Optimizing Food Delivery: Insights & Strategies

Food Analysis Project and Python Foundations

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Executive Summary

- **Key Insights**:

  - Data-Driven Decisions: Our comprehensive analysis highlights key consumer trends and operational insights, empowering strategic decisions for FoodHub's growth.

  - Cuisine Demand: American, Italian, and Japanese cuisines emerge as top favorites, underscoring targeted marketing opportunities.

  - Delivery Dynamics: Weekend deliveries point to a need for faster service; streamlining these can boost customer satisfaction.

  - Loyal Customers: A dedicated segment of frequent customers anchors our base, meriting a specialized loyalty program.

  - Quality & Ratings: A mixed landscape of customer ratings invites a multifaceted approach to enhance service quality.

  - Operational Timelines: Delivery times across weekdays and weekends show consistency, yet there's potential to expedite over-60-minute orders.

  - Revenue Opportunities: Analysis identifies lucrative segments, need to fine-tune pricing for higher-value orders.

Executive Summary

- **Recommendations**:

  - Forge ahead with cuisine-specific campaigns.

  - Re-engineer weekend delivery operations.

  - Craft personalized loyalty incentives.

  - Collaborate with restaurants to elevate culinary experiences.

  - Explore AI solutions for delivery optimization.

  - Foster a culture of excellence in customer service.

Business Problem Overview and Solution Approach

- Problem Defined:

    - In the fast-paced food delivery market, sustaining high customer satisfaction and operational excellence remains a pivotal challenge.

    - The intricate balance of quick delivery, culinary diversity, and consumer loyalty is crucial in staying ahead of competition.

- Solution Strategy:

    - The solution hinges on in-depth data analysis to dissect and understand customer behaviors, preferences, and the efficiency of our delivery operations.

    - Leveraging analytical tools, we've synthesized insights that are directly shaping our tactical and strategic business decisions.

Business Problem Overview and Solution Approach

- Methodology:

  - Utilizing a combination of univariate and multivariate analytical techniques to extract patterns and correlations.

  - Implementing a feedback loop to translate customer ratings and reviews into actionable quality improvements.

  - Employing predictive analytics to anticipate demand fluctuations and optimize our supply chain accordingly.

Data Overview

- Dataset Composition:

    - The dataset comprises 1898 orders across 9 key attributes, capturing a holistic view of FoodHub's operations from order IDs to delivery times.

- Variable Types:

    - The dataset features a mix of numerical and categorical data types, enabling a robust analysis. Specifically, there are integer data types for order identification and time metrics, a floating-point type for order costs, and object types for textual information like cuisine and ratings.

- Data Integrity:

    - The rigorous data checking revealed no missing values, attesting to the dataset's completeness and readiness for analysis.

Data Overview

- Statistical Summary:

  - Insights into operational timings. The preparation time ranges from 20 to 35 minutes, while delivery times span from 15 to 33 minutes, highlighting efficiency in our food delivery processes.

- Order Ratings:

  - A notable aspect of the data is that 736 orders remain unrated. Capturing this feedback could provide further insights into customer satisfaction and areas for service enhancement.

Univariate Analysis

- Order & Customer Insights

  - Unique Orders: 1,898 individual orders ensure data integrity and traceability.

  - Customer Base: 1,200 unique customers reflect diverse usage and a solid base for behavior analysis.

Univariate Analysis

- Diversity in Dining

    - Variety of Restaurants: Partnerships with 178 diverse restaurants highlight expansive culinary offerings and commitment to a variety of dining experiences.

