

Mini Project for Vacat Retail Industry

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Business Goal

The goal is to execute an end-to-end data analytics project by performing ETL process, building a data model, applying statistical methods and building an interactive dashboard solution that will serve as a centralized platform (analytics dashboard solution) for Vacat to efficiently track and monitor KPI metrics towards the business goals and help them derive real-time insights for informed decision making to help drive growth.

Background

Data Techcon's Client (Vacat) runs an ecommerce company & would like to leverage data analytics to solve data silos problem by aggregating data from disparate sources (PostgreSQL, Salesforce and ERP system) into a centralized platform that will serve as a source of truth for tracking & monitoring KPI metrics.

Methodology

Data Sources: Data set was extracted from (PostgreSQL, Salesforce and ERP system) and subsequently imported into power BI in the power Query editor.

Data Preprocessing:

- ❖ Extract the data from relational database ; Extract Transform Load (ETL) process in power Query editor.
- ❖ Extract, transform, load and build a data model using Power BI by importing data from the postgresQL server.
- ❖ Change columns into correct data types.

Data Analysis Expression (DAX) and Data visualization

- ❖ Create Primary & Secondary metrics by applying statistical calculations using DAX functions.
- ❖ Develop Analytic Dashboard in Power BI for data visualization and insights to monitor KPI metrics.
- ❖ Provide recommendations on tracking the Business metrics performance.

Methodology

Exploratory Data Analysis: EDA

- ❖ Use Area chart chart to monitor the pattern and trends overtime.
- ❖ Used Bar chart to identify the top performing items.
- ❖ Pie charts and donut charts to show the percentage of categories.
- ❖ Use scatter plot to check for linear trend or relationship between 2 variables.
- ❖ Use Time intelligence functions in power bi to manipulate data using specific time periods.

Cover Page

Cover Page

Summary view

Product view

Drill down view

Time intelligence view



SUMMARY



PRODUCT
ANALYTICS



DRILL DOWN
ANALYTICS



TIME INTELLIGENCE
ANALYTICS

Key Metrics

Total Revenue

\$1.81M

Total Profit

\$237K

Order Quantity

30K

Average
Order Value

\$60

Highest
Revenue

\$17K

Lowest
Revenue

\$0.44

Lowest Profit

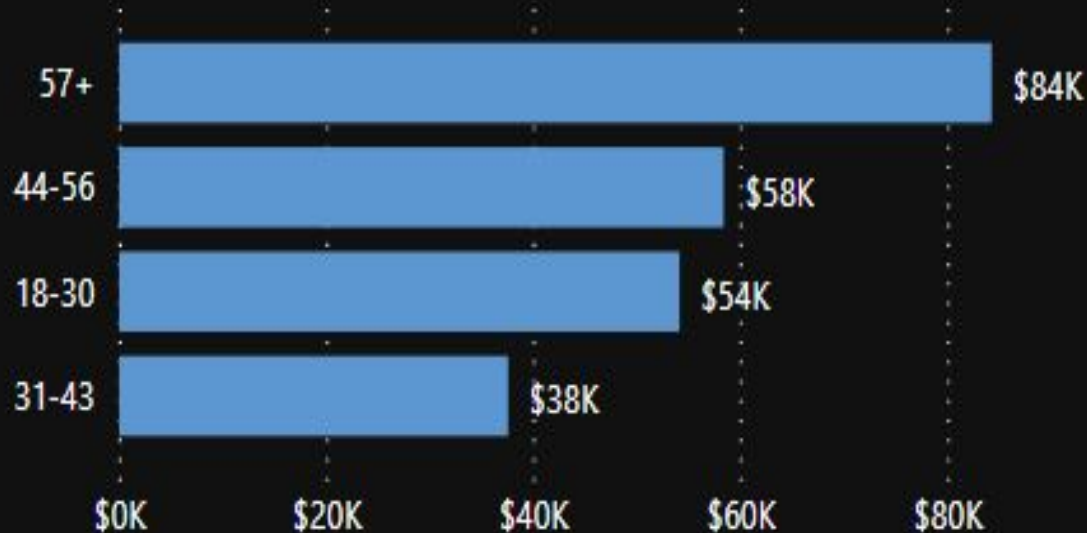
(\$6,600)

Of the total revenue, the lowest revenue observed is \$0.44 while the highest revenue is \$17,000. The total number of orders is approximately 30,000.

The total profit is \$237,000. The lowest profit is -\$6,600.

