# Output

## ● Dataset

Description :
It has 16 columns - order_id, order_date, ship_mode, segment, country, city, state, postal_code, region, category, sub_category, product_id, quantity, discount, sale_price and profit.
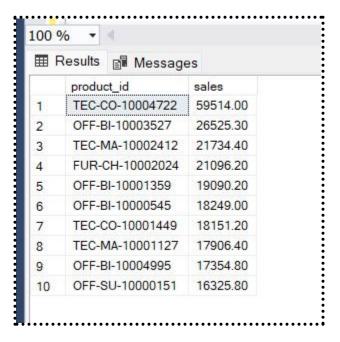
Source - https://www.kaggle.com/datasets/ankitbansal06/retail-orders

| | order_id | order_date | ship_mode | segment | country | city | state | postal_code | region | category | sub_category | product_id | quantity | discount | sale_price | profit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2023-03-01 | Second Class | Consumer | United States | Henderson | Kentucky | 42420 | South | Furniture | Bookcases | FUR-BO-10001798 | 2 | 5.20 | 254.80 | 14.80 |
| 2 | 2 | 2023-08-15 | Second Class | Consumer | United States | Henderson | Kentucky | 42420 | South | Furniture | Chairs | FUR-CH-10000454 | 3 | 21.90 | 708.10 | 108.10 |
| 3 | 3 | 2023-01-10 | Second Class | Corporate | United States | Los Angeles | California | 90036 | West | Office Supplies | Labels | OFF-LA-10000240 | 2 | 0.50 | 9.50 | -0.50 |
| 4 | 4 | 2022-06-18 | Standard Class | Consumer | United States | Fort Lauderdale | Florida | 33311 | South | Furniture | Tables | FUR-TA-10000577 | 5 | 19.20 | 940.80 | 160.80 |
| 5 | 5 | 2022-07-13 | Standard Class | Consumer | United States | Fort Lauderdale | Florida | 33311 | South | Office Supplies | Storage | OFF-ST-10000760 | 2 | 1.00 | 19.00 | -1.00 |
| 6 | 6 | 2022-03-13 | NULL | Consumer | United States | Los Angeles | California | 90032 | West | Furniture | Furnishings | FUR-FU-10001487 | 7 | 1.50 | 48.50 | -1.50 |
| 7 | 7 | 2022-12-28 | Standard Class | Consumer | United States | Los Angeles | California | 90032 | West | Office Supplies | Art | OFF-AR-10002833 | 4 | 0.30 | 9.70 | -0.30 |
| 8 | 8 | 2022-01-25 | Standard Class | Consumer | United States | Los Angeles | California | 90032 | West | Technology | Phones | TEC-PH-10002275 | 6 | 45.50 | 864.50 | 4.50 |
| 9 | 9 | 2023-03-23 | NULL | Consumer | United States | Los Angeles | California | 90032 | West | Office Supplies | Binders | OFF-BI-10003910 | 3 | 0.40 | 19.60 | -0.40 |
| 10 | 10 | 2023-05-16 | Standard Class | Consumer | United States | Los Angeles | California | 90032 | West | Office Supplies | Appliances | OFF-AP-10002892 | 5 | 3.30 | 106.70 | 16.70 |
| 11 | 11 | 2023-03-31 | NULL | Consumer | United States | Los Angeles | California | 90032 | West | Furniture | Tables | FUR-TA-10001539 | 9 | 51.30 | 1658.70 | 188.70 |

Fig 1- Data set

## ● Useful Insights derived from data

⇒ Top 10 highest revenue generating products

| | product_id | sales |
|---|---|---|
| 1 | TEC-CO-10004722 | 59514.00 |
| 2 | OFF-BI-10003527 | 26525.30 |
| 3 | TEC-MA-10002412 | 21734.40 |
| 4 | FUR-CH-10002024 | 21096.20 |
| 5 | OFF-BI-10001359 | 19090.20 |
| 6 | OFF-BI-10000545 | 18249.00 |
| 7 | TEC-CO-10001449 | 18151.20 |
| 8 | TEC-MA-10001127 | 17906.40 |
| 9 | OFF-BI-10004995 | 17354.80 |
| 10 | OFF-SU-10000151 | 16325.80 |

