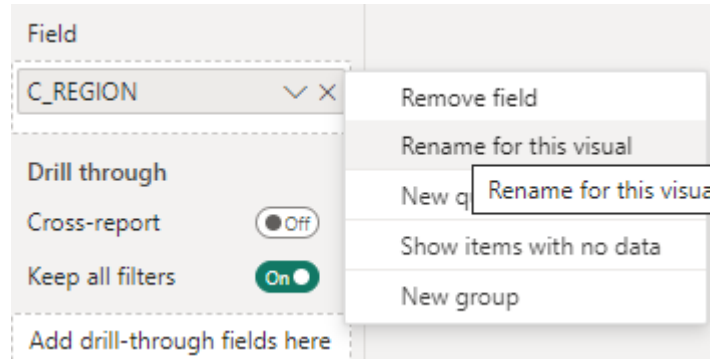
Change name to “REGION.”



Right click at C\_NATION field and select Rename for this visual.

Change name to “COUNTRY.”

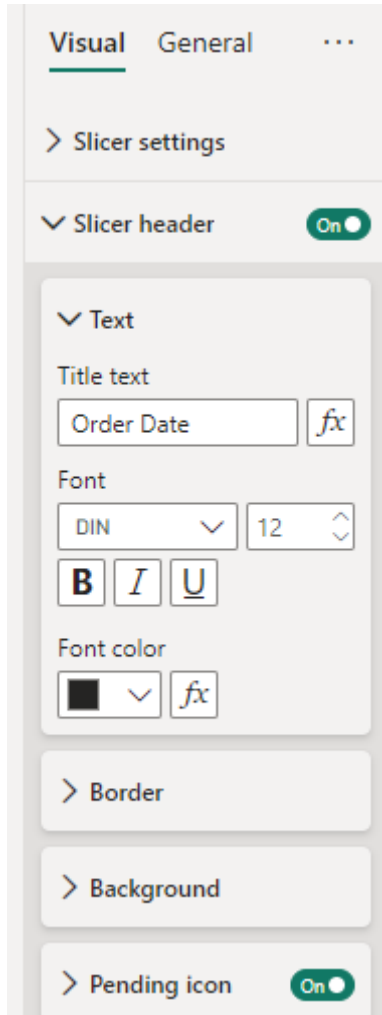
## Step 3) Rename visual Slicer – Market Segment



Right click at C\_MKTSEGMENT field and select Rename for this visual.

Change name to “MARKET SEGMENT.”

## Step 3) Rename visual Slicer – Order Date



When using date hierarchy, option “rename for this visual” is disappeared. Because of that we need to another workaround to rename it by doing the following:

Select Visual -> Slicer header -> Title Text -> Rename “Year, Month” to “ORDER DATE.”

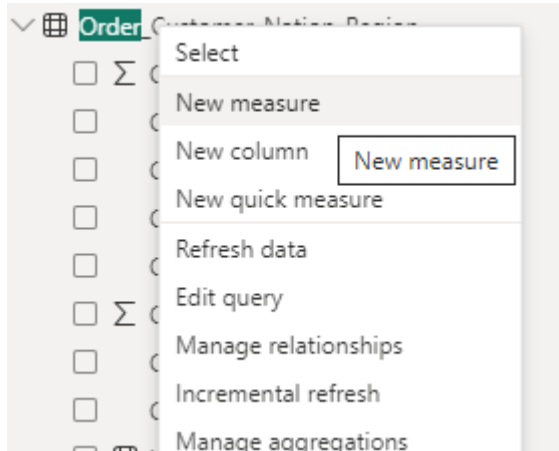


# Step 3) Slicer - Put everything together

In the end, this is what you should see

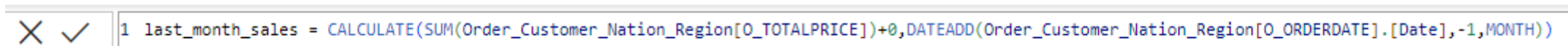
REGION	
All	▼
COUNTRY	▼
All	▼
MARKET SEGMENT	▼
All	▼
ORDER DATE	▼
All	▼

## Step 4) Total Price Growth – Create Measure “last month sales”

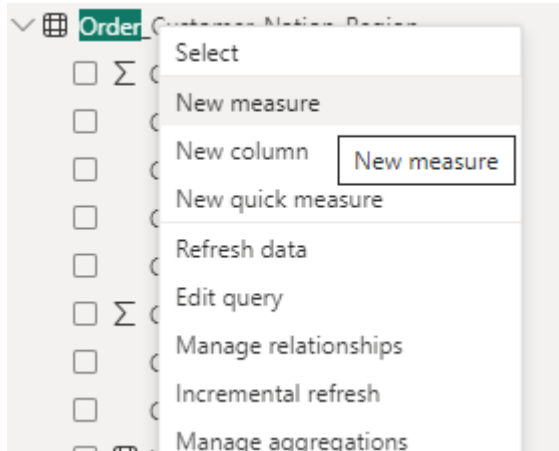


Right Click on Order Customer Nation Region Table. Then select “New measure” and create “last\_months\_sales” using the code below:

```
last_month_sales =  
CALCULATE(SUM(Order_Customer_Nation_Region[O_TOTALPRICE])+0,DATEADD(Order_Customer_Nation_Region[O_ORDERDATE].[Date],-1,MONTH))
```

A screenshot of the Power BI DAX formula bar. It shows the DAX code for the 'last\_month\_sales' measure: `1 last_month_sales = CALCULATE(SUM(Order_Customer_Nation_Region[O_TOTALPRICE])+0,DATEADD(Order_Customer_Nation_Region[O_ORDERDATE].[Date],-1,MONTH))`. The formula bar has a close button (X) and a checkmark button.

## Step 4) Total Price Growth – Create Measure “Growth”



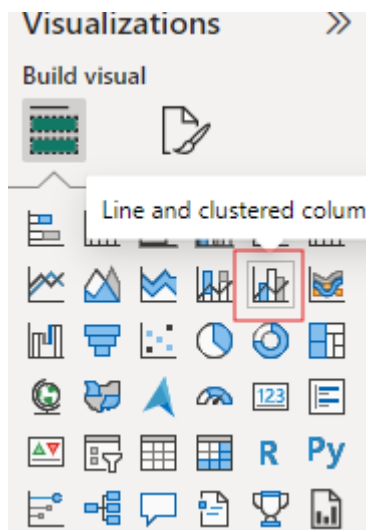
Right Click on Order Customer Nation Region Table. Then select “New measure” and create “Growth” measure using the code below:

Growth =  
(SUM(Order\_Customer\_Nation\_Region[O\_TOTALPRICE])  
- [last\_month\_sales]) / [last\_month\_sales]

