

## Project 5(Google Big Query)

### Creating DataSet

The screenshot shows the Google Cloud BigQuery Studio interface. On the left is a sidebar with navigation options: Analysis (BigQuery Studio, Data transfers, Scheduled queries, Analytics Hub, Dataform, Partner Center), Migration (Assessment, SQL translation), and Administration (Monitoring, Capacity management, BI Engine, Policy tags). The main panel displays the 'Create dataset' dialog. The 'Project ID' is 'striking-loop-401215'. The 'Dataset ID' is 'super\_18'. The 'Location type' is set to 'Multi-region' with 'US (multiple regions in United States)' selected. The 'Default table expiration' is set to 'None'. The 'Advanced options' section is collapsed. At the bottom are 'CREATE DATASET' and 'CANCEL' buttons.

**Create dataset**

Project ID \*  
striking-loop-401215 [CHANGE](#)

Dataset ID \*  
super\_18  
Letters, numbers, and underscores allowed

Location type [?](#)  
☐ Region  
Specify a region to colocate your datasets with other Google Cloud services.  
☒ Multi-region  
Allow BigQuery to select a region within a group to achieve higher quota limits.  
Multi-region \*  
US (multiple regions in United States)

Default table expiration  
☐ Enable table expiration [?](#)  
Default maximum table age  Days

Advanced options [v](#)

[CREATE DATASET](#) [CANCEL](#)

### Uploading Data

The screenshot shows the Google Cloud BigQuery Studio interface with the 'Create table' dialog open. The 'Source' section has 'Create table from' set to 'Upload' and 'Select file' set to 'cleandata1.csv'. The 'File format' is 'CSV'. The 'Destination' section has 'Project' set to 'striking-loop-401215', 'Dataset' set to 'super\_18', and 'Table' set to 'analysis\_18'. The 'Table type' is 'Native table'. The 'Schema' section has 'Auto detect' checked, with a message 'Schema will be automatically generated.' The 'Partition and cluster settings' section has 'Partitioning' set to 'No partitioning'. At the bottom are 'CREATE TABLE' and 'CANCEL' buttons.

**Create table**

Source  
Create table from  
Upload  
Select file \*  
cleandata1.csv [X](#) [BROWSE](#) [?](#)  
File format  
CSV

Destination  
Project \*  
striking-loop-401215 [BROWSE](#)  
Dataset \*  
super\_18  
Table \*  
analysis\_18  
Maximum name size is 1,024 UTF-8 bytes. Unicode letters, marks, numbers, connectors, dashes, and spaces are allowed.  
Table type  
Native table [?](#)

Schema  
☒ Auto detect  
[?](#) Schema will be automatically generated.

Partition and cluster settings  
Partitioning  
No partitioning [?](#)

[CREATE TABLE](#) [CANCEL](#)

## Schema of uploaded table

The screenshot shows the Google Cloud BigQuery interface. The left sidebar contains navigation options like Analysis, Migration, and Administration. The main area displays the 'analysis\_18' table schema. The schema table lists columns with their names, types, modes, keys, collations, default values, policy tags, and descriptions.

Field name	Type	Mode	Key	Collation	Default Value	Policy Tags	Description
Order_ID	STRING	NULLABLE	-	-	-	-	-
Ship_Mode	STRING	NULLABLE	-	-	-	-	-
Customer_Name	STRING	NULLABLE	-	-	-	-	-
Segment	STRING	NULLABLE	-	-	-	-	-
Country	STRING	NULLABLE	-	-	-	-	-
City	STRING	NULLABLE	-	-	-	-	-
State	STRING	NULLABLE	-	-	-	-	-
Region	STRING	NULLABLE	-	-	-	-	-
Category	STRING	NULLABLE	-	-	-	-	-
Sub_Category	STRING	NULLABLE	-	-	-	-	-
Product_Name	STRING	NULLABLE	-	-	-	-	-
Sales	FLOAT	NULLABLE	-	-	-	-	-
Quantity	INTEGER	NULLABLE	-	-	-	-	-
Discount	FLOAT	NULLABLE	-	-	-	-	-
Profit	FLOAT	NULLABLE	-	-	-	-	-
order_year	INTEGER	NULLABLE	-	-	-	-	-