    - Cuisine Preferences: 14 distinct cuisine types led by American, Italian, and Japanese choices showcase users' cosmopolitan tastes and opportunities for targeted promotions.
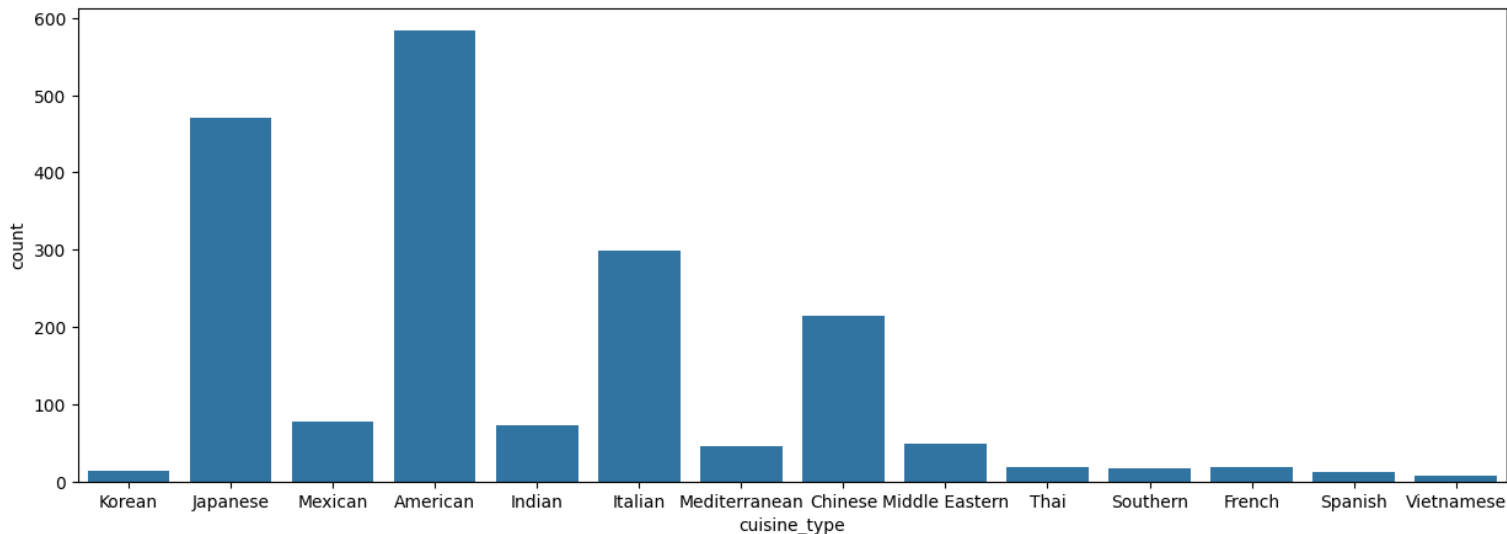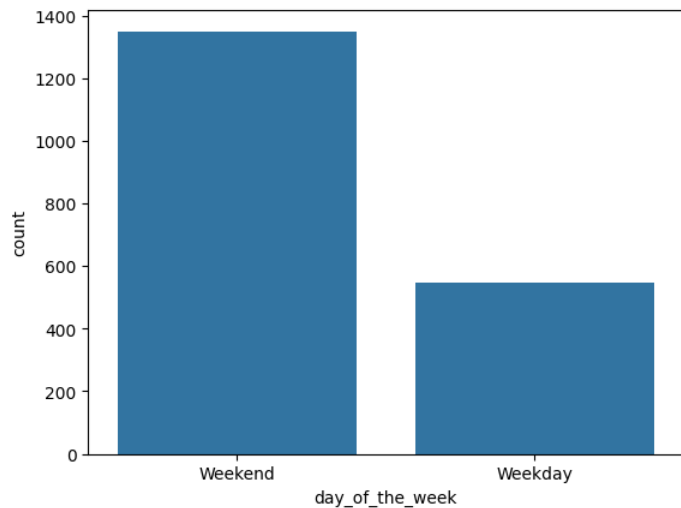
Univariate Analysis