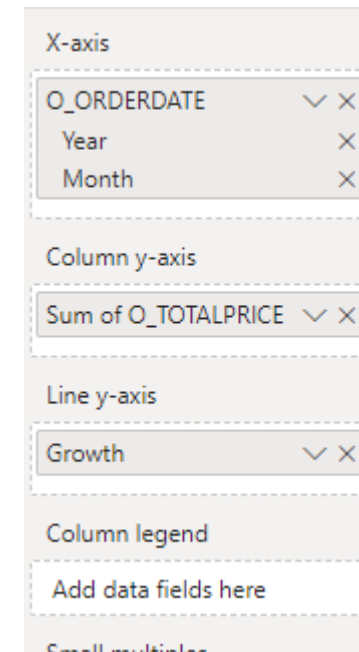
```
1 Growth = (SUM(Order_Customer_Nation_Region[O_TOTALPRICE]) - [last_month_sales]) / [last_month_sales]
```

## Step 4) Total Price Growth – Create line chart

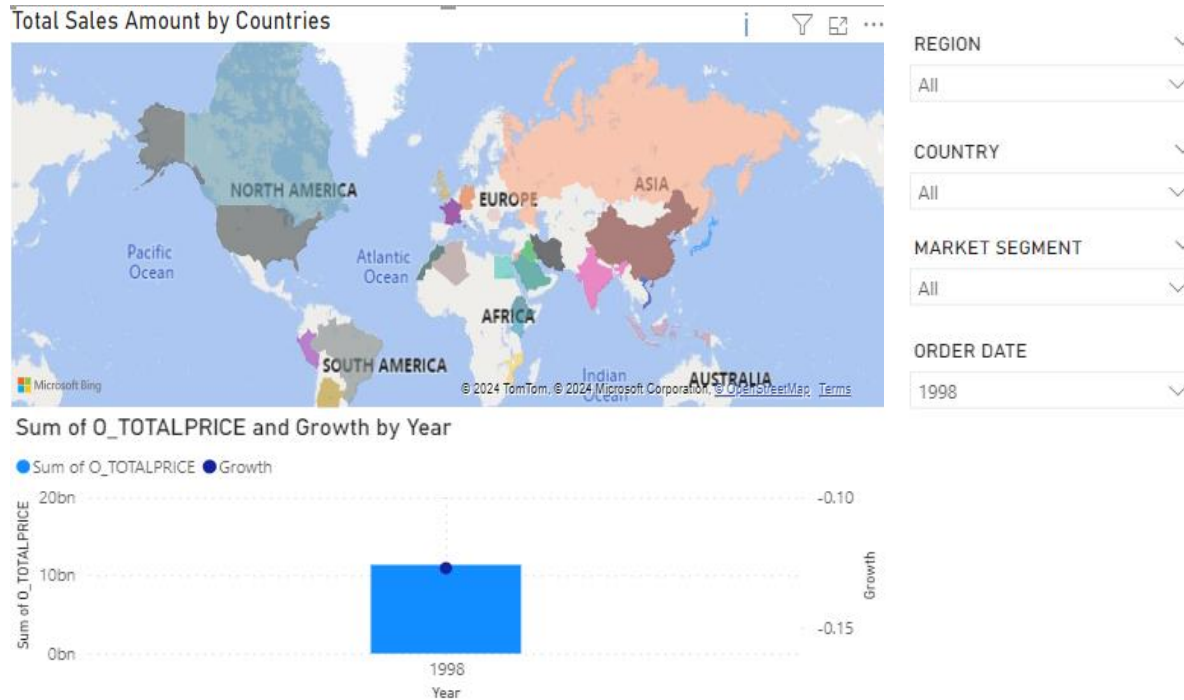
Select Line and Clustered Column Chart



Drag each of the fields to Visualizations component as show in the image

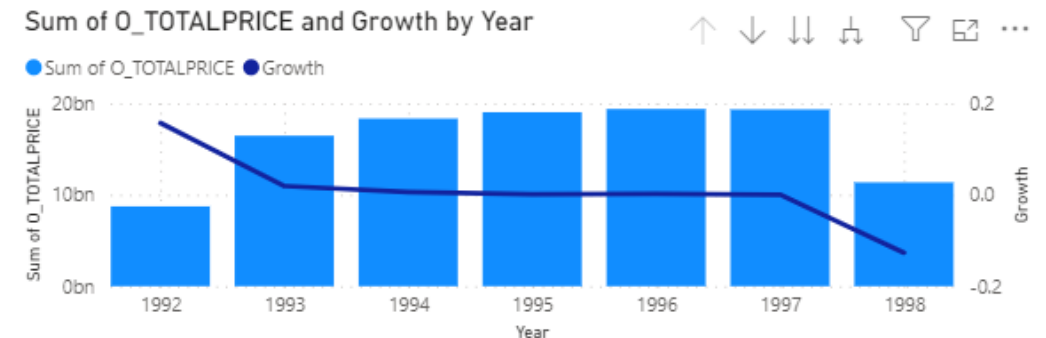


## Step 4) Total Price Growth – Change date hierarchy

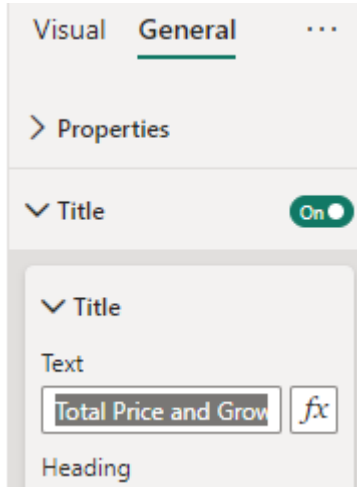


Try change ORDER DATE filter to 1998, then.

Select “Go to the next level in the hierarchy” to switch from year to month



## Step 4) Total Price Growth - Rename title



Under General, change title text to “Total Price and Growth by year and month”

# Tips: New Column vs New Measure vs New Quick Measure

	New Column	New Measure	New Quick Measure
Definition	A calculated column added to a table in your data model. It is created using Data Analysis Expressions (DAX) and the results are stored in the data model	A dynamic calculation that uses DAX to aggregate data. Measures are not stored in the table; instead, they are calculated on the fly based on the filters applied in your reports.	A predefined calculation that Power BI creates for you based on a set of commonly used patterns. It generates the necessary DAX code without requiring you to write it yourself.
Use Cases	Used to add new data fields that are calculated row-by-row (e.g., column that calculates the profit margin for each row in a sales table.)	Used for creating aggregations like sums, averages, counts, or more complex calculations.	Ideal for users who may not be familiar with DAX or need to quickly create common calculations.
Storage	Since it is part of the table, it consumes memory and can increase the size of your data model.	Measures do not consume storage since they are computed when needed, but they can impact performance depending on the complexity of the calculation and the size of the dataset.	You can use the quick measure as it is, or further customize the generated DAX formula to meet your specific needs.

