**Objective:**  
To uncover sales trends and seasonal patterns in FMCG data (2022–2024) and provide insights that improve forecasting and inventory planning.

"To analyze historical sales data to uncover critical trends, seasonal patterns, and performance metrics. The goal is to deliver actionable insights that guide smarter inventory and marketing decisions."

Uncovering Overall Sales Trends 📈

Let's answer the first big question from our objective: **What are the overall sales trends over time?**

To do this, we'll group our daily sales data by month to get a high-level view of the revenue trend from 2022 to 2024.

Key Observations

* **Explosive Business Growth:** The data reveals a period of hyper-growth. Total revenue skyrocketed from **$3,166,961.51** in 2022 to **$8,436,253.56** in 2023, marking an exceptional **year-over-year growth of 166.38%**.
* **Identified Peak Sales Season:** The highest revenue-generating months are consistently clustered in the summer. The data shows the absolute peak sales period occurred between **May and August of 2023**, with the highest single month being **July 2023 at $891,713.45**.
* **Low 2022 Baseline:** The business experienced a very slow start to the measurement period. The five lowest-performing months are all in the first half of 2022, with revenue as low as **$10,719.36 in January 2022**, which establishes a clear baseline for the subsequent growth.

**Key Observations (The "What")**

* **Explosive Growth:** The business grew from **$3.17M** in 2022 to **$8.44M** in 2023, a **+166%** year-over-year increase.
* **Summer Peak Season:** The highest sales period is **May-August**, with the peak in **July 2023 ($891K)**.
* **2022 Baseline:** Early 2022 performance was very low (e.g., **$10.7K** in Jan 2022), establishing it as a "start-up" phase.

**1. Explosive Business Growth**

**Insight:**

* The 166% YoY revenue growth indicates the company successfully transitioned from an early operational phase in 2022 to a strong growth phase in 2023.
* Such growth suggests effective **scaling of supply chains, expanded product reach, and stronger market penetration**.
* This trajectory positions the company for **further expansion**, but sustaining such hyper-growth may require investment in infrastructure, distribution, and demand forecasting.

**2. Identified Peak Sales Season**

**Insight:**

* Revenue peaks consistently between **May–August**, signaling **seasonal demand patterns**.
* The July 2023 revenue spike highlights **consumer behavior linked to summer-driven FMCG categories** (e.g., beverages, personal care, packaged food).
* These insights can help the business **plan targeted marketing campaigns, optimize inventory, and run promotions ahead of the summer surge**, maximizing revenue during this window.

**3. Low 2022 Baseline**

**Insight:**

* The very low revenue in early 2022 suggests the company was either in a **launch phase** or had **limited market coverage** at that time.
* The rapid ramp-up afterward reflects successful **market entry and brand adoption**.
* This establishes 2022 as a **baseline year**, meaning growth metrics going forward should be benchmarked against 2023 for a more realistic performance comparison (rather than against the startup phase).

**Progress Report: What We've Accomplished So Far**

So far, we have successfully addressed the highest-level parts of our objective:

* **✅ Uncovered Critical Trends:** We identified the massive **+166.38% year-over-year growth**, which is the most critical business trend.
* **✅ Identified Seasonal Patterns:** We discovered that the key seasonal pattern is a **strong summer sales peak** (May-August), not a holiday peak.

**Analyze Performance by Product Category**.

Key Observations

* **Yogurt is the Dominant Category:** **Yogurt** is the clear market leader, generating over **$8.2 million** in revenue. This is more than the next two categories combined.
* **A Clear "Second Tier":** There is a distinct second tier of strong performers consisting of **Milk** (~$4.1M), **ReadyMeal** (~$3.6M), and **SnackBar** (~$3.4M). These categories are significant contributors but are far behind Yogurt.
* **The 80/20 Rule in Effect:** The top four categories (Yogurt, Milk, ReadyMeal, SnackBar) are the engine of the business, accounting for the vast majority of the total revenue. **Juice**, at ~$652K, is a much smaller, niche category.

**Actionable Insights**

**Insight 1: Yogurt is the Core Business Driver.**

* **The "What it means":** The company's overall financial health is critically dependent on the performance of the Yogurt category. Any disruption to Yogurt sales would have a major impact on the entire business.
* **Recommendation:** **Protect and grow the core.** A majority of strategic resources, including product innovation, marketing budget, and prime shelf space, should be allocated to the Yogurt category to maintain its leadership position and drive further growth.