- Financial Insights

    - High-Value Orders: 29.24% of orders over $20 point to a significant segment willing to pay for quality, suggesting potential for loyalty and upscale dining promotions.
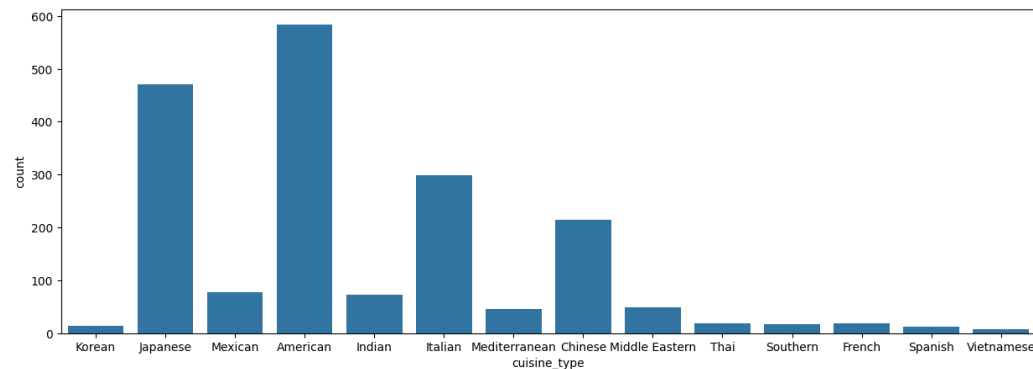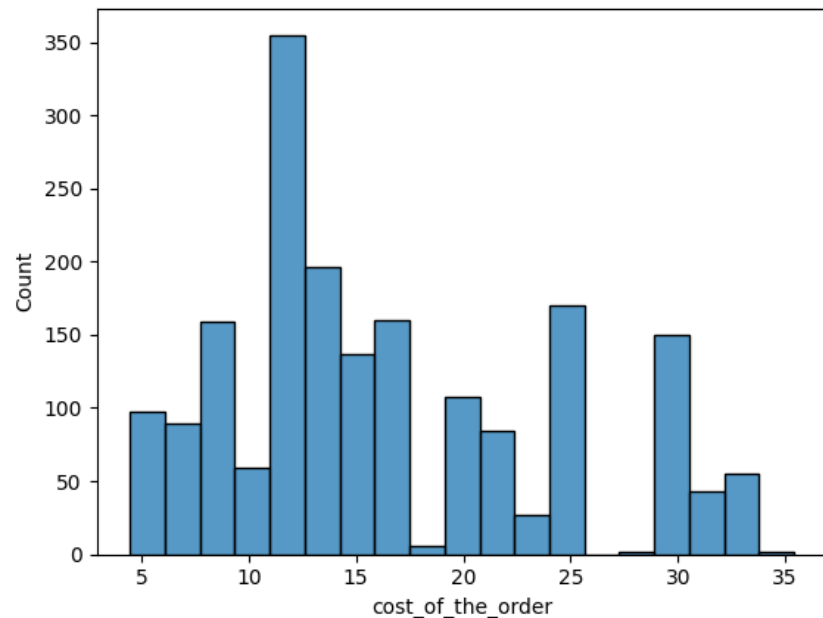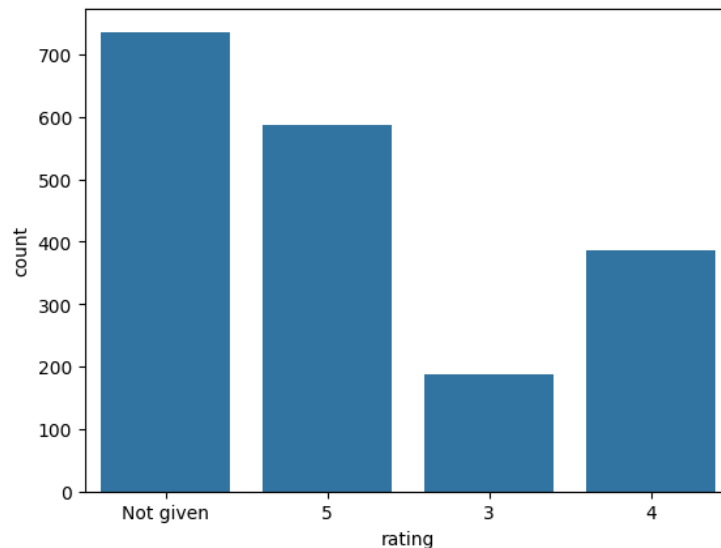
Univariate Analysis

- Day of the Week Trends

    - Consistent order flow throughout the week, with no dips or spikes.

