

amazon.com[®]

The Amazon logo, a curved orange arrow pointing from the letter 'a' to the letter 'z', is positioned below the text 'amazon.com'.

Amazon, the lowest prices?

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Background

It's arguable that amazon is a goliath within the retail industry when it comes to pricing. Prices are said to fluctuate so much on amazon that major competitors struggle to keep up. Some competitors even offer an advantage of price matching to avoid a pricing war.



Procedure

- I'm interested in finding out if Amazon really has the lowest prices.
- Gather an SRS of 30 random items from Amazon and Best Buy.
 - Take the first 10 listed prices from each section of appliances to make it random
 - Avoid used items to achieve a more comparable data set
 - Avoid best buy only items



Raw data

listed prices	Best Buy	Amazon
LG - 49" Class (48.5" Diag.) - LED - 2160p - Smart - 4K Ultra HD TV - Black	\$ 499.99	\$ 529.99
Sony - 55" Class (54.6" Diag.) - LED - 2160p - Smart - 4K Ultra HD TV - Black	\$ 799.99	\$ 749.99
Sony - 65" Class (64.5" Diag.) - LED - 2160p - Smart - 4K Ultra HD TV with High Dynamic Range - Black	\$ 1,999.99	\$ 1,999.99
HP - 17.3" Laptop - Intel Core i5 - 8GB Memory - 1TB HDD	\$ 479.99	\$ 462.10
HP - 15.6" Laptop - AMD A12-Series - 6GB Memory - 1TB Hard Drive - Black	\$ 329.99	\$ 259.00
Beats by Dr. Dre - Beats Studio Wireless Over-Ear Headphones - Gloss Black	\$ 199.99	\$ 219.00
Bose® - QuietComfort® 35 wireless headphones - Silver	\$ 349.99	\$ 349.00
Dell - Inspiron Desktop - Intel Core i3 - 8GB Memory - 1TB Hard Drive - Black	\$ 429.99	\$ 373.00
HP - Pavilion Desktop - AMD A10-Series - 8GB Memory - 1TB Hard Drive - HP finish in twinkle black	\$ 399.99	\$ 299.29
Apple - 21.5" iMac® - Intel Core i5 - 8GB Memory - 1TB Hard Drive - Silver	\$ 1,199.99	\$ 1,179.00
Dell - Inspiron 23.8" Touch-Screen All-In-One - AMD A8-Series - 8GB Memory - 1TB Hard Drive - Black/White	\$ 649.99	\$ 599.99
Microsoft - Surface Pro 4 - 12.3" - 128GB - Intel Core i5 - Silver	\$ 849.99	\$ 700.50
Microsoft - Surface Pro 4 - 12.3" - 256GB - 16GB Intel Core i7 - Silver	\$ 1,499.99	\$ 1,519.99
Apple - iPad (Latest Model) with WiFi - 32GB - Space Gray	\$ 329.99	\$ 331.50
Sony - PlayStation 4 Pro Console	\$ 399.99	\$ 363.99
Sony - PlayStation 4 Console Uncharted 4: A Thief's End Bundle	\$ 299.99	\$ 299.00
Microsoft - Xbox One S 500GB Minecraft Favorites Console Bundle with 4K Ultra HD Blu-ray™ - White	\$ 249.99	\$ 209.99
Microsoft - Xbox One S 500GB Battlefield™ 1 Console Bundle with 4K Ultra HD Blu-ray™ - White	\$ 299.99	\$ 247.99
LG - 4.5 Cu. Ft. 12-Cycle Front-Loading Washer - White	\$ 699.99	\$ 699.99
LG - 4.5 Cu. Ft. 9-Cycle Front-Loading Washer - White	\$ 629.99	\$ 629.99
Samsung - 4.2 Cu. Ft. 9-Cycle High-Efficiency Steam Front-Loading Washer - White	\$ 599.99	\$ 649.50
LG - 49" Class (48.5" Diag.) - LED - 2160p - Smart - 4K Ultra HD TV - Black	\$ 499.99	\$ 499.99
Samsung - 40" Class (40" Diag.) - LED - 1080p - Smart - HDTV - Black	\$ 369.99	\$ 279.95
Sony - 48" Class (47.6" Diag.) - LED - 1080p - Smart - HDTV - Black	\$ 499.99	\$ 389.99
GoPro - Karma Quadcopter with HERO5 Black - Black/White	\$ 1,099.99	\$ 1,099.00
DJI - Mavic Pro Quadcopter with Remote Controller - Gray	\$ 999.99	\$ 999.00
DJI - Phantom 4 Pro Quadcopter - White	\$ 1,499.99	\$ 1,516.00
YUNEEC - Typhoon H Hexacopter Pro with Intel® RealSense™ Technology - Gun Metal Gray	\$ 1,499.99	\$ 1,499.00
YUNEEC - Typhoon 4K Quadcopter with Carrying Case - Black	\$ 899.99	\$ 699.98
DJI - Phantom 4 Pro+ Quadcopter - White	\$ 1,799.99	\$ 1,726.99

*Exploratory & Inferential analysis of
data*



amazon

Graphical data set: clustered column



Scatter plot



Two sample T test

P- μ_1 The mean price of all listed amazon products

- μ_2 The mean price of all listed best buy products

Hypothesis

$H_0: \mu_1 = \mu_2$ there is no difference in listed prices from Amazon and Best Buy

$H_a: \mu_1 < \mu_2$ Amazon has the lowest prices in listed items.

Assumptions

Assumptions

- Normal, CLT both samples $n > 30$
- Random SRS of 30 chosen Items
- Independent $n < 1/10 N$ each sample is less than 10% of its listed items

Inference

Best buy Amazon

$\bar{X}_2 = 746.65$ $\bar{X}_1 = 712.74$

$S_{x_2} = 492.75$

$S_{x_1} = 501.143$

$DF = 29.9834$

$P = .3962$

$T = -.26426$



Conclusions

Because the P value is not significant at the alpha level of .05% we fail to reject the null hypothesis. In conclusion there isn't strong evidence that there's a difference in listed prices or that Amazon has the lowest prices.

Limitations

- Small sample size
- Extreme variations in pricing could've lead to influencing outliers I.E from home appliances to expensive electronic equipment.