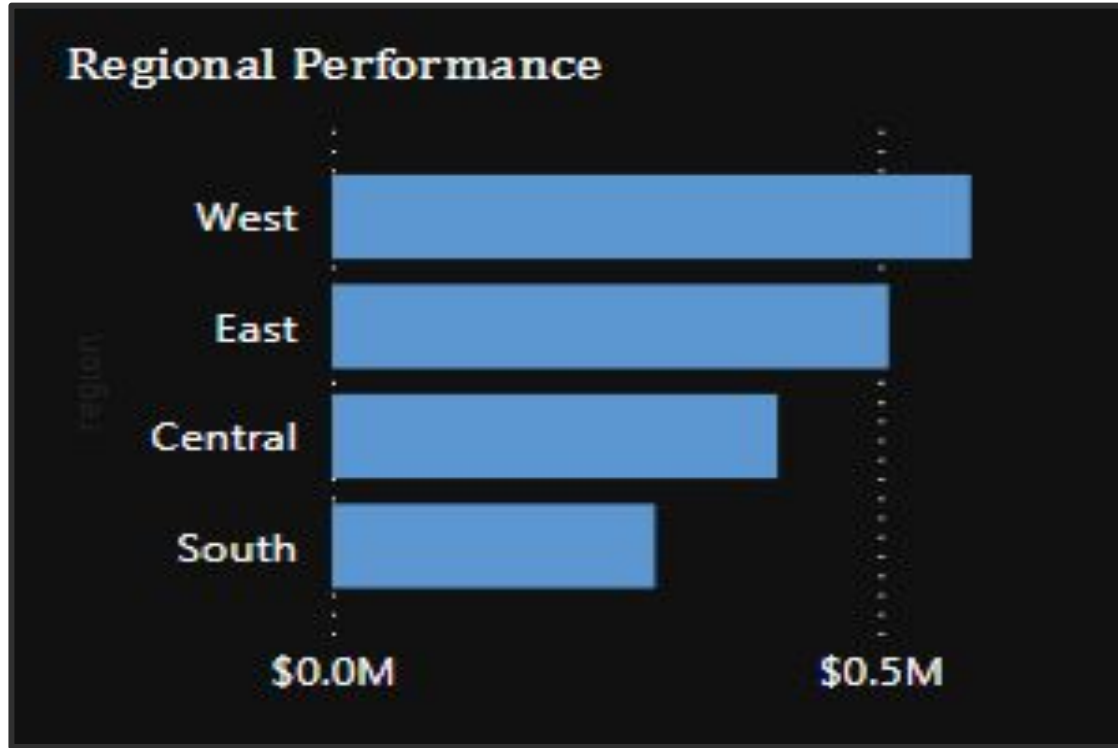
Insights (Summary Analysis)

What age group accounted for the highest profit?



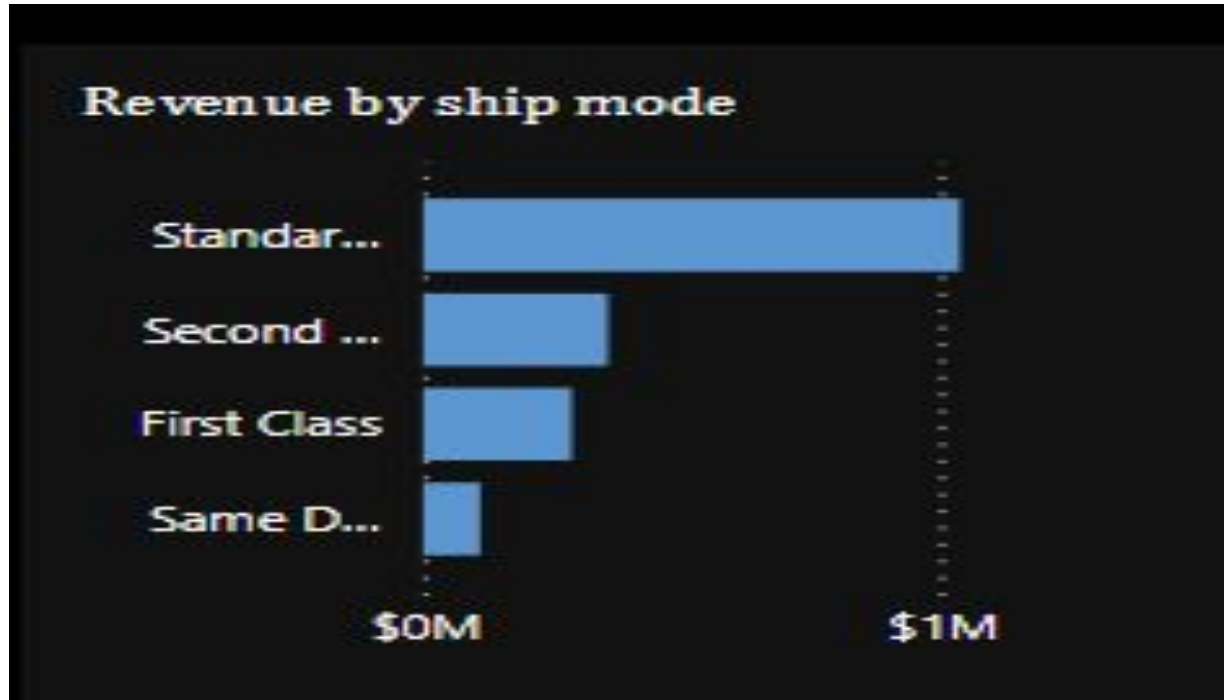
- Overall, the 57 & above age group accounted for the highest profit of \$84,000.
- Individuals below 31 and 43 years had the least profit of about \$38,000.

