

# Laptop by Specs Inferential EDA

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As of August 1, 2024

# Section I

## Executive Summary



# Executive Summary

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As a reminder, this dataset was scraped from flipkart.com. I will be conducting an analysis geared towards tech companies such as Dell, HP, Asus, Acer etc.

## Key Findings:

- **Top-rated Brands:**
  - Apple, LG, MSI, Realme, and Alienware were among the top 5 laptop brands with the highest overall ratings.
- **Processor Comparison:**
  - On average, AMD processor laptops were rated higher and were cheaper compared to Intel laptops, which were more expensive and had lower ratings.
- **Hypothesis Testing Results:**
  - **Storage Type:** There was a statistically significant difference in the means of price between laptops with hard disk drives (HDD) and those with solid-state drives (SSD).
  - **Operating Systems:** The null hypothesis was not true and a significant difference was found in the mean prices of laptops with different operating systems (Windows, DOS, and Mac).
  - **Brand Ratings:** After applying the Central Limit Theorem (CLT), there was a statistically significant difference in the means of ratings between different brands, such as Asus and HP.

## Recommendations for Technology Companies to Enhance Ratings:

- **Processor Choices:**
  - Consider producing more laptops with AMD processors, as they are both higher-rated and cheaper.
- **Graphics Performance:**
  - Include GPUs in laptops regardless of the video RAM amount, as laptops with GPUs tend to have significantly higher ratings.
- **Storage Solutions:**
  - Favor SSDs over HDDs to enhance performance and customer satisfaction, as SSDs are generally preferred despite their higher cost.

