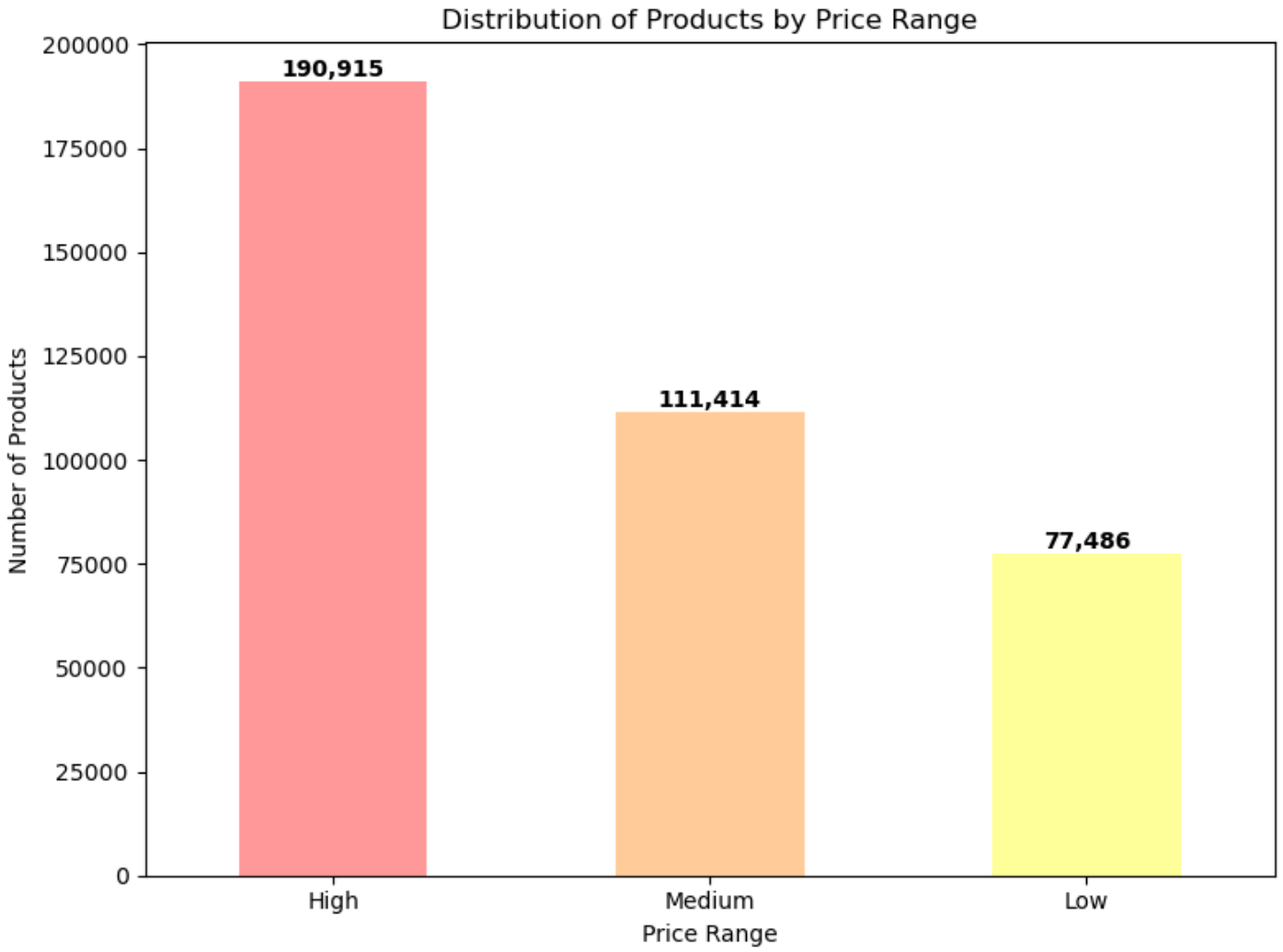
Product DISCOUNT at Eniac.

Introduction

- **Title**: Driving Business Insights through Product and Sales Analysis

- **Opening Statement**:
  - This analysis identifies trends in pricing, discounts, and seasonality to optimize decision-making.