Insights (Summary Analysis- Regional Performance)



- The west region has the highest revenue (\$583,472) while the south region has the lowest revenue (\$295,110).

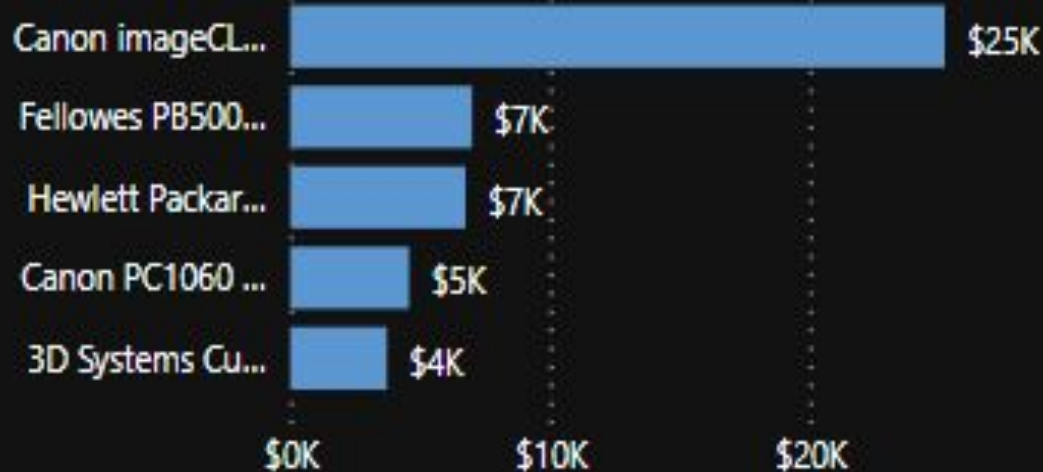
Insights (Summary Analysis- Revenue by shipping mode)



- The standard ship mode accounted for the highest revenue of about \$1,038,787.

Insights (Product Analysis-What are the top selling products?)

Top 5 selling products



- The Canon Image Class 2000 Advanced copier accounted for the most profit of \$25,000 while the Bush advantage collection racetrack conference table systems accumulated the least profit of \$1,782.

Insights (Product Analysis-What is the highest profit for product category?)



