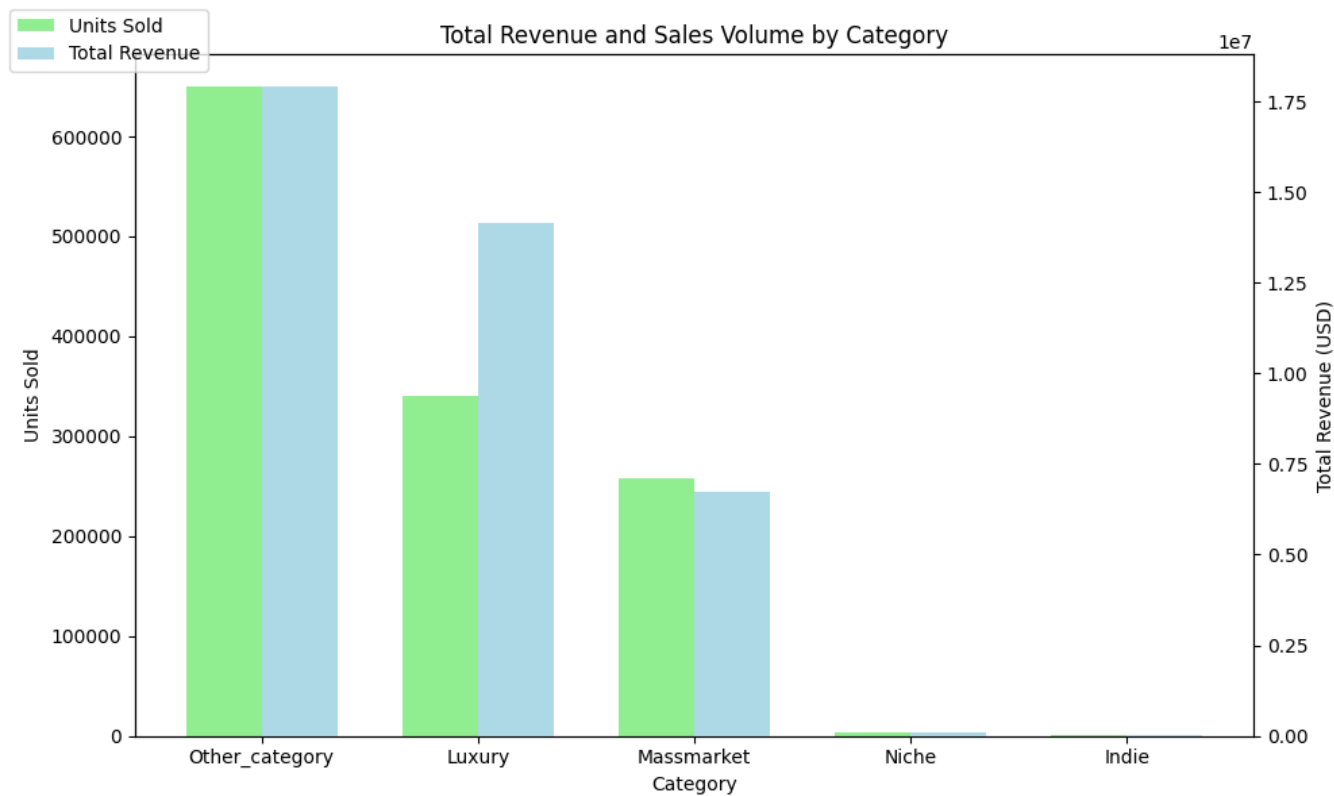


# Part 1: Product Category Analysis

## General Overview

Product Category Analysis												
	category	brand	title	sold	available	available_value	total_revenue	average_price	sold_man	sold_woman	revenue_man	revenue_woman
0	Other_category	329	1188	649501	25413	713946	17899065	27.56	358092.0	291409	10335993.0	7563072
1	Luxury	39	537	340028	6789	299947	14157643	41.64	241584.0	98444	10466504.0	3691139
2	Massmarket	21	169	257746	3932	112682	6736388	26.14	161717.0	96029	4518345.0	2218043
3	Niche	5	25	3091	109	4084	110922	35.89	0.0	3091	0.0	110922
4	Indie	8	26	667	198	7635	28460	42.67	276.0	391	15259.0	13201



## Conclusions

The "Other" category dominates with 649,501 units sold, contributing to a total revenue of USD 17,899,065, the highest across all categories.

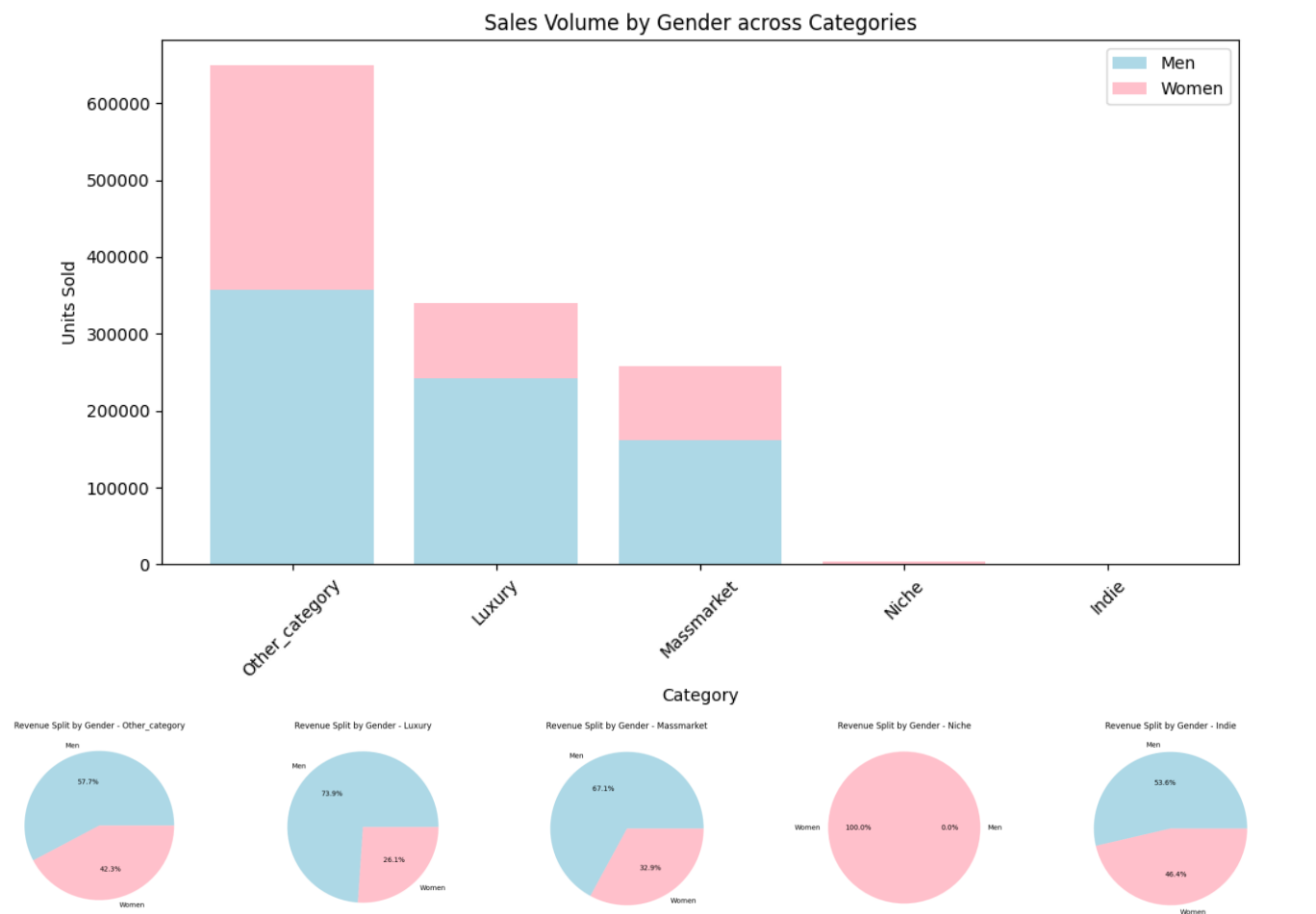
The luxury segment accounts for 340,028 units sold, generating USD 14,157,643 in revenue.