Result of Analysis

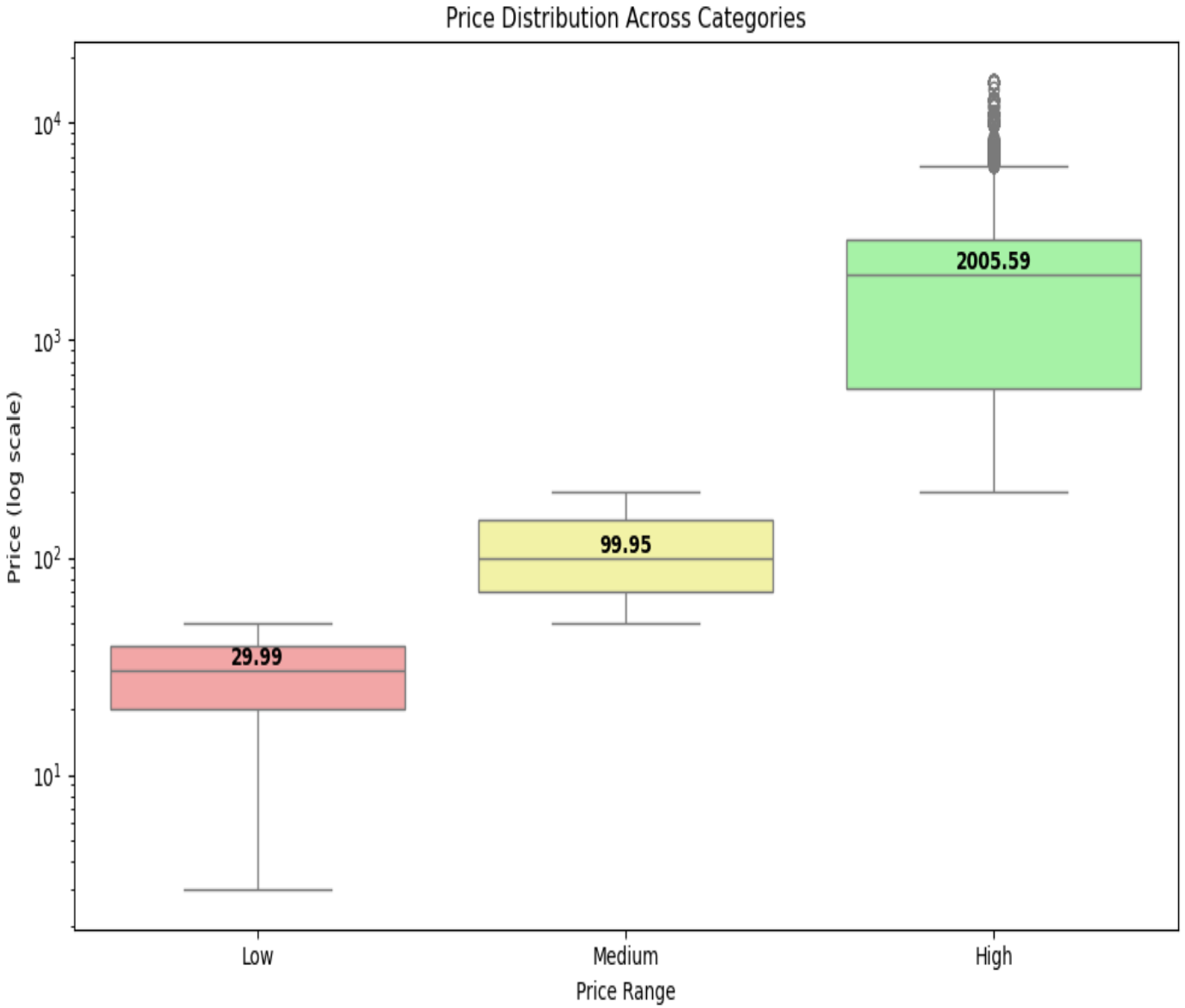


- How should products be classified into different categories to simplify reports and analysis?