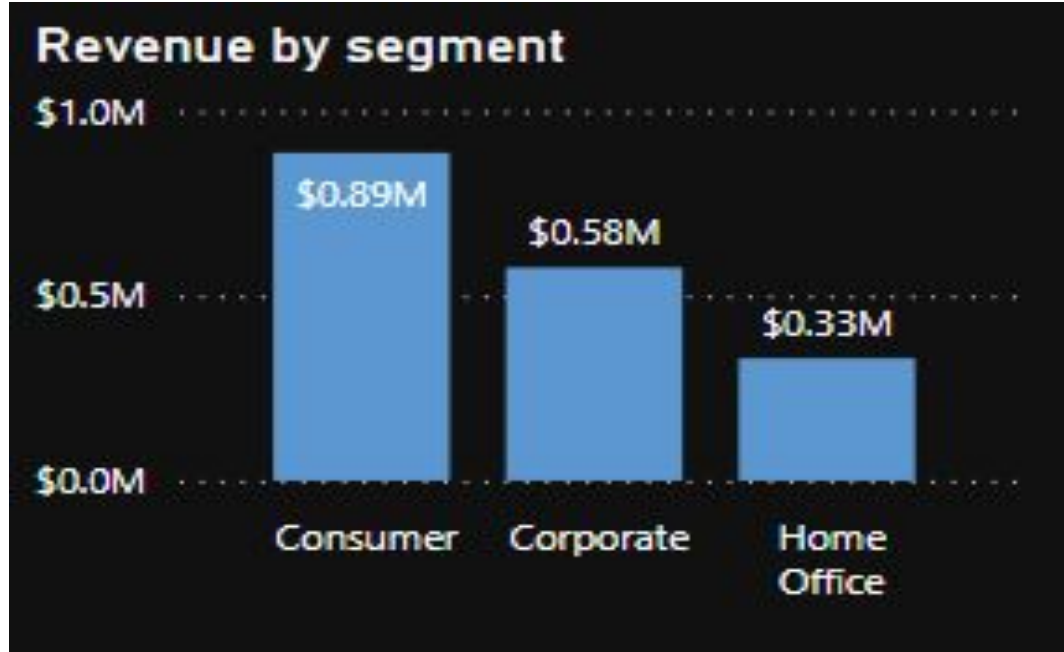
- The highest profit of \$121,744 was obtained in the Technology department while the lowest profit (\$13,755) was obtained in the Furniture department.

Insights (Product Analysis-What is the top 5 product id with highest profit?)



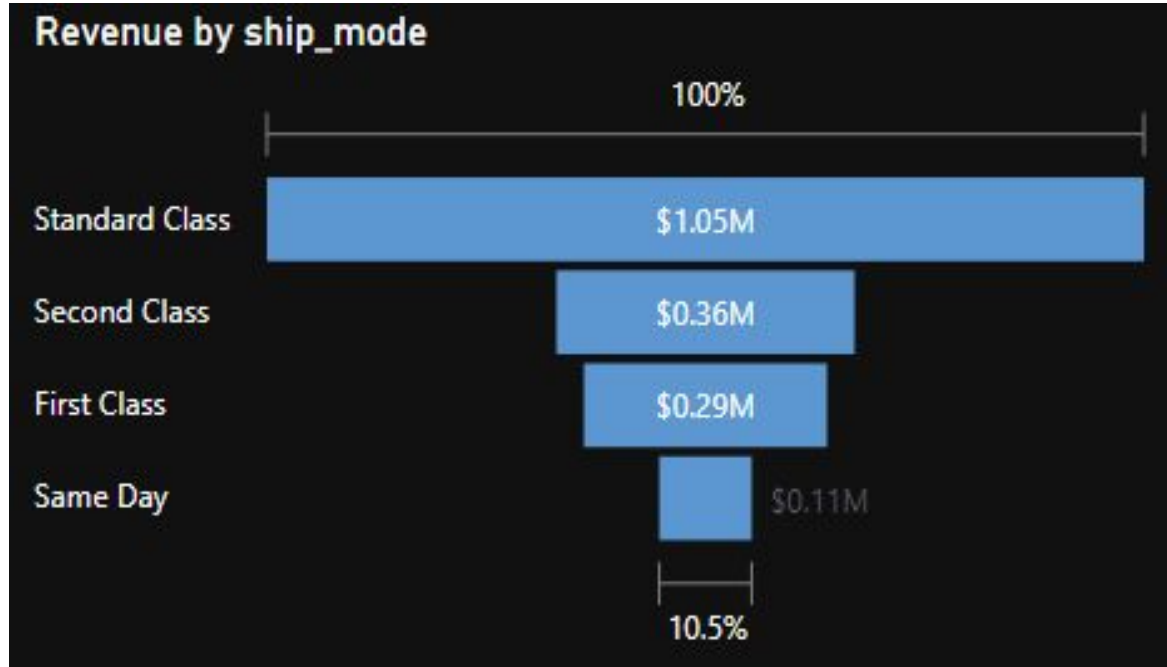
- The highest Revenue of \$25000 was obtained with product id TEC-CO-10004722.

Insights (Product Analysis-What segment generated the highest revenue?)



- The consumer segment generated the highest revenue.

