
Which product lines dominate overall sales?

```
SELECT p.product_line,
    SUM(s.sales_amount) AS total_revenue,
    ROUND(100.0 * SUM(s.sales_amount) / SUM(SUM(s.sales_amount)) OVER(), 2)
    AS pct_contribution
FROM sales s
JOIN products p ON s.product_key = p.product_key
GROUP BY p.product_line
ORDER BY total_revenue DESC;
```

product_line	total_revenue	pct_contribution
Road	14622841	49.81
Mountain	10250850	34.92
Touring	3879135	13.21
Other sales	603014	2.05

Insights:

Road Product line generates the most revenue in all years.

What is the revenue generated by each product?

```
WITH ranked_products AS (
   SELECT p.product_name,
        SUM(s.sales_amount) AS total_revenue,
        RANK() OVER(ORDER BY SUM(s.sales_amount) DESC) AS rank_order,
        SUM(SUM(s.sales_amount)) OVER() AS grand_total
   FROM sales s
   JOIN products p ON s.product_key = p.product_key
   GROUP BY p.product_name
)
SELECT product_name,
        total_revenue,
        ROUND(100 * total_revenue / grand_total, 2) AS revenue_pct
   FROM ranked_products
```

product_name	total_revenue	revenue_pct
Mountain-200 Black- 46	1373454	4.68
Mountain-200 Black- 42	1363128	4.64
Mountain-200 Silver- 38	1339394	4.56
Mountain-200 Silver- 46	1301029	4.43
Mountain-200 Black- 38	1294854	4.41
Mountain-200 Silver- 42	1257368	4.28
Road-150 Red- 48	1205786	4.11
Road-150 Red- 62	1202208	4.10
Road-150 Red- 52	1080556	3.68
Road-150 Red- 56	1055510	3.60
Road-150 Red- 44	1005418	3.42
Road-250 Black- 52	734425	2.50
Road-250 Red- 58	702666	2.39
Road-250 Black- 48	691213	2.35

Are high-volume products always high-revenue?

```
SELECT p.product_name, SUM(s.quantity) AS total_units,
    SUM(s.sales_amount) AS total_revenue
FROM sales s
JOIN products p ON s.product_key = p.product_key
GROUP BY p.product_name
ORDER BY total_units DESC;
```

product_name	total_units	total_revenue
Water Bottle - 30 oz.	4242	21210
Patch Kit/8 Patches	3190	6380
Mountain Tire Tube	3096	15480
Road Tire Tube	2376	9504
Sport-100 Helmet- Red	2230	78050
AWC Logo Cap	2189	19701
Sport-100 Helmet- Blue	2124	74340
Fender Set - Mountain	2120	46640
Sport-100 Helmet- Black	2082	72870
Mountain Bottle Cage	2023	20230
Road Bottle Cage	1711	15399
Touring Tire Tube	1488	7440
HL Mountain Tire	1397	48895
ML Mountain Tire	1161	34830
LL Road Tire	1044	21924
Touring Tire	935	27115
ML Road Tire	926	23150

Insights:

No, high-volume products does not always generate high-revenue.

Total units of HL Mountain Tire were 1397 but still generated highest revenue.

Product subcategories with highest average profit margins

```
select
    p.subcategory,
    avg(s.sales_price - p.cost) as avg_profit_margin
from sales s
join products p on s.product_key = p.product_key
group by p.subcategory
order by avg_profit_margin desc;
```

subcategory	avg_profit_margin
Mountain Bikes	876.1231
Touring Bikes	671.3752
Road Bikes	656.9612
Bike Stands	100.0000
Bike Racks	75.0000
Shorts	44.0000
Vests	40.0000
Hydration Packs	34.0000
Helmets	22.0000
Gloves	15.0000
Fenders	14.0000
Jerseys	12.0000
Tires and Tubes	8.8781
Socks	6.0000
Cleaners	5.0000
Bottles and Ca...	4.4045
Caps	2.0000

Insights:

Mountain Bikes have the maximum average profit margin whereas Caps have the lowest.

How much are sales growing each year?

```
WITH yearly_sales AS (
   SELECT YEAR(order_date) AS year, SUM(sales_amount) AS total_sales
   FROM sales
   GROUP BY YEAR(order_date)
)
SELECT year, total_sales,
      LAG(total_sales) OVER(ORDER BY year) AS prev_year_sales,
      ROUND((total_sales - LAG(total_sales) OVER(ORDER BY year)) /
          NULLIF(LAG(total_sales) OVER(ORDER BY year),0), 2) *100 AS growth_pct
FROM yearly_sales;
```

year	total_sales	prev_year_sales	growth_pct
2010	43419	NULL	NULL
2011	7075088	43419	16195.00
2012	5842231	7075088	-17.00
2013	16344468	5842231	180.00
2014	45642	16344468	-100.00

Insights:

The company’s year-on-year growth shows no clear upward trend.

Specifically, the growth rate declined in 2012, rebounded in 2013, and then dropped again in 2014.

This indicates that the business has been experiencing fluctuations rather than consistent growth.