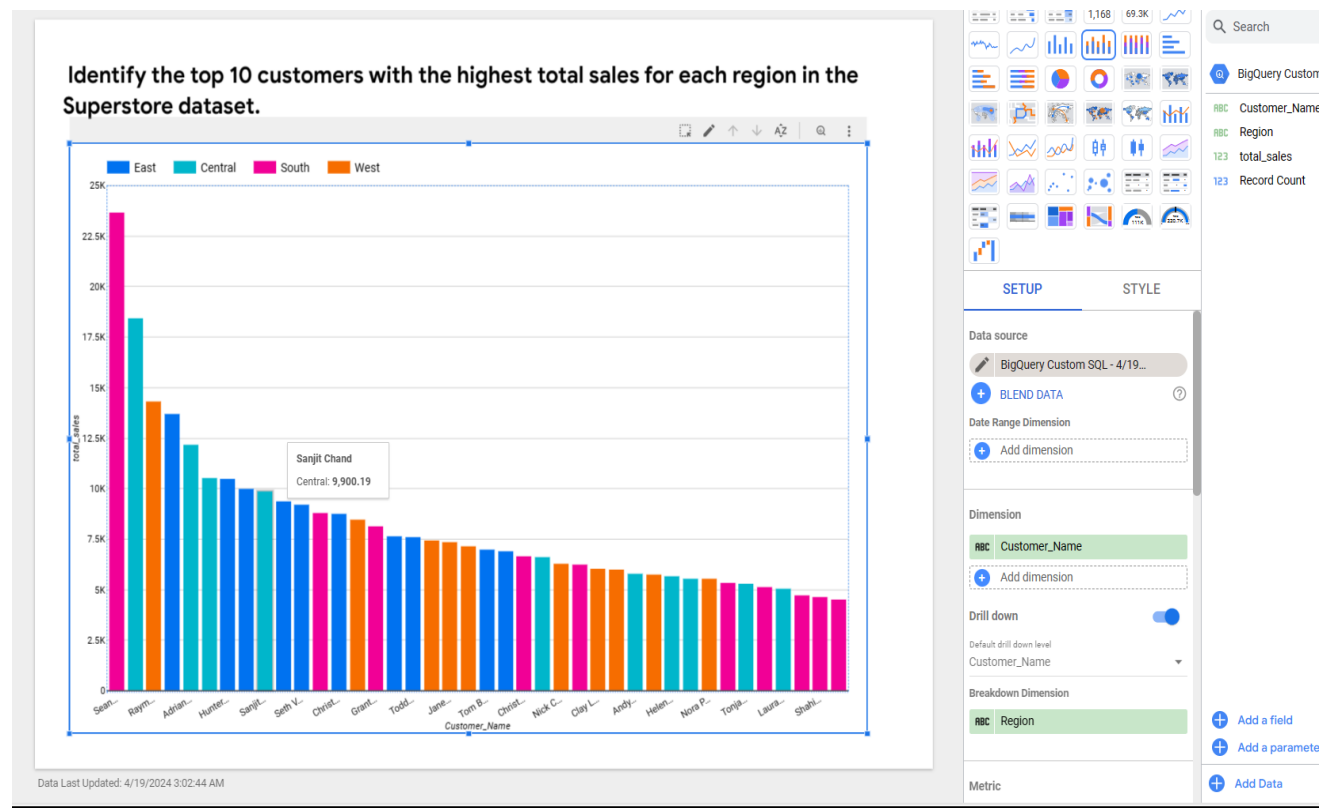
## Identify the top 10 customers with the highest total sales for each region in the Superstore dataset.

The screenshot shows the Google Cloud BigQuery interface with a SQL query executed. The query identifies the top 10 customers with the highest total sales for each region. The results are displayed in a table with columns: Row, Region, Customer\_Name, and total\_sales.

```
1 WITH ranked_customers AS (  
2   SELECT Region, Customer_Name, SUM(sales) AS total_sales,  
3         ROW_NUMBER() OVER (PARTITION BY Region ORDER BY SUM(sales) DESC) AS sales_rank  
4   FROM superstore.analysis_18  
5   GROUP BY Region, Customer_Name  
6 )  
7 SELECT Region, Customer_Name, total_sales  
8 FROM ranked_customers  
9 WHERE sales_rank <= 10;
```

Row	Region	Customer_Name	total_sales
1	East	Tom Ashbrook	13723.498000000...
2	East	Hunter Lopez	10522.55
3	East	Bill Shoney	10022.292999999...
4	East	Greg Tran	9382.934
5	East	Seth Vernon	9216.568
6	East	Christopher Conant	8765.66
7	East	Peter Fuller	7678.228
8	East	Todd Sumrall	7629.210000000...
9	East	Tom Boeckenhauer	6999.96
10	East	Daniel Raglin	6937.870000000...
11	Central	Tamara Chand	18437.138
12	Central	Adrian Barton	12181.594000000...
13	Central	Becky Martin	10539.896
14	Central	Sanjit Chand	9900.19

## Visualisation:



## Saving Query view as table in big query

Google Cloud Console - My First Project

BigQuery Studio

Query: problem1

```
WITH ranked_customers AS (
  SELECT Region, Customer_Name, SUM(sales) AS total_sales,
         ROW_NUMBER() OVER (PARTITION BY Region ORDER BY total_sales DESC) AS sales_rank
  FROM super_18.analysis_18
  GROUP BY Region, Customer_Name
)
SELECT Region, Customer_Name, total_sales
FROM ranked_customers
WHERE sales_rank <= 10;
```

Query results: 40 rows

Row	Region	Customer_Name	total_sales
1	East	Tom Ashbrook	13723.49800000...
2	East	Hunter Lopez	10522.55
3	East	Bill Shonely	10022.29299999...
4	East	Greg Tran	9382.934
5	East	Seth Vernon	9216.568
6	East	Christopher Conant	8765.66
7	East	Peter Fuller	7678.228
8	East	Todd Sumrall	7629.210000000...

Save results as: BigQuery table, CSV (Google Drive), CSV (local file), JSON (local file), JSONL (newline delimited), Google Sheets, Copy to Clipboard.

Job history: "save1" deleted.

# Saving Query

The screenshot shows the Google Cloud BigQuery console interface. The URL is [https://console.cloud.google.com/bigquery?project=striking-loop-401215&w=1m51m44m31ststriking-loop-4012152super\\_183analysis\\_18](https://console.cloud.google.com/bigquery?project=striking-loop-401215&w=1m51m44m31ststriking-loop-4012152super_183analysis_18). The left sidebar contains navigation links for Analysis, Migration, and Administration. The main area is divided into an Explorer on the left and a query editor on the right. The Explorer shows a project named 'striking-loop-401215' with a dataset 'super\_18' containing tables 'analysis\_18', 'prob1', and 'problem1'. The query editor shows an 'Untitled query' with the following SQL code:

```
1 WITH ranked_customers AS (  
2   SELECT Region, Customer_Name,   
3     ROW_NUMBER() OVER (   
4       FROM super_18.analysis_18   
5       GROUP BY Region, Customer_N  
6     ) AS total_sales,   
7   SELECT Region, Customer_Name, t  
8   FROM ranked_customers  
9   WHERE sales_rank <= 10;
```

The 'SAVE' button is highlighted, and a dropdown menu is open with options: 'Save query', 'Save view', and 'Save as...'. The 'Query results' section below the editor shows a table with columns: Row, Region, Customer\_Name, and total\_sales. The results are filtered to show rows 33 through 40.