    - Indicates FoodHub's integral part in daily routines.

    - Enables precise demand forecasting and supply chain adjustments.
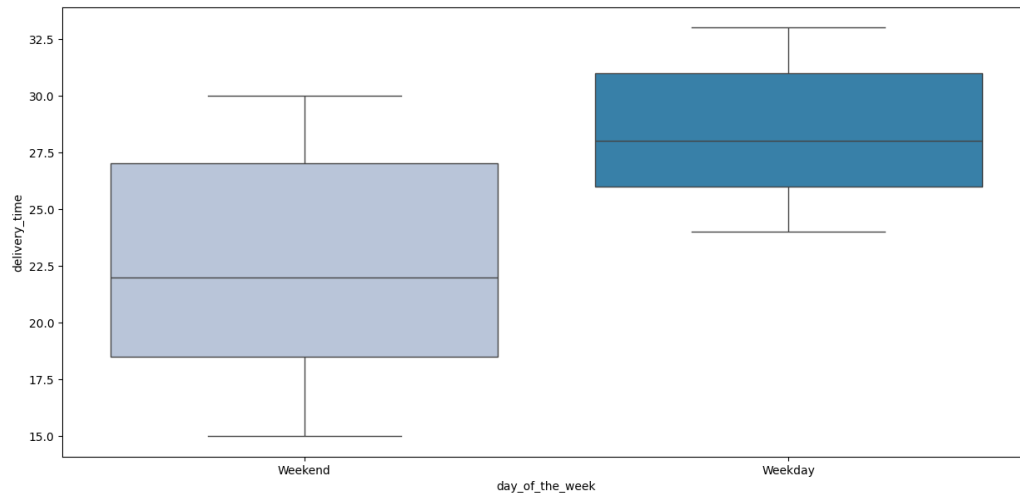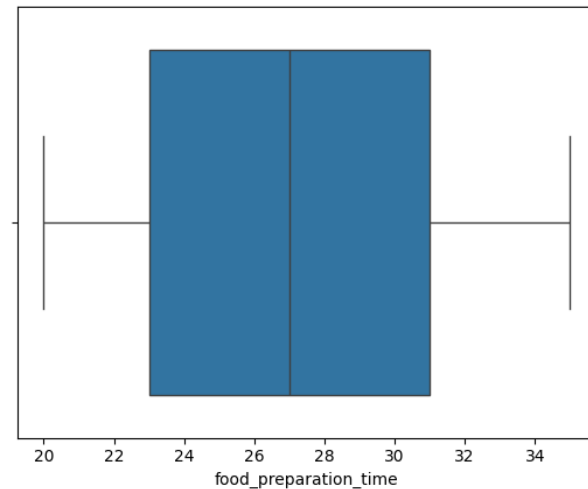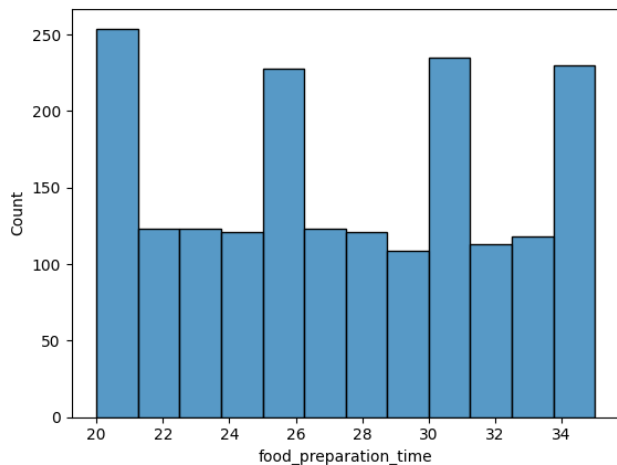
Univariate Analysis

- Rating Insights

  - 736 orders are unrated, presenting an opportunity for engagement.