# Bonus Lab

## Mr.A Product Health Report

200K

Count of PS\_PARTKEY

10K

Count of S\_SUPPKEY

25

Count of P\_BRAND

3321

Count of P\_PARTKEY

70

Low Quantity Parts

### Slow Moving Parts

P_PARTKEY	P_MFGR	P_NAME	P_CONTAINER	P_BRAND	P_TYPE	P_SIZE	P_RETAILPRICE
20	Manufacturer#1	ivory navy honeydew sandy midnight	MED BAG	Brand#12	LARGE POLISHED NICKEL	48	920.02
48	Manufacturer#5	slate thistle cornsilk pale forest	JUMBO CASE	Brand#53	STANDARD BRUSHED STEEL	27	948.04
69	Manufacturer#5	lace burnished rosy antique metallic	SM BOX	Brand#52	MEDIUM POLISHED BRASS	2	969.06
144	Manufacturer#1	hot midnight orchid dim steel	SM BOX	Brand#14	SMALL ANODIZED TIN	26	1,044.14
146	Manufacturer#3	azure smoke mint cream burlywood	WRAP PACK	Brand#34	STANDARD BRUSHED COPPER	11	1,046.14
258	Manufacturer#4	royal frosted blue pale dim	WRAP DRUM	Brand#43	STANDARD ANODIZED COPPER	18	1,158.25
307	Manufacturer#2	peru beige firebrick royal navy	WRAP DRUM	Brand#21	LARGE BURNISHED BRASS	30	1,207.30
421	Manufacturer#1	white black burnished brown medium	WRAP PACK	Brand#12	LARGE PLATED STEEL	36	1,321.42
442	Manufacturer#4	honeydew cornsilk powder salmon purple	MED PACK	Brand#41	LARGE BURNISHED TIN	22	1,342.44

S\_NAME

All

List of Parts that do not have any sales

### Low Quantity Report

PS_PARTKEY	P_MFGR	P_NAME	P_CONTAINER	S_NAME	P_RETAILPRICE	Available Qty
3271	Manufacturer#3	frosted thistle goldenrod almond mint	LG BOX	Supplier#000003272	1,174.27	1
5277	Manufacturer#1	steel olive saddle dark orange	LG DRUM	Supplier#000005278	1,182.27	1
5319	Manufacturer#1	white almond firebrick bisque metallic	JUMBO BAG	Supplier#000000320	1,224.31	1
5912	Manufacturer#1	aquamarine navy cream lace peru	JUMBO PACK	Supplier#000008413	1,817.91	1
9593	Manufacturer#3	sky pale lace bisque tomato	MED JAR	Supplier#000004594	1,502.59	1
10265	Manufacturer#5	burlywood salmon drab deep forest	MED DRUM	Supplier#000002767	1,175.26	1
10351	Manufacturer#5	antique seashell lemon metallic orange	WRAP JAR	Supplier#000005354	1,261.35	1
11043	Manufacturer#5	royal tan floral deep slate	SM CASE	Supplier#000001044	954.04	1
13095	Manufacturer#2	maroon deep olive honeydew smoke	SM CASE	Supplier#000008098	1,008.09	1
14028	Manufacturer#3	red sandy bisque slate sienna	JUMBO JAR	Supplier#000004029	942.02	1
16714	Manufacturer#4	pink almond aquamarine chartreuse chiffon	WRAP PACK	Supplier#000004218	1,630.71	1