Row	Region	Customer_Name	total_sales
33	South	Grant Thornton	8167.419999999...
34	South	Christopher Martinez	6682.259999999...
35	South	Jim Epp	6264.354
36	South	Anna Haberlin	5369.676
37	South	Maria Etezadi	5156.56
38	South	Patrick O'Brill	4732.336
39	South	Shahid Collister	4646.356
40	South	John Lee	4519.839

**For each order shipped in the first year, calculate the profit margin (profit as a percentage of sales) and identify orders with a profit margin above 20%**

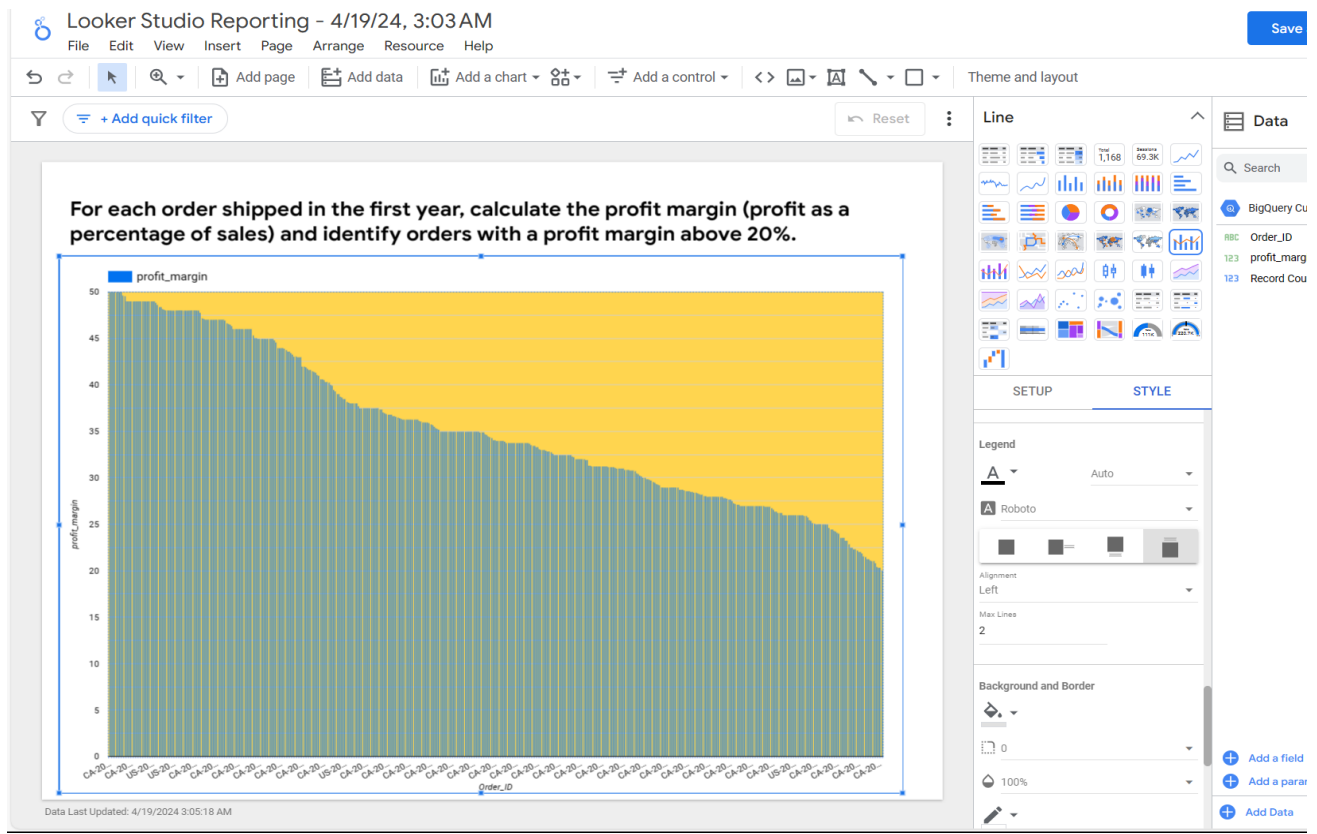
The screenshot shows the Google Cloud BigQuery console interface. The URL is [https://console.cloud.google.com/bigquery?project=striking-loop-401215&w=1m51m44m31ststriking-loop-4012152super\\_183analysis\\_18](https://console.cloud.google.com/bigquery?project=striking-loop-401215&w=1m51m44m31ststriking-loop-4012152super_183analysis_18). The left sidebar contains navigation links for Analysis, Migration, and Administration. The main area is divided into an Explorer on the left and a query editor on the right. The Explorer shows a project named 'striking-loop-401215' with a dataset 'super\_18' containing tables 'analysis\_18', 'prob1', and 'problem1'. The query editor shows an 'Untitled query' with the following SQL code:

```
1 SELECT Order_ID, (SUM(Profit) / SUM(Sales)) * 100 AS profit_margin  
2 FROM super_18.analysis_18  
3 WHERE Ship_year = (SELECT MIN(Ship_year) FROM super_18.analysis_18)  
4 GROUP BY order_id  
5 HAVING profit_margin > 20;
```

