ELLER COLLEGE OF MANAGEMENT
HSLopez School of Business Analytics

# ANALYTICS REPORT

**TO:** WALMART'S PRICING DEPARTMENT

**FROM:** JAKE MOORE

**SUBJECT:** ANALYSIS OF ONLINE WOMEN'S SHOE PRICES

**DATE:** SEPTEMBER 24TH, 2025

## *Introduction*

In this brief analysis, we analyzed data from approximately 26,983 online women's shoe price listings across four different merchants- Walmart (8,180), Amazon (189), Macy's (669), and Overstock (17,945). The main objective of this analysis was to determine whether average prices differ across merchants and to quantify the difference in Walmart's average prices compared to each key competitor.

To assess whether prices differed across merchants, we conducted a one-way ANOVA with a 5% significance level. The results revealed a statistically significant difference in average prices between at least one pair of merchants, with a p-value of 5.32E-16, which is lower than our significance level of 0.05. To better understand these differences, we conducted further analysis using Fisher's confidence interval tests, using the ANOVA within-group variance of MS = 3265.22 and a critical value of t = 1.9602, which allowed us to calculate the range of average price differences between Walmart and each individual competitor.

Key Insights with a 95% Confidence Interval.

- Walmart vs. Amazon: [-16.56, -0.08]
    - Walmart is cheaper by $0.08 to $16.56
- Walmart vs. Macy's: [-22.79, -13.79]
    - Walmart is cheaper by $13.79 to $22.79
- Walmart vs. Overstock: [-5.14, -2.16]
    - Walmart is cheaper by $2.16 to $5.14

Walmart's average online women's shoe price of $70.35 is statistically lower than those of Amazon ($78.67), Macy's ($88.64), and Overstock ($74.00) at the 95% confidence level. These prices confirm that Walmart currently has the lowest prices. Based on this analysis, we recommend that Walmart continue to hold its current pricing strategy while exploring different small price increases on select items.

## *Data Analysis*

To identify only relevant competitors, we filtered and cleaned the dataset to only include merchants that offer at least 100 different types of shoes and had prices similar to those of Walmart. This led our analysis to identify four main merchants: Walmart, Amazon, Macy's, and Overstock. In our initial bar graph, we see that Walmart has an average price of $70, while the nearest competitor Overstock, comes in at $74.

ANOVA Test

$H_0$: There is no difference in average women's shoe prices across the 4 merchants of Walmart, Amazon, Macy's, and Overstock.

$H_A$: There is at least one difference in average women's shoe prices across the 4 merchants of Walmart, Amazon, Macy's, and Overstock.

Because the p-value = 5.32E-16 is less than our significance of 0.05, we can reject the null hypothesis and can conclude that there is at least one difference in average women's shoe prices across the 4 merchants. To find out how Walmart's prices differ from their competitors and by how much, we will use Fisher's Confidence Intervals.

Walmart vs. Amazon

$H_0$: There is not a difference in average women's shoe prices between Walmart and Amazon.

$H_A$: There is a difference in average women's shoe prices between Walmart and Amazon.

$$(70.35 - 78.67) \pm 1.9602 \sqrt{3265.22\left(\frac{1}{8180} + \frac{1}{189}\right)}$$

[-16.56, -0.08]

Since the interval does not include 0, we can conclude there is a difference in average women's shoe prices between Walmart and Amazon. Since the interval was set up as Walmart minus Amazon and is entirely negative, Walmart's average prices are lower than Amazon's by between $0.08 and $16.56.

Walmart vs. Macy's

$H_0$: There is not a difference in average women's shoe prices between Walmart and Macy's.

$H_A$: There is a difference in average women's shoe prices between Walmart and Macy's.

$$(70.35 - 88.64) \pm 1.9602 \sqrt{3265.22\left(\frac{1}{8180} + \frac{1}{669}\right)}$$

[-22.79, -13.79]

Since the interval does not include 0, we can conclude there is a difference in average women's shoe prices between Walmart and Macy's. Since the interval was set up as Walmart minus Macy's and is entirely negative, Walmart's average prices are lower than Macy's by between $13.79 and $22.79.

Walmart vs. Overstock

$H_0$: There is not a difference in average women's shoe prices between Walmart and Overstock.

$H_A$: There is a difference in average women's shoe prices between Walmart and Overstock.

$$(70.35 - 74) \pm 1.9602 \sqrt{3265.22\left(\frac{1}{8180} + \frac{1}{17945}\right)}$$

[-5.14, -2.16]

Since the interval does not include 0, we can conclude there is a difference in average women's shoe prices between Walmart and Overstock. Since the interval was set up as Walmart minus Overstock and is entirely negative, Walmart's average prices are lower than Overstock by between $2.16 and $5.14.

Overall Recommendation

Walmart should continue to maintain its low prices as women's shoes are $2-23 cheaper on average in comparison to their competitors. It is important to note that an increase as small as 8 cents could tip the scale and allow Walmart to not pride themselves in being cheaper than Amazon. One recommendation would be to test small price increases on products that heavily undercut their competitors to level the playing field. Finally, Walmart could introduce a generalized, small price increase of 5 cents, and continue to offer a price match guarantee to foster brand trust and loyalty.

***Conclusion***

In this analysis, we examined over 26,000 women's shoe listings to evaluate how Walmart's pricing strategies compare to its three main online competitors- Amazon, Macy's, and Overstock. Our results showed that Walmart's average price is statistically lower than each of its competitors.

Based on these findings, we recommend that Walmart maintain its current pricing strategy while testing small price adjustments on items that heavily undercut competitors and continue to highlight its price-matching programs.

For future analysis, it may be useful to explore different specific shoe categories to determine if prices are different between luxury shoes, discount shoes, and other types of shoes.

Please feel free to contact me at jakemoore@arizona.edu if you have any questions or would like to discuss these recommendations in more detail.

***Technical Appendix***

*Figure 1 – ANOVA Output*

**Anova: Single Factor**

**SUMMARY**

| *Groups* | *Count* | *Sum* | *Average* | *Variance* |
|---|---|---|---|---|
| Walmart | 8180 | 575500.405 | 70.35457274 | 4862.530685 |
| Amazon | 189 | 14869.455 | 78.67436508 | 3194.923692 |
| Macys | 669 | 59300.09 | 88.63989537 | 10398.6169 |
| Overstock | 17945 | 1327960.265 | 74.00168654 | 2272.336537 |

ANOVA

| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
|---|---|---|---|---|---|---|
| Between Groups | 242682.5763 | 3 | 80894.19209 | 24.77450069 | 5.31733E-16 | 2.605238318 |
| Within Groups | 88092367.04 | 26979 | 3265.219876 | | | |
| Total | 88335049.62 | 26982 | | | | |

**Jake Moore**

*Figure 2 – Average Price Bar Graph*