Total

70

PS\_AVAILQTY

1

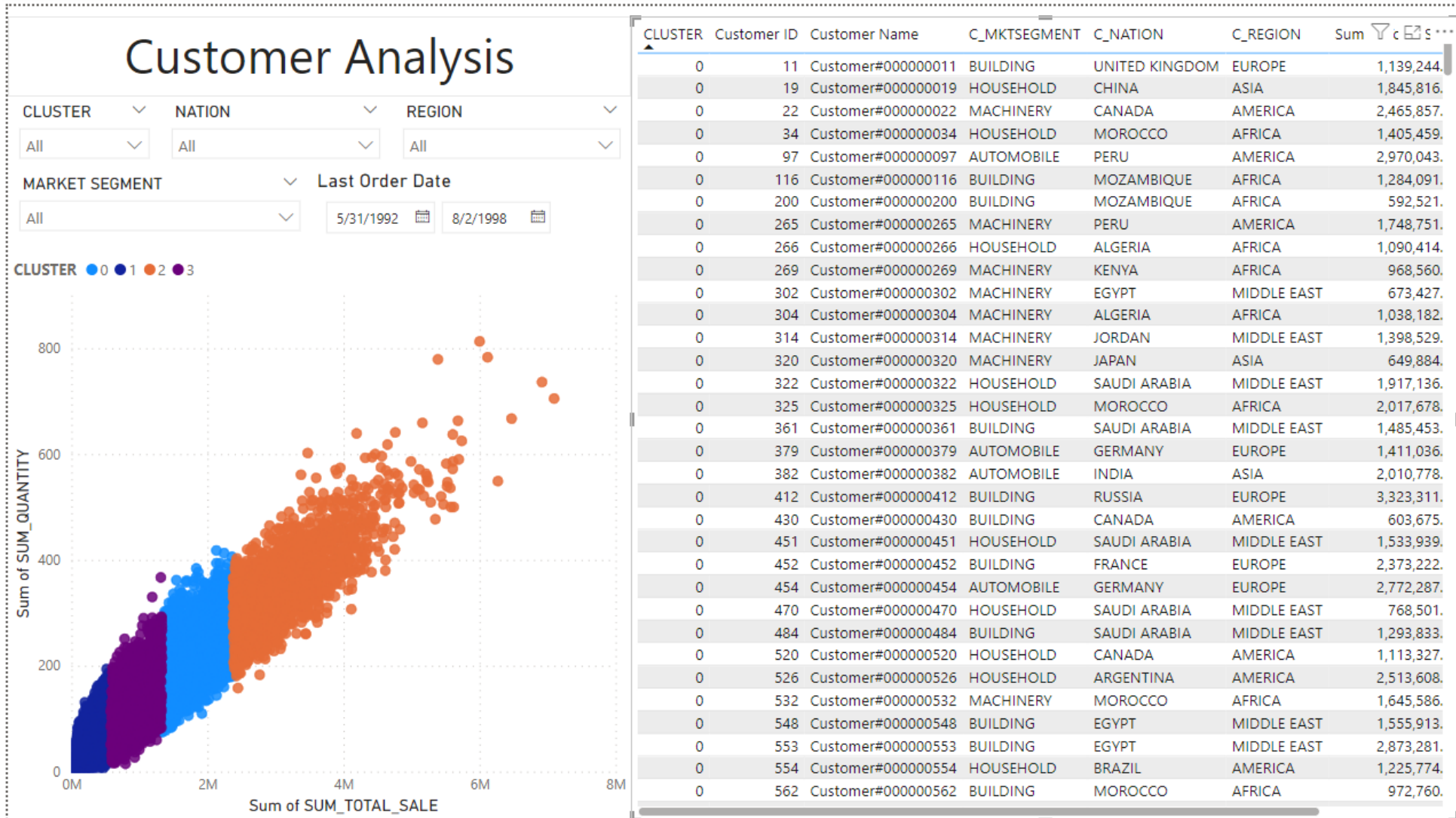
1

Filter that only apply on bottom table and summary number on the rightmost

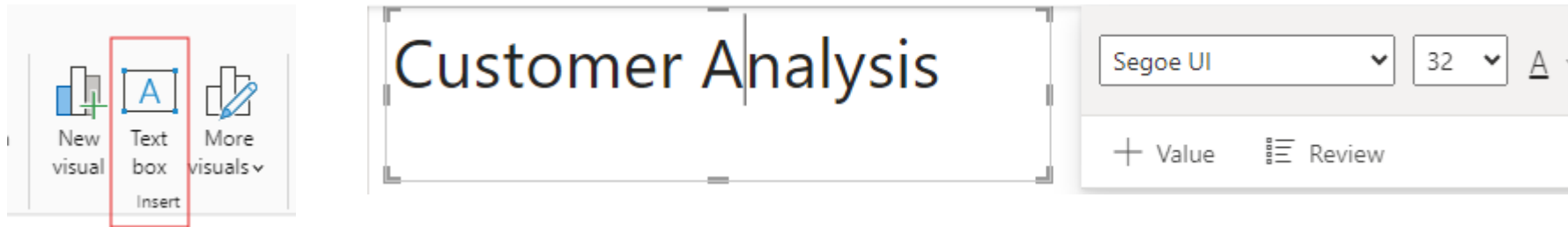
List of Parts that have available qty lower than the threshold



# Lab 2.2 (Forecasting Dashboard)



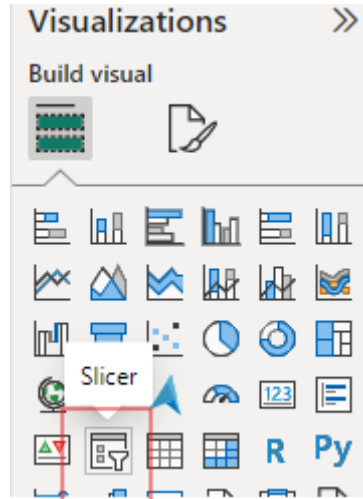
# Create Text Box – Customer Analysis



Select Home -> Text box -> Type  
“Customer Analysis”.

Then move the text box to the  
top left of the dashboard, by  
clicking at the border of box and  
drag it to the left.

# Create Slicer - CLUSTER

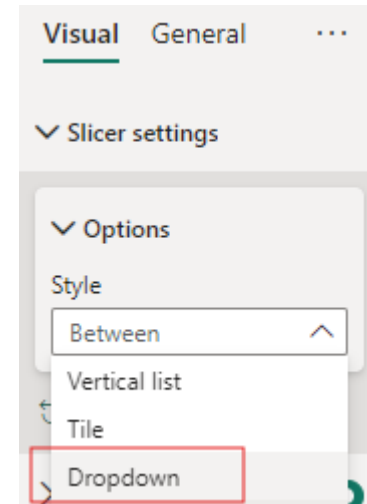


Under Visualizations, select Slicer

Then use the Following Settings:

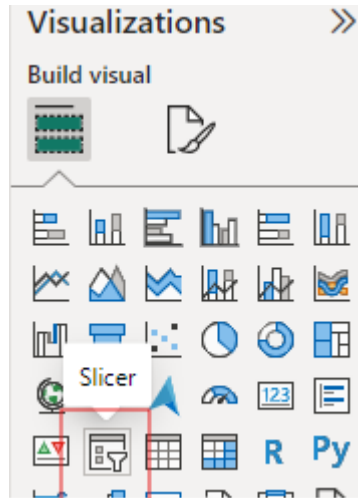
**Source Table field:** Lab 1-2

**Field:** CLUSTER



Under Slicer settings, change Style to Dropdown

# Create Slicer - Nation

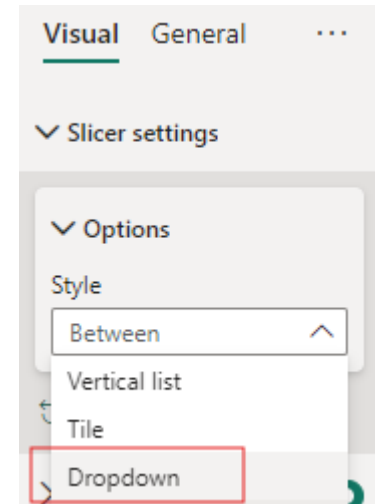


Under Visualizations, select Slicer

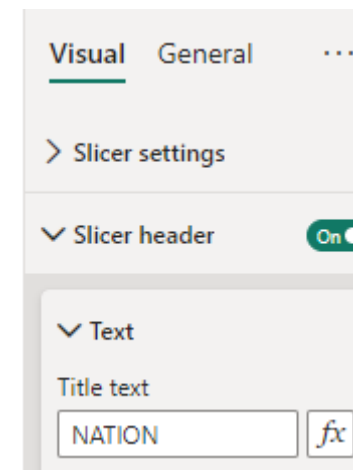
Then use the Following Settings:

**Source Table field:**  
Customer\_Aggregation

**Field:** C\_NATION

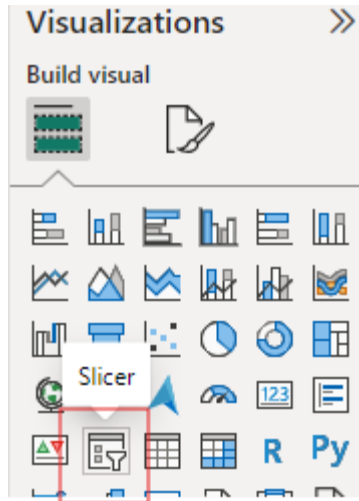


Under Slicer settings, change Style to Dropdown



Under Slicer header, change Title text to "NATION"

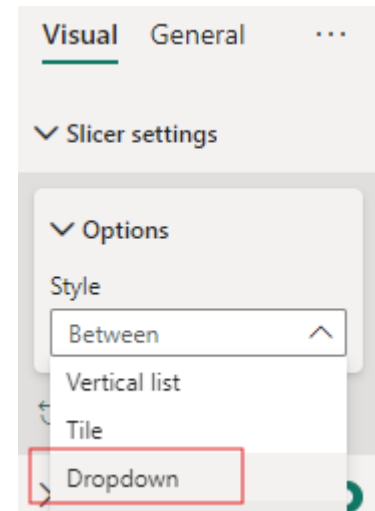
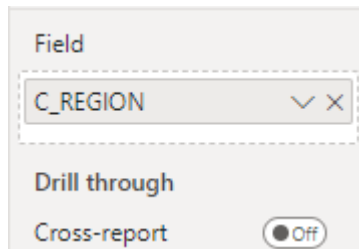
# Create Slicer - Region