⇒ Top 5 highest selling products in each region
[Total regions - Central, East, South, West]

| | region | product_id | sales | rn |
|---|---|---|---|---|
| 1 | Central | TEC-CO-10004722 | 16975.00 | 1 |
| 2 | Central | TEC-MA-10000822 | 13770.00 | 2 |
| 3 | Central | OFF-BI-10001120 | 11056.50 | 3 |
| 4 | Central | OFF-BI-10000545 | 10132.70 | 4 |
| 5 | Central | OFF-BI-10004995 | 8416.10 | 5 |
| 6 | East | TEC-CO-10004722 | 29099.00 | 1 |
| 7 | East | TEC-MA-10001047 | 13767.00 | 2 |
| 8 | East | FUR-BO-10004834 | 11274.10 | 3 |
| 9 | East | OFF-BI-10001359 | 8463.60 | 4 |
| 10 | East | TEC-CO-10001449 | 8316.00 | 5 |
| 11 | South | TEC-MA-10002412 | 21734.40 | 1 |
| 12 | South | TEC-MA-10001127 | 11116.40 | 2 |
| 13 | South | OFF-BI-10001359 | 8053.20 | 3 |
| 14 | South | TEC-MA-10004125 | 7840.00 | 4 |
| 15 | South | OFF-BI-10003527 | 7391.40 | 5 |
| 16 | West | TEC-CO-10004722 | 13440.00 | 1 |
| 17 | West | OFF-SU-10000151 | 12592.30 | 2 |
| 18 | West | FUR-CH-10001215 | 9604.00 | 3 |
| 19 | West | OFF-BI-10003527 | 7804.80 | 4 |
| 20 | West | TEC-AC-10003832 | 7722.70 | 5 |

⇒ Month over month growth comparison for 2022 and 2023 sales

| | order_year | order_month | sales |
|---|---|---|---|
| 1 | 2023 | 1 | 88632.60 |
| 2 | 2022 | 1 | 94712.50 |
| 3 | 2022 | 2 | 90091.00 |
| 4 | 2023 | 2 | 128124.20 |
| 5 | 2022 | 3 | 80106.00 |
| 6 | 2023 | 3 | 82512.30 |
| 7 | 2022 | 4 | 95451.60 |
| 8 | 2023 | 4 | 111568.60 |
| 9 | 2023 | 5 | 86447.90 |
| 10 | 2022 | 5 | 79448.30 |
| 11 | 2023 | 6 | 68976.50 |
| 12 | 2022 | 6 | 94170.50 |
| 13 | 2023 | 7 | 90563.80 |
| 14 | 2022 | 7 | 78652.20 |
| 15 | 2022 | 8 | 104808.00 |
| 16 | 2023 | 8 | 87733.60 |
| 17 | 2023 | 9 | 76658.60 |
| 18 | 2022 | 9 | 79142.20 |

| | order_month | Year_2022 | Year_2023 |
|---|---|---|---|
| 1 | 1 | 94712.50 | 88632.60 |
| 2 | 2 | 90091.00 | 128124.20 |
| 3 | 3 | 80106.00 | 82512.30 |
| 4 | 4 | 95451.60 | 111568.60 |
| 5 | 5 | 79448.30 | 86447.90 |
| 6 | 6 | 94170.50 | 68976.50 |
| 7 | 7 | 78652.20 | 90563.80 |
| 8 | 8 | 104808.00 | 87733.60 |
| 9 | 9 | 79142.20 | 76658.60 |
| 10 | 10 | 118912.70 | 121061.50 |
| 11 | 11 | 84225.30 | 75432.80 |
| 12 | 12 | 95869.90 | 102556.10 |

⇒ For each category month wise highest sales
[Total categories - 3 : Furniture, Office Supplies and Technology]

| | category | order_year_month | sales |
|---|---|---|---|
| 1 | Furniture | 202210 | 42888.90 |
| 2 | Office Supplies | 202302 | 44118.50 |
| 3 | Technology | 202310 | 53000.10 |

⇒ Sub category having highest growth by profit in 2023 compared to 2022

| | sub_category | Year_2022 | Year_2023 |
|---|---|---|---|
| 1 | Accessories | 77627.20 | 83977.40 |
| 2 | Appliances | 65034.40 | 38663.30 |
| 3 | Art | 13644.10 | 12615.70 |
| 4 | Binders | 87675.50 | 108363.10 |
| 5 | Bookcases | 53469.50 | 57346.60 |
| 6 | Chairs | 151395.30 | 165429.80 |
| 7 | Copiers | 82090.30 | 62268.60 |
| 8 | Envelopes | 8767.20 | 7150.00 |
| 9 | Fasteners | 1430.10 | 1508.80 |
| 10 | Furnishings | 47816.20 | 40522.10 |
| 11 | Labels | 6329.60 | 5665.30 |
| 12 | Machines | 73723.20 | 109178.50 |
| 13 | Paper | 38898.90 | 36932.40 |
| 14 | Phones | 157334.70 | 160673.60 |
| 15 | Storage | 102907.40 | 113000.60 |
| 16 | Supplies | 16140.70 | 28917.40 |
| 17 | Tables | 111305.90 | 88055.30 |

| | sub_category | Year_2022 | Year_2023 | percentage |
|---|---|---|---|---|
| 1 | Supplies | 16140.70 | 28917.40 | 79.158276 |