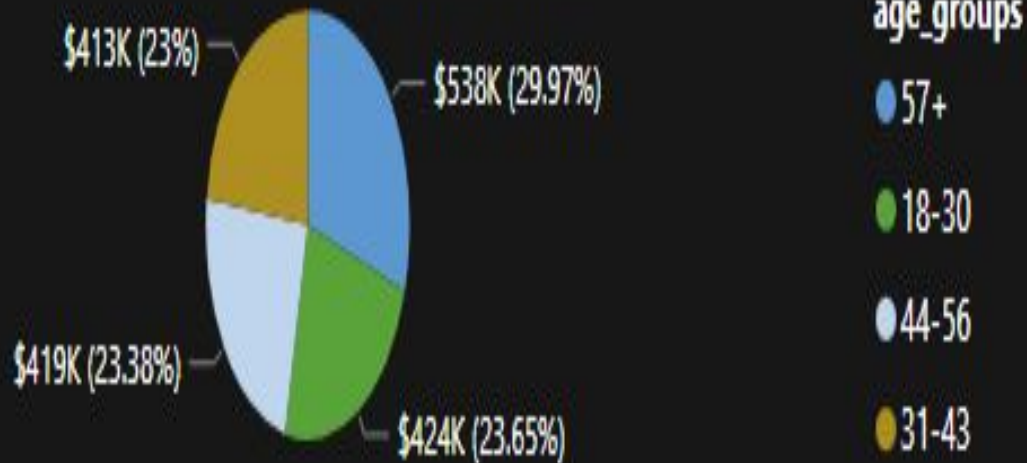
Insights (Product Analysis-What ship mode generated the highest revenue?)



- The standard class ship mode generated the highest revenue of \$1M.

Insights (Drill Down Analysis-Top Revenue by age group)

Revenue by age group



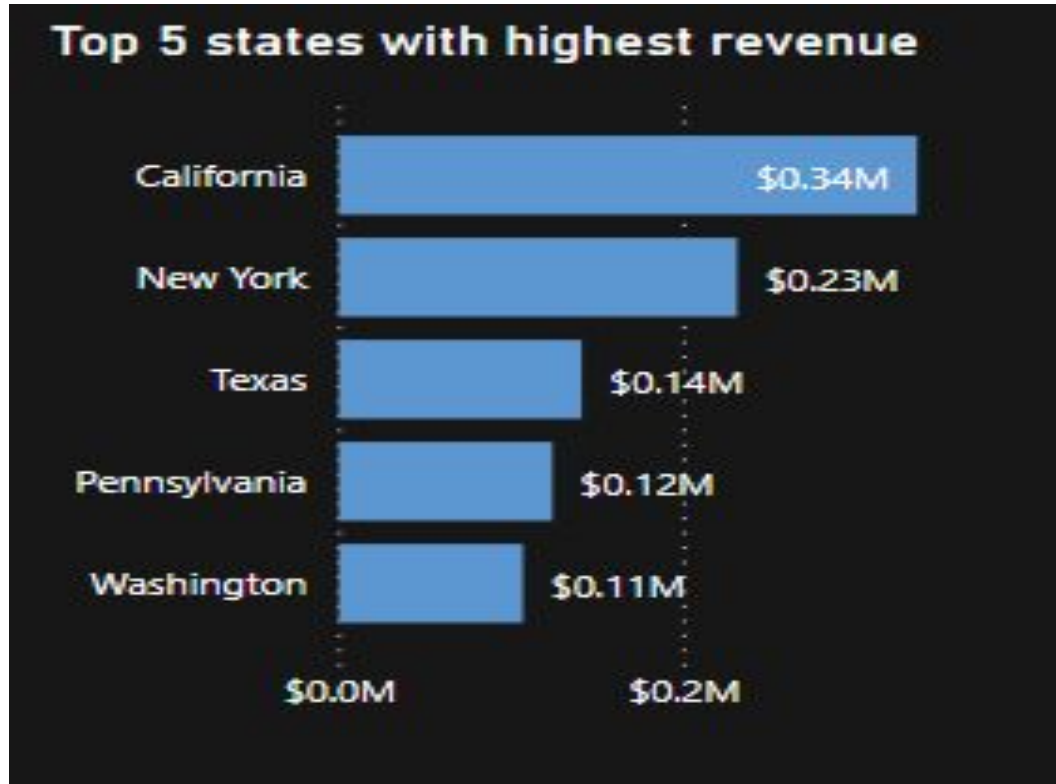
- The age group 57 & above has the highest revenue of 30%.