With 257,746 units sold and a total revenue of USD 6,736,388, the mass market caters to a price-sensitive audience, as indicated by the lower average price (USD 26.14).

The niche category has the lowest sales volume at 3,091 units and total revenue of USD 110,922.

Indie brands have the smallest presence, with just 667 units sold and total revenue of USD 28,460.

Overview by Gender



Conclusions

Sales in the other segment are relatively balanced between men (358,092 units) and women (291,409 units), though men slightly outperform in volume. Men's products generate USD 10,335,993 in revenue (57.8% of the category's total), while women contribute USD 7,563,072. This gender revenue gap highlights a stronger demand or higher pricing for men's products in this category.

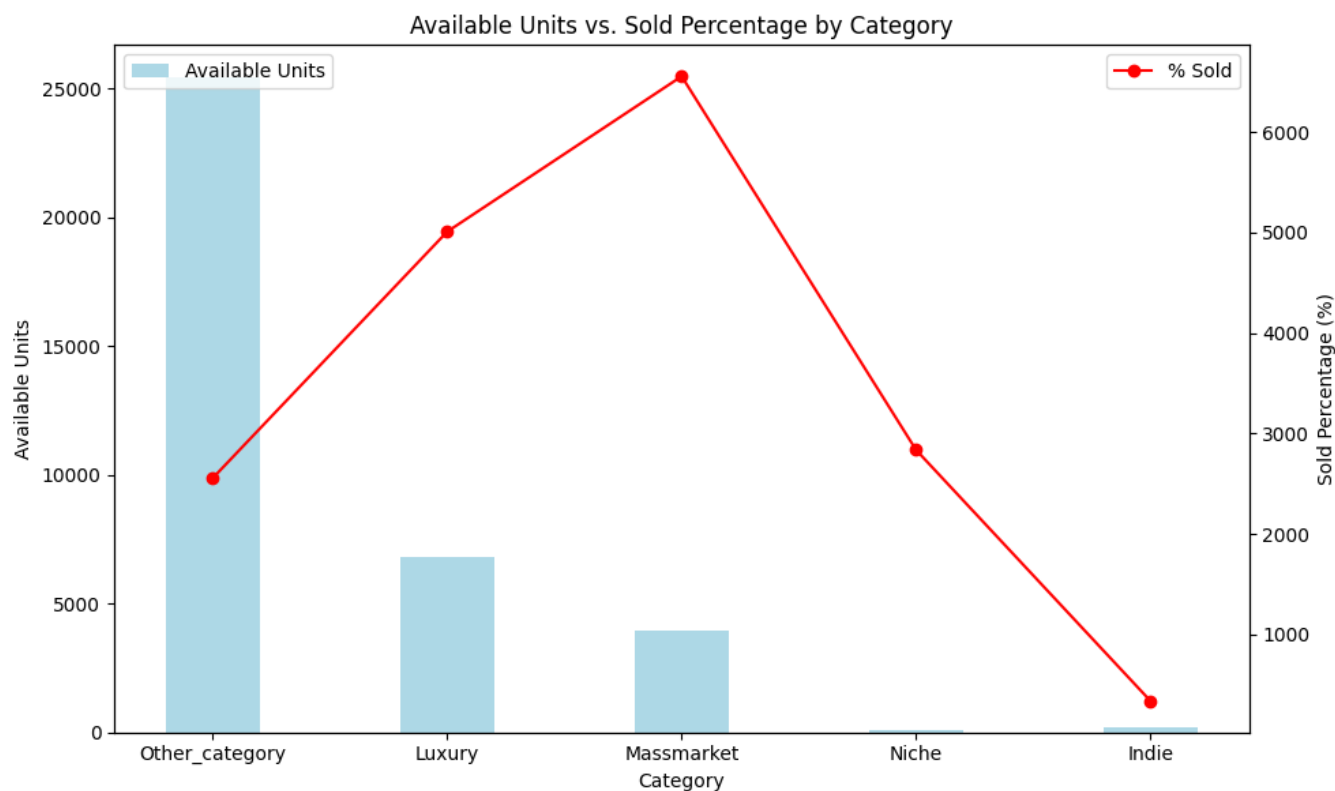
The luxury segment accounts for 340,028 units sold, generating USD 14,157,643 in revenue. A notable skew toward male purchases (241,584 units for men vs. 98,444 for women), with men's sales representing 71% of the total volume. Men's products contribute significantly to the revenue (USD 10,466,504 or 73.9%), while women's products account for USD 3,691,139. The higher average price (USD 41.64) suggests premium positioning, which is well accepted in the market.

With 257,746 units sold and a total revenue of USD 6,736,388, the mass market caters to a price-sensitive audience, as indicated by the lower average price (\$26.14). Men lead in both sales volume (161,717 units) and revenue (USD 4,518,345), but the women's segment (96,029 units sold) also holds significant value. Men's products generate approximately 67% of the total revenue, highlighting their stronger foothold in the mass market.

The niche category has the lowest sales volume at 3,091 units and total revenue of USD 110,922. Interestingly, all sales are directed toward women's products, showing no demand for men's offerings. The entire revenue of USD 110,922 comes from women, reflecting a highly targeted product range.

Indie brands have the smallest presence, with just 667 units sold and total revenue of USD 28,460. Slightly more units are sold to women (391 units) compared to men (276 units), but both segments are almost equally represented. Men's products account for USD 15,259 in revenue, while women contribute USD 13,201. The nearly equal revenue split indicates balanced pricing and demand across genders.

Inventory and Sales Overview



Conclusions

The "Other" category drives substantial revenue with balanced sales between genders, but further analysis on inventory management is recommended to optimize stock and sales dynamics.

The luxury category is male-driven, with high unit sales and revenue reflecting strong brand loyalty or effective targeting. However, the relatively low female sales highlight an opportunity for better engagement with the female segment.

The mass market displays a more balanced gender split in sales compared to luxury, but men still dominate. The lower average price reflects the category's competitive nature. Expanding product offerings or promotions in the women's segment could help increase overall market share.

The niche category is entirely women-focused, with low but potentially high-margin sales. The absence of male-targeted products might indicate a missed opportunity or a deliberate brand strategy, but further market research could explore untapped male demand.

Indie brands represent a small but balanced segment in terms of gender distribution. However, low sales and revenue suggest limited market penetration. Opportunities may exist in refining brand positioning or increasing visibility to grow this niche.

Overall Insights

Gender Influence:

Across categories, men's products generally outperform women's in both sales volume and revenue, especially in the luxury and mass-market segments. This indicates a higher demand for male-oriented products, but also highlights an opportunity for expanding female-targeted offerings.

Revenue vs. Sales:

There is a clear correlation between sales volume and revenue in most categories, but disparities in average pricing across categories point to different market strategies. Luxury brands benefit from higher pricing, while mass-market and indie brands focus on affordability.