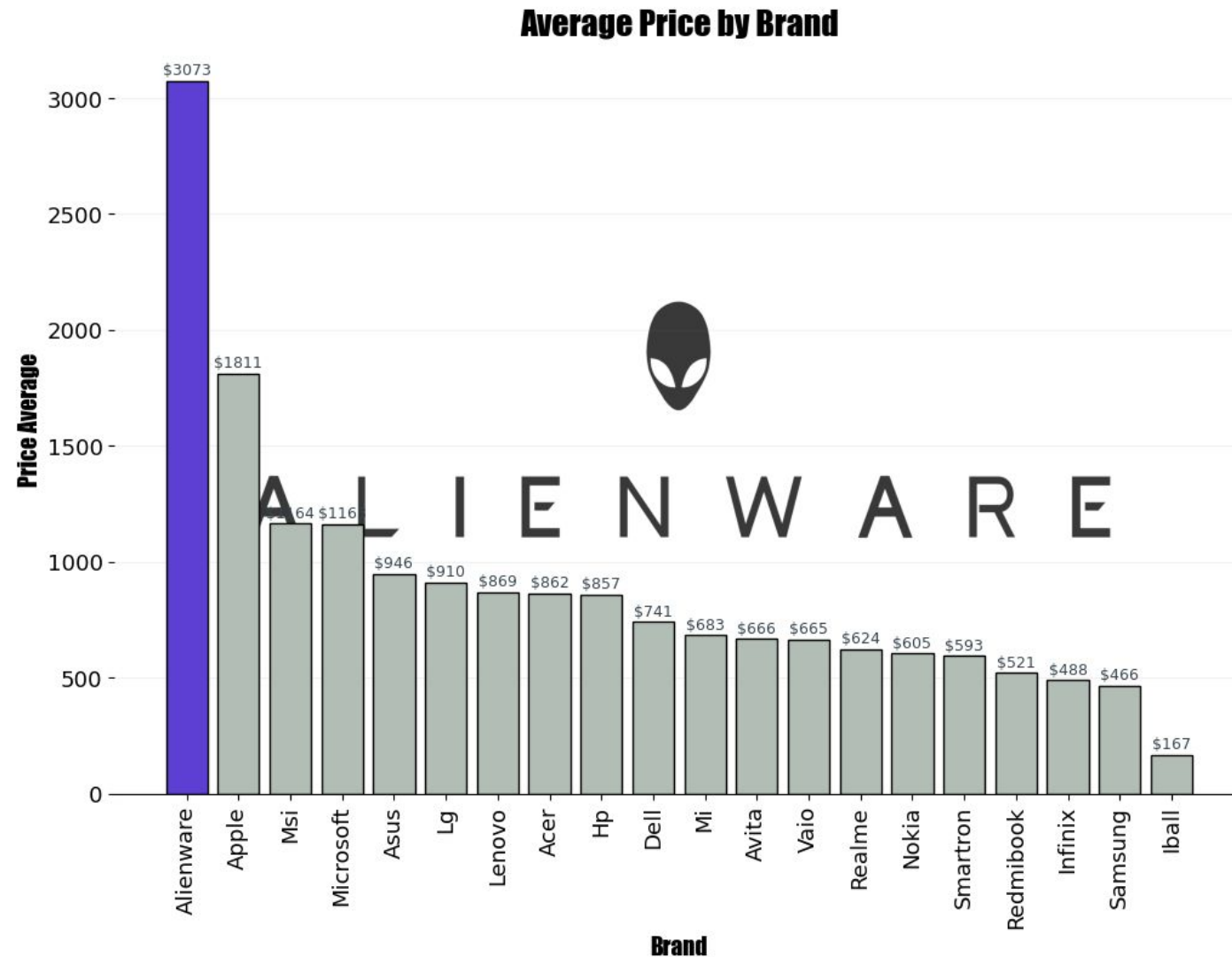


# Section II

Data Visualization & Inferential Analysis