Insights (Drill Down Analysis- Revenue trend across years, Quarters by shipping date.)



- The highest Profit of \$105,201 was obtained in Quarter 4 of year 2017.
- Overall, there is an increasing trend in revenue in the 4th Quarter across all years 2015-2017.

Insights (Drill Down Analysis-What state accounted for the highest Revenue)



- California accounted for the highest revenue of \$336,048.

Insights (Drill Down Analysis-What state accounted for the highest profit)



- New York accounted for the highest profit of \$50,000.

Insights (Time Intelligence Analysis-Table showing revenue last year, 2 years ago and year till date)

State	Rev_YTD	Rev_Last_Year	Rev_2yearsago	Rev_3yearsago
California	\$137,646	\$198,401	\$82,854	
New York	\$106,780	\$124,796	\$53,078	
Texas	\$68,579	\$72,767	\$28,184	
Washington	\$47,844	\$59,481	\$21,146	
North Carolina	\$37,030	\$43,311	\$11,746	
Pennsylvania	\$36,830	\$87,539	\$44,559	
Illinois	\$34,373	\$55,135	\$17,626	
Arizona	\$25,712	\$44,871	\$21,802	
Wisconsin	\$21,532	\$17,530	\$9,974	
Ohio	\$19,480	\$39,462	\$17,847	
Colorado	\$17,550	\$32,249	\$13,864	
Florida	\$14,962	\$19,442	\$7,663	
Georgia	\$14,059	\$29,016	\$12,315	
Minnesota	\$12,829	\$27,318	\$14,046	
Michigan	\$11,498	\$37,689	\$21,512	
Delaware	\$10,734	\$6,562	\$3,209	
Kentucky	\$10,362	\$13,078	\$8,588	
Tennessee	\$10,360	\$18,470	\$14,655	
New Jersey	\$9,520	\$7,160	\$1,076	
Indiana	\$9,170	\$8,188	\$1,986	
Virginia	\$8,585	\$20,115	\$10,322	
Connecticut	\$8,146	\$5,629	\$918	
Mississippi	\$7,719	\$8,263	\$4,343	
Total	\$723,248	\$1,070,633	\$465,549	

- California accounted for the highest revenue last year, 2 years ago and year till date.
- Overall, revenue has decreased by 32% this current year compared to revenue obtained last year.

Recommendations

- ❖ Increase advertisement campaigns or introduce loyalty programs especially to customers age 57 and above.
- ❖ Invest more into production of the top selling product such as (CANON image class copier).
- ❖ The ship mode with the highest sales is the standard ship mode. Increase the availability of this option to customers.
- ❖ Increase technology product marketing campaigns or spend especially in the east region.
- ❖ Since Quarter 4 of every year contributes to high sales, company should increase marketing spend in this period.

Appendix-Summary View



Total Revenue

\$1.81M

Total Profit

\$237K

% Profit
Margin

13%

Average
Order Value

\$60

of
Customers

785

SUMMARY -SALES ANALYTICS

Select state

All

Select segment

All

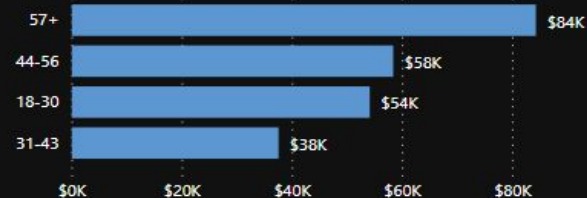


2015

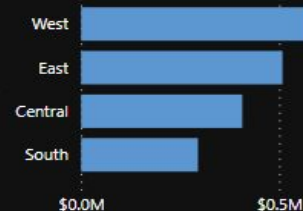
2016

2017

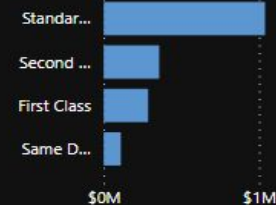
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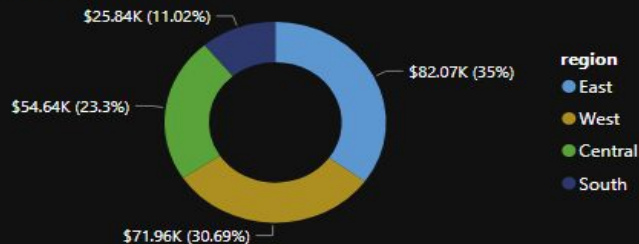
Regional Performance



