

1. States with the Highest Profit

```
1 WITH temp AS (  
2 SELECT  
3 state,  
4 SUM(profit) as sum_profit,  
5 SUM(amount) as sum_sales  
6 FROM dane  
7 GROUP BY state  
8 ORDER BY sum_profit DESC  
9 )  
10 SELECT *,  
11 ROUND(sum_profit*100/sum_sales,0) AS proc_margin  
12 FROM temp
```

	state text	sum_profit bigint	sum_sales bigint	proc_margin numeric
1	Florida	308706	1091174	28
2	New York	308506	1130048	27
3	California	278814	1086436	25
4	Texas	257780	1011475	25
5	Illinois	240372	978738	24
6	Ohio	216519	884768	24

- Florida generates the highest total profit despite not recording the highest total sales. This suggests a higher profit margin and stronger overall profitability compared to other states
- Observed positive relation between total sales and profit margin. States with higher sales tend to achieve slightly higher margins
- Profit margins remain relatively constant across states (24–28%)

2. Most Profitable Category in Each State

```
1 WITH temp AS (  
2 SELECT  
3 state,  
4 category,  
5 SUM(profit) as sum_profit,  
6 SUM(profit)*100/SUM(SUM(profit)) OVER (PARTITION BY state) as p_profit,  
7 ROW_NUMBER() OVER (PARTITION BY state ORDER BY SUM(profit) DESC) as num  
8 FROM dane  
9 GROUP BY state, category  
10 )  
11 SELECT state, category, sum_profit, ROUND(p_profit,2) as proc_profit  
12 FROM temp  
13 WHERE num=1  
14 ORDER BY sum_profit DESC
```

	state text	category text	sum_profit bigint	proc_profit numeric
1	California	Furniture	115391	41.39
2	Florida	Electronics	111892	36.25
3	New York	Office Supplies	108449	35.15
4	Texas	Electronics	103942	40.32
5	Illinois	Office Supplies	91755	38.17
6	Ohio	Furniture	80369	37.12

- The most profitable product category varies across states, indicating differences in local demand and market structure
- A particularly strong category dominance is visible in California (Furniture) and in Texas (Electronics), where over 40% of total profit is generated by the leading category

3. Sales vs Profitability Analysis (for sub-categories with sales >= 300k)

```

1  WITH temp AS (
2  SELECT
3  sub_category,
4  category,
5  SUM(profit) as sum_profit,
6  SUM(amount) as sum_sales
7  FROM dane
8  GROUP BY category, sub_category
9  HAVING SUM(amount) >= 300000
10 )
11 SELECT *,
12 ROUND(sum_profit*100/sum_sales,0) as proc_margin
13 FROM temp
14 ORDER BY sum_sales DESC

```

	sub_category text	category text	sum_profit bigint	sum_sales bigint	proc_margin numeric
1	Markers	Office Supplies	174749	627875	27
2	Tables	Furniture	156796	625177	25
3	Sofas	Furniture	142854	568367	25
4	Printers	Electronics	146259	566359	25
5	Electronic Gam...	Electronics	148454	565092	26
6	Pens	Office Supplies	129846	552269	23
7	Paper	Office Supplies	149723	524755	28
8	Phones	Electronics	113607	503055	22
9	Chairs	Furniture	122892	431964	28
10	Laptops	Electronics	110260	419950	26
11	Bookcases	Furniture	118000	413165	28
12	Binders	Office Supplies	97257	384611	25

- High sales volume at the sub-category level does not necessarily correlate with higher profit margins
- The highest sales and total profit are generated by Markers and Tablets. However, the highest profit margins are achieved by Paper, Chairs and Bookcases (28%), followed by Markers (27%)
- The lowest profit margins are observed for Phones (22%) and Pens (23%)

4. Year-Over-Year Performance Analysis

```

1  WITH sums AS (
2  SELECT
3  year,
4  SUM(profit) AS sum_profit,
5  SUM(amount) AS sum_sales
6  FROM dane
7  GROUP BY year
8  ORDER BY year
9  ),
10 yoy AS (
11 SELECT *, ROUND(sum_profit*100/sum_sales,0) AS proc_margin,
12 LAG(sum_profit) OVER (ORDER BY year) AS prev_profit,
13 LAG(sum_sales) OVER (ORDER BY year) AS prev_sales
14 FROM sums
15 )
16 SELECT
17 year,
18 ROUND((sum_profit-prev_profit)*100/prev_profit,1) AS yoy_profit,
19 ROUND((sum_sales-prev_sales)*100/prev_sales,1) AS yoy_sales,
20 proc_margin
21 FROM yoy

```

	year integer	yoy_profit numeric	yoy_sales numeric	proc_margin numeric
1	2020	[null]	[null]	26
2	2021	26.0	37.0	23
3	2022	38.0	23.0	26
4	2023	-18.0	-15.0	26
5	2024	-4.0	-2.0	25

- **2021:** Strong growth in both profit and sales
- **2022:** Continued growth in profit and sales, with an improvement in margin. These two years represent a period of strong performance for the company
- **2023:** A noticeable decline in both profit and sales, while the margin remained stable at 26%. This suggests the end of the growth phase and the beginning of a slowdown.
- **2024:** A slight further decrease in profit and sales, indicating that the decline is slowing down and the company may be stabilizing

5. Sales Trends by Months

```
1 WITH temp AS(  
2 SELECT  
3 month,  
4 ROUND(AVG(profit),0) as a_profit,  
5 CASE  
6 WHEN month='styczeń' OR month='luty' OR month='marzec' THEN 1  
7 WHEN month='kwiecień' OR month='maj' OR month='czerwiec' THEN 2  
8 WHEN month='lipiec' OR month='sierpień' OR month='wrzesień' THEN 3  
9 WHEN month='październik' OR month='listopad' OR month='grudzień' THEN 4  
10 END AS quarter  
11 FROM dane  
12 GROUP BY month, year  
13 )  
14 SELECT month, ROUND(AVG(a_profit),0) AS avg_profit, quarter  
15 FROM temp  
16 GROUP BY month, quarter  
17 ORDER BY avg_profit DESC
```

	month text	avg_profit numeric	quarter integer
1	marzec	1630	1
2	sierpień	1472	3
3	wrzesień	1412	3
4	czerwiec	1356	2
5	kwiecień	1343	2
6	lipiec	1337	3
7	listopad	1310	4
8	październik	1292	4
9	luty	1282	1
10	grudzień	1255	4
11	styczeń	1218	1
12	maj	1209	2

- The highest average profit is observed in March (1630), while the lowest is recorded in May (1209)
- The difference between the most and least profitable months is around 25%, which suggests seasonality in sales
- Higher profits are generally observed in the 2nd and 3rd quarters than in 1st and 4th quarters