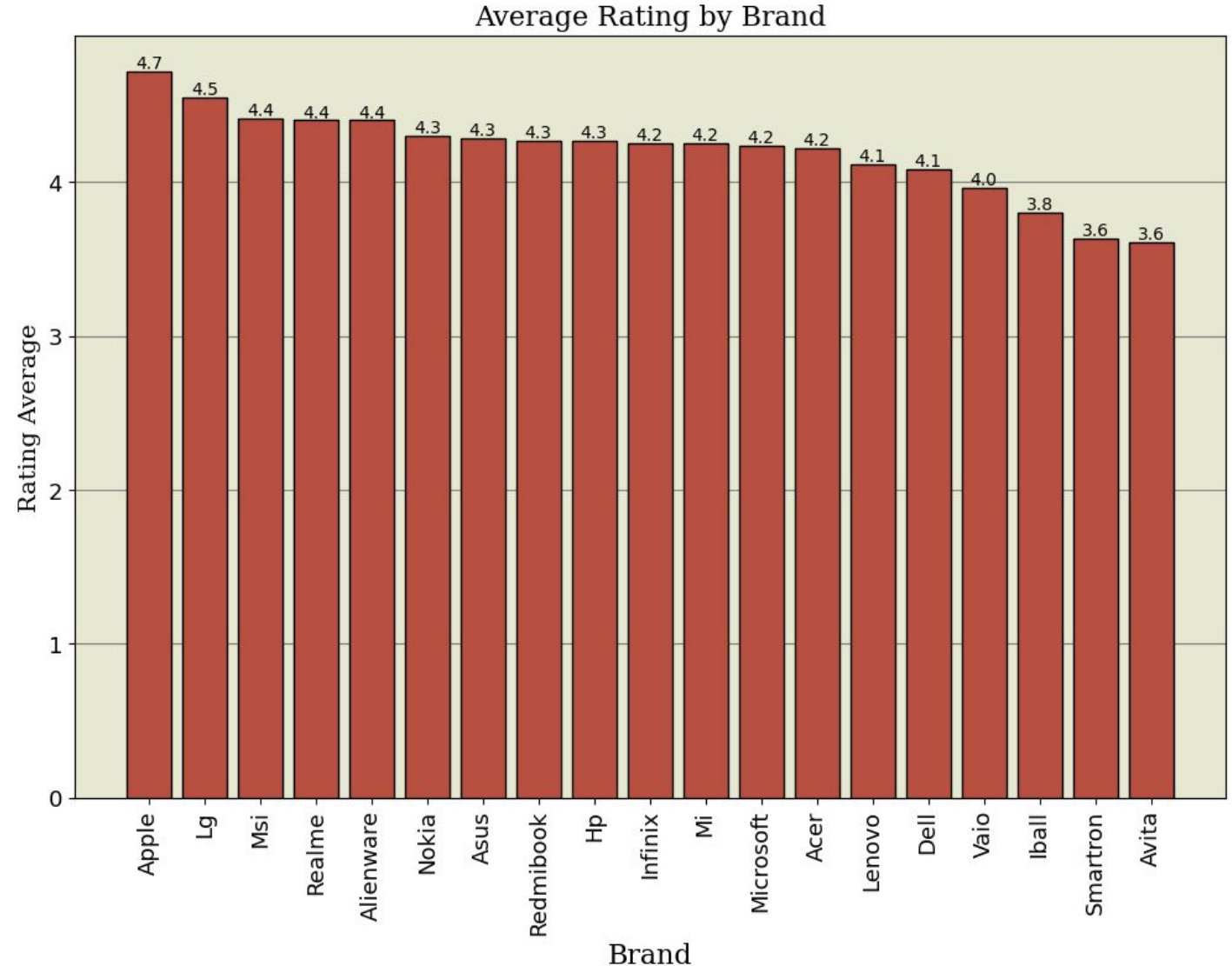
# Which laptop brands are the most expensive?