#### Inventory Management:

High available inventory in categories like "Other" suggests potential inefficiencies. Improving inventory turnover or aligning stock with demand could drive more efficient operations.

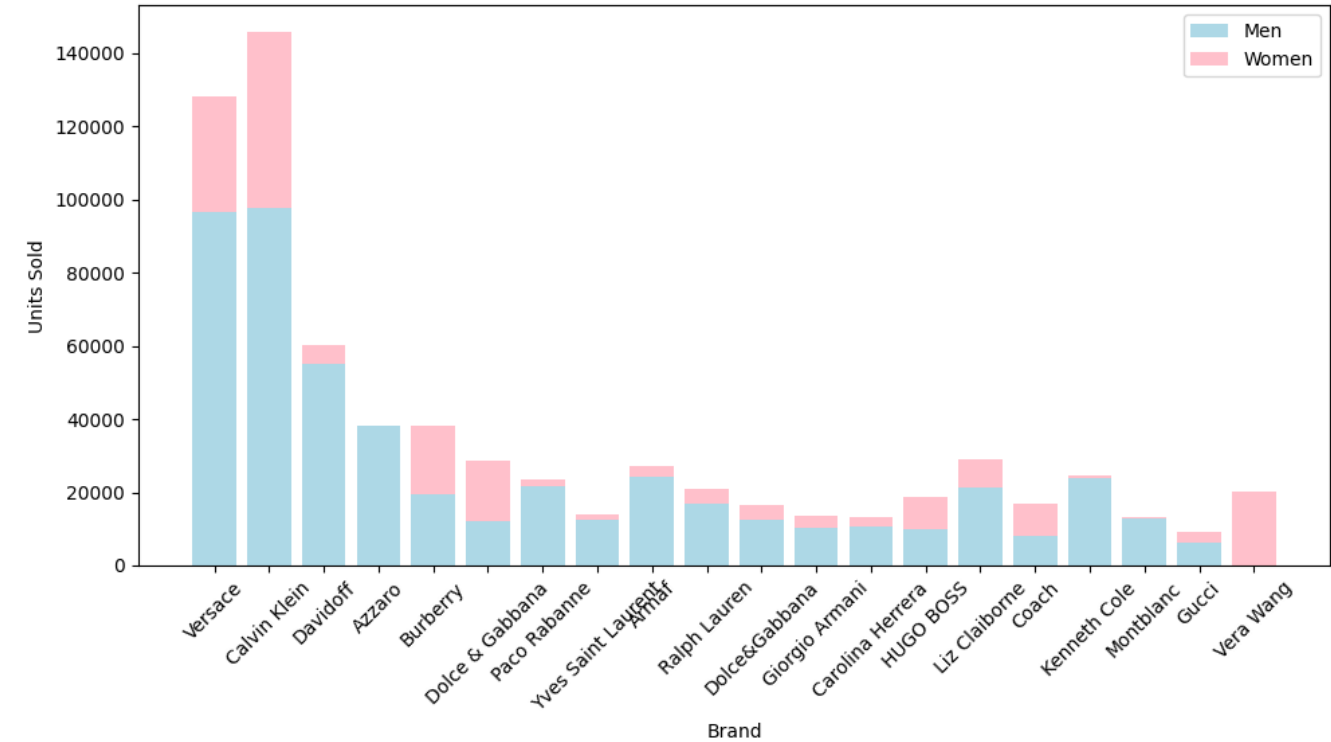
## Part 2: Product Brand Analysis

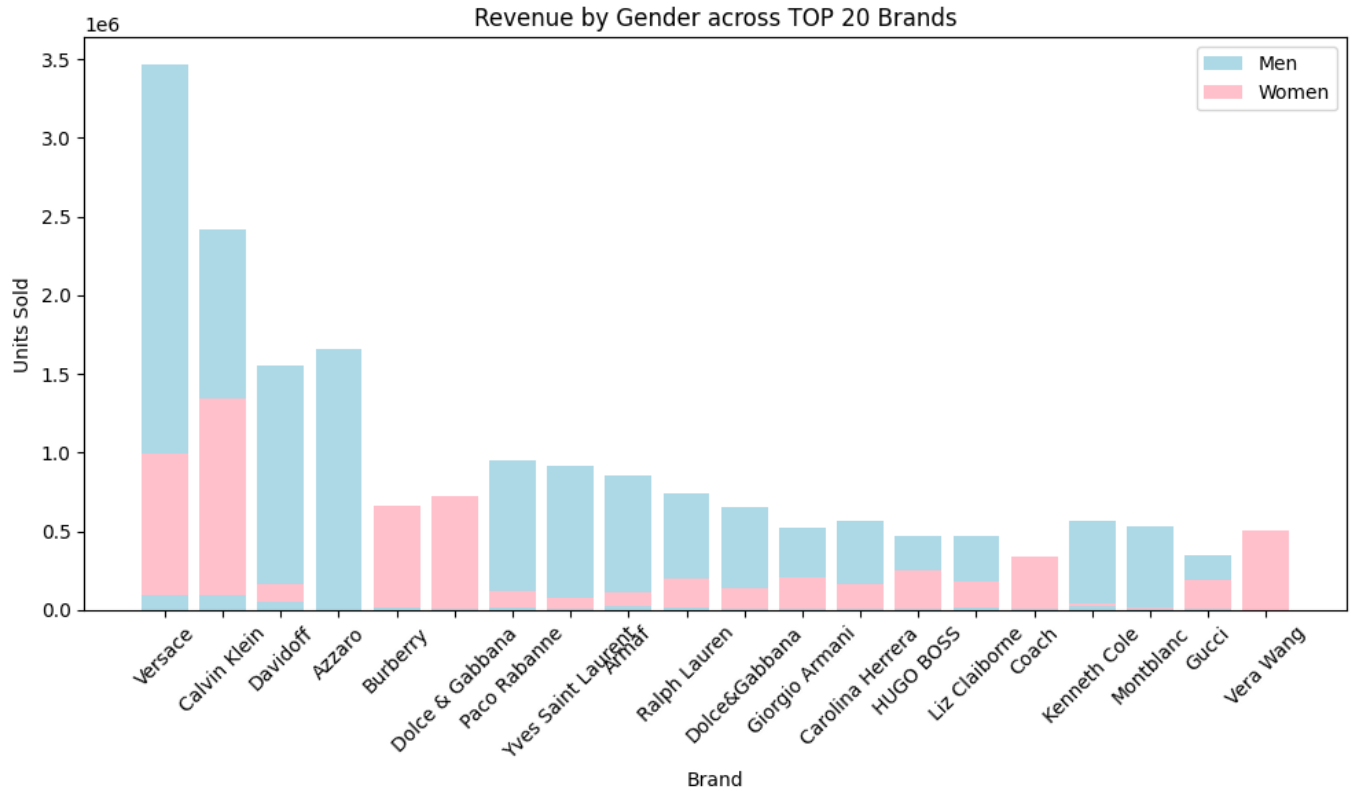
### Overview of Top 20 Brands

Top Brands

	brand	average_price	available	sold	available_value	total_revenue	sold_man	sold_woman	revenue_man	revenue_woman	category
0	Versace	36.188679	1041	128077	31604	4360571	96519.0	31558.0	3465160.0	895411.0	Luxury
1	Calvin Klein	24.235294	1539	145672	42537	3666265	97572.0	48100.0	2420582.0	1245683.0	Massmarket
2	Davidoff	23.727273	59	60289	1190	1664342	54944.0	5345.0	1557350.0	106992.0	Other_category
3	Azzaro	42.266667	266	38305	7007	1658519	38305.0	0.0	1658519.0	0.0	Luxury
4	Burberry	39.727273	1026	38001	36046	1205658	19286.0	18715.0	564764.0	640894.0	Luxury
5	Dolce & Gabbana	38.869565	423	28570	16183	1072571	11965.0	16605.0	362656.0	709915.0	Luxury
6	Paco Rabanne	58.595745	534	23506	25405	1051978	21579.0	1927.0	954418.0	97560.0	Massmarket
7	Yves Saint Laurent	58.181818	701	13895	40345	985820	12302.0	1593.0	919094.0	66726.0	Luxury
8	Armaf	39.047619	975	27120	29560	949374	24282.0	2838.0	858988.0	90386.0	Other_category
9	Ralph Lauren	37.640000	1705	20849	61887	921153	16757.0	4092.0	739675.0	181478.0	Other_category
10	Dolce&Gabbana	45.951613	462	16362	22467	780433	12344.0	4018.0	653566.0	126867.0	Other_category
11	Giorgio Armani	53.888889	514	13455	26670	726095	10395.0	3060.0	527374.0	198721.0	Luxury
12	Carolina Herrera	55.309524	379	13284	19879	724148	10575.0	2709.0	568110.0	156038.0	Luxury
13	HUGO BOSS	36.625000	176	18811	6874	717748	9738.0	9073.0	471695.0	246053.0	Other_category
14	Liz Claiborne	23.272727	900	29170	19204	633676	21341.0	7829.0	474706.0	158970.0	Other_category
15	Coach	34.250000	933	17056	34420	623997	8170.0	8886.0	293445.0	330552.0	Other_category
16	Kenneth Cole	21.875000	243	24636	5659	587768	23716.0	920.0	566608.0	21160.0	Massmarket
17	Montblanc	40.500000	521	13058	15964	540686	12953.0	105.0	536639.0	4047.0	Luxury