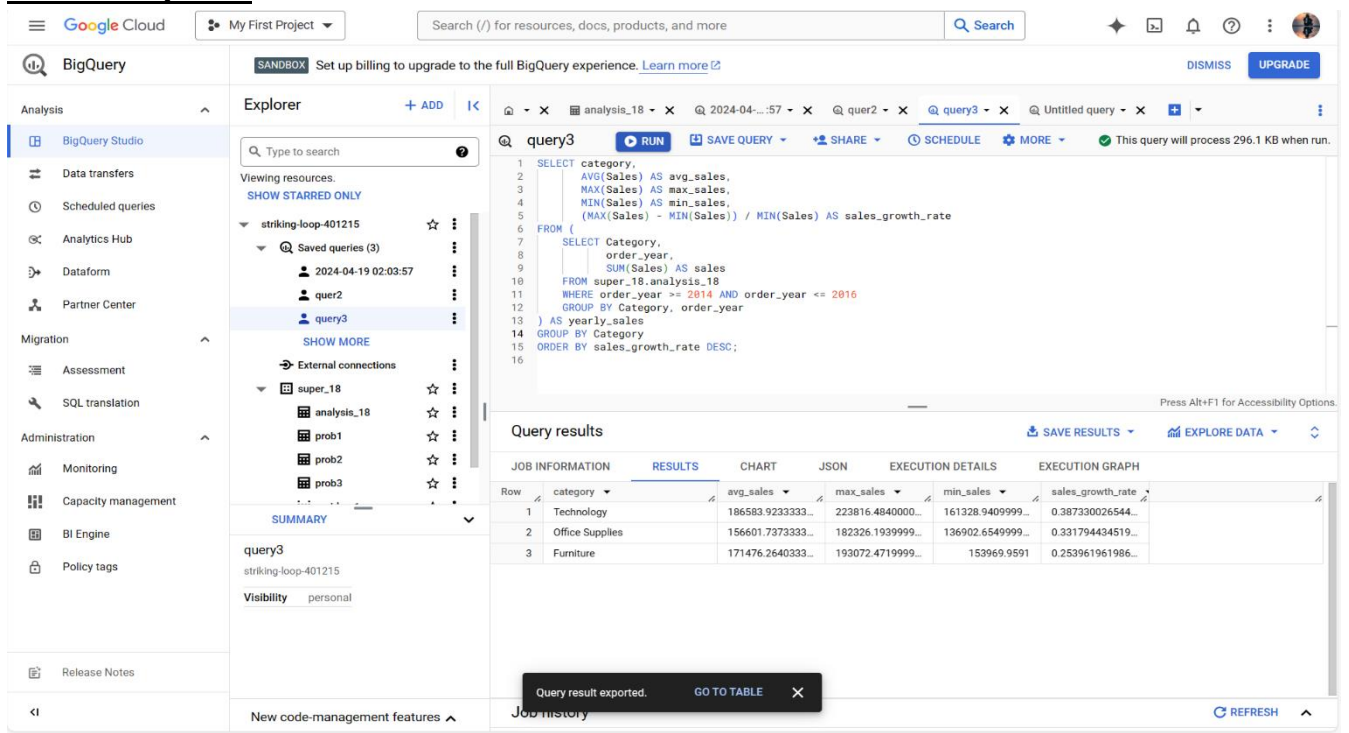
The 'Query results' section below the editor shows a table with columns: Row, Order\_ID, and profit\_margin. The results are filtered to show rows 1 through 16.

Row	Order_ID	profit_margin
1	CA-2014-159709	40.57091161453...
2	CA-2014-142979	41.0
3	CA-2014-104472	31.12312961961...
4	CA-2014-122070	48.41355256215...
5	CA-2014-130092	31.0
6	US-2014-114188	38.45762071246...
7	CA-2014-118304	26.0
8	CA-2014-163650	41.44925575101...
9	CA-2014-163293	36.84646983311...
10	CA-2014-159184	37.52661139342...
11	CA-2014-113166	36.25
12	CA-2014-107573	32.5
13	CA-2014-125514	31.31974967253...
14	CA-2014-132542	50.0
15	CA-2014-109890	28.00000000000...
16	US-2014-124625	21.0

