



Price Correlation Between nVidia GPUs and Bitcoin

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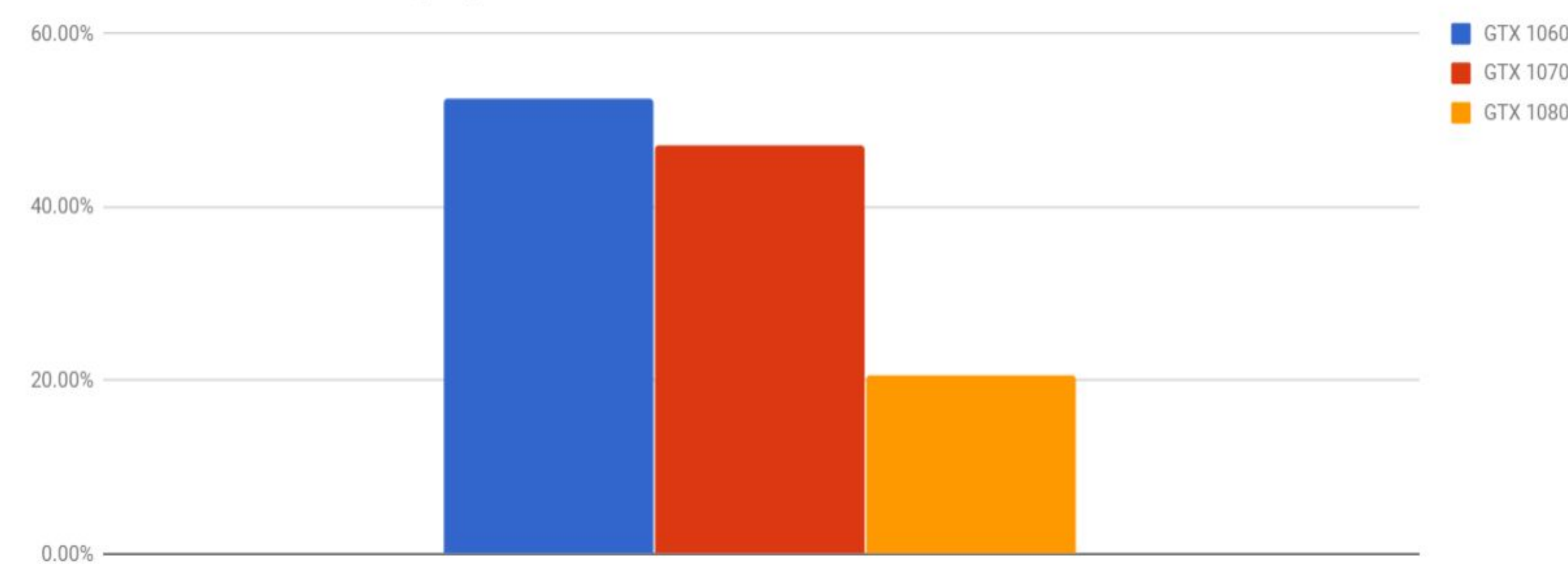
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INTRODUCTION

As cryptocurrencies such as Bitcoin become increasingly popular, the demand for graphics processing units (GPUs) has reached new heights. “Miners,” or people who use computing power in exchange for Bitcoin, use GPUs specifically because of their superior efficiency in “mining” cryptocurrency compared to traditional computer processing units (CPUs) (Halaburda, 2016). Recently, there has been a shortage of GPUs, resulting in dramatic price increases that negatively impact the average consumer by forcing them to pay inflated prices. Many consumers and news outlets have placed blame on the recent advent of cryptocurrency mining as the primary reason for this price increase. However, no real evidence has been presented (Haran, 2017). The goal of this research project is to determine whether or not there is a correlation between the price of Bitcoin and the prices of various GPUs.

GPU Price Increase Since 3/15/2017



RESEARCH METHODOLOGIES

The strategy, or inquiry approach, I chose was correlational research. This required that I find quantitative price data for various GPUs in order to compare them to the price of Bitcoin to form a correlation conclusion.

Step 1: I gathered price data from various sources for three popular GPUs: the nVidia GTX 1060, GTX 1070, and GTX 1080. The average price for each GPU was compiled twice a month starting at the beginning of 2017.