•Products are grouped into three categories for clarity:

•**High Price**: 190,915 products (most dominant category)
•**Medium Price**: 111,414 products
•**Low Price**: 77,486 products

•**Key Insight**:
•This classification helps streamline reporting and analysis by focusing on trends within price segments



•What is the distribution of product prices across different categories?

The boxplot shows the price distribution across three categories:

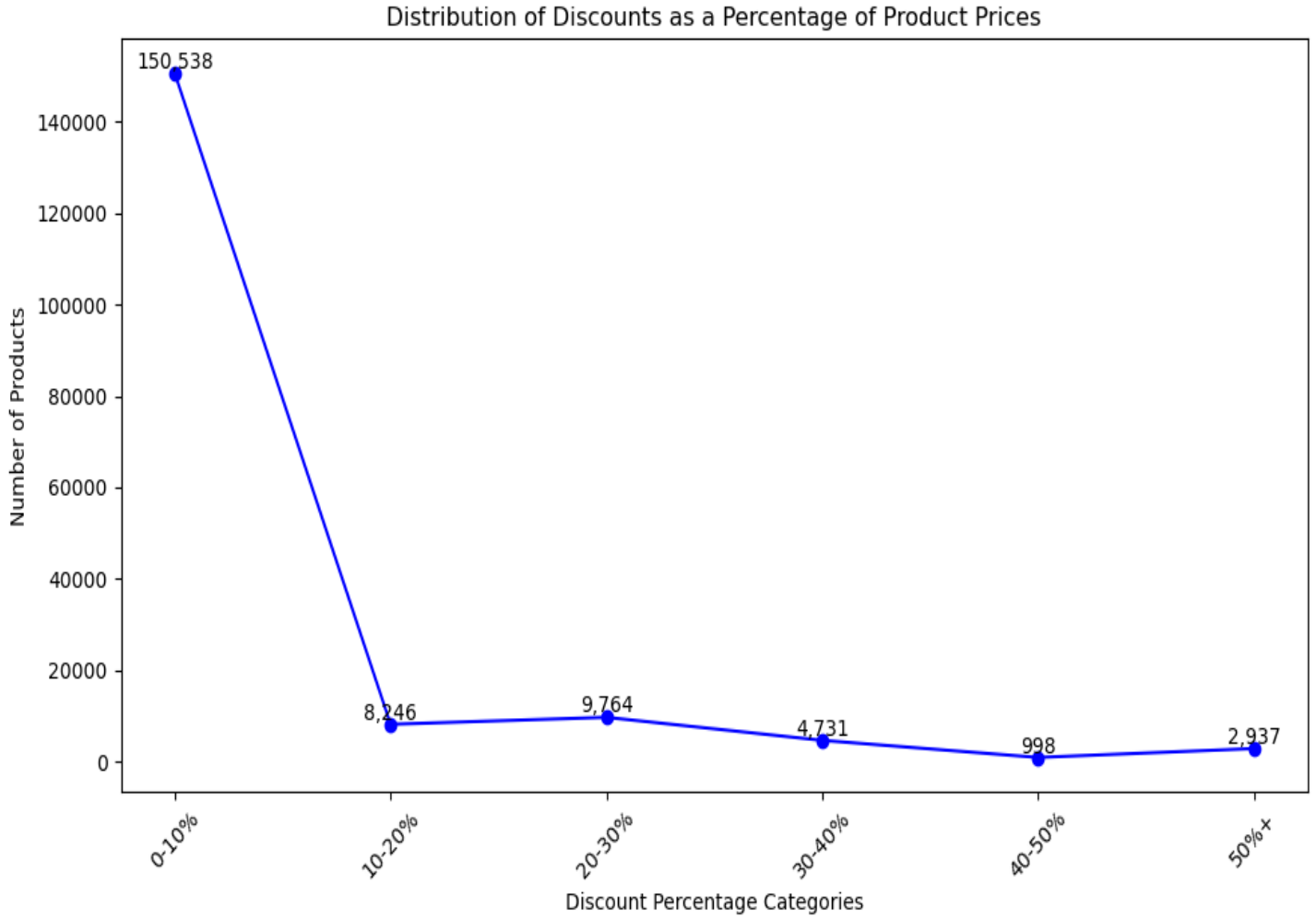
- **Low Price Range:** Median price is **€29.99**, with a narrow spread of values.
- **Medium Price Range:** Median price is **€99.95**, with slightly broader variability.
- **High Price Range:** Median price is significantly higher at **€2005.59**, with outliers indicating some extremely high-priced products.