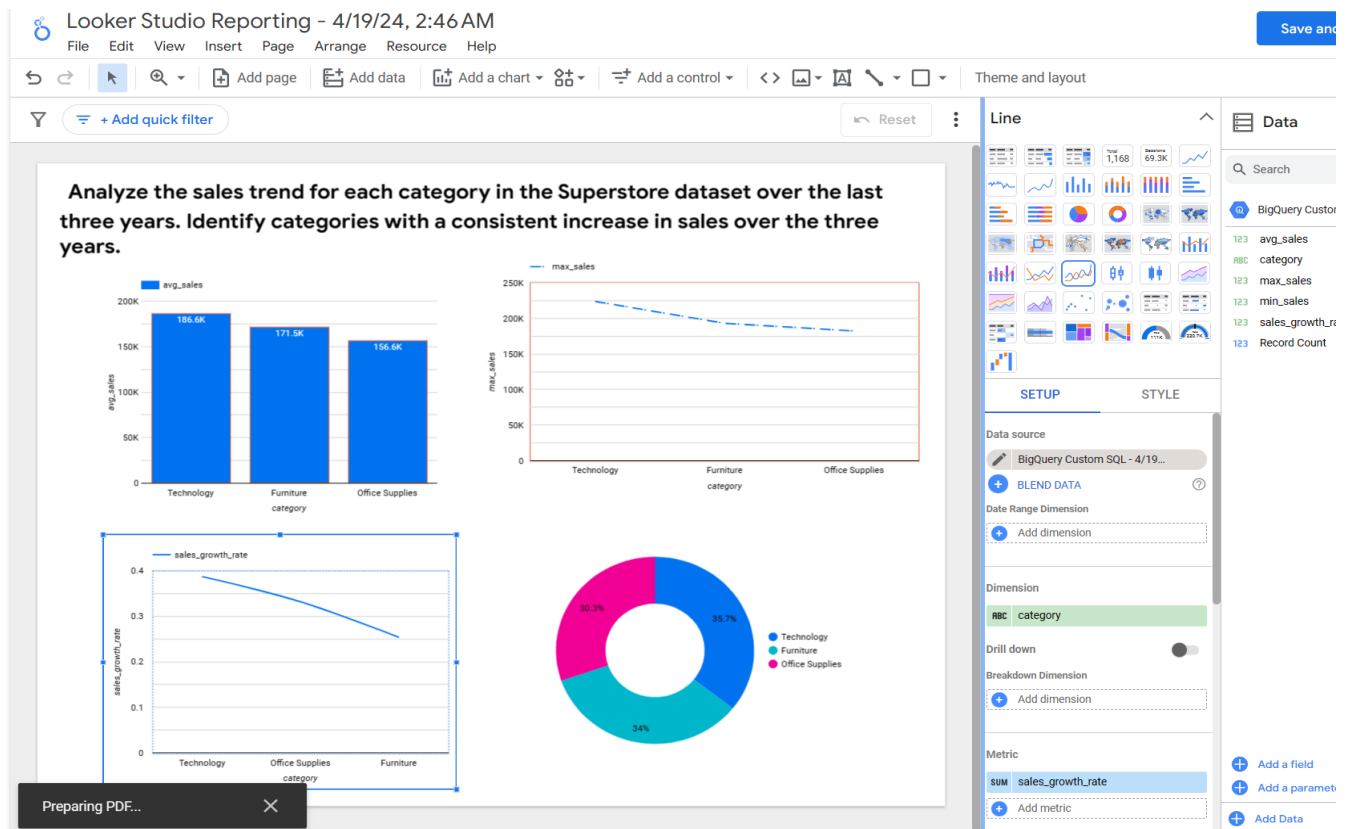
## Visualisation:



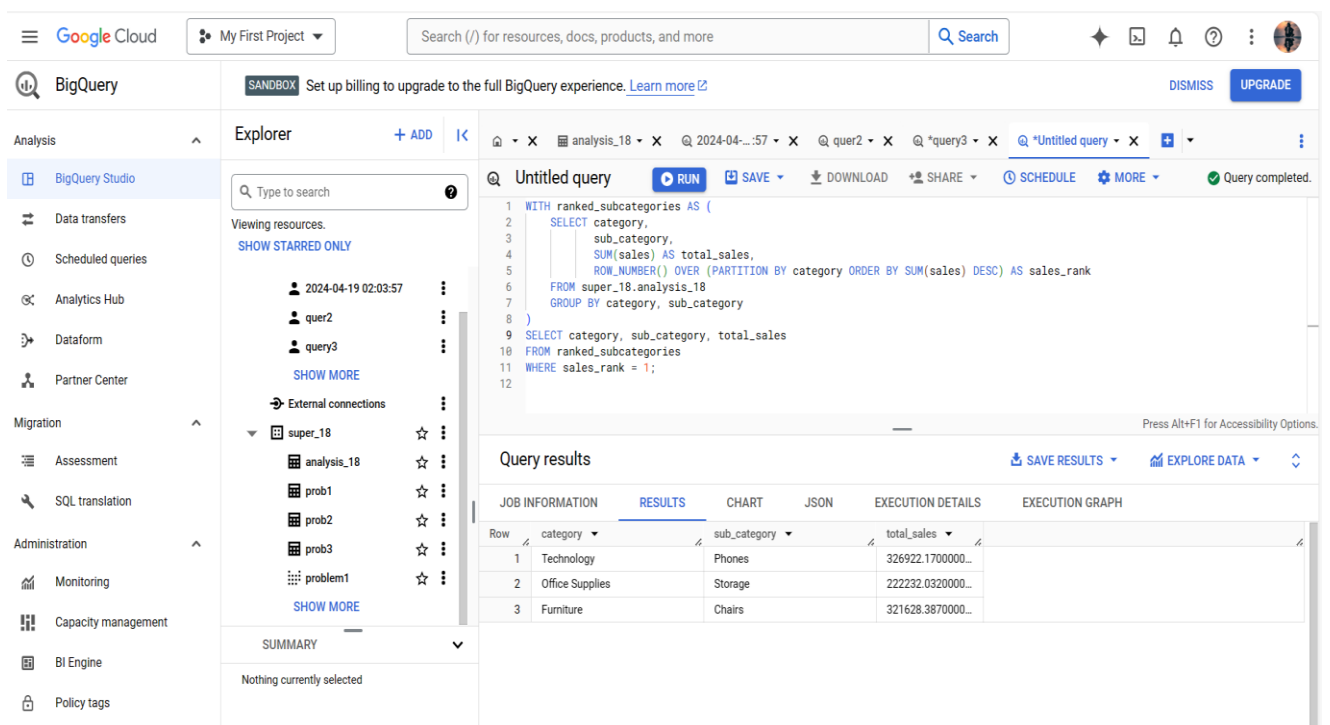
Analyze the sales trend for each category in the Superstore dataset over the last three years. Identify categories with a consistent increase in sales over the three years.