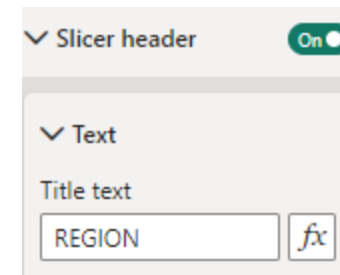
Under Visualizations, select Slicer

Then use the Following Settings:

**Source Table field:**  
Customer\_Aggregation  
**Field:** C\_REGION

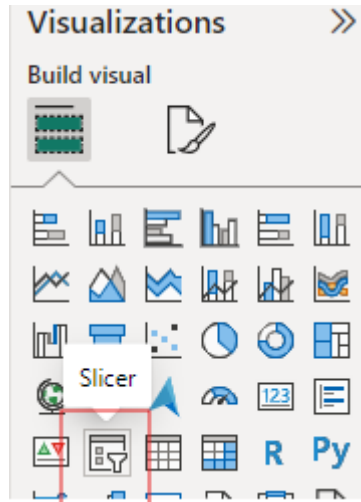


Under Slicer settings, change Style to Dropdown



Under Slicer header, change Title text to "REGION"

# Create Slicer – Market Segment



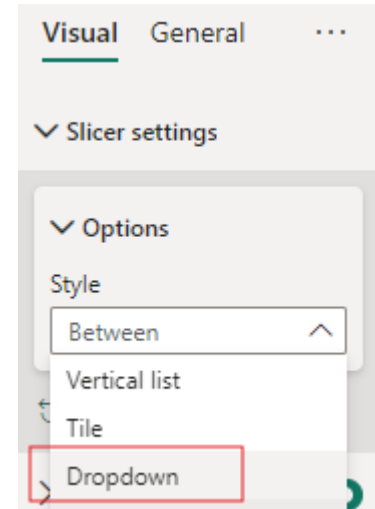
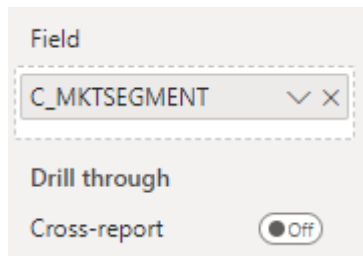
Under Visualizations, select Slicer

Then use the Following Settings:

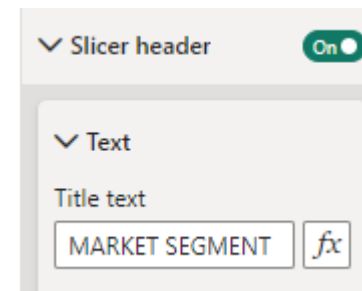
**Source Table field:**

Customer\_Aggregation

**Field:** C\_MKTSEGMENT

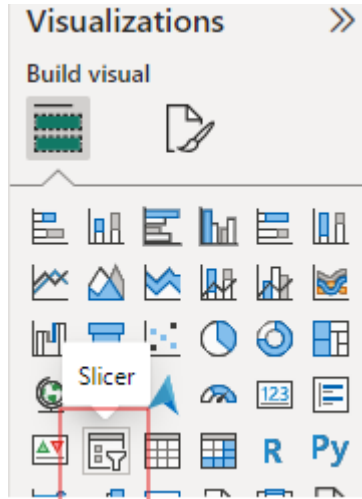


Under Slicer settings, change Style to Dropdown



Under Slicer header, change Title text to “MARKET SEGMENT”

# Create Slicer – Last Order Date



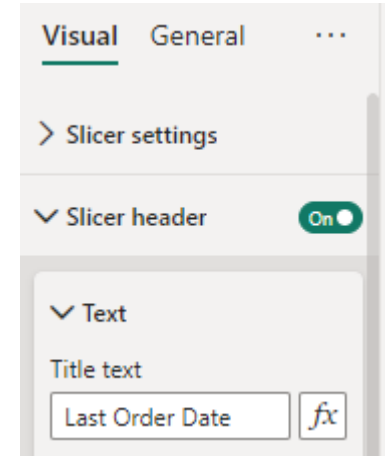
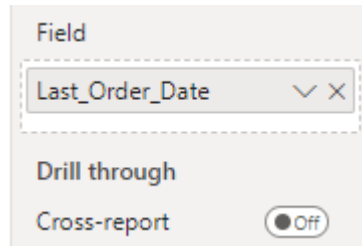
Under Visualizations, select Slicer

Then use the Following Settings:

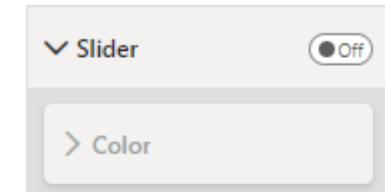
**Source Table field:**

Customer\_Aggregation

**Field:** Last\_Order\_Date



Under Slicer header, change Title text to “Last Order Date”



Under Slider settings, change Slider to Off

# Create Slicer – Put everything together

**Customer Analysis**

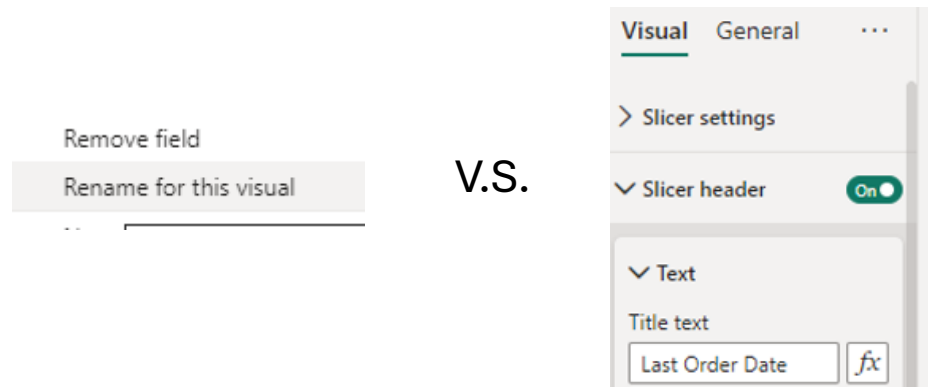
CLUSTER	NATION	REGION
All ▼	All ▼	All ▼
MARKET SEGMENT	Last Order Date	
All ▼	5/31/1992 📅	8/2/1998 📅

Put each of slicer location according to the left image.