  - Encourage feedback via rewards or discounts to gain user insights.

  - Aims to enhance service quality and user experience.
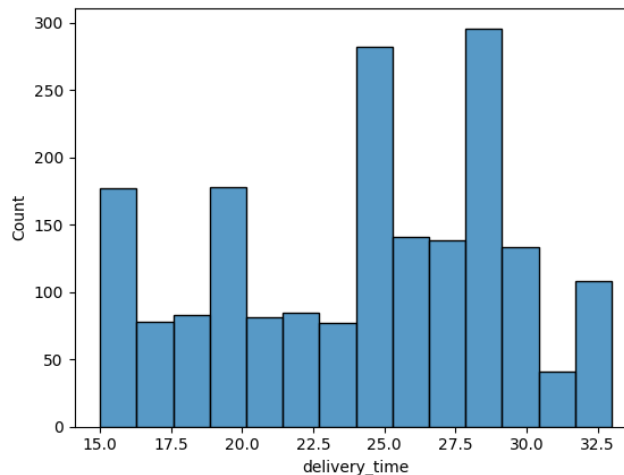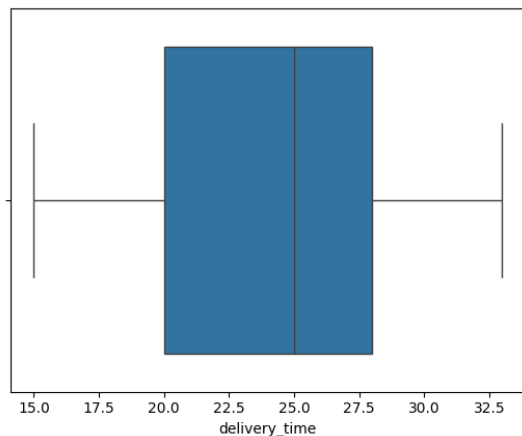
Univariate Analysis

- Optimizing Food Prep Time

  - Notable variation in preparation times suggests optimization potential.

  - Partnering with restaurants to streamline processes.

  - Potential strategies: staff training, kitchen upgrades, menu adjustments.

  - Goal: Reduce wait times, increase satisfaction and loyalty.

Univariate Analysis

- Delivery Time Analysis

    - Delivery times vary, with weekends needing improvement.

    - Opportunities to improve weekend delivery efficiency.

    - Possible actions: More staff, dynamic routing software.

    - Enhanced delivery times can elevate customer satisfaction in peak times.
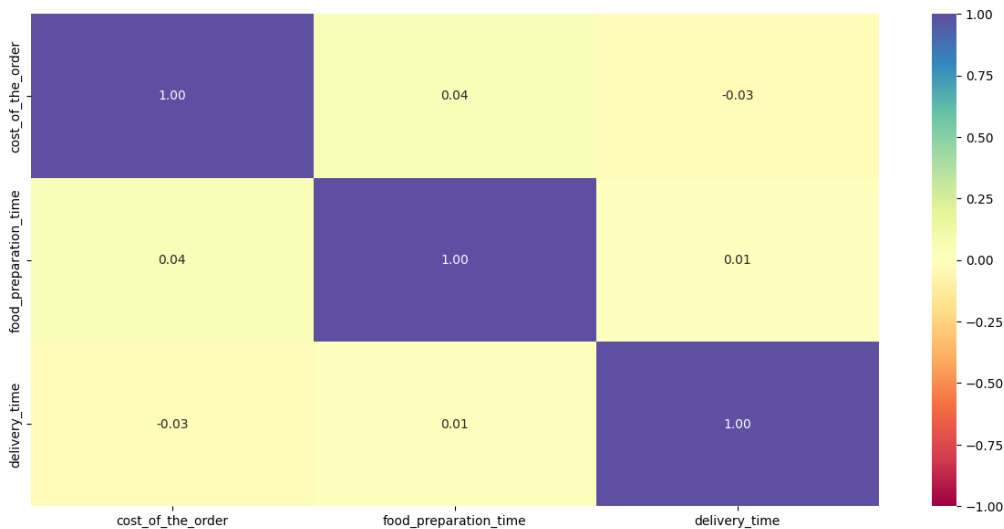
Univariate Analysis

- Top 5 Restaurants:

    - Insight: The top 5 restaurants, including Shake Shack and The Meatball Shop, show the most significant number of orders, highlighting their popularity on the platform.