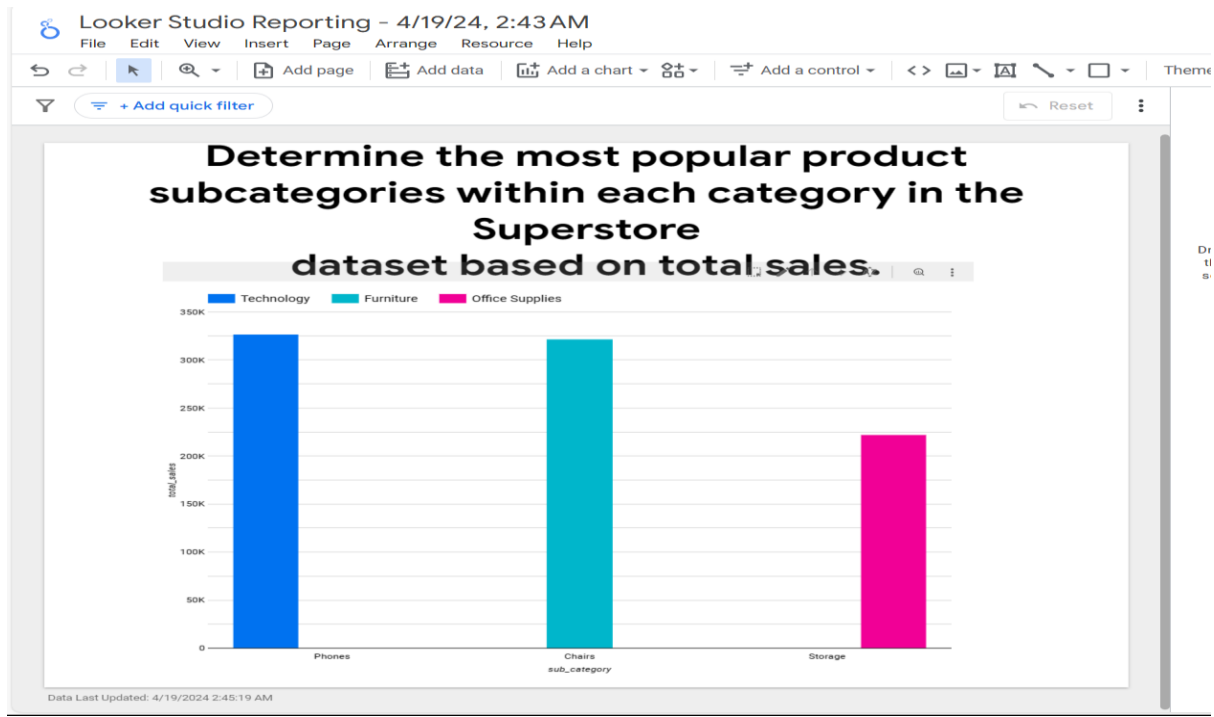
## Visualisation:



## Determine the most popular product subcategories within each category in the Superstore dataset based on total sales



## Visualisation:



## Identify the most profitable sales representatives for each region in the Superstore dataset

Google Cloud My First Project Search (/) for resources, docs, products, and more 🔍 Search

BigQuery SANDBOX Set up billing to upgrade to the full BigQuery experience. [Learn more](#) DISMISS UPGRADE

Analysis Explorer + ADD 🔍

BigQuery Studio 🔍 Type to search

Viewing resources. SHOW STARRED ONLY

▼ Saved queries (5)

- 2024-04-19 02:03:57
- quer2
- query3
- query4
- query5

SHOW MORE

External connections

▼ super\_18

- analysis\_18
- prob1
- prob2

SUMMARY

query5

striking-loop-401215

Visibility personal

Release Notes

query5 RUN SAVE QUERY SHARE SCHEDULE MORE

```
1 WITH ranked_sales_reps AS (  
2   SELECT Region,  
3          Customer_Name,  
4          SUM(Profit) AS total_profit,  
5          ROW_NUMBER() OVER (PARTITION BY Region ORDER BY SUM(Profit) DESC) AS profit_rank  
6   FROM super_18.analysis_18  
7   GROUP BY Region, Customer_Name  
8 )  
9 SELECT Region, Customer_Name, total_profit  
10 FROM ranked_sales_reps  
11 WHERE profit_rank = 1;  
12
```

Query results SAVE RESULTS EXPLORE DATA

Job history REFRESH

PERSONAL HISTORY PROJECT HISTORY

Filter Enter property name or value

Job ID	Creation time	Owner	Type	Summary	In	Actions
✓ bquxjob_7ee8055d_18ef2fffd52	April 19, 2024 2:27 AM	rithvik18m@gmail.com	COPY	-	-	⋮
✓ bquxjob_2f6f8b0a_18ef2fea91e	April 19, 2024 2:26 AM	rithvik18m@gmail.com	QUERY	WITH ranked_sales...	-	⋮
✓ bquxjob_2ebc4c8f_18ef2fce87c	April 19, 2024 2:24 AM	rithvik18m@gmail.com	COPY	-	-	⋮
✓ bquxjob_66fe7ef0_18ef2fc5f97	April 19, 2024 2:23 AM	rithvik18m@gmail.com	QUERY	WITH ranked_subcat...	-	⋮
✓ bquxjob_4b47a84c_18ef2fa7f97	April 19, 2024 2:21 AM	rithvik18m@gmail.com	COPY	-	-	⋮
✓ bquxjob_726e2eff_18ef2f93c5d	April 19, 2024 2:20 AM	rithvik18m@gmail.com	QUERY	SELECT category, AV...	-	⋮
✓	AM	rithvik18m@gmail.com	COPY	-	-	⋮

Query result exported. GO TO TABLE X



Looker Studio Studio Reporting - 4/19/24, 2:29 AM

File Edit View Insert Page Arrange Resource Help

Theme and layout

+ Add quick filter

Reset

Chart

SETUP STYLE

Bar chart

Bars 16

Series 10

☐ Stacked Bars

☐ Show data labels

Color by

☐ Single color

☐ Bar order

☒ Dimension values

Manage dimension value colors

Reference Lines

[+ Add a reference line](#)

[+ Add a reference band](#)