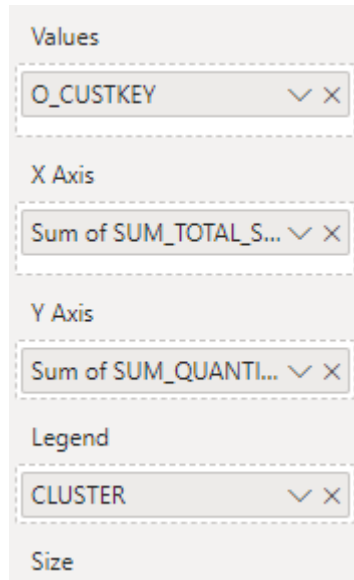


# Tips: Rename for this visual vs Change visual title text

- Rename for this visual will sometimes change visual title (depending on version), but not the other way around.
- The title text of a visual is typically set separately.
- If you want the visual's title to reflect the new name you assigned using "rename for this visual," you would need to manually update the title text of the visual to match the renamed field or measure.
- Thus, renaming a field within a visual does not automatically change the visual's title text; both need to be adjusted separately to ensure consistency.



# Create Scatter Chart



The screenshot shows the 'Fields' task pane in Power BI. It is configured for a scatter chart with the following settings:

- Values:** O\_CUSTKEY
- X Axis:** Sum of SUM\_TOTAL\_S...
- Y Axis:** Sum of SUM\_QUANTI...
- Legend:** CLUSTER
- Size:** (empty)

Under Visualizations -> Build visual -> select Scatter chart

Then use the following Settings:

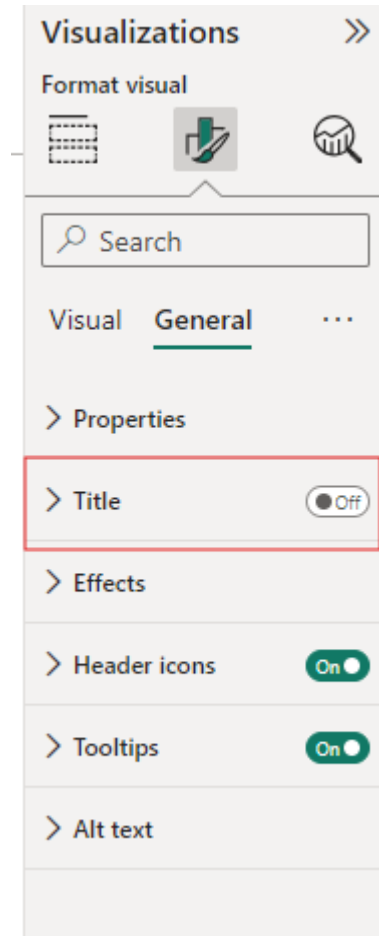
**Source Table field:** Lab1-2

**Values:** O\_CUSTKEY

**X Axis:** Sum of SUM\_TOTAL\_SALE

**Y Axis:** Sum of SUM\_QUANTITY

**Legend:** CLUSTER

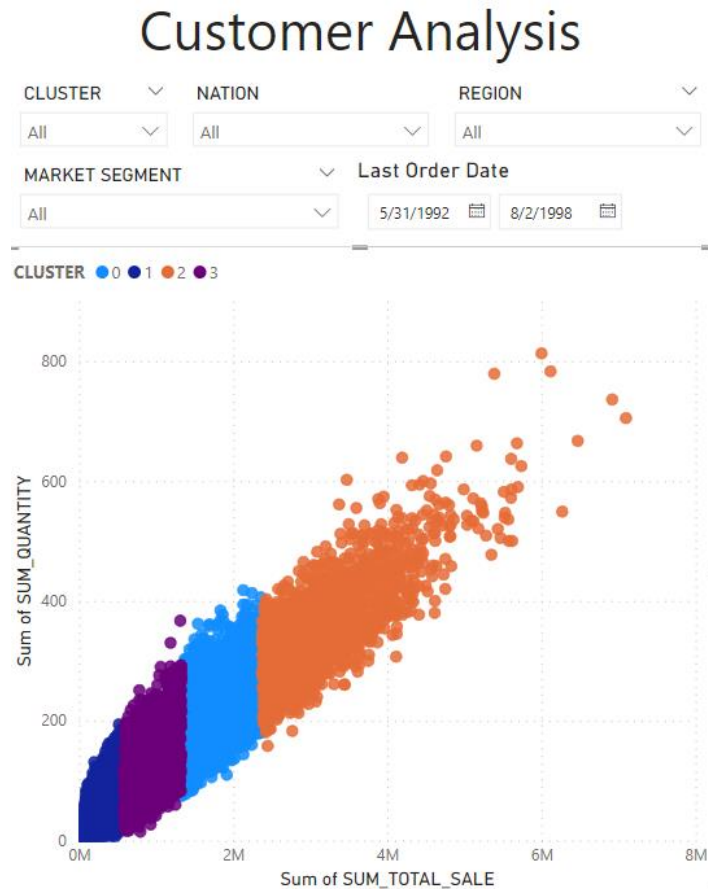


The screenshot shows the 'Visualizations' task pane in Power BI, specifically the 'General' tab. The 'Title' property is highlighted with a red box and is set to 'Off'.

- Visualizations:** Format visual
- Search:** Search
- Visual:** General
- Properties:**
- Title:** Off
- Effects:**
- Header icons:** On
- Tooltips:** On
- Alt text:**

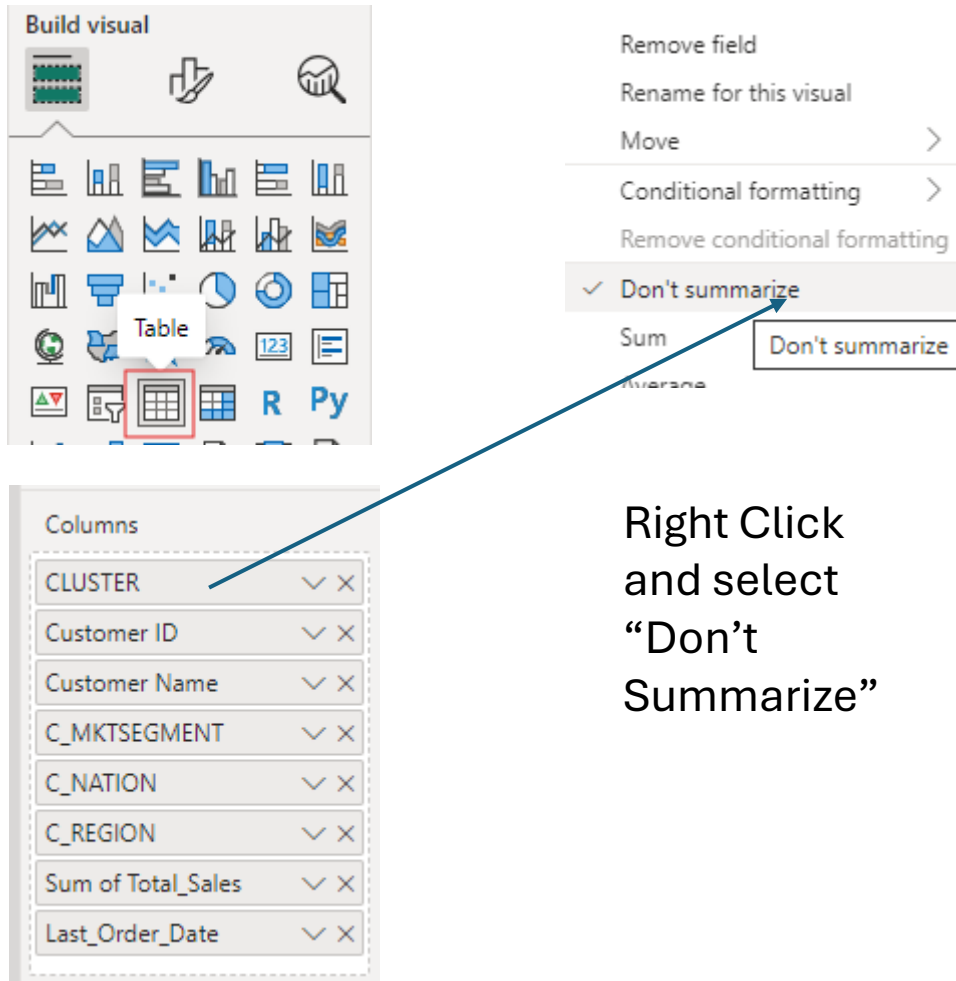
Under Visualizations, select format Your Visual -> General -> Toggle Title menu to off

