

Retail Sales & Competitor Pricing Analytics Project (Google Sheets)

(Data Cleaning • Product Hierarchy Mapping • Pricing Analysis • Franchise Metrics • Dashboard)

This project showcases my ability to clean raw retail sales data, structure product categories, create automated calculations using ARRAYFORMULA, analyze pricing vs competitors, and build a complete dashboard used for commercial decision-making.

1. Data Cleaning & Preparation

I started by creating a working copy of the raw dataset and naming it **Cleaned_Data**. The goal here was to make the dataset analysis-ready without losing any original information.

Key steps included:

- Freezing header rows for easier navigation.
- Using filters to identify blanks and fill missing values:
 - Categorical → "Unknown"
 - Numeric → *Median values*
 - Date → Placeholder: 2024-01-01
- Removing duplicate rows using Google Sheets' cleanup tool.
- Correcting number, currency, and date formats.
- Manually checking for outliers by sorting numeric columns.

Raw data:

	A	B	C	D	E	F	G	H	I	J	K	L
1	Product_ID	Category	Subcategory	Brand	Base_Cost	Listing_Price	Competitor_Price	Units_Sold	Store_Regio	Date		
2	1	Beverages	Coffee	FreshCo	3.45	4.6	4.89	22	North	2024-02-14		
3	2	Snacks	Chips	NaturePure	2.18	2.76	2.55	19	East	2024-05-21		
4	3	Dairy	Yogurt	UrbanFoods	4.92	6.43	6.12	17	West	2024-07-09		
5	4	Bakery	Cakes	GoodBite	6.44	8.34	9.01	13	South	2024-03-12		
6	5	Frozen	Meals	DailyDelight	5.27	7.03	6.44	21	North	2024-04-30		
7	6	Produce	Fruits	NaturePure	1.94	2.52	2.44	27	East	2024-01-23		
8	7	Beverages	Soda	GoodBite	2.85	3.59	3.77	25	South	2024-08-19		
9	8	Snacks	Bars	FreshCo	1.77	2.26	2.42	30	West	2024-09-25		
10	9	Dairy	Milk	UrbanFoods	3.08	4.18	4.35	16	North	2024-11-02		
11	10	Bakery	Muffins	DailyDelight	2.93	3.47	3.81	18	South	2024-06-14		
12	11	Frozen	Pizza	GoodBite	4.66	5.75	5.41	26	East	2024-10-28		
13	12	Produce	Vegetables	FreshCo	1.56	2.14	2.01	33	West	2024-03-07		
14	13	Beverages	Juice	UrbanFoods	2.49	3.14	3.35	28	North	2024-01-17		
15	14	Snacks	Nuts	DailyDelight	3.01	3.87	4.11	21	East	2024-07-30		
16	15	Dairy	Cheese	NaturePure	5.32	6.92	6.4	14	South	2024-04-11		
17	16	Bakery	Pastry	GoodBite	2.74	3.66	3.52	20	West	2024-09-09		
18	17	Frozen	Veggies	FreshCo	1.98	2.53	2.71	32	North	2024-02-24		
19	18	Produce	Herbs	UrbanFoods	1.22	1.68	1.73	23	South	2024-08-06		
20	19	Beverages	Tea	DailyDelight	3.07	3.84	4.06	19	East	2024-12-14		
21	20	Snacks	Cookies	GoodBite	2.59	3.41	3.09	26	West	2024-06-22		
22	21	Dairy	Butter	FreshCo	4.12	5.64	5.85	12	North	2024-02-16		
23	22	Bakery	Bread	UrbanFoods	1.89	2.46	2.35	29	South	2024-05-19		

Cleaned data:

	A	B	C	D	E	F	G	H	I	J	K	L	M	
1	Key	Category	product	Brand	Base_Cost	Listing_Price	Competitor_Price	Units_Sold	Store_Regio	Date	WEBU_Categ	WEBU_Subcateg	Margin	Margin %
2	Beverages Coffee	Beverages	Coffee	FreshCo	\$3.45	\$4.60	\$4.89	22	North	2/14/2024	Drinks	Hot Drinks	\$1.15	
3	Snacks Chips	Snacks	Chips	NaturePure	\$2.18	\$2.76	\$2.55	19	East	5/21/2024	Sides	Packaged Snacks	\$0.58	
4	Dairy Yogurt	Dairy	Yogurt	UrbanFoods	\$4.92	\$6.43	\$6.12	17	West	7/9/2024	Desserts	Dairy	\$1.51	
5	Bakery Cakes	Bakery	Cakes	GoodBite	\$6.44	\$8.34	\$9.01	13	South	3/12/2024	Desserts	Cakes	\$1.90	
6	Frozen Meals	Frozen	Meals	DailyDelight	\$5.27	\$7.03	\$6.44	21	North	4/30/2024	Meals	Frozen Meals	\$1.76	
7	Produce Fruits	Produce	Fruits	NaturePure	\$1.94	\$2.52	\$2.44	27	East	1/23/2024	Sides	Fresh Fruits	\$0.58	
8	Beverages Soda	Beverages	Soda	GoodBite	\$2.85	\$3.59	\$3.77	25	South	8/19/2024	Drinks	Cold Drinks	\$0.74	
9	Snacks Bars	Snacks	Bars	FreshCo	\$1.77	\$2.26	\$2.42	30	West	9/25/2024	Sides	Packaged Snacks	\$0.49	
10	Dairy Milk	Dairy	Milk	UrbanFoods	\$3.08	\$4.18	\$4.35	16	North	11/2/2024	Dairy	Liquid Dairy	\$1.10	
11	Bakery Muffins	Bakery	Muffins	DailyDelight	\$2.93	\$3.47	\$3.81	18	South	6/14/2024	Desserts	Muffins	\$0.54	
12	Frozen Pizza	Frozen	Pizza	GoodBite	\$4.66	\$5.75	\$5.41	26	East	10/28/2024	Meals	Frozen Pizza	\$1.09	
13	Produce Vegetables	Produce	Vegetables	FreshCo	\$1.56	\$2.14	\$2.01	33	West	3/7/2024	Sides	Fresh Vegetables	\$0.58	
14	Beverages Juice	Beverages	Juice	UrbanFoods	\$2.49	\$3.14	\$3.35	28	North	1/17/2024	Drinks	Cold Drinks	\$0.65	
15	Snacks Nuts	Snacks	Nuts	DailyDelight	\$3.01	\$3.87	\$4.11	21	East	7/30/2024	Sides	Packaged Snacks	\$0.86	
16	Dairy Cheese	Dairy	Cheese	NaturePure	\$5.32	\$6.92	\$6.40	14	South	4/11/2024	Dairy	Solid Dairy	\$1.60	
17	Bakery Pastry	Bakery	Pastry	GoodBite	\$2.74	\$3.66	\$3.52	20	West	9/9/2024	Desserts	Pastry	\$0.92	
18	Frozen Veggies	Frozen	Veggies	FreshCo	\$1.98	\$2.53	\$2.71	32	North	2/24/2024	Sides	Frozen Vegetables	\$0.55	
19	Produce Herbs	Produce	Herbs	UrbanFoods	\$1.22	\$1.68	\$1.73	23	South	8/6/2024	Sides	Fresh Herbs	\$0.46	
20	Beverages Tea	Beverages	Tea	DailyDelight	\$3.07	\$3.84	\$4.06	19	East	12/14/2024	Drinks	Hot Drinks	\$0.77	
21	Snacks Cookies	Snacks	Cookies	GoodBite	\$2.59	\$3.41	\$3.09	26	West	6/22/2024	Sides	Packaged Snacks	\$0.82	
22	Dairy Butter	Dairy	Butter	FreshCo	\$4.12	\$5.64	\$5.85	12	North	2/16/2024	Dairy	Solid Dairy	\$1.52	
23	Bakery Bread	Bakery	Bread	UrbanFoods	\$1.89	\$2.46	\$2.35	29	South	5/19/2024	Bakery	Bread	\$0.57	

2. Standardizing Product Hierarchy

To bring structure to the product catalog, I created a new sheet called **Product_Hierarchy**.

What I did:

- Copied Category & Product columns
- Removed duplicates to get unique items
- Added two new classification columns:
 - **WEBU_Category**
 - **WEBU_Subcategory**

Then I manually mapped each product into a clean hierarchy so later analysis would group correctly.

Key	Category	Product	WEBU_Category	WEBU_Subcategory
Beverages Coffee	Beverages	Coffee	Drinks	Hot Drinks
Snacks Chips	Snacks	Chips	Sides	Packaged Snacks
Dairy Yogurt	Dairy	Yogurt	Desserts	Dairy
Bakery Cakes	Bakery	Cakes	Desserts	Cakes
Frozen Meals	Frozen	Meals	Meals	Frozen Meals
Produce Fruits	Produce	Fruits	Sides	Fresh Fruits
Beverages Soda	Beverages	Soda	Drinks	Cold Drinks
Snacks Bars	Snacks	Bars	Sides	Packaged Snacks
Dairy Milk	Dairy	Milk	Dairy	Liquid Dairy
Bakery Muffins	Bakery	Muffins	Desserts	Muffins
Frozen Pizza	Frozen	Pizza	Meals	Frozen Pizza
Produce Vegetables	Produce	Vegetables	Sides	Fresh Vegetables
Beverages Juice	Beverages	Juice	Drinks	Cold Drinks
Snacks Nuts	Snacks	Nuts	Sides	Packaged Snacks
Dairy Cheese	Dairy	Cheese	Dairy	Solid Dairy
Bakery Pastry	Bakery	Pastry	Desserts	Pastry
Frozen Veggies	Frozen	Veggies	Sides	Frozen Vegetables
Produce Herbs	Produce	Herbs	Sides	Fresh Herbs
Beverages Tea	Beverages	Tea	Drinks	Hot Drinks
Snacks Cookies	Snacks	Cookies	Sides	Packaged Snacks
Dairy Butter	Dairy	Butter	Dairy	Solid Dairy
Bakery Bread	Bakery	Bread	Bakery	Bread

Smart Step: Creating a Unique Key

To avoid lookup errors (e.g., same product name appearing in multiple categories), I created a **Key**:

```
=ARRAYFORMULA(B2:B & " | " & C2:C)
```

This Key was used for VLOOKUP to map WEBU_Category & Subcategory back to Cleaned_Data.

	A	B	C
1	Key	Category	product
2	Beverages Coffee	Beverages	Coffee
3	Snacks Chips	Snacks	Chips
4	Dairy Yogurt	Dairy	Yogurt
5	Bakery Cakes	Bakery	Cakes
6	Frozen Meals	Frozen	Meals
7	Produce Fruits	Produce	Fruits
8	Beverages Soda	Beverages	Soda
9	Snacks Bars	Snacks	Bars
10	Dairy Milk	Dairy	Milk
11	Bakery Muffins	Bakery	Muffins
12	Frozen Pizza	Frozen	Pizza
13	Produce Vegetables	Produce	Vegetables
14	Beverages Juice	Beverages	Juice
15	Snacks Nuts	Snacks	Nuts
16	Dairy Cheese	Dairy	Cheese
17	Bakery Pastry	Bakery	Pastry
18	Frozen Veggies	Frozen	Veggies
19	Produce Herbs	Produce	Herbs
20	Beverages Tea	Beverages	Tea
21	Snacks Cookies	Snacks	Cookies
22	Dairy Butter	Dairy	Butter
23	Bakery Bread	Bakery	Bread

	J	K	L
gio	Date	WEBU_Catego	WEBU_Subcateg
	2/14/2024	Drinks	Hot Drinks
	5/21/2024	Sides	Packaged Snacks
	7/9/2024	Desserts	Dairy
	3/12/2024	Desserts	Cakes
	4/30/2024	Meals	Frozen Meals
	1/23/2024	Sides	Fresh Fruits
	8/19/2024	Drinks	Cold Drinks
	9/25/2024	Sides	Packaged Snacks
	11/2/2024	Dairy	Liquid Dairy
	6/14/2024	Desserts	Muffins
	10/28/2024	Meals	Frozen Pizza
	3/7/2024	Sides	Fresh Vegetables
	1/17/2024	Drinks	Cold Drinks
	7/30/2024	Sides	Packaged Snacks
	4/11/2024	Dairy	Solid Dairy
	9/9/2024	Desserts	Pastry
	2/24/2024	Sides	Frozen Vegetables
	8/6/2024	Sides	Fresh Herbs
	12/14/2024	Drinks	Hot Drinks
	6/22/2024	Sides	Packaged Snacks
	2/16/2024	Dairy	Solid Dairy
	5/19/2024	Bakery	Bread

3. Pricing & Competitor Analysis Columns

I added several analytical columns that update automatically using ARRAYFORMULA:

- **Margin**

```
=ARRAYFORMULA(IF(F2:F="", "", F2:F - E2:E))
```

- **Margin %**

```
=ARRAYFORMULA(IF(F2:F="", "", (F2:F - E2:E) / F2:F))
```

- **Competitor Gap**

```
=ARRAYFORMULA(IF(F2:F="", "", F2:F - G2:G))
```

- **Price Band (Low/Medium/High)**

```
=ARRAYFORMULA(IF(F2:F="", "", IFS(  
  F2:F < 3, "Low",  
  F2:F < 6, "Medium",  
  TRUE, "High"  
)))
```

These allow quick comparisons between our prices and competitor prices, and help segment products.

M	N	O	P
Margin	Margin %	Competitor Gap	Price Band
\$1.15	25%	-0.29	Medium
\$0.58	21%	0.21	Low
\$1.51	23%	0.31	High
\$1.90	23%	-0.67	High
\$1.76	25%	0.59	High
\$0.58	23%	0.08	Low
\$0.74	21%	-0.18	Medium
\$0.49	22%	-0.16	Low
\$1.10	26%	-0.17	Medium
\$0.54	16%	-0.34	Medium
\$1.09	19%	0.34	Medium
\$0.58	27%	0.13	Low
\$0.65	21%	-0.21	Medium
\$0.86	22%	-0.24	Medium
\$1.60	23%	0.52	High
\$0.92	25%	0.14	Medium
\$0.55	22%	-0.18	Low
\$0.46	27%	-0.05	Low
\$0.77	20%	-0.22	Medium
\$0.82	24%	0.32	Medium
\$1.52	27%	-0.21	Medium
\$0.57	23%	0.11	Low

4. Pivot Tables for Insights

To turn the cleaned data into business insights, I built several pivot tables:

1 Competitor Gap by Category

Shows whether we are priced above or below competitors.

Category	AVERAGE of Competitor Gap
Frozen	0.028
Snacks	0.001
Bakery	-0.061
Produce	-0.076
Dairy	-0.133
Beverages	-0.138

2 Margin % by Product

Helps identify high-profit vs low-profit items.

3 Units Sold by Region

Gives a regional performance snapshot for commercial teams.

4 Monthly Sales Trend

Created by generating a Month column:

```
=ARRAYFORMULA(IF(I2:I="", "", TEXT(I2:I, "MMM-YY")))
```

Then used in a pivot table to track monthly sales movement.

	Date - Year-Month	SUM of Units_Sold
2	2024-Jan	1,637
3	2024-Feb	2,212
4	2024-Mar	1,987
5	2024-Apr	1,773
6	2024-May	2,210
7	2024-Jun	2,004
8	2024-Jul	1,462
9	2024-Aug	2,149
0	2024-Sep	2,388
1	2024-Oct	1,646
2	2024-Nov	1,145
3	2024-Dec	2,303
4	2025-Jan	298
5		

5. Franchisee Metrics Simulation

To simulate a real business environment, I created a **Franchisee_Metrics** sheet.

KPIs included:

- Total Revenue
- Month-over-Month Growth
- Average Margin %
- Average Competitor Gap
- % of Items Cheaper Than Competitors

Example formula for "% items cheaper":

=COUNTIF(Cleaned_Data!O2:O, "<0") / COUNTA(Cleaned_Data!A2:A)

A	B	C	D	E	F
		Franchisee_Metrics			
TOTAL Revenue	\$87,261.4			Average Margin %	23%
Month-over-Month Sales Growth				Average Competitor Gap	-0.06319
Date - Year-Month	SUM of Units_Sold	Month over months sales growth		% Items Cheaper vs Competition	66%
2024-Jan	1,637	35.13%			
2024-Feb	2,212	-10.17%			
2024-Mar	1,987	-10.77%			
2024-Apr	1,773	24.65%			
2024-May	2,210	-9.32%			
2024-Jun	2,004	-27.05%			
2024-Jul	1,462	46.99%			
2024-Aug	2,149	11.12%			
2024-Sep	2,388	-31.07%			
2024-Oct	1,646	-30.44%			
2024-Nov	1,145	101.14%			
2024-Dec	2,303	-87.06%			
2025-Jan	298	-100.00%			

6. Dashboard Creation

Finally, I created a full dashboard bringing all the insights together.
This included four charts:

1 Price vs Competitor (Clustered Column Chart)

Visual comparison of our price vs competitor price for each product.

2 Sales by Region (Bar Chart)

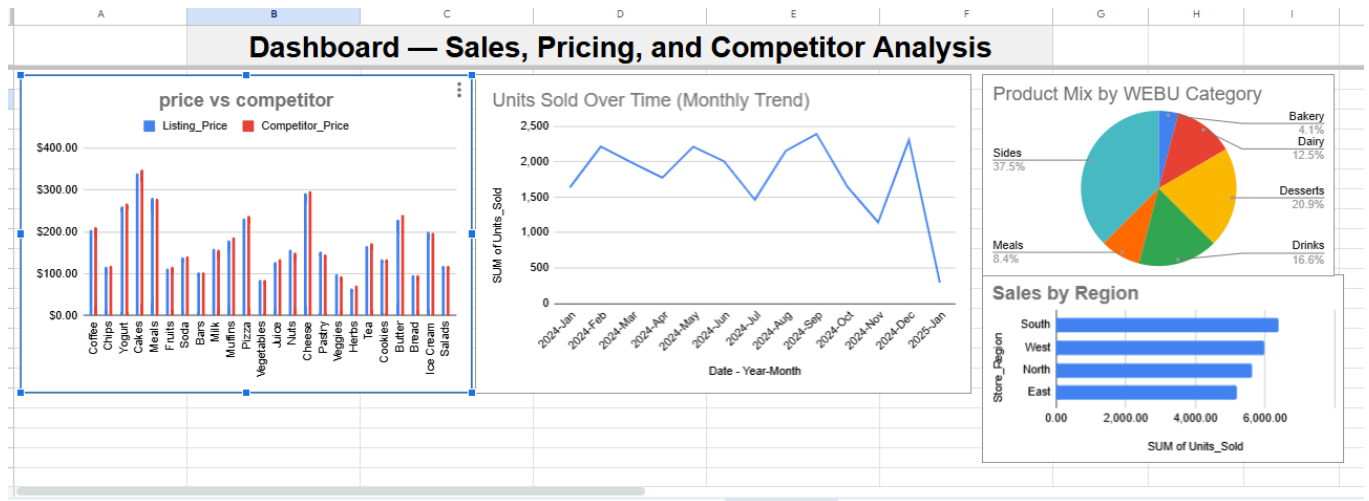
Quick view of performance across regions.

3 Product Mix (Pie Chart)

Shows distribution across WEBU categories.

4 Units Sold Over Time (Line Chart)

Shows trends and seasonality.



7. Tools & Skills Used

- Google Sheets (Advanced)
- ARRAYFORMULA / VLOOKUP / IFS / COUNTIF
- Pivot Tables
- Dashboard Creation
- Data Cleaning
- Data Structuring & Hierarchy Mapping
- Pricing & Competitor Analysis
- Sales Trend Analysis

8. Summary

This project demonstrates end-to-end handling of a retail dataset — from raw, messy files to a structured, automated, and insight-rich dashboard.