Axes

### Identify the most profitable sales representatives for each region in the Superstore dataset.

Customer_Name	Region	total_profit
Tamara Chand	Central	8,745.06
Raymond Buch	West	~6,800
Hunter Lopez	East	~5,100
Christopher Martinez	South	~3,200

Data Last Updated: 4/19/2024 2:31:58 AM

**Google Cloud** | My First Project | Search (/) for resources, docs, products, and more

**Observability Logging**

**Logs Explorer** | Refine scope | Project

Query | Recent (1) | Saved (0) | Suggested (1) | Library

Clear query | Save | Stream logs | Run query

2:13:31 AM - 6:13:31 AM | Search all fields | BigQuery | Log name | Severity | Show query

1 resource.type = "bigquery\_resource"

Log fields | Histogram | Create metric | Create alert | Jump to now | More actions

Log fields: Search fields and values

RESOURCE TYPE: BigQuery

SEVERITY: LOG NAME

cloudaudit.googleapis.com/data\_access 296

PROJECT ID: striking-loop-401215 296

Histogram: Apr 19, 2:13 AM | 2:30 AM | 3:00 AM | Apr 19, 3:19 AM

Query results: 296 log entries | Find in results | Correlate by | Download

Summary fields | Wrap lines

47% of results are similar and can be hidden. Hide similar entries Preview

>	i	2024-04-19 03:05:43.358	bigquery.googleapis.com	jobservice.jobcompleted	_15/jobs/job_1ABP5NNVPSAKPXMFVP2gPICTaCY2	rithvik18@gmail.com
>	i	2024-04-19 03:05:43.372	bigquery.googleapis.com	jobservice.query	projects/striking-loop-401215/queries	rithvik18@gmail.com
>	i	2024-04-19 03:05:43.582	bigquery.googleapis.com	jobservice.jobcompleted	_15/jobs/job_oUPa5xHxi_xGYa@Rr8hA2ID8Zzf	rithvik18@gmail.com
>	i	2024-04-19 03:05:43.586	bigquery.googleapis.com	jobservice.query	projects/striking-loop-401215/queries	rithvik18@gmail.com
>	i	2024-04-19 03:05:43.647	bigquery.googleapis.com	jobservice.jobcompleted	_15/jobs/job_ekTK2YQDzrXMAJ-BAlAJz-iRA	rithvik18@gmail.com
>	i	2024-04-19 03:05:43.666	bigquery.googleapis.com	jobservice.query	projects/striking-loop-401215/queries	rithvik18@gmail.com
>	i	2024-04-19 03:05:55.386	bigquery.googleapis.com	jobservice.jobcompleted	_15/jobs/job_zcDI1PGWk4gJAoUAMeTFKcp4ZT512	rithvik18@gmail.com
>	i	2024-04-19 03:05:55.327	bigquery.googleapis.com	jobservice.query	projects/striking-loop-401215/queries	rithvik18@gmail.com
>	i	2024-04-19 03:06:24.848	bigquery.googleapis.com	jobservice.jobcompleted	_15/jobs/job_PhcNFDQabIVDEcpnj-DA16Uo9vJ	rithvik18@gmail.com
>	i	2024-04-19 03:06:24.896	bigquery.googleapis.com	jobservice.query	projects/striking-loop-401215/queries	rithvik18@gmail.com
>	i	2024-04-19 03:06:26.129	bigquery.googleapis.com	jobservice.jobcompleted	_15/jobs/job_QSNIJrdjDXwYEGyPh319gsiVMSB	rithvik18@gmail.com
>	i	2024-04-19 03:06:26.133	bigquery.googleapis.com	jobservice.query	projects/striking-loop-401215/queries	rithvik18@gmail.com
>	i	2024-04-19 03:07:26.989	bigquery.googleapis.com	jobservice.jobcompleted	_15/jobs/job_LqLw-43DC-fB4061InqjynAFHTau	rithvik18@gmail.com
>	i	2024-04-19 03:07:27.833	bigquery.googleapis.com	jobservice.query	projects/striking-loop-401215/queries	rithvik18@gmail.com

To view newer entries: Extend time by: 1 hour Edit time



Log fields

Histogram

Create metric

Create alert

Jump to now

More actions

Query results

581 log entries

Find in results

Correlate by

Download

SEVERITY

TIME

IST

Summary

Edit

Summary fields

Wrap lines

47% of results are similar and can be hidden.

Hide similar entries

Preview

>

i

2024-04-19 03:05:43.506

bigquery.googleapis.com

jobservice.query

projects/striking-loop-481215/queries

rithvik18m@gmail.com

audit\_log, method: "jobservice.query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:05:43.508

bigquery.googleapis.com

...cloud.bigquery.v2.JobService.Query

\_15/jobs/job\_0pVsShXi\_xGYaW81hA2iDRZzF

rithvik18m@gmail.com

audit\_log, method: "google.cloud.bigquery.v2.JobService.Query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:05:43.647

bigquery.googleapis.com

jobservice.jobcompleted

\_15/jobs/job\_ekTK2YoYD0z1xMAJ-BAIAjz-irA

rithvik18m@gmail.com

audit\_log, method: "jobservice.jobcompleted", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:05:43.648

bigquery.googleapis.com

...cloud.bigquery.v2.JobService.Query

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rithvik18m@gmail.com

audit\_log, method: "google.cloud.bigquery.v2.JobService.Query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:05:43.666

bigquery.googleapis.com

jobservice.query

projects/striking-loop-481215/queries

rithvik18m@gmail.com

audit\_log, method: "jobservice.query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:05:43.667