18	Gucci	52.960000	171	9158	9446	537672	6073.0	3085.0	347883.0	189789.0	Luxury
19	Vera Wang	23.000000	197	20308	4811	505972	0.0	20308.0	0.0	505972.0	Other_category

Sales Volume by Gender across TOP 20 Brands





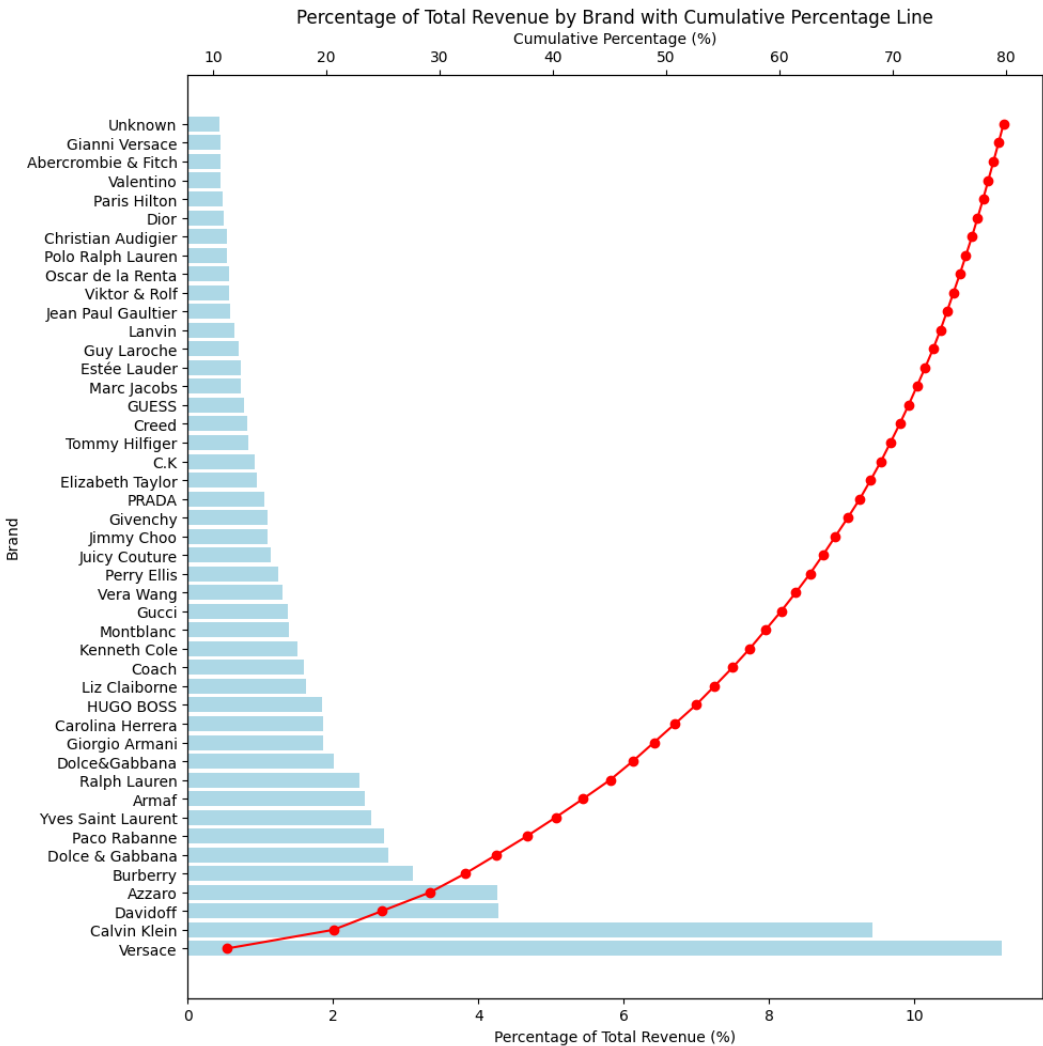
Top Brands by Gender (Man)

	brand	average_price	available	sold	available_value	total_revenue	sold_man	sold_woman	revenue_man	revenue_woman	category
0	Versace	36.188679	1041	128077	31604	4360571	96519.0	31558.0	3465160.0	895411.0	Luxury
1	Calvin Klein	24.235294	1539	145672	42537	3666265	97572.0	48100.0	2420582.0	1245683.0	Massmarket
2	Azzaro	42.266667	266	38305	7007	1658519	38305.0	0.0	1658519.0	0.0	Luxury
3	Davidoff	23.727273	59	60289	1190	1664342	54944.0	5345.0	1557350.0	106992.0	Other_category
4	Paco Rabanne	58.595745	534	23506	25405	1051978	21579.0	1927.0	954418.0	97560.0	Massmarket
5	Yves Saint Laurent	58.181818	701	13895	40345	985820	12302.0	1593.0	919094.0	66726.0	Luxury
6	Armaf	39.047619	975	27120	29560	949374	24282.0	2838.0	858988.0	90386.0	Other_category
7	Ralph Lauren	37.640000	1705	20849	61887	921153	16757.0	4092.0	739675.0	181478.0	Other_category
8	Dolce&Gabbana	45.951613	462	16362	22467	780433	12344.0	4018.0	653566.0	126867.0	Other_category
9	Carolina Herrera	55.309524	379	13284	19879	724148	10575.0	2709.0	568110.0	156038.0	Luxury
10	Kenneth Cole	21.875000	243	24636	5659	587768	23716.0	920.0	566608.0	21160.0	Massmarket
11	Burberry	39.727273	1026	38001	36046	1205658	19286.0	18715.0	564764.0	640894.0	Luxury
12	Montblanc	40.500000	521	13058	15964	540686	12953.0	105.0	536639.0	4047.0	Luxury
13	Giorgio Armani	53.888889	514	13455	26670	726095	10395.0	3060.0	527374.0	198721.0	Luxury
14	Liz Claiborne	23.272727	900	29170	19204	633676	21341.0	7829.0	474706.0	158970.0	Other_category
15	HUGO BOSS	36.625000	176	18811	6874	717748	9738.0	9073.0	471695.0	246053.0	Other_category
16	PRADA	65.500000	124	4803	7340	411473	4268.0	535.0	384060.0	27413.0	Other_category
17	Dolce & Gabbana	38.869565	423	28570	16183	1072571	11965.0	16605.0	362656.0	709915.0	Luxury
18	C.K	28.000000	0	12739	0	356692	12739.0	0.0	356692.0	0.0	Other_category
19	Gucci	52.960000	171	9158	9446	537672	6073.0	3085.0	347883.0	189789.0	Luxury