Segmenting customers based on Recency, Frequency and Monetary

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```
SELECT c.customer_id,
    concat(c.first_name, ' ', c.last_name) as name,
    DATEDIFF(CURDATE(), MAX(s.order_date)) AS recency,
    COUNT(DISTINCT s.order_number) AS frequency,
    SUM(s.sales_amount) AS monetary
FROM sales s
JOIN customers c ON s.customer_key = c.customer_key
GROUP BY c.customer_id, concat(c.first_name, ' ', c.last_name)
```

customer_id	name	recency	frequency	monetary
11433	Maurice Shan	4354	6	12904
11439	Janet Munoz	4318	6	12488
11241	Lisa Cai	4309	7	11468
11417	Lacey Zheng	4262	7	11248
11420	Jordan Turner	4278	7	11200
11242	Larry Munoz	4273	7	11067
11245	Ricky Vazquez	4266	4	10580
11246	Latasha Rubio	4257	4	10575
11237	Clarence Anand	4282	4	10566
11425	Ariana Gray	4256	6	10528
11429	Marco Lopez	4253	6	10468
11428	Deanna Perez	4316	4	9954
11427	Desiree Dominguez	4318	4	9918
11431	Bryant Garcia	4338	4	9913
11423	Jasmine Stewart	4318	4	9905
11249	Cindy Patel	4353	4	9890
11412	Sydney Bryant	4327	4	9880

Which customers haven’t purchased recently?

```
SELECT c.customer_id, c.first_name, c.last_name,
    MAX(s.order_date) AS last_order,
    DATEDIFF(CURDATE(), MAX(s.order_date)) AS days_since_last_purchase
FROM customers c
JOIN sales s ON c.customer_key = s.customer_key
GROUP BY c.customer_id, c.first_name, c.last_name
ORDER BY days_since_last_purchase DESC;
```

customer_id	first_name	last_name	last_order	days_since_last_purchase
28389	Rachael	Martinez	2010-12-29	5344
27601	Sydney	Rogers	2011-01-02	5340
27612	Lucas	Hill	2011-01-03	5339
27666	Alyssa	Garcia	2011-01-06	5336
25861	Garrett	Cooper	2011-01-06	5336
27577	Patrick	Cook	2011-01-06	5336
27604	Richard	Brooks	2011-01-07	5335
27578	Courtney	Carter	2011-01-14	5328
27649	Evan	Bailey	2011-01-16	5326
27614	Warren	Ye	2011-01-16	5326
29385	Don	Lal	2011-01-19	5323
25857	Abigail	Perry	2011-01-19	5323
28390	Frederick	Suri	2011-01-24	5318
27605	Miguel	Martinez	2011-01-26	5316
27611	Jack	Edwards	2011-01-26	5316
19802	Sara	James	2011-01-27	5315
26620	Isabella	Green	2011-01-27	5315

Result 2

Which categories are most often delayed?

```
SELECT p.category,
    ROUND(AVG(DATEDIFF(s.shipping_date, s.due_date)), 2) AS avg_delay_days
FROM sales s
JOIN products p ON s.product_key = p.product_key
WHERE s.shipping_date > s.due_date
GROUP BY p.category
ORDER BY avg_delay_days DESC;
```

	category	avg_delay_days
▶	Bikes	5.00
	Accessories	5.00
	Clothing	5.00

Insights:

Analysis shows that all product categories experience the same average delivery delay.

This suggests that the delay is not category-specific, but rather a systemic issue in the supply chain or logistics process.

Top 10 customers by total revenue with country and gender info

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```
select
        c.customer_key,
        c.first_name,
        c.last_name,
        c.country,
        c.gender,
        sum(s.sales_amount) as total_spent
from sales s
join customers c on s.customer_key = c.customer_key
group by c.customer_key, c.first_name, c.last_name, c.country, c.gender
order by total_spent desc limit 10;
```

customer_key	first_name	last_name	country	gender	total_spent
1133	Kaitlyn	Henderson	France	Female	13294
1302	Nichole	Nara	France	Female	13294
1309	Margaret	He	France	Female	13268
1132	Randall	Dominguez	France	Male	13265
1301	Adriana	Gonzalez	France	Female	13242
1322	Rosa	Hu	France	Female	13215
1125	Brandi	Gill	France	Female	13195
1308	Brad	She	France	Male	13172
1297	Francisco	Sara	France	Male	13164
434	Maurice	Shan	France	Male	12904

Insights:

Among all regions, France hosts the top 10 highest-spending customers.

This indicates that the French market contributes disproportionately to revenue compared to other regions.

Which geographies are most profitable?

```
SELECT c.country,
    SUM(s.sales_amount - (p.cost * s.quantity)) AS total_profit
FROM sales s
JOIN products p ON s.product_key = p.product_key
JOIN customers c ON s.customer_key = c.customer_key
GROUP BY c.country
ORDER BY total_profit DESC;
LIMIT 10;
```

country	total_profit
United States	3715378
Australia	3542018
United Kingdom	1342453
Germany	1147603
France	1041856
Canada	811565
Unknown	84634

Insights:

United States emerges as the most profitable market, contributing the highest share to overall profit, whereas Canada is the least profitable market.

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Customer purchasing patterns by age group and marital status

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with customer_age as (
    select
        customer_key,
        floor(datediff(current_date, birth_date) / 365) as age,
        marital_status
    from customers
),
age_groups as (
    select
        customer_key,
        marital_status,
        case
            when age < 25 then 'Under 25'
            when age between 25 and 40 then '25-40'
            when age between 41 and 60 then '41-60'
            else '60+'
        end as age_group
    from customer_age
),
sales_by_group as (
```

```
    select
        ag.age_group,
        ag.marital_status,
        sum(s.sales_amount) as total_sales,
        count(distinct s.customer_key) as customer_count
    from sales s
    join age_groups ag on s.customer_key = ag.customer_key
    group by ag.age_group, ag.marital_status
)
select * from sales_by_group
order by total_sales desc;
```

age_group	marital_status	total_sales	customer_count
41-60	Single	10282271	5948
41-60	Married	9543077	5891
60+	Married	5200667	3818
60+	Single	3166279	2023
25-40	Single	721419	502
25-40	Married	442127	302

Insights:

The core customer base consists of single individuals aged 41–60, making up the majority of our sales.

In contrast, younger customers form a significantly smaller segment of our customer base.