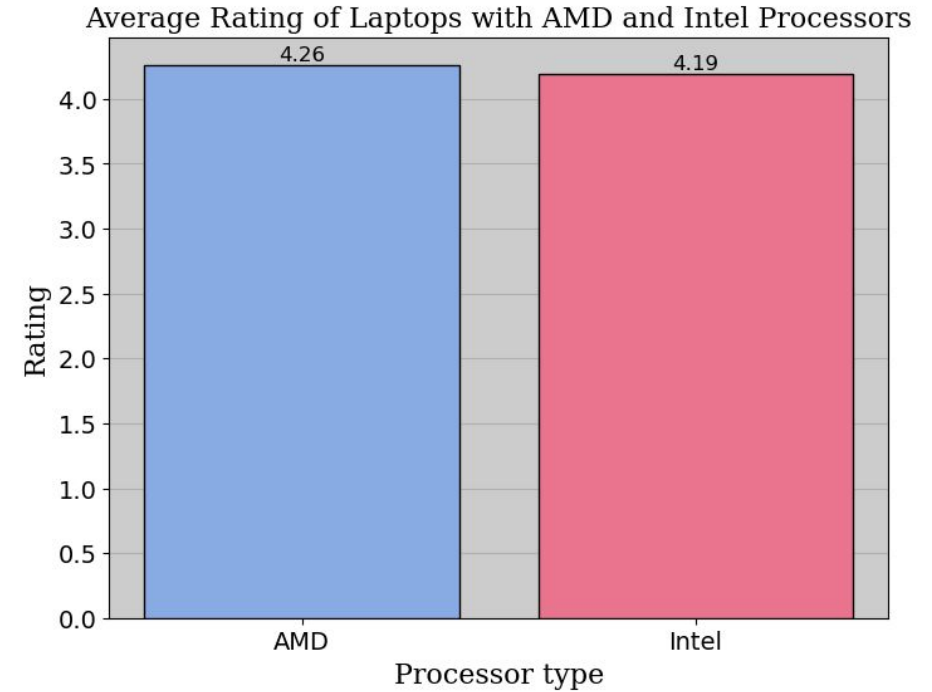
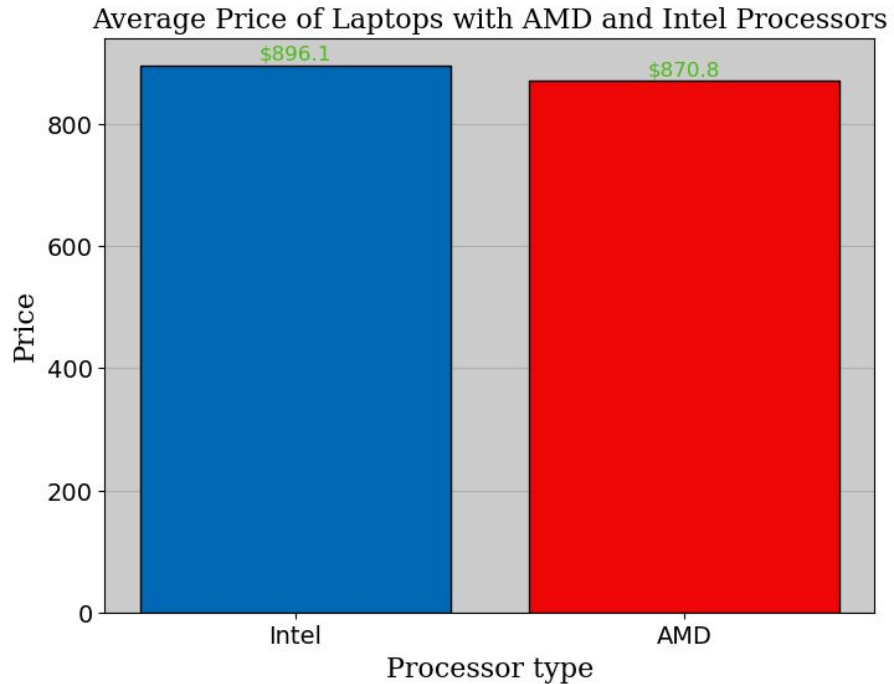
- Alienware, Apple, MSI, Microsoft, and Asus are among the top 5 brands on average with laptops to be most expensive
- Alienware laptops on average are roughly \$3,100