Top Brands by Gender (Woman)

	brand	average_price	available	sold	available_value	total_revenue	sold_man	sold_woman	revenue_man	revenue_woman	category
0	Calvin Klein	24.235294	1539	145672	42537	3666265	97572.0	48100.0	2420582.0	1245683.0	Massmarket
1	Versace	36.188679	1041	128077	31604	4360571	96519.0	31558.0	3465160.0	895411.0	Luxury
2	Dolce & Gabbana	38.869565	423	28570	16183	1072571	11965.0	16605.0	362656.0	709915.0	Luxury
3	Burberry	39.727273	1026	38001	36046	1205658	19286.0	18715.0	564764.0	640894.0	Luxury
4	Vera Wang	23.000000	197	20308	4811	505972	0.0	20308.0	0.0	505972.0	Other_category
5	Juicy Couture	26.857143	1138	14799	32569	446113	541.0	14258.0	11902.0	434211.0	Other_category
6	Jimmy Choo	37.277778	495	12354	17632	428749	150.0	12204.0	5732.0	423017.0	Other_category
7	Elizabeth Taylor	17.375000	275	20653	4631	368167	4.0	20649.0	68.0	368099.0	Massmarket
8	Coach	34.250000	933	17056	34420	623997	8170.0	8886.0	293445.0	330552.0	Other_category
9	Givenchy	51.500000	308	8969	15397	428601	2332.0	6637.0	115410.0	313191.0	Luxury
10	Marc Jacobs	45.428571	91	5645	4248	285404	0.0	5645.0	0.0	285404.0	Other_category
11	Estée Lauder	30.846154	484	8174	19734	282830	10.0	8164.0	190.0	282640.0	Other_category
12	GUESS	20.500000	100	15093	2040	302448	1613.0	13480.0	32260.0	270188.0	Other_category
13	Perry Ellis	29.857143	280	17279	7201	485544	7377.0	9902.0	215904.0	269640.0	Other_category
14	HUGO BOSS	36.625000	176	18811	6874	717748	9738.0	9073.0	471695.0	246053.0	Other_category
15	Oscar de la Renta	28.500000	45	8232	967	221204	0.0	8232.0	0.0	221204.0	Luxury
16	Lanvin	21.166667	421	9450	9003	248333	1955.0	7495.0	33235.0	215098.0	Other_category
17	Christian Audigier	20.666667	324	10031	6480	207640	0.0	10031.0	0.0	207640.0	Other_category
18	Giorgio Armani	53.888889	514	13455	26670	726095	10395.0	3060.0	527374.0	198721.0	Luxury
19	Gucci	52.960000	171	9158	9446	537672	6073.0	3085.0	347883.0	189789.0	Luxury

Top brands contributing 80% of the revenue



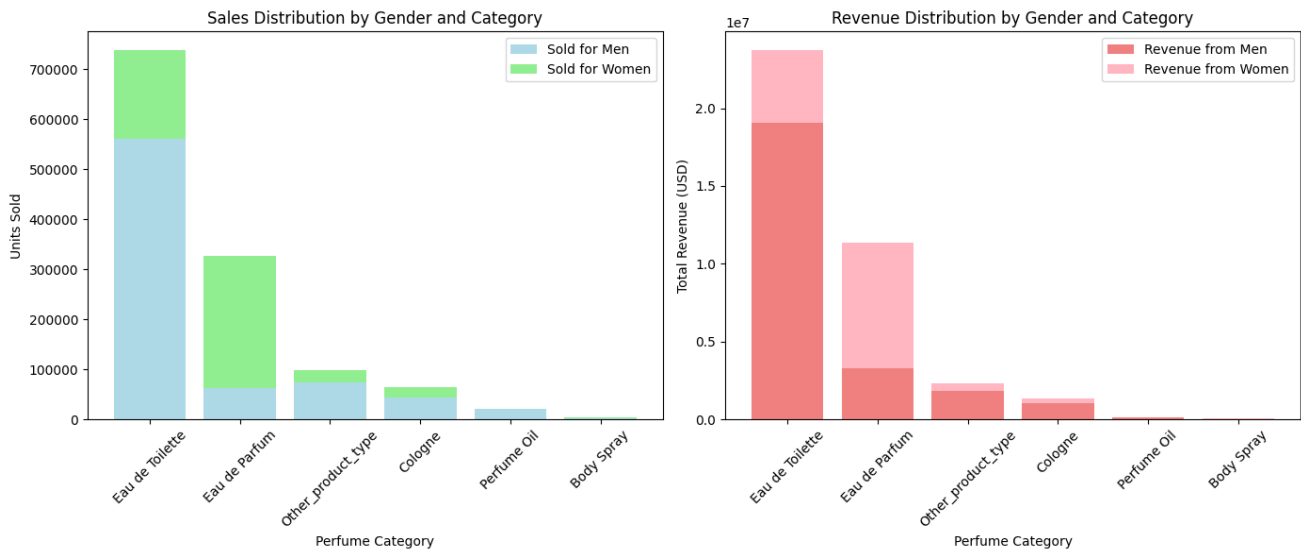
Conclusions

The chart reveals that a small number of brands command a significant portion of the total revenue, with Luxury brands leading in both revenue and share of total income. Notably, the 45 brands displayed collectively account for 80% of the total revenue, highlighting their dominance in the market.

This underscores the critical role these brands play in the overall financial landscape and their substantial impact on the market's financial performance.

Sales and Revenue Analysis by Perfume Type and Gender

Sales and Revenue Analysis by Perfume Type and Gender										
	grouped_category	average_price	available	sold	available_value	total_revenue	sold_man	sold_woman	revenue_man	revenue_woman
0	Eau de Toilette	37.533639	16907	738461	505698	23747687	560557	177904	19042397	4705290
1	Eau de Parfum	48.204473	15056	326593	502867	11337603	61777	264816	3259876	8077727
2	Other_product_type	38.625954	2348	98410	71762	2309491	74611	23799	1830556	478935
3	Cologne	40.407407	1865	63565	53367	1360699	42900	20665	1060702	299997
4	Perfume Oil	19.545455	88	20919	1720	133752	20261	658	124590	9162
5	Body Spray	17.346154	177	3085	2880	43246	1563	1522	17980	25266



Conclusions

Eau de Toilette stands out significantly in terms of total sales volume and revenue. The category's high sales volume (738,461 units) and substantial revenue (USD 23,747,687) highlight its dominant market position. This category's high performance is driven by a high volume of sales and a considerable revenue contribution from male consumers (USD 19,042,397). The lower average price compared to Eau de Parfum suggests that it appeals to a broader audience, leading to higher sales volume despite the lower per-unit revenue.