This highlights distinct pricing tiers, with high-price products being the most variable.

Discounted product by quantity

- **How many products are being discounted?**

1. Number of discounted products: 48,741
2. Number of non-discounted products: 128,473
3. Percentage of discounted products: 27.50%

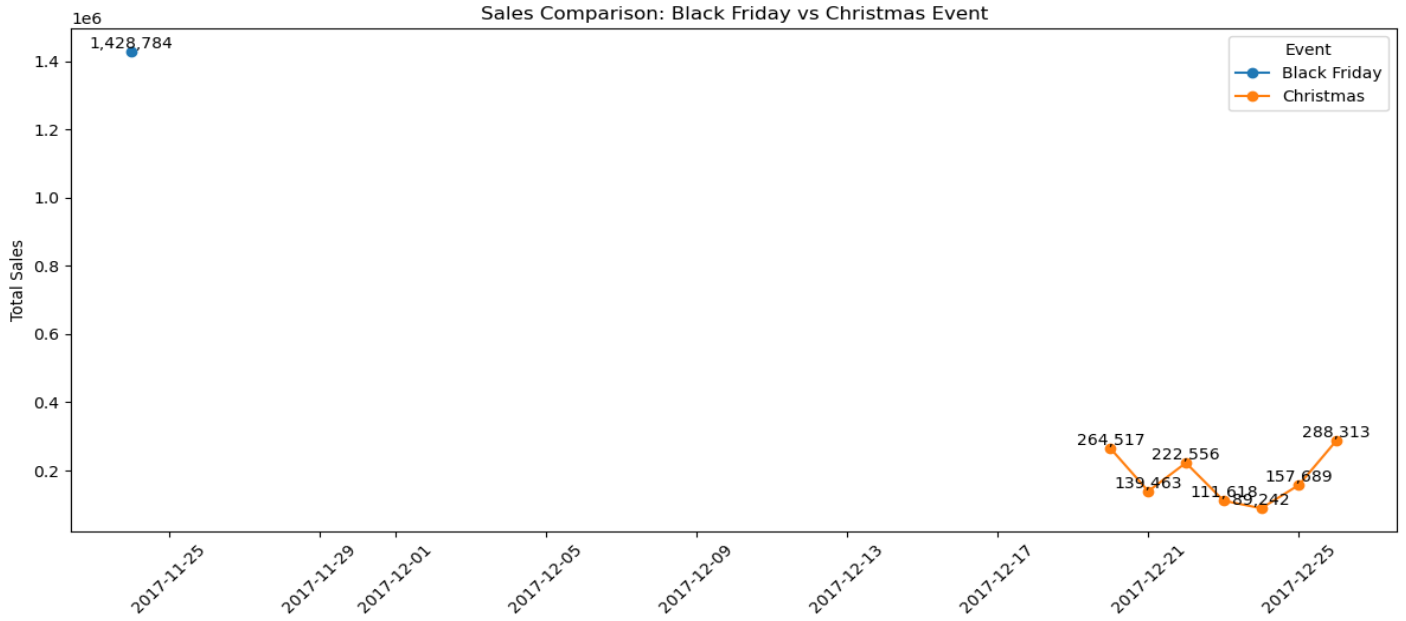


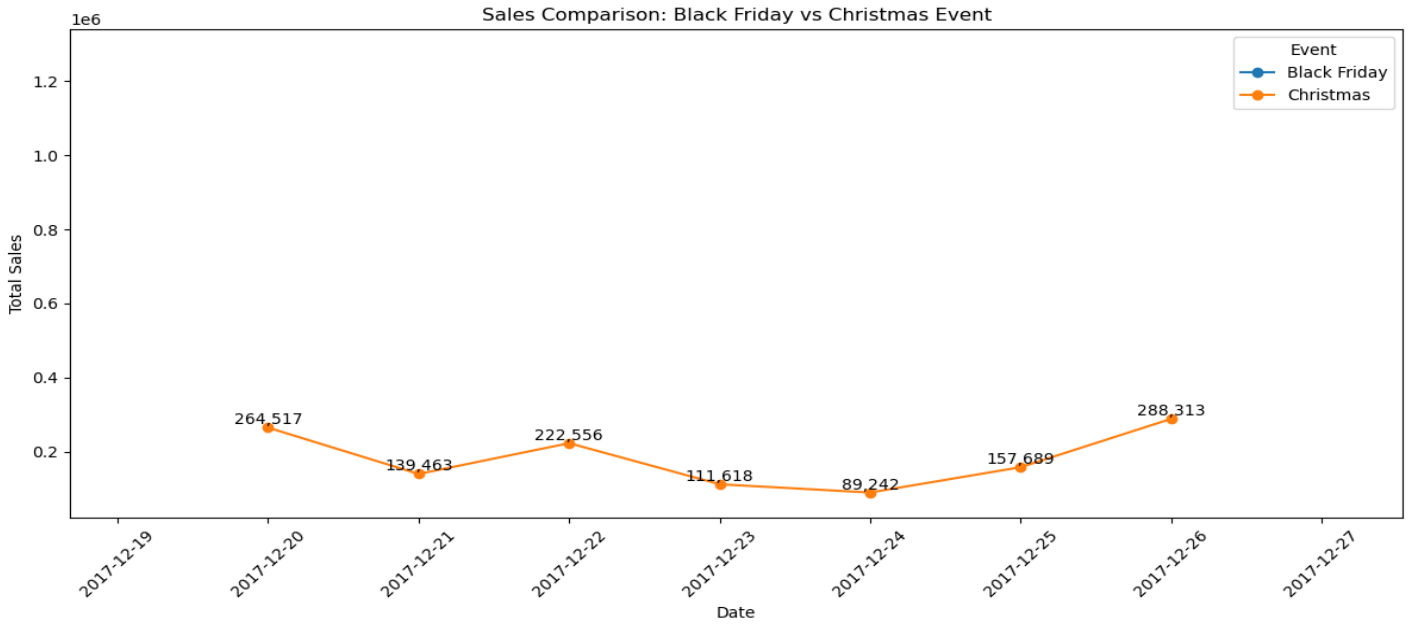
- How big are the offered discounts as a percentage of the product prices?

- The majority of products (150,538) have discounts in the **0-10%** range, indicating most discounts are minimal.

- Significant drops in product count are seen as discounts increase:
- **10-20%**: 8,246 products
- **20-30%**: 9,764 products
- **30-40%**: 4,731 products
- **40-50%**: 998 products
- **50%+**: 2,937 products

Visualization Insight:
- The bar chart highlights how discounts decrease as a percentage of product price, with most concentrated in the lowest range.





- How do seasonality and special dates (Christmas, Black Friday) affect sales?

Based on the line graph:

1. **Black Friday Sales**: The sales for Black Friday were very high on its event date (around November 25th), reaching approximately **1.4 million**. However, there are no sales data points for Black Friday after its event date.

2. **Christmas Sales**: The sales for Christmas gradually increased from December 20th to December 25th, peaking at 288,313 on December 25th. The sales during this period were lower compared to Black Friday.

How could data collection be improved?

To improve data collection:

1. **Ensure Data Completeness**: Missing values (e.g., price, promo price, or date) can cause inaccuracies. Add validation during data entry to ensure all fields are filled. Use default or estimated values for mandatory fields (e.g., assign a default price based on the product category).

2. **Improve Data Consistency**: Inconsistent formats (e.g., prices as strings instead of numbers) require extra cleaning. Standardize data at the source with proper formats (e.g., numeric fields for prices) and use dropdowns or predefined options for categories (e.g., event type or state).

Case Study Question: Are discounts working?

The discounts are working, but their impact is limited:

Impact of Discounts: Sales from regular periods vastly outweigh those from special events like Black Friday or Christmas, suggesting that discounts during these events provide short-term boosts but do not dominate overall revenue