# Which laptop brands are rated the highest?

- Apple is the highest rated laptop on average, with an average rating of 4.7
- Avita is rated the lowest
- Well known companies such as Dell, Acer, and Lenovo were rated above 4.0, but was a bit lower than what I had originally expected

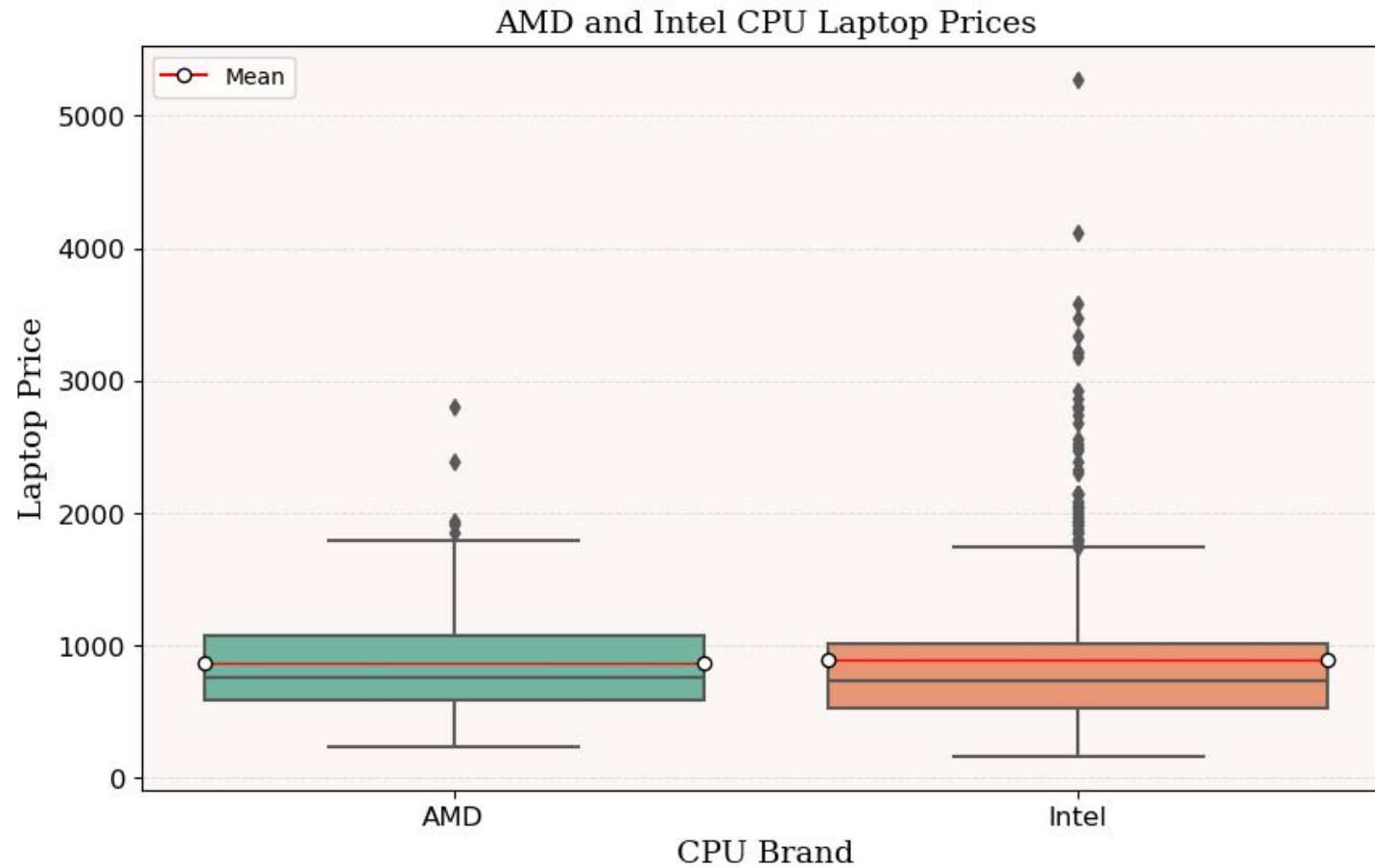


# AMD & Intel Processor Laptops - Ratings & Price



- Intel CPU laptops on average were priced higher compared to AMD CPU laptops.
- Intel CPU laptops were rated lower compared to AMD CPU laptops.

# AMD & Intel Processor Laptops - Ratings & Price (Continued)





# Inferential Analysis Summary

## Non-normal Data:

- Tested for normality using KDE plot and Shapiro-Wilk test; data was not normally distributed.

## Processor Price Comparison:

- **Question:** Is there a significant difference in prices between laptops with Intel and AMD processors?
- **Test:** Mann-Whitney U Test
- **Result:** No significant difference found in the means of prices between Intel and AMD laptops.

## Storage Type Price Comparison:

- **Question:** Do laptops with SSDs have significantly different prices compared to those with HDDs?
- **Test:** Mann-Whitney U Test
- **Result:** Significant difference found in the means of prices between SSD and HDD laptops.