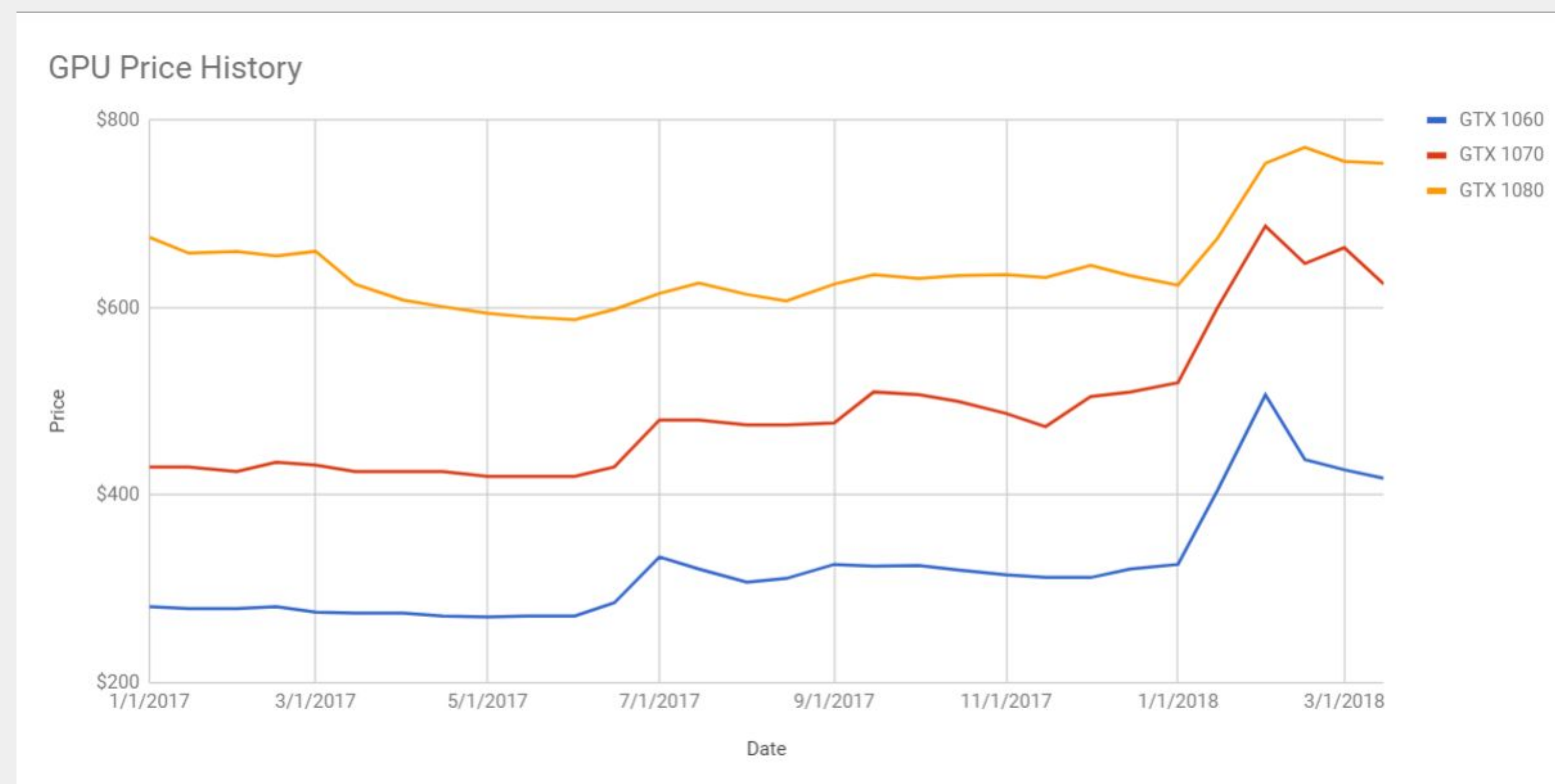
Step 2: I used coindesk.com to gather the price history of Bitcoin at the same twice-a-month interval.

Step 3: I used various sources to find the average mining efficiency across different benchmarks for each GPU.