# Create Scatter Chart – Put everything together



Put the Scatter chart on the left of dashboard below slicers. The result should be similar to the left image.

# Create Report Table – Select fields



Right Click  
and select  
“Don’t  
Summarize”

Under Visualizations -> Build visual -> select  
Report table

Then use the following Settings (put column in  
order):

**Source Table field:** Lab1-2

**Column:** CLUSTER

O\_CUSTKEY -> Rename to “Customer ID”

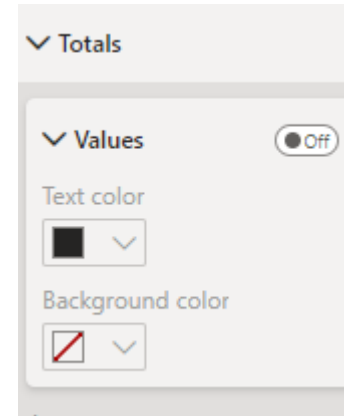
**Source Table field:** Customer\_Aggregation

**Columns:**

- C\_NAME -> Rename to “Customer Name”
- C\_MKTSEGMENT
- C\_NATION
- C\_REGION
- Sum of Total\_Sales
- Last\_Order\_Date"

# Create Report Table – Hide total

CLUSTER	O_CUSTKEY	C_NAME	C_MKTSEGMENT	C_NATION	C_REGION	Sum of Total	
	2	Customer#000000002	AUTOMOBILE	JORDAN	MIDDLE EAST	503,478.96	Si
	4	Customer#000000004	MACHINERY	EGYPT	MIDDLE EAST	1,287,281.43	Si
	7	Customer#000000007	AUTOMOBILE	CHINA	ASIA	1,865,924.34	Fr
3	8	Customer#000000008	BUILDING	PERU	AMERICA	1,511,779.99	W
1	10	Customer#000000010	HOUSEHOLD	ETHIOPIA	AFRICA	913,655.49	Si
0	11	Customer#000000011	BUILDING	UNITED KINGDOM	EUROPE	1,139,244.00	TI
1	13	Customer#000000013	BUILDING	CANADA	AMERICA	1,587,031.33	W
	14	Customer#000000014	FURNITURE	ARGENTINA	AMERICA	483,305.47	M
2	16	Customer#000000016	FURNITURE	IRAN	MIDDLE EAST	2,163,664.60	M
	17	Customer#000000017	AUTOMOBILE	BRAZIL	AMERICA	568,362.80	Si
0	19	Customer#000000019	HOUSEHOLD	CHINA	ASIA	1,845,816.42	TI
1	20	Customer#000000020	FURNITURE	RUSSIA	EUROPE	675,043.96	Fr
0	22	Customer#000000022	MACHINERY	CANADA	AMERICA	2,465,857.54	W
	23	Customer#000000023	HOUSEHOLD	CANADA	AMERICA	994,055.94	Si
	25	Customer#000000025	FURNITURE	JAPAN	ASIA	1,052,831.26	Si
	26	Customer#000000026	AUTOMOBILE	RUSSIA	EUROPE	888,474.05	TI
	28	Customer#000000028	FURNITURE	INDIA	ASIA	1,451,211.65	Si
3	29	Customer#000000029	FURNITURE	ALGERIA	AFRICA	1,094,945.35	M
	31	Customer#000000031	HOUSEHOLD	UNITED KINGDOM	EUROPE	747,668.59	Si
3	32	Customer#000000032	BUILDING	MOROCCO	AFRICA	703,046.37	W
0	34	Customer#000000034	HOUSEHOLD	MOROCCO	AFRICA	1,405,459.45	Fr
1	35	Customer#000000035	HOUSEHOLD	PERU	AMERICA	724,689.84	Si
2	37	Customer#000000037	FURNITURE	INDIA	ASIA	1,756,473.64	TI
	38	Customer#000000038	HOUSEHOLD	JAPAN	ASIA	146,933.05	TI
1	40	Customer#000000040	BUILDING	CANADA	AMERICA	2,310,366.61	Si
	43	Customer#000000043	MACHINERY	ROMANIA	EUROPE	1,228,371.83	W
	44	Customer#000000044	AUTOMOBILE	MOZAMBIQUE	AFRICA	744,380.88	W
1	46	Customer#000000046	AUTOMOBILE	FRANCE	EUROPE	833,519.81	TI
	47	Customer#000000047	BUILDING	BRAZIL	AMERICA	449,937.34	Fr
1	49	Customer#000000049	FURNITURE	IRAN	MIDDLE EAST	1,047,919.29	W
	50	Customer#000000050	MACHINERY	FRANCE	EUROPE	330,809.53	Si
1	52	Customer#000000052	HOUSEHOLD	IRAQ	MIDDLE EAST	1,214,722.61	Fr
	53	Customer#000000053	HOUSEHOLD	MOROCCO	AFRICA	622,578.79	Si
Total						112,601,852,404.38	



Click the report table chart ->  
Visual -> Totals -> Toggle  
Values to Off.

This will hide total at the  
bottom.