Eau de Parfum, while generating less sales volume (326,593 units) compared to Eau de Toilette, commands a higher average price (USD 48.20). This higher average price results in a total revenue of USD 11,337,603, with a significant revenue contribution from female consumers (USD 8,077,727). The data indicates that Eau de Parfum is more premium and preferred among women, reflecting its higher average price and sales revenue.

The 'Other' category, with an average price of USD 38.63, shows moderate performance with a total revenue of USD 2,309,491. However, it is characterized by a substantial male revenue contribution (USD 1,830,556), suggesting that it caters more to male consumers. Despite a lower sales volume, its moderate average price contributes to its total revenue.



Cologne demonstrates a moderate average price (USD 40.41) with lower sales volume (63,565 units) compared to Eau de Toilette and Eau de Parfum. It generates a total revenue of USD 1,360,699, predominantly from male consumers (USD 1,060,702). This indicates that while it has a respectable price point, its overall market impact is limited by its lower sales volume.

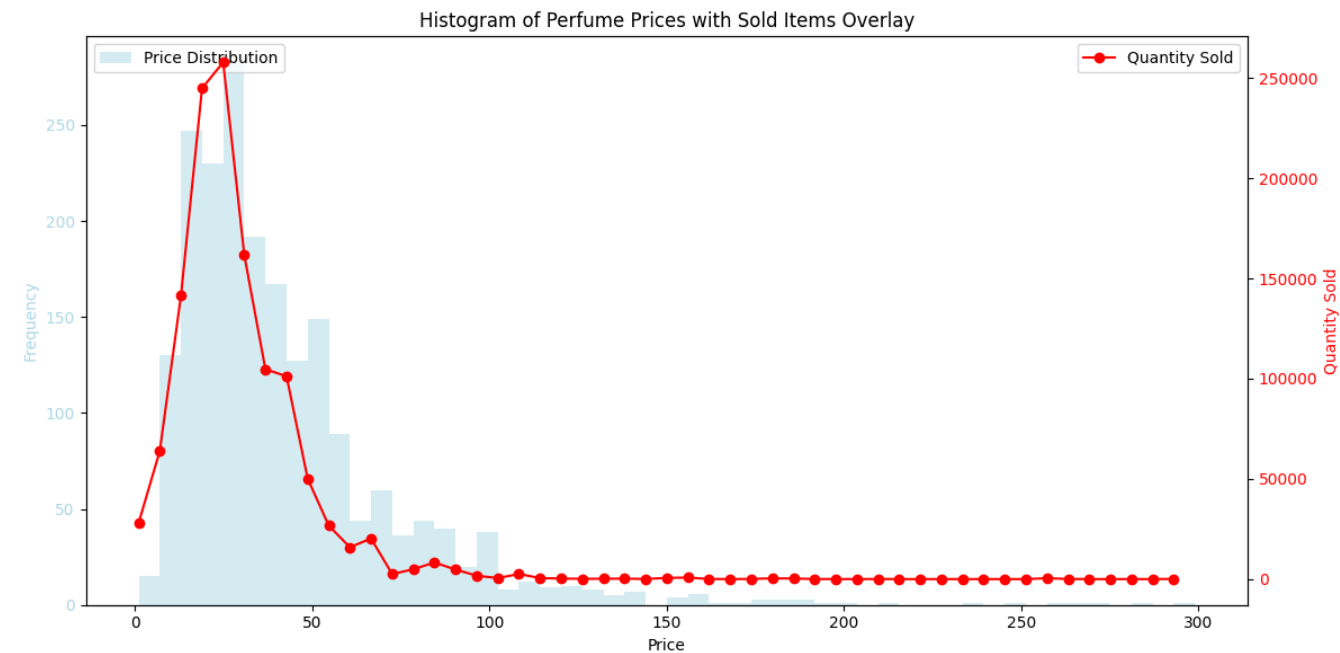
Perfume Oil and Body Spray are characterized by their lower average prices (USD 19.55 and USD 17.35, respectively) and low sales volumes (20,919 and 3,085 units, respectively). Perfume Oil, despite its low price, generates more revenue from men (USD 124,590), reflecting a niche market. Body Spray, being the least expensive, generates minimal revenue (USD 43,246) with a relatively even split between male and female consumers.

## Part 3: Price Analysis

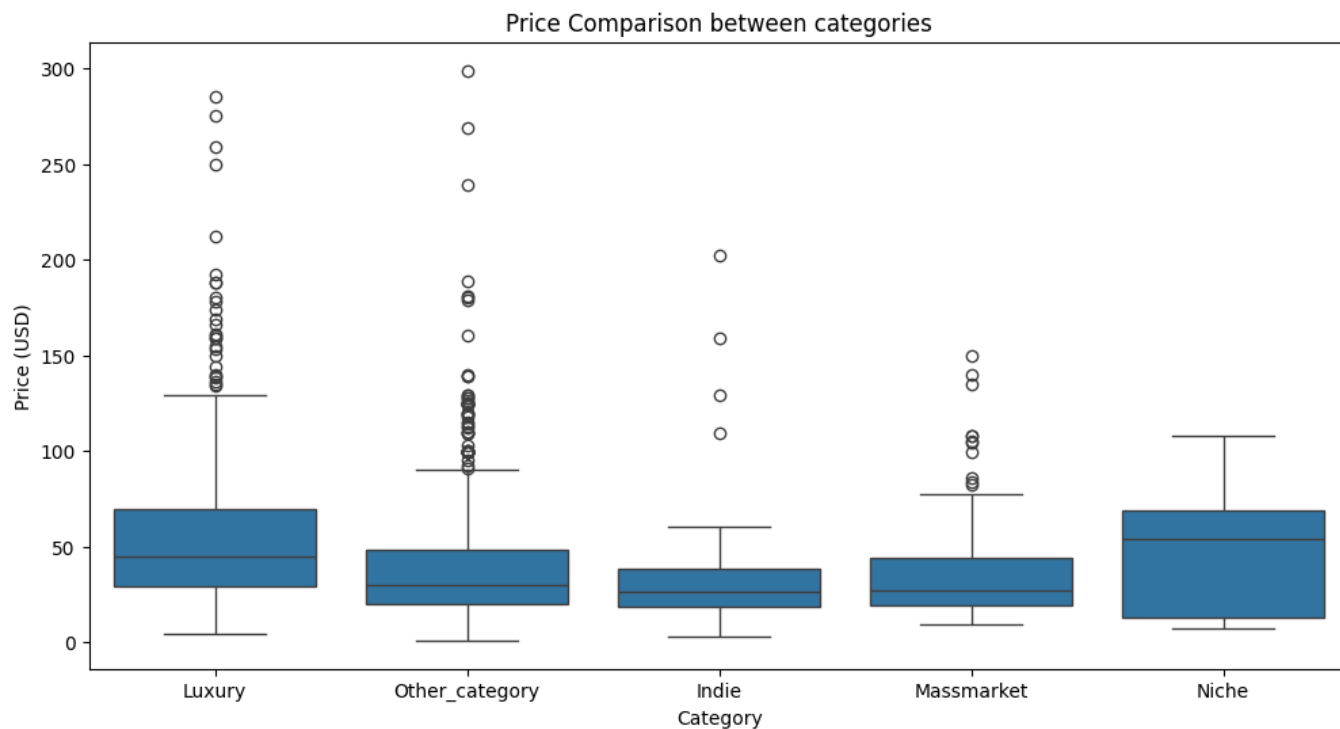
### Perfume Pricing Metrics by Category, Group, and Gender

	Category										Grouped Category		Gender	
	Indie	Luxury	Massmarket	Niche	Other_category	Body Spray	Cologne	Eau de Parfum	Eau de Toilette	Other_product_type	Perfume Oil	man	woman	
Mean	44.42	54.73	35.63	51.12	37.76	17.35	40.41	48.2	37.53	38.63	19.55	45.77	39.19	
Min	3.00	4.00	9.00	7.00	1.00	6.00	4.00	3.0	5.00	1.00	6.00	3.00	1.00	
Max	202.00	285.00	150.00	108.00	299.00	44.00	129.00	285.0	178.00	299.00	40.00	259.00	299.00	
Mode	13.00	49.00	24.00	11.00	29.00	10.00	17.00	29.0	29.00	15.00	6.00	29.00	29.00	

### Prices and Sales



### Category Price Analysis



## Conclusions

Luxury perfumes have the highest average price at 54.73 USD, followed by Niche (51.12 USD) and Indie (44.42 USD). Massmarket and Other categories have lower mean prices at 35.63 USD and 37.76 USD, respectively. This suggests that Luxury and Niche perfumes are positioned at a higher price point compared to the other categories.