- Most Popular Cuisine on Weekends:

    - Insight: American cuisine is the most popular on weekends, suggesting targeted promotions could drive higher sales during these days.

- High-Value Orders:

    - Insight: Orders above $20 make up 29.24% of the dataset, indicating a substantial high-spending customer segment.

Univariate Analysis

- Mean Order Delivery Time:

    - Insight: The average delivery time across the platform is 24.16 minutes, which can be a key selling point for the platform's efficiency.

- Top 3 Customers

    - Customer ID 52832: Leading with 13 orders.

    - Customer ID 47440: Close behind with 10 orders.

    - Customer ID 83287: With 9 orders.

Multivariate Analysis

- Correlation Analysis:

    - Analysis through a heatmap indicates minimal correlation between the order cost, food preparation time, and delivery time.

    - Each service metric operates independently, providing flexibility in improvement strategies without interdependency issues.
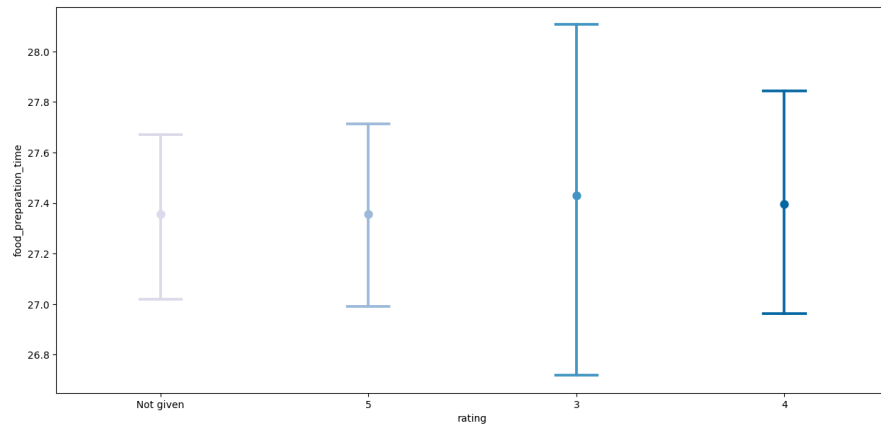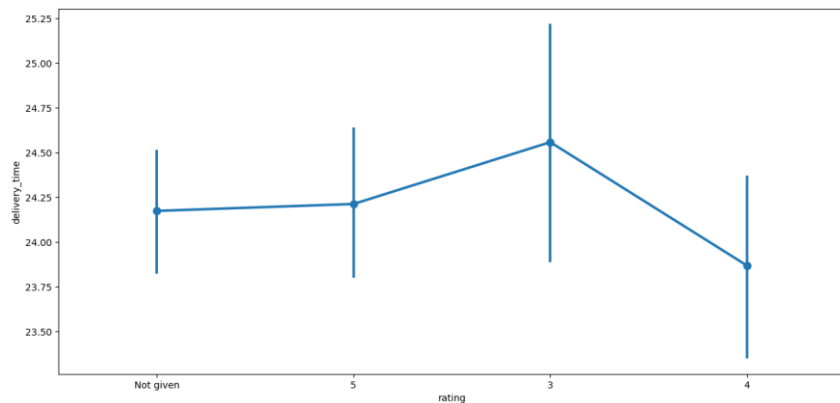
Multivariate Analysis

- Rating Analysis (Questions 12, 13):