# Create Report Table – Filter Blank

CLUSTER	O_CUSTKEY	C_NAME	C_MKTSEGMENT	C_NATION	C_REGION	Sum of Total	
0	11	Customer#000000011	BUILDING	UNITED KINGDOM	EUROPE	1,139,244.00	Th
1	13	Customer#000000013	BUILDING	CANADA	AMERICA	1,587,031.33	W
	14	Customer#000000014	FURNITURE	ARGENTINA	AMERICA	483,305.47	M
2	16	Customer#000000016	FURNITURE	IRAN	MIDDLE EAST	2,163,664.60	M
	17	Customer#000000017	AUTOMOBILE	BRAZIL	AMERICA	568,362.80	St
0	19	Customer#000000019	HOUSEHOLD	CHINA	ASIA	1,845,816.42	Ti
1	20	Customer#000000020	FURNITURE	RUSSIA	EUROPE	675,043.96	Fr
0	22	Customer#000000022	MACHINERY	CANADA	AMERICA	2,465,857.54	W
	23	Customer#000000023	HOUSEHOLD	CANADA	AMERICA	994,055.94	Se
	25	Customer#000000025	FURNITURE	JAPAN	ASIA	1,052,831.26	St
	26	Customer#000000026	AUTOMOBILE	RUSSIA	EUROPE	888,474.05	Ti
	28	Customer#000000028	FURNITURE	INDIA	ASIA	1,451,211.65	Se
3	29	Customer#000000029	FURNITURE	ALGERIA	AFRICA	1,094,945.35	M
	31	Customer#000000031	HOUSEHOLD	UNITED KINGDOM	EUROPE	747,668.59	Se
3	32	Customer#000000032	BUILDING	MOROCCO	AFRICA	703,046.37	W
0	34	Customer#000000034	HOUSEHOLD	MOROCCO	AFRICA	1,405,459.45	Fr
1	35	Customer#000000035	HOUSEHOLD	PERU	AMERICA	724,689.84	Se
2	37	Customer#000000037	FURNITURE	INDIA	ASIA	1,756,473.64	Ti
	38	Customer#000000038	HOUSEHOLD	JAPAN	ASIA	146,933.05	Ti
1	40	Customer#000000040	BUILDING	CANADA	AMERICA	2,310,366.61	St
	43	Customer#000000043	MACHINERY	ROMANIA	EUROPE	1,228,371.83	W
	44	Customer#000000044	AUTOMOBILE	MOZAMBIQUE	AFRICA	744,380.88	W
1	46	Customer#000000046	AUTOMOBILE	FRANCE	EUROPE	833,519.81	Ti
	47	Customer#000000047	BUILDING	BRAZIL	AMERICA	449,937.34	Fr

blank

Filters on this page

**CLUSTER**  
is 0, 1, 2, or 3

Filter type ①

Basic filtering

☒ Select all

☐ (Blank)

☒ 0 9268

☒ 1 22984

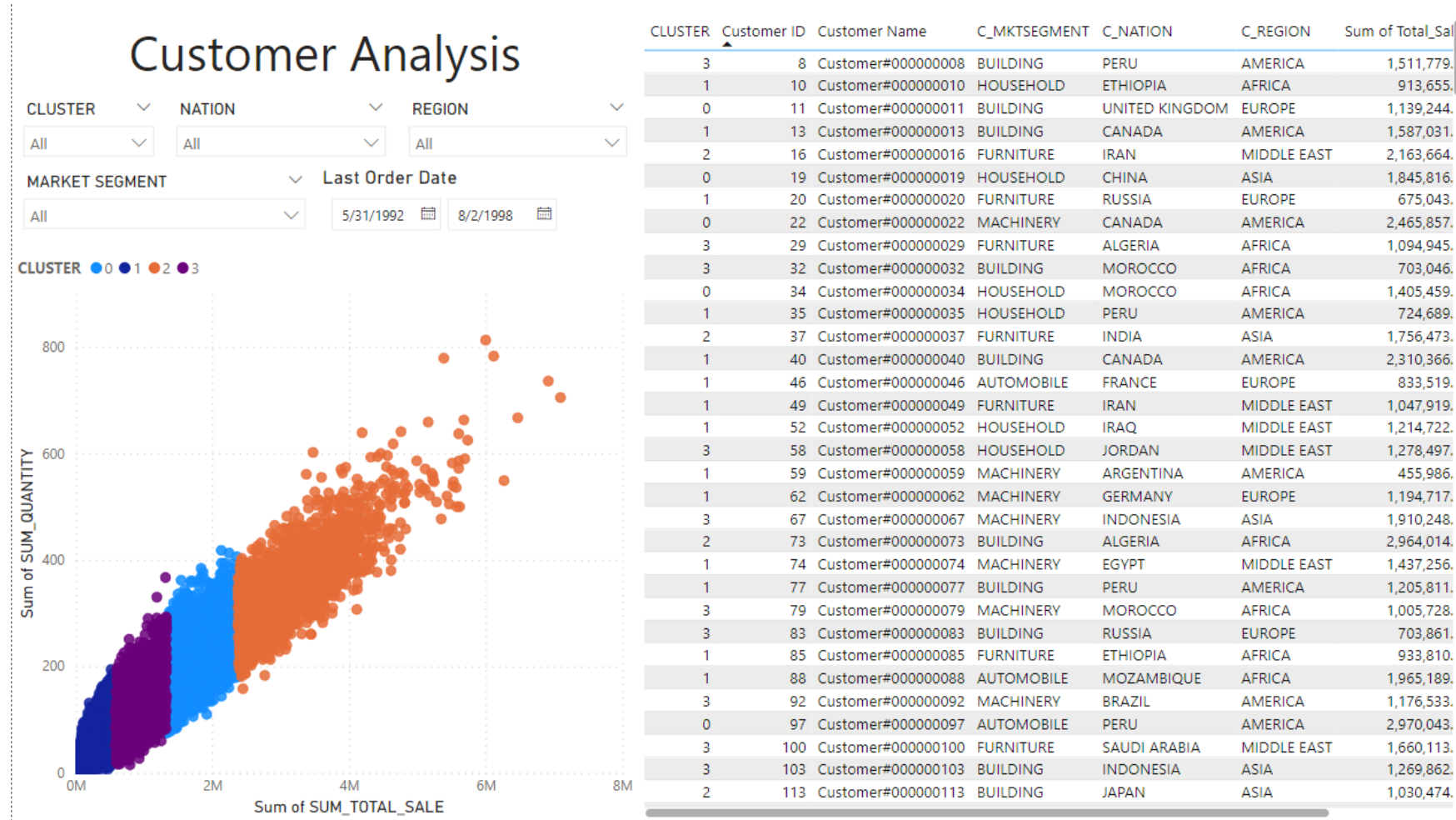
☒ 2 2528

☒ 3 16216

☐ Require single selection

Drag field Cluster to “Filters on this page” to filter out Blank Cluster results showing in report table chart.

# Create Report Table – Put everything together



# Lab file (Starter / Answer)

- [https://bootcathon.blob.core.windows.net/public/Lab2\\_Starter.pbix](https://bootcathon.blob.core.windows.net/public/Lab2_Starter.pbix)
- [https://bootcathon.blob.core.windows.net/public/Lab2\\_Test.pbix](https://bootcathon.blob.core.windows.net/public/Lab2_Test.pbix)