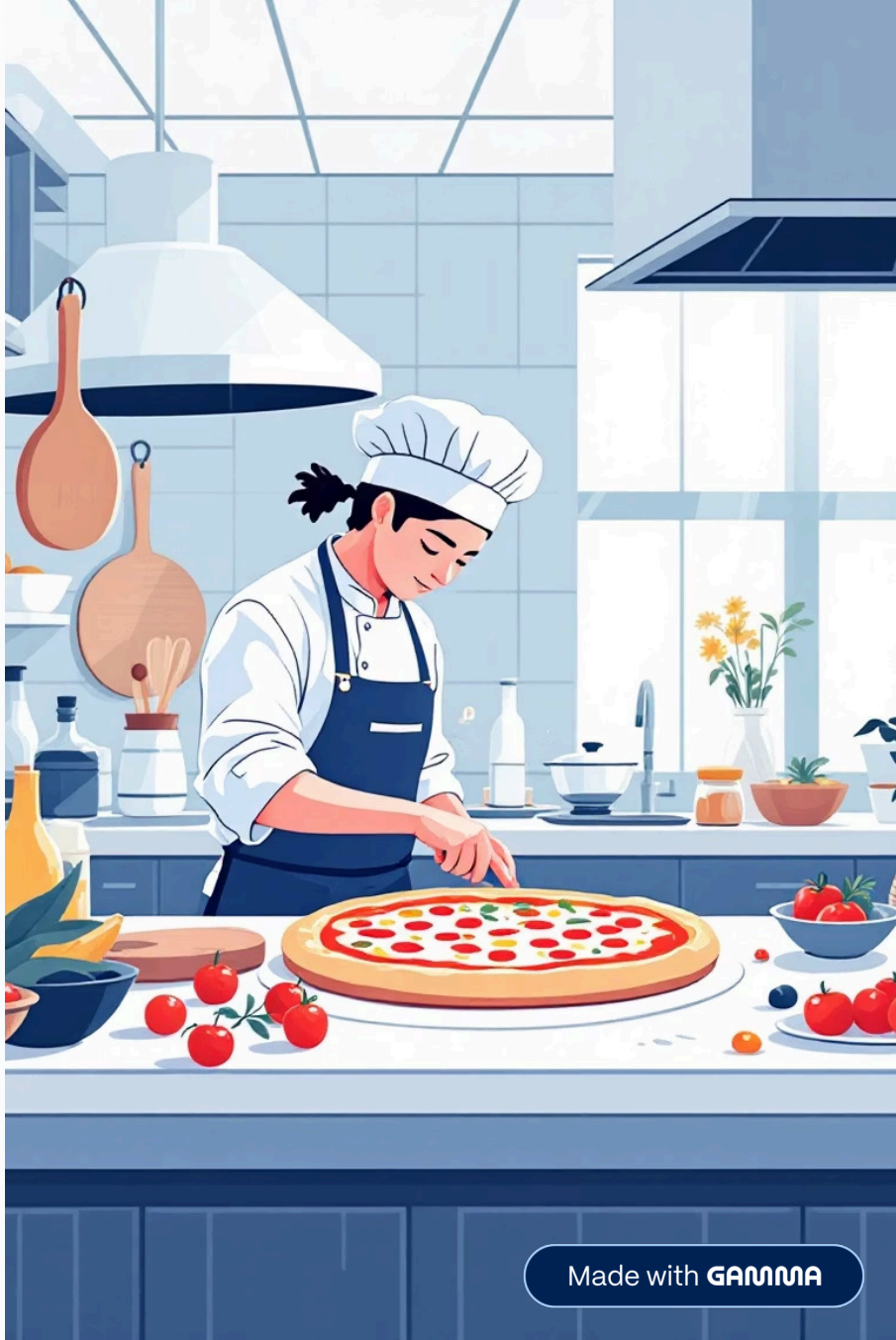
The Great Pizza Analytics Challenge

A comprehensive exploration of pizza sales data through structured SQL analysis, uncovering key business insights and performance metrics.