The lowest minimum price is observed in the Other category (1.00 USD), which is significantly lower than the minimum prices in other categories. Massmarket and Indie categories also have relatively low minimum prices at 9.00 USD and 3.00 USD, respectively, indicating a broader range of affordable options.

Luxury perfumes have the highest maximum price at 285.00 USD, showing a potential for premium pricing in this segment. The Other category has the highest variability with a maximum price of 299.00 USD, suggesting a diverse price range in this category. Massmarket and Niche categories have lower maximum prices compared to Luxury and Other.

The most frequently occurring price is relatively consistent across categories, with Luxury and Massmarket categories having a mode of 49.00 USD and 24.00 USD, respectively. This indicates that despite the overall higher average prices in Luxury and Niche categories, the most common price point is lower.



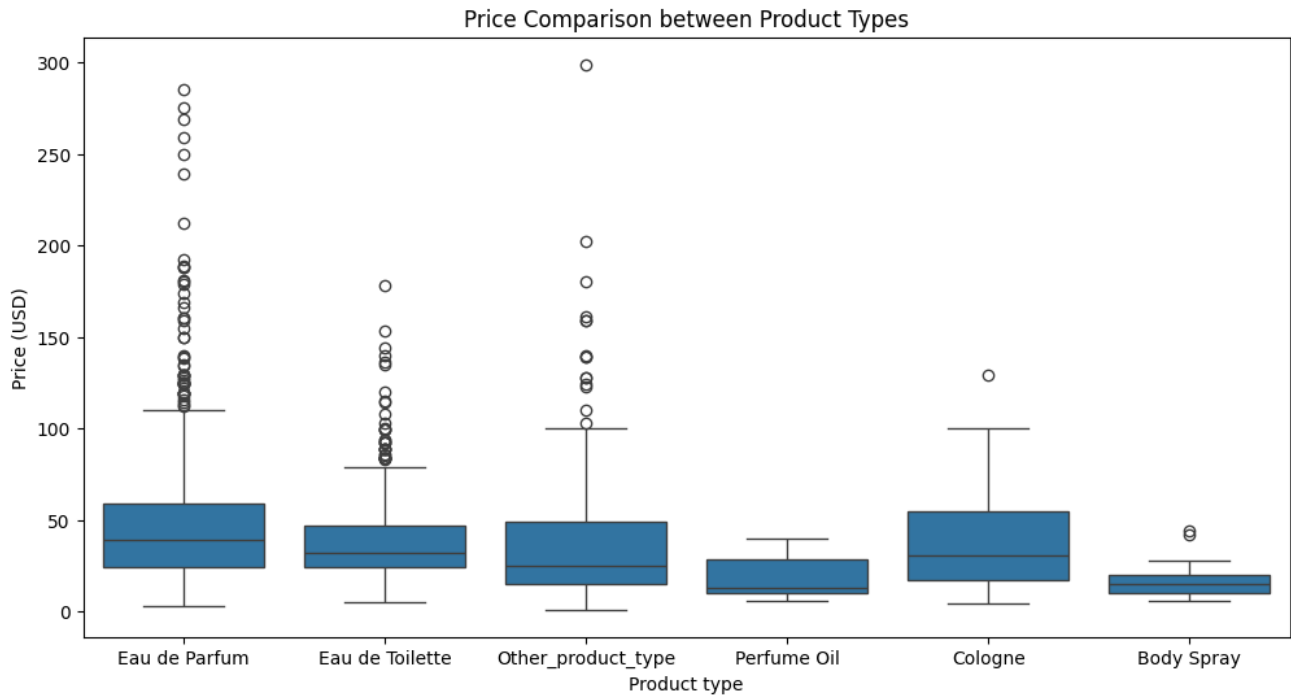
## Conclusions

Men's perfumes have a mean price of 45.77 USD, which is slightly higher than Women's perfumes at 39.19 USD. This suggests that Men's perfumes are generally positioned at a higher price point compared to Women's options.

**Minimum Prices:** The minimum price for Men's perfumes is 3.00 USD, while Women's perfumes start at 1.00 USD. This indicates a wider range of very affordable options in the Women's category.

**Maximum Prices:** The maximum price for Men's perfumes is 259.00 USD, while Women's perfumes can go up to 299.00 USD. This suggests that there is a higher ceiling for Women's perfumes, potentially indicating a broader range of premium products.

**Mode:** The most frequently occurring price is 29.00 USD for both Men's and Women's perfumes, indicating a common price point that is popular across genders.



## Conclusions

**Minimum Prices:** Body Spray has the lowest mean price at 17.35 USD, while Eau de Parfum (48.20 USD) and Cologne (40.41 USD) are priced higher, showing that Eau de Parfum and Cologne are positioned at a premium compared to Body Spray and Perfume Oil. Other products have the lowest minimum price of 1.00 USD, indicating the availability of very affordable options in this category. Body Spray also has a low minimum price (6.00 USD), suggesting that it is generally more affordable.