Revenue by ship mode

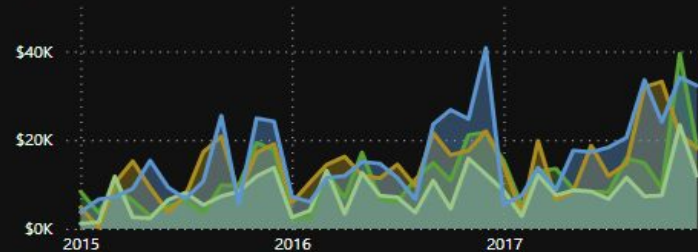


Total Profit by region



Revenue Trend over time across all regions

region ● Central ● East ● South ● West



Appendix-Product View



Total Revenue

\$1.81M

Total Profit

\$237K

% Profit
Margin

13%

of unique
product
category

3

PRODUCT ANALYTICS

Select state

All

Select segment

All

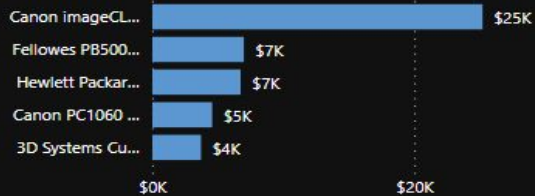


2015

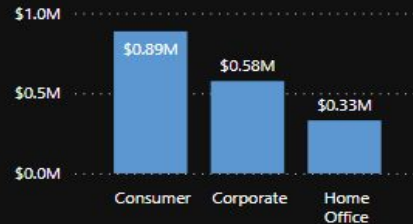
2016

2017

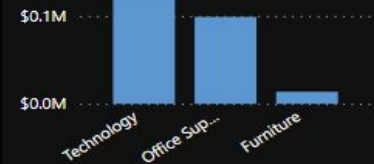
Top 5 selling products



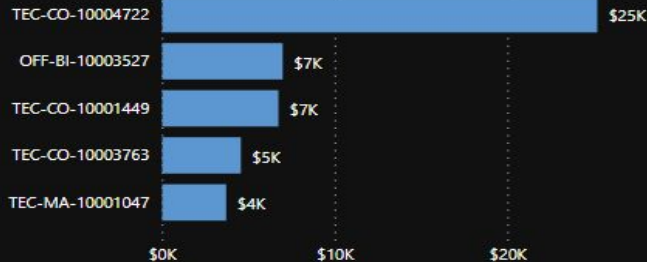
Revenue by segment



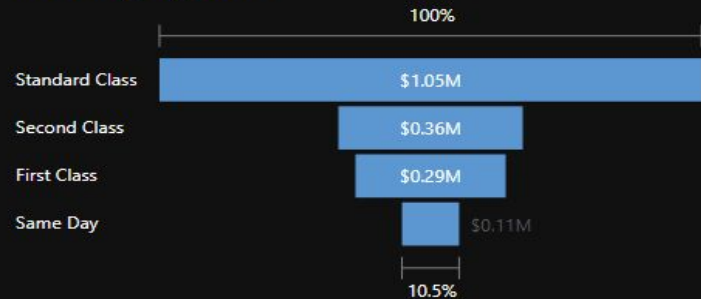
What product category accounts for the highest profit?