## Operating System Price Comparison:

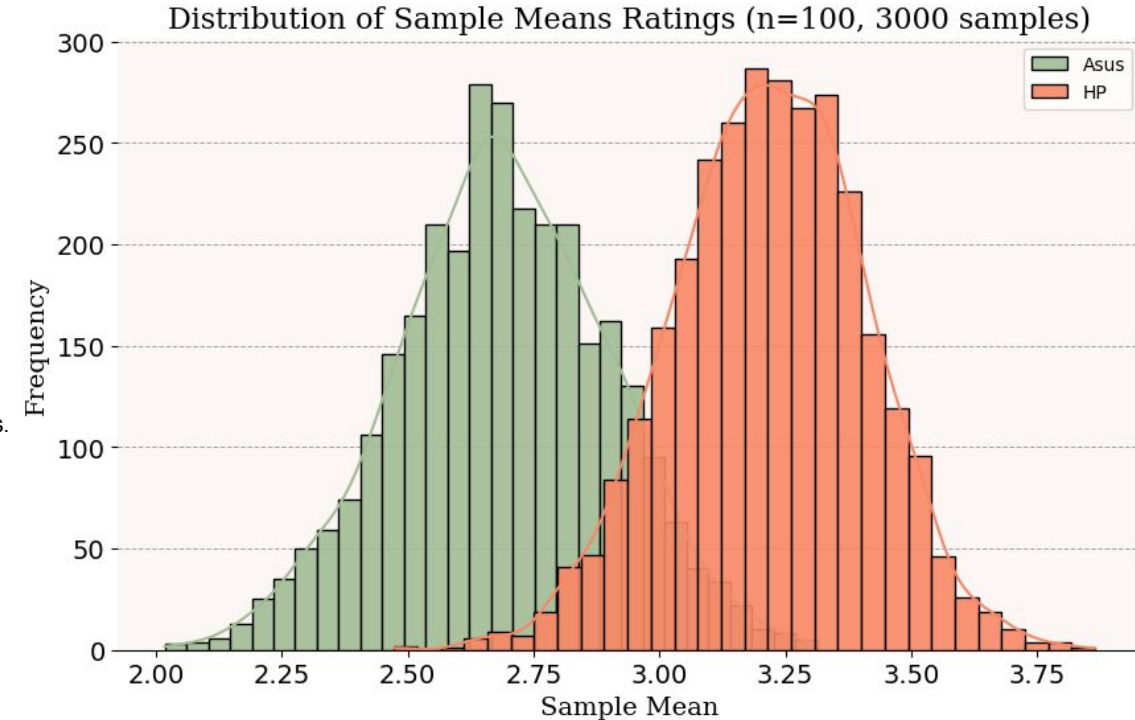
- **Question:** Is there a significant difference in prices of laptops based on their operating system (Windows, Mac, DOS)?
- **Test:** Kruskal-Wallis H Test
- **Result:** Null hypothesis was not true and significant difference found in the means of prices based on operating systems.

## Brand Ratings Comparison:

- **Question:** Is there a significant difference in ratings between brands such as Asus and HP?
- **Test:** Independent Student's T-Test (after applying CLT)
- **Result:** Significant difference found in the mean ratings between brands such as Asus and HP.

## RAM and Price Comparison:

- **Question:** Do laptops with higher RAM (4GB, 8GB, 16GB) have higher prices?
- **Test:** ANOVA Test (after applying CLT)
- **Result:** Significant difference found in the mean prices of laptops based on RAM size.



**\*Note: All tests were ran with a 95% significance level.**

# Recommendation

## Apple:

- Continue investing in market research to understand market and consumer needs.

## Dell, Acer, HP, other tech companies:

- Current average ratings above 4.0, but room for improvement compared to Apple (4.7).
- Consider producing more laptops with AMD processors, as data trend implied that they are cheaper and higher-rated than Intel.
- Include GPUs in laptops regardless of VRAM, as data trend implied that laptops with GPUs receive higher ratings.
- Continue using Windows or explore partnering with Apple for a new OS.

## General Recommendation:

- Increase the production of laptops with SSDs, as the data trend implied they are faster and improve customer satisfaction despite higher costs.