    - Cost does not stand alone as a driver of satisfaction. Our analysis highlights the multifaceted nature of customer contentment, urging us to enrich the overall dining experience.
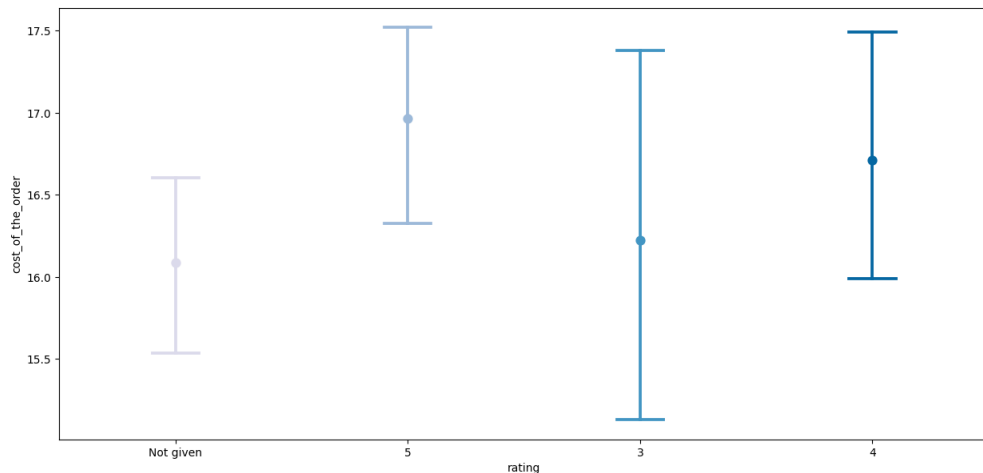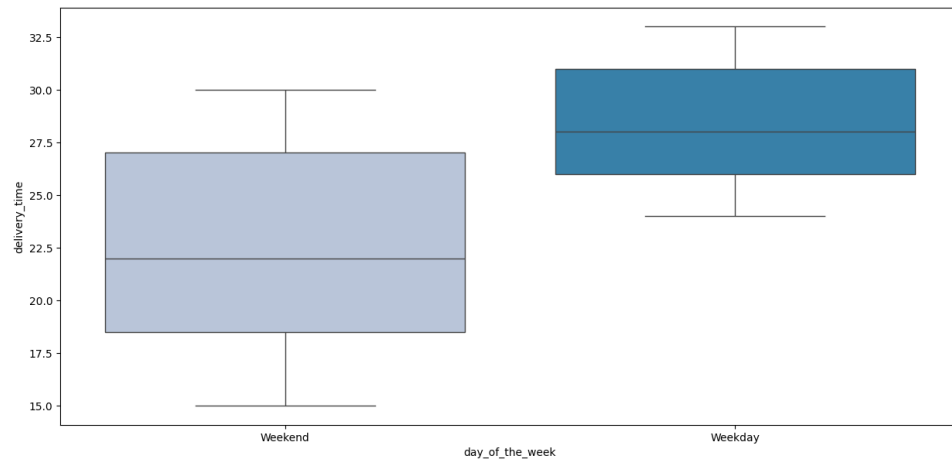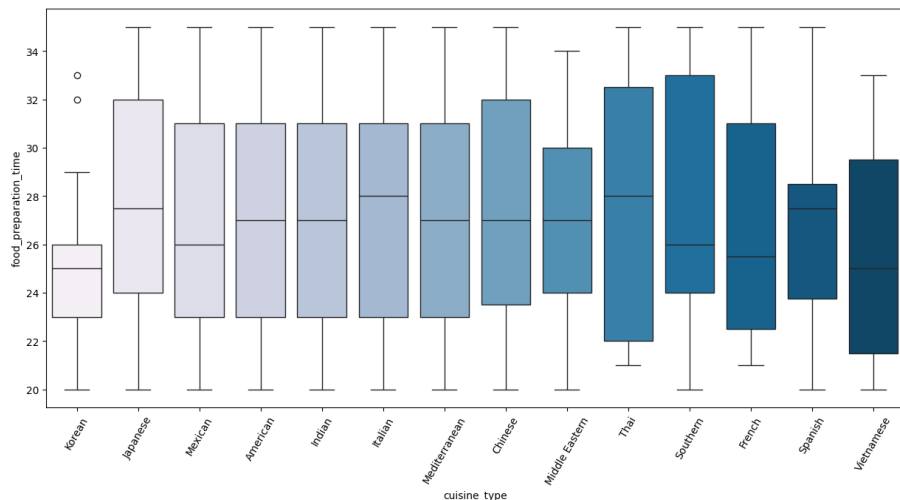
Multivariate Analysis