bigquery.googleapis.com

...cloud.bigquery.v2.JobService.Query

\_15/jobs/job\_ekTK2YoYD0z1xMAJ-BAIAjz-irA

rithvik18m@gmail.com

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>

i

2024-04-19 03:05:55.386

bigquery.googleapis.com

jobservice.jobcompleted

\_15/jobs/job\_zcdIPGWX4gJaoUAMeTFKcp4ZT512

rithvik18m@gmail.com

audit\_log, method: "jobservice.jobcompleted", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:05:55.387

bigquery.googleapis.com

...cloud.bigquery.v2.JobService.Query

\_15/jobs/job\_zcdIPGWX4gJaoUAMeTFKcp4ZT512

rithvik18m@gmail.com

audit\_log, method: "google.cloud.bigquery.v2.JobService.Query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:05:55.327

bigquery.googleapis.com

jobservice.query

projects/striking-loop-481215/queries

rithvik18m@gmail.com

audit\_log, method: "jobservice.query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:05:55.328

bigquery.googleapis.com

...cloud.bigquery.v2.JobService.Query

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rithvik18m@gmail.com

audit\_log, method: "google.cloud.bigquery.v2.JobService.Query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:06:24.848

bigquery.googleapis.com

jobservice.jobcompleted

\_15/jobs/job\_PhCtNFDQabiVDEcnpj-DA16U09vJ

rithvik18m@gmail.com

audit\_log, method: "jobservice.jobcompleted", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:06:24.850

bigquery.googleapis.com

...cloud.bigquery.v2.JobService.Query

\_15/jobs/job\_PhCtNFDQabiVDEcnpj-DA16U09vJ

rithvik18m@gmail.com

audit\_log, method: "google.cloud.bigquery.v2.JobService.Query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:06:24.896

bigquery.googleapis.com

jobservice.query

projects/striking-loop-481215/queries

rithvik18m@gmail.com

audit\_log, method: "jobservice.query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:06:24.899

bigquery.googleapis.com

...cloud.bigquery.v2.JobService.Query

\_15/jobs/job\_PhCtNFDQabiVDEcnpj-DA16U09vJ

rithvik18m@gmail.com

audit\_log, method: "google.cloud.bigquery.v2.JobService.Query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:06:26.129

bigquery.googleapis.com

jobservice.jobcompleted

\_15/jobs/job\_Q5NJrgDXBxwyEgYpN3i9gsiV8MSB

rithvik18m@gmail.com

audit\_log, method: "jobservice.jobcompleted", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:06:26.131

bigquery.googleapis.com

...cloud.bigquery.v2.JobService.Query

\_15/jobs/job\_Q5NJrgDXBxwyEgYpN3i9gsiV8MSB

rithvik18m@gmail.com

audit\_log, method: "google.cloud.bigquery.v2.JobService.Query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:06:26.133

bigquery.googleapis.com

jobservice.query

projects/striking-loop-481215/queries

rithvik18m@gmail.com

audit\_log, method: "jobservice.query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:06:26.135

bigquery.googleapis.com

...cloud.bigquery.v2.JobService.Query

\_15/jobs/job\_Q5NJrgDXBxwyEgYpN3i9gsiV8MSB

rithvik18m@gmail.com

audit\_log, method: "google.cloud.bigquery.v2.JobService.Query", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:07:26.989

bigquery.googleapis.com

jobservice.jobcompleted

\_15/jobs/job\_LqLw-43Dc-fB4061InqjynAFHTAU

rithvik18m@gmail.com

audit\_log, method: "jobservice.jobcompleted", principal\_email: "rithvik18m@gmail.com"

>

i

2024-04-19 03:07:26.991

bigquery.googleapis.com

...cloud.bigquery.v2.JobService.Query

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rithvik18m@gmail.com

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## Analysis Documentation:

## 1. Top 10 Customers by Total Sales per Region

**Query Result Explanation:** After performing the query, we found that in the East region, Tom Ashbrook emerged as the top customer with total sales amounting to \$13,723, while in the Central region, Tamara Chand led with total sales of \$18,437. These insights shed light on the significant contributors to sales within each region, enabling targeted marketing or retention strategies to enhance customer relationships and drive revenue growth.

## 2. Profit Margin Analysis for First-Year Orders

**Query Result Explanation:** From the analysis, we identified approximately 470 out of 9800 orders that exhibited a profit margin above 20%. This suggests that a considerable portion of first-year orders achieved a healthy level of profitability, indicating effective cost management or pricing strategies. It also highlights areas where profitability might be optimized further through strategic adjustments in pricing or cost controls.

### 3. Sales Trend Analysis by Category Over Three Years

**Query Result Explanation:** Upon analyzing the sales trends over the last three years, it was observed that the Technology category exhibited the highest sales growth rate, with an average annual increase of 0.38. This indicates a significant upward trend in sales for technology-related products. Following closely behind, Office Supplies also demonstrated positive sales growth.

### 4. Popular Product Subcategories within Each Category

**Query Result Explanation:** In the Technology category, "Phones" emerged as the top-selling subcategory, indicating high consumer demand for communication devices. Similarly, within Office Supplies, the subcategory "Storage" recorded the highest total sales, suggesting a need for organizational solutions among consumers. These insights can inform inventory management decisions and marketing strategies to capitalize on popular product categories and subcategories.

### 5. Most Profitable Sales Representatives per Region

**Query Result Explanation:** Upon conducting the analysis, it was found that Tamara Chand emerged as the most profitable sales representative in the Central region. Tamara Chand achieved the highest total profit among all sales representatives operating in the Central region.

Identifying Tamara Chand as the most profitable sales representative in the Central region underscores her effectiveness in driving sales and profitability. This insight can be utilized to recognize and reward Tamara Chand's performance, as well as to study her sales strategies for potential replication or incorporation into training programs for other sales representatives.