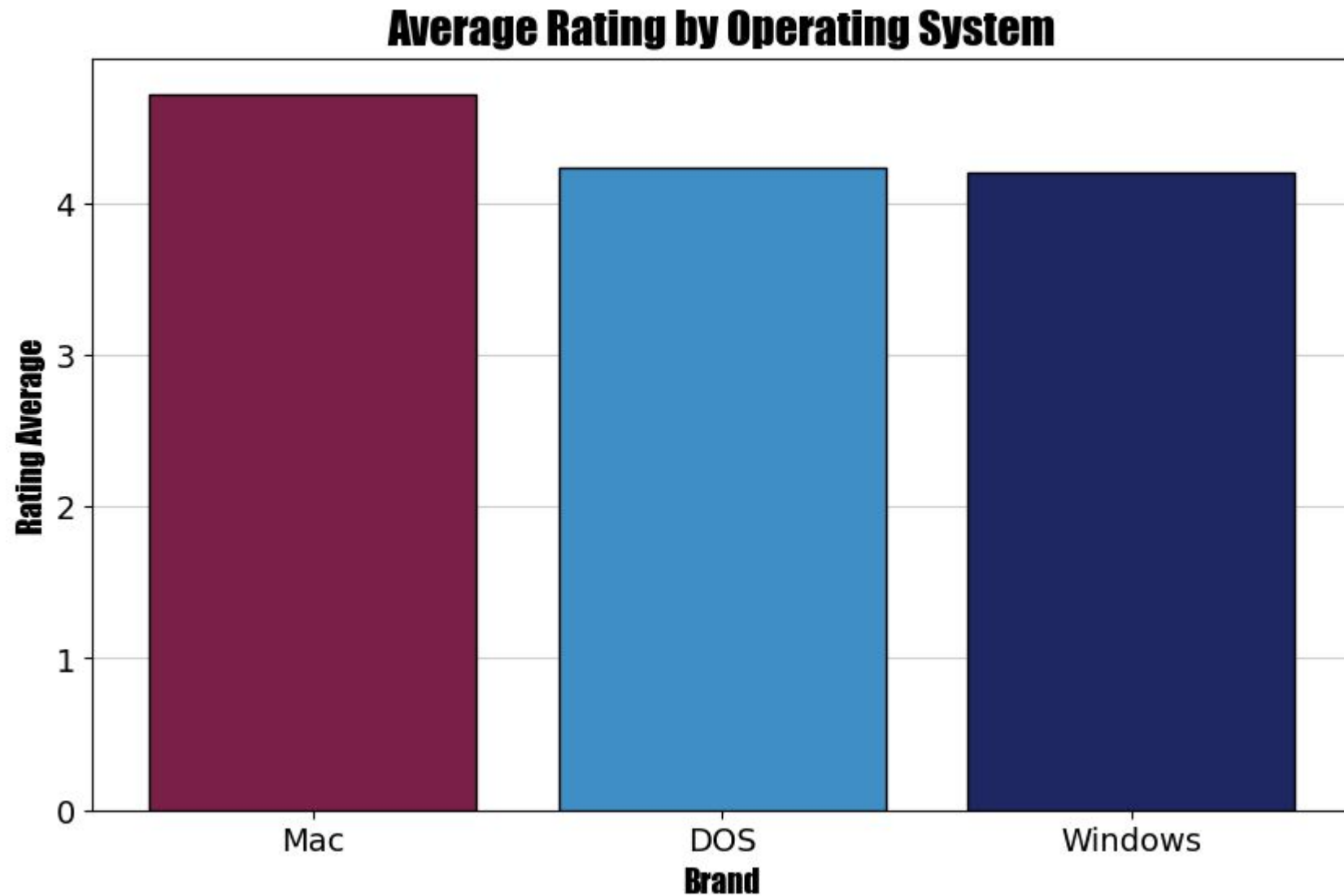


# Section III

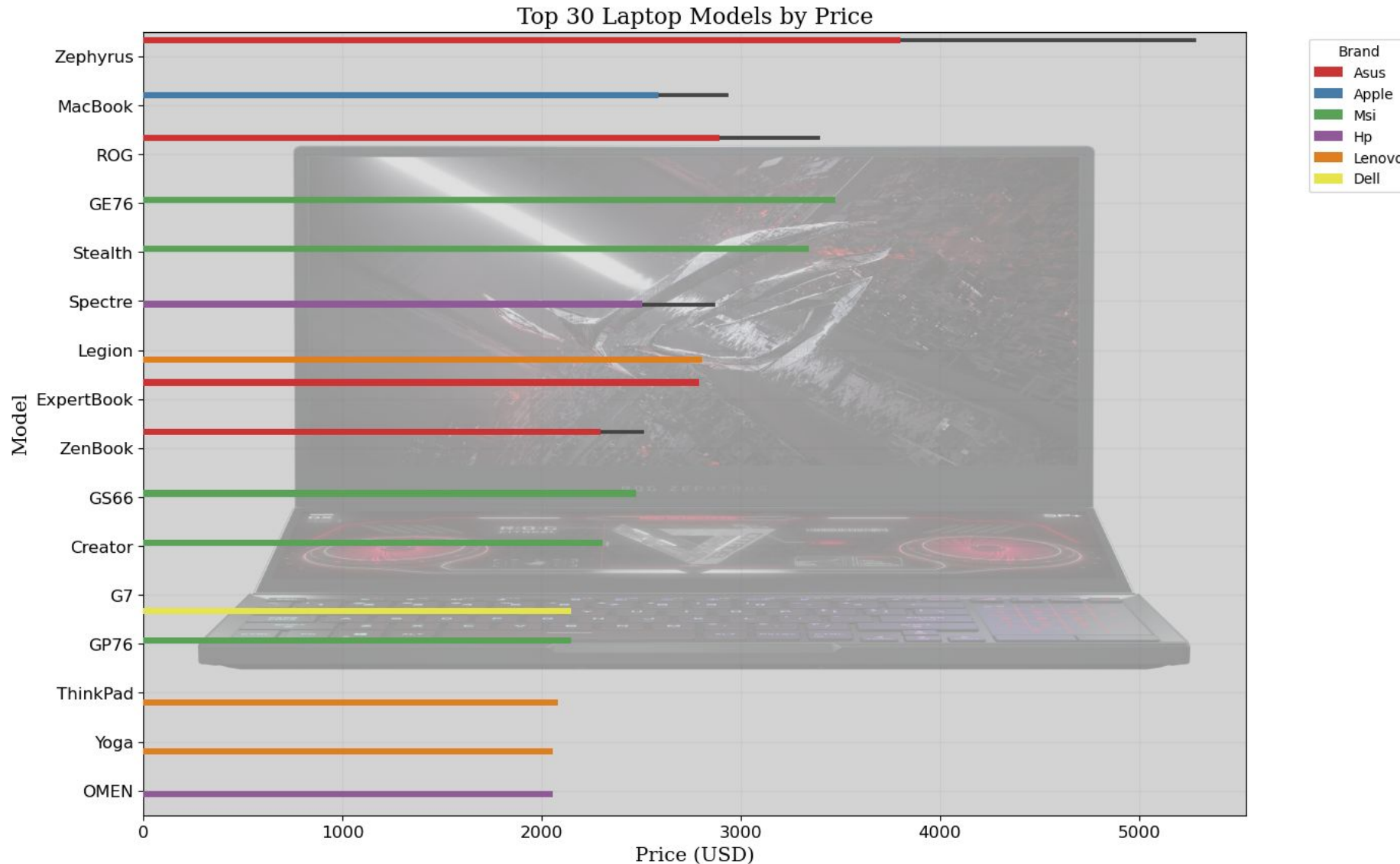
## Appendix



# Average rating by Operating System



# Top 30 Laptop Models by Price





# Average Rating by Graphic Card VRAM Amount