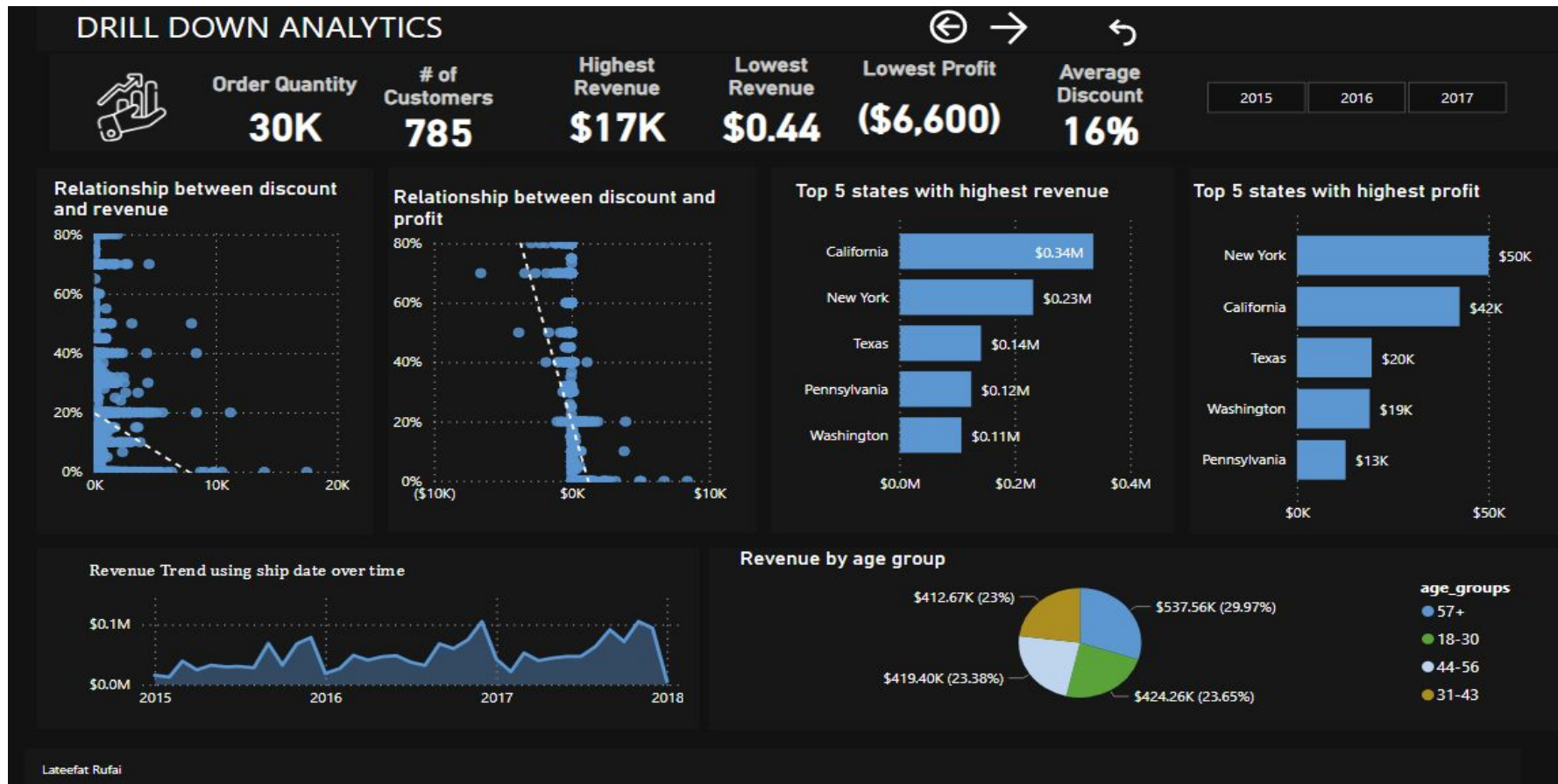
Top 5 product id with highest profit



Revenue by ship_mode



Appendix-Drill Down View



Appendix-Time Intelligence View



Revenue

\$1.81M

Profit

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% Profit
Margin

13%

Average
Order Value

\$60

of
Customers

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TIME INTELLIGENCE ANALYTICS

Select state

All

Select segment

All



2015

2016

2017

State	Rev_YTD	Rev_Last_Year	Rev_2yearsago	Rev_3yearsago
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Year	Revenue	T.Profit
2017	\$723,248.01	\$93,955.41
November	\$118,447.83	\$9,690.10
Central	\$39,497.97	\$8,487.81
Standard Class	\$24,039.00	\$7,379.80
Second Class	\$9,360.29	\$1,641.45
First Class	\$5,520.03	(\$582.52)
Same Day	\$578.65	\$49.08
West	\$34,167.40	\$2,836.79
Standard Class	\$18,422.89	\$1,980.90
Second Class	\$8,760.17	\$480.21
First Class	\$5,748.59	\$245.92
Same Day	\$1,235.75	\$129.76
South	\$23,390.33	(\$5,845.87)
Same Day	\$10,759.13	(\$3,524.24)
Standard Class	\$8,737.58	(\$73.43)
First Class	\$2,606.60	(\$2,408.89)
Second Class	\$1,287.02	\$160.70
East	\$21,392.13	\$4,211.37
Standard Class	\$12,954.01	\$1,964.42
Second Class	\$6,701.05	\$2,058.54
Same Day	\$902.55	(\$9.70)
First Class	\$834.51	\$198.12
September	\$87,750.71	\$10,974.54
Total	\$1,793,881.07	\$234,505.52