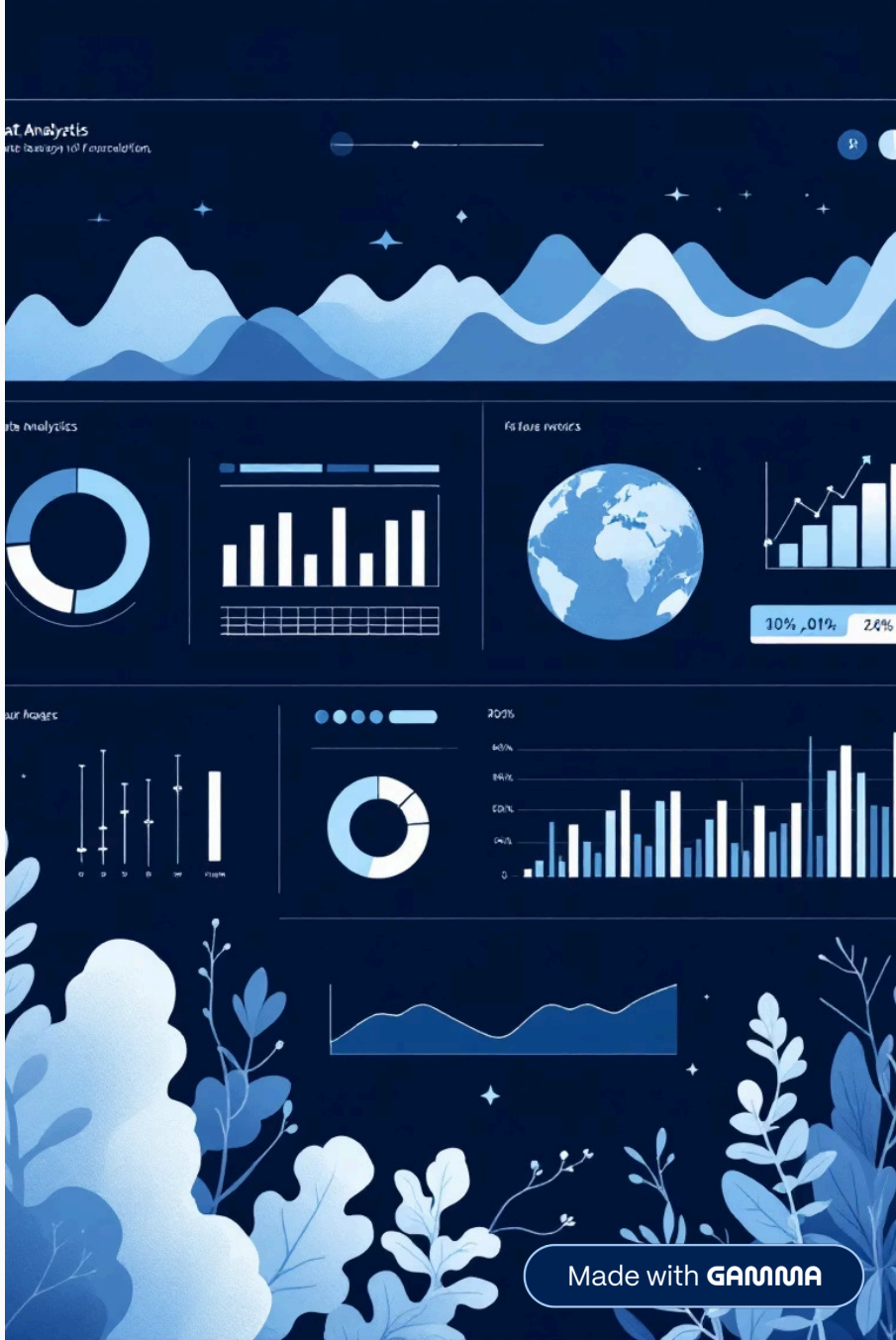
Project Overview

The Challenge

Analysing pizza sales data using SQL to understand customer preferences, pricing strategies, and operational efficiency. This project transforms raw transactional data into actionable business intelligence.

Our Approach

Three structured phases guide our analysis: **Foundation & Inspection** for data quality, **Filtering & Exploration** for targeted insights, and **Sales Performance** for business metrics that drive decisions.



Phase 1: Foundation & Inspection

Building confidence in data quality and structure

Unique Pizza Categories

Identified all distinct pizza types using SELECT DISTINCT to establish our product catalogue baseline.

Handling Missing Data

Implemented COALESCE function to replace NULL ingredients with "Missing Data", ensuring clean reporting outputs.

Price Integrity Check

Verified pricing completeness with NULL checks—zero missing prices confirms data reliability for revenue calculations.

Key Insight: Data cleaning is the foundation of accurate analysis. The COALESCE function is essential for handling missing values professionally.

Phase 2: Filtering & Exploration

Isolating specific data subsets to answer targeted business questions

01

Orders on Specific Days

Used WHERE clause to filter orders by exact date (2015-01-01), enabling daily performance tracking.

02

High-Priced Pizzas

Applied ORDER BY DESC to identify premium products and analyse pricing distribution patterns.

03

Large Pizza Focus

Leveraged IN operator for size filtering ('L', 'XL'), providing concise multi-value checking.

04

Pricing Bracket Analysis

Utilised BETWEEN operator for range queries (£15.00-£17.00), identifying mid-tier pricing segments.

05

Pattern Matching

Deployed LIKE with wildcards (%chicken%) to find substring matches in pizza names.

06

Peak Hour Analysis

Combined OR logic to capture specific dates and late-evening orders (after 20:00), revealing demand patterns.

Phase 3: Sales Performance Analytics

Aggregation, grouping, and joins for actionable business metrics

SUM()

Total Quantity Sold

Calculated overall sales volume across all transactions

AVG()

Average Pizza Price

Determined mean price rounded to two decimal places

Advanced Analytical Techniques

Multi-Table JOINs

Linked orders, order_details, and pizzas tables to calculate total revenue per order using SUM(quantity × price).

GROUP BY Analysis

Aggregated quantity sold per pizza category, revealing customer preferences and popular segments.

HAVING Clause

Filtered aggregated results to show only categories exceeding 5,000 units sold—high-volume performers.

Strategic Insights from Advanced Queries

Identifying Inventory Risk

LEFT JOIN technique revealed pizzas never ordered—products with zero sales that may require menu optimisation or removal.

Business Impact: Reduces waste, streamlines inventory, and focuses resources on popular items.

Pricing Strategy Analysis

SELF JOIN methodology compared prices between different sizes of the same pizza type, calculating price differences across size tiers.

Strategic Value: Ensures pricing consistency and validates value proposition for customers upgrading to larger sizes.

Crucial Distinction: WHERE filters individual rows *before* aggregation; HAVING filters groups *after* aggregation—understanding this difference is fundamental for complex queries.

Key Takeaways & Next Steps

Data Quality Foundation

Successfully inspected data structure, handled NULL values with COALESCE, and verified pricing integrity—establishing trustworthy analysis foundations.

Targeted Exploration

Demonstrated proficiency with WHERE, LIKE, IN, BETWEEN, and logical operators to isolate specific data subsets and answer precise business questions.

Performance Intelligence

Calculated critical business metrics including total quantity, average price, and order values through JOINs, GROUP BY, HAVING, and SELF JOINs.

Overall Business Insight

- In short, the business has a healthy, well-priced, and data-validated product set, but needs to focus its attention on replacing or rebranding the few inventory items that have zero sales.