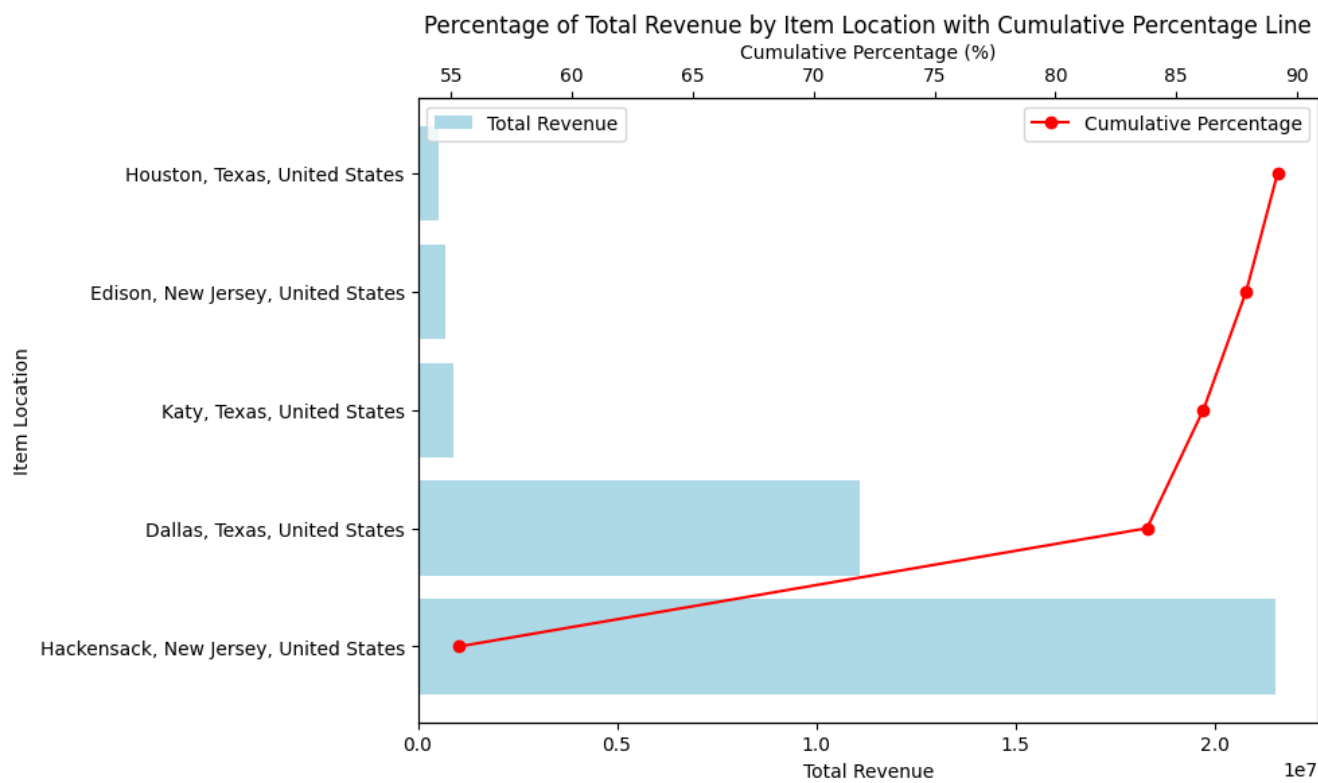
**Maximum Prices:** Eau de Parfum and Cologne have the highest maximum prices, 285.00 USD and 129.00 USD, respectively, showing that these categories can command higher prices. Body Spray and Perfume Oil have lower maximum prices, reflecting a more affordable range.

The most common price point varies by category, with Cologne and Eau de Parfum having modes of 29.00 USD, reflecting their popularity at that price. Body Spray and Perfume Oil have lower modes, which are consistent with their generally lower price ranges.

# Part 4: Geographic analysis

## Top items contributing 90% of the revenue

	itemLocation	price	available	sold	available_value	total_revenue	sold_man	sold_woman	revenue_man	revenue_woman	cumulative_sales	percentage_of_total
0	Hackensack, New Jersey, United States	45.85	902	617390	35354	21537042	422755.0	194635.0	15645479.0	5891563.0	21537042	55.32
1	Dallas, Texas, United States	30.49	23428	435567	649479	11085194	221711.0	213856.0	5849435.0	5235759.0	32622236	28.47
2	Katy, Texas, United States	66.00	395	12230	26330	908275	9071.0	3159.0	647486.0	260789.0	33530511	2.33
3	Edison, New Jersey, United States	52.82	491	13115	26118	688948	5727.0	7388.0	399780.0	289168.0	34219459	1.77
4	Houston, Texas, United States	45.89	375	14851	15849	506560	13553.0	1298.0	449010.0	57550.0	34726019	1.30



### Inventory Top Locations

	itemLocation	Indie_inv	Luxury_inv	Massmarket_inv	Niche_inv	Other_Category_inv	Body Spray_inv	Cologne_inv	Eau de Parfum_inv	Eau de Toilette_inv	Other_product_type_inv
0	Dallas, Texas, United States	0	135874	82153	0	431452	0	29219	241840	370738	7682
1	Edison, New Jersey, United States	404	15170	540	0	10004	0	0	15929	5824	4365
2	Hackensack, New Jersey, United States	0	15042	3242	0	17070	100	1437	15929	17576	312
3	Houston, Texas, United States	0	1992	0	54	13803	0	310	9475	1454	4610
4	Katy, Texas, United States	0	15880	1280	540	8630	0	0	13780	9820	2730

### Sales Top Locations

	itemLocation	Indie_rev	Luxury_rev	Massmarket_rev	Niche_rev	Other_Category_rev	Body Spray_rev	Cologne_rev	Eau de Parfum_rev	Eau de Toilette_rev	Other_product_type_rev
0	Dallas, Texas, United States	0	1868759	2353362	0	6863073	0	577044	3472153	6836132	199865
1	Edison, New Jersey, United States	3636	452333	9035	0	223944	0	2550	434975	181458	69965
2	Hackensack, New Jersey, United States	0	9822953	3926065	62840	7725184	2790	417820	4961132	14771683	1383617
3	Houston, Texas, United States	0	21185	0	18	485357	0	1032	131932	308145	65451
4	Katy, Texas, United States	0	603975	27584	972	275744	0	0	528711	279074	100490

### Inventory Utilization Ratios (IUR)

	itemLocation	Indie_IUR	Luxury_IUR	Massmarket_IUR	Niche_IUR	Other_Category_IUR	Body Spray_IUR	Cologne_IUR	Eau de Parfum_IUR	Eau de Toilette_IUR	Other_product_type_IUR
0	Dallas, Texas, United States	0.0	13.75	28.65	0.00	15.91	0.0	19.75	14.36	18.44	26.02
1	Edison, New Jersey, United States	9.0	29.82	16.73	0.00	22.39	0.0	inf	27.31	31.16	16.03
2	Hackensack, New Jersey, United States	0.0	653.04	1211.00	inf	452.56	27.9	290.76	311.45	840.45	4434.67
3	Houston, Texas, United States	0.0	10.64	0.00	0.33	35.16	0.0	3.33	13.92	211.93	14.20
4	Katy, Texas, United States	0.0	38.03	21.55	1.80	31.95	0.0	0.00	38.37	28.42	36.81

## **Conclusions**

The data illustrates clear disparities in inventory utilization and sales performance across different locations. By implementing strategic adjustments and focusing on underperforming categories, overall sales efficiency and revenue can be improved significantly.

### **Sales Performance:**

Total Sold: The highest sales volume is seen in Hackensack (617,390), followed by Dallas (435,567). Katy and Edison show significantly lower sales figures, indicating potential issues in either demand or inventory levels.

Total Revenue: Hackensack also leads in total revenue (21,537,042), with Dallas following at 11,085,194. The lower revenue in Katy (908,275) and Edison (688,948) points to a need for improvement.

### **Inventory Levels:**

Available Stock: Dallas has the highest available stock (23,428), suggesting good inventory management. In contrast, Katy has only 395 items available, which may not be sufficient to meet demand based on its sales volume.

Available Value: The highest available value is in Dallas (\$649,479), which correlates with its sales figures. However, Hackensack's lower available stock still yields substantial revenue due to effective sales.

## **Inventory and Sales Performance**

Hackensack:

Strong performance in Luxury (653.04) and Massmarket (1211.00) IURs indicates a highly efficient inventory turnover.

The Other Category IUR (452.56) suggests good management, while the Niche category (inf) points to possible inventory issues or lack of sales data.

Dallas:

Reasonable IURs in Massmarket (28.65) and Other Category (15.91) demonstrate effective inventory management, but Indie (0.0) and Niche (0.00) categories are underperforming, indicating potential missed opportunities.

Katy:

The Eau de Parfum IUR (38.37) is notable, but overall low sales and inventory levels suggest that more aggressive marketing or better stock management is necessary.

Edison:

Luxury IUR (29.82) is promising, while Massmarket IUR (16.73) indicates moderate performance. However, significant inefficiencies in the Cologne (inf) category suggest inventory problems.

Houston:

Low IURs across most categories, especially Luxury (10.64) and Niche (0.33), point to inefficiencies in inventory planning and demand forecasting. More strategic inventory management is crucial here.