- Rating Analysis Cont:

  - Swift delivery, while important, is not the sole determinant of satisfaction. This insight directs us towards refining the complete delivery experience to achieve higher customer approval.

  - The data suggests customers may prefer quality over haste. A balance between timely food preparation and culinary excellence is key to our partnership with restaurants.

Multivariate Analysis

- Time Analysis (Questions 15, 16):

  - A notable share of deliveries exceed 60 minutes, signaling room for process enhancement.

  - Similar delivery times on weekdays and weekends suggest a stable operational flow, ripe for efficiency improvements.

Multivariate Analysis

- Revenue Generation (Question 14):

  - Net revenue calculations highlight the profitability of high-cost orders.

  - The pricing strategy is informed by these insights, aiming to boost overall profitability.
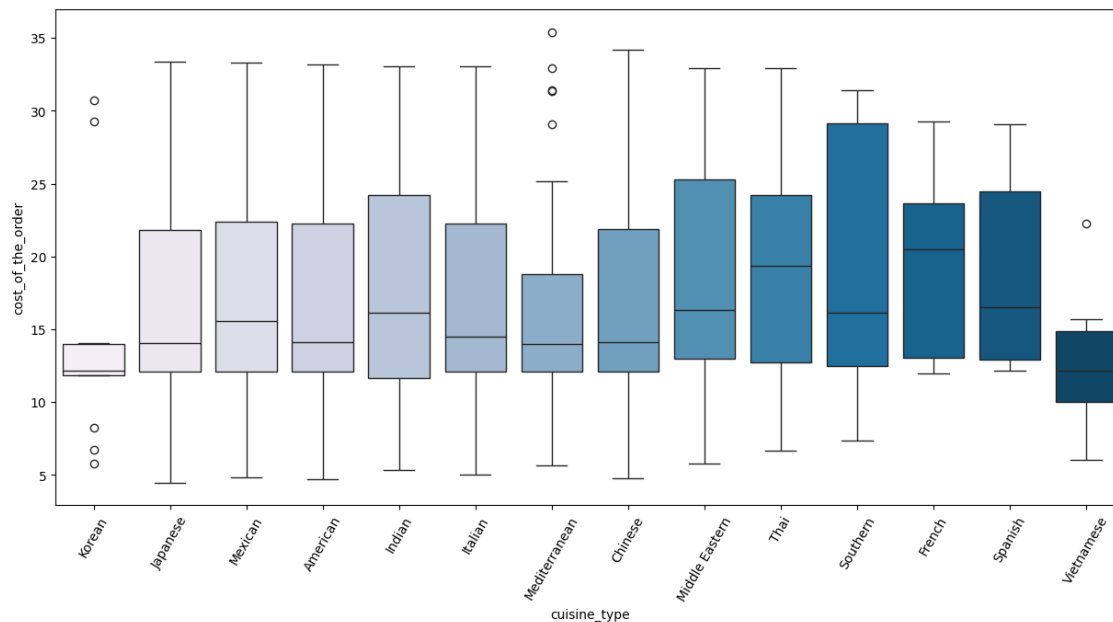
APPENDIX

- PYF_Project_LearnerNotebook_LowCode.ipynb

  - Python Script: Contains the detailed data analysis process, including data cleaning, exploratory data analysis, and the statistical methods used to derive insights.

- foodhub_order.csv

  - Data File: The original dataset used for the analysis, representing the order details from FoodHub.

Happy Learning !