**Insight 2: A Tiered Approach to Portfolio Management is Required.**

* **The "What it means":** Not all categories are equal. Treating them the same would be inefficient.
* **Recommendation:**
  + **Tier 1 (Yogurt):** Focus on **dominance and innovation**.
  + **Tier 2 (Milk, ReadyMeal, SnackBar):** Focus on **steady growth**. These are strong, reliable categories where targeted promotions and cross-selling with Yogurt could yield significant returns.
  + **Tier 3 (Juice):** A decision is needed. Is this a category to **invest in for growth** or simply to **maintain** for portfolio completeness? A deeper analysis of its profitability is warranted.

**Analyze Performance by Region**.

**Key Observations**

* **Remarkably Balanced Market Performance:** The most striking finding is the incredibly even distribution of revenue across all three regions. There is no single dominant region.
  + **PL-South:** ~$6.67M
  + **PL-North:** ~$6.66M
  + **PL-Central:** ~$6.62M
* **No Underperforming Regions:** All three regions are strong, high-value markets, contributing almost equally to the total revenue. This indicates a consistent and successful market presence across the entire operational area.

**Actionable Insights**

* **Insight 1: Consistent Go-to-Market Strategy is Highly Effective.**
  + **The "What it means":** The balanced sales figures suggest that the company's current strategies for product placement, marketing, and distribution are working uniformly well across all regions. This is a sign of a mature and stable market position.
  + **Recommendation:** **Maintain and standardize the current successful playbook.** Instead of making broad, sweeping changes, the focus should be on refining and optimizing the existing strategies that have proven effective in all three markets.

**Insight 2: An Ideal Environment for A/B Testing.**

* **The "What it means":** Since all regions perform so similarly, they serve as perfect control groups for one another. This allows the business to test new strategies with a high degree of confidence.
* **Recommendation:** **Use a single region to pilot new initiatives.** For example, introduce a new promotional strategy or product line exclusively in "PL-Central". The impact can be precisely measured against the stable performance of "PL-North" and "PL-South". This data-driven approach minimizes risk and allows for confident, validated decision-making.

**Analyze the Impact of Promotions**.

**Key Observations**

* **Promotions Effectively Double Basket Size:** This is the most important finding. The **Average Units Sold Per Transaction** jumps dramatically from **17.4** without a promotion to **34.1** when a promotion is active.
* **Most Sales are Non-Promotional:** A large majority of the revenue (**$14.8M** vs. **$5.1M**) comes from transactions without promotions. This is simply because most transactions (~162,000 out of ~190,000) occurred without a promotion.

**Actionable Insights**

* **Insight 1: Promotions are Highly Effective at Increasing Sales Volume.**
  + **The "What it means":** The data proves that when a promotion is offered, it successfully incentivizes customers to purchase significantly more items. A nearly 100% increase in the average number of units sold per transaction is an enormous success.
  + **Recommendation:** Continue and expand the use of promotions as a key lever for driving sales volume. The strategy is clearly working.
* **Insight 2: There is a Major Opportunity to Increase Promotion Frequency.**
  + **The "What it means":** While promotions are very effective, they are used in a relatively small number of transactions (~15% of the total). This indicates that there is a significant untapped opportunity.
  + **Recommendation:** **Strategically increase the frequency of promotions**, especially during the identified **peak summer season (May-August)**. By applying this proven tactic during the period of highest demand, the business can significantly amplify its peak season revenue and overall sales volume for the year.

**The Full Story: Connecting Our Findings**

1. **The "When" - An Emerging Growth Story:** The business is not just growing; it's exploding. The **+166% YoY growth** is the primary narrative. This growth is not driven by the traditional holiday season, but by a strong **summer peak**, fundamentally shifting the company's operational calendar.
2. **The "What" - The Engine of Growth:** The **Yogurt category is the undisputed driver** of our success, generating more revenue than the next two categories combined. Our overall business health is intrinsically tied to the performance of this single category.
3. **The "Where" - A Stable and Consistent Market:** This impressive growth is happening **uniformly across all regions (North, South, and Central)**. This remarkable balance indicates that our go-to-market strategy is highly effective and replicable, providing a stable foundation for further expansion.
4. **The "Why" - A Proven Tactic for Amplification:** We have confirmed that **promotions are a powerful tool**, doubling the average number of units sold per transaction. However, they are currently used in only a small fraction of sales, representing a major, underutilized opportunity.

**Finding 1: Overall Sales Trend**

* **Business Observation:** The company is in a **hyper-growth phase**, evidenced by a **166% year-over-year revenue increase**. This growth is driven by a strong **summer peak season (May-August)**, which is the core profit window for the business.
* **Business Insight & Recommendation:**
  + **The company's 2023 strategy was a massive success.** The key business priority is now to **sustain this momentum** by scaling operations (supply chain, inventory) to meet this new level of demand.
  + **Re-align the operational calendar.** All strategic planning, especially marketing spend and inventory management, must be concentrated on maximizing performance during the proven **May-August peak season** to drive profitability.

**Finding 2: Product Category Performance**

* **Business Observation:** The **Yogurt category is the company's "Hero Product"**, generating more revenue ($8.2M) than the next two categories combined. The business's financial health is critically dependent on this single category.
* **Business Insight & Recommendation:**
  + **This represents both an opportunity and a risk.** The business must **protect and grow its core asset**.
  + A majority of the R&D, innovation, and marketing budget should be allocated to the Yogurt category to solidify its market leadership. This ensures the primary revenue engine remains strong and less vulnerable to competition.

**Finding 3: Regional Performance**

* **Business Observation:** Revenue is **remarkably balanced** across all three key markets (North, South, Central), with each contributing ~$6.6M.
* **Business Insight & Recommendation:**
  + **The company has a highly effective and replicable go-to-market strategy.** This operational consistency is a major competitive advantage, as it proves the business model is scalable.
  + Use this market stability for **low-risk innovation**. A new product or promotion can be tested in a single region, and its performance can be accurately measured against the other two stable "control" regions, allowing for confident, data-driven decisions.

**Finding 4: Promotion Impact**

* **Business Observation:** Promotions are a powerful tool for influencing customer behavior. When a promotion is active, the **average number of items per purchase doubles** (from 17.4 to 34.1).
* **Business Insight & Recommendation:**
  + **Promotions are a proven lever for increasing Average Transaction Value (ATV).** The strategy works exceptionally well.
  + There is a significant opportunity to **increase revenue by increasing the frequency of promotions**, especially on the core Yogurt category during the summer peak. This creates a powerful multiplier effect: applying our most effective tactic to our best-selling product during our busiest season.

**Project Map: From Data to Decision**

This map outlines the four-step analytical process used to transform raw sales data into a strategic business recommendation.

**🎯 1. Project Objective & Data Preparation**

* **Goal:** Analyze sales data to find trends and insights for better inventory and marketing decisions.
* **Action:** Loaded the FMCG sales data, cleaned it, and created a Revenue column for analysis.

**🔍 2. Exploratory Data Analysis (EDA) - The Four Pillars**

* **A. Overall Trends (The "When")**
  + **Question:** What are our high-level sales patterns?
  + **Finding:** Identified **+166% YoY growth** and a critical **summer peak season** (May-Aug).
* **B. Category Performance (The "What")**
  + **Question:** What products are driving our sales?
  + **Finding:** Discovered that **Yogurt** is the dominant, core business driver.
* **C. Regional Performance (The "Where")**
  + **Question:** Where are our key markets?
  + **Finding:** Revealed a remarkably **stable and balanced performance** across all three regions.
* **D. Promotion Impact (The "Why")**
  + **Question:** How effective are our promotions?
  + **Finding:** Proved that promotions are highly effective, **doubling the average units sold** per transaction.

**💡 3. Synthesizing the Insights**

* We connected the four pillars to tell a single story: A hyper-growth business with a strong summer peak, driven by a hero product (Yogurt), and a proven tactic (promotions) that can be used to accelerate growth even further.

**🚀 4. Final Strategic Recommendation**

* **"Own the Summer & Amplify the Core"**
  + Realign the company's entire operational focus to the **May-August peak season**.
  + **Amplify this peak** by increasing the use of promotions specifically on the **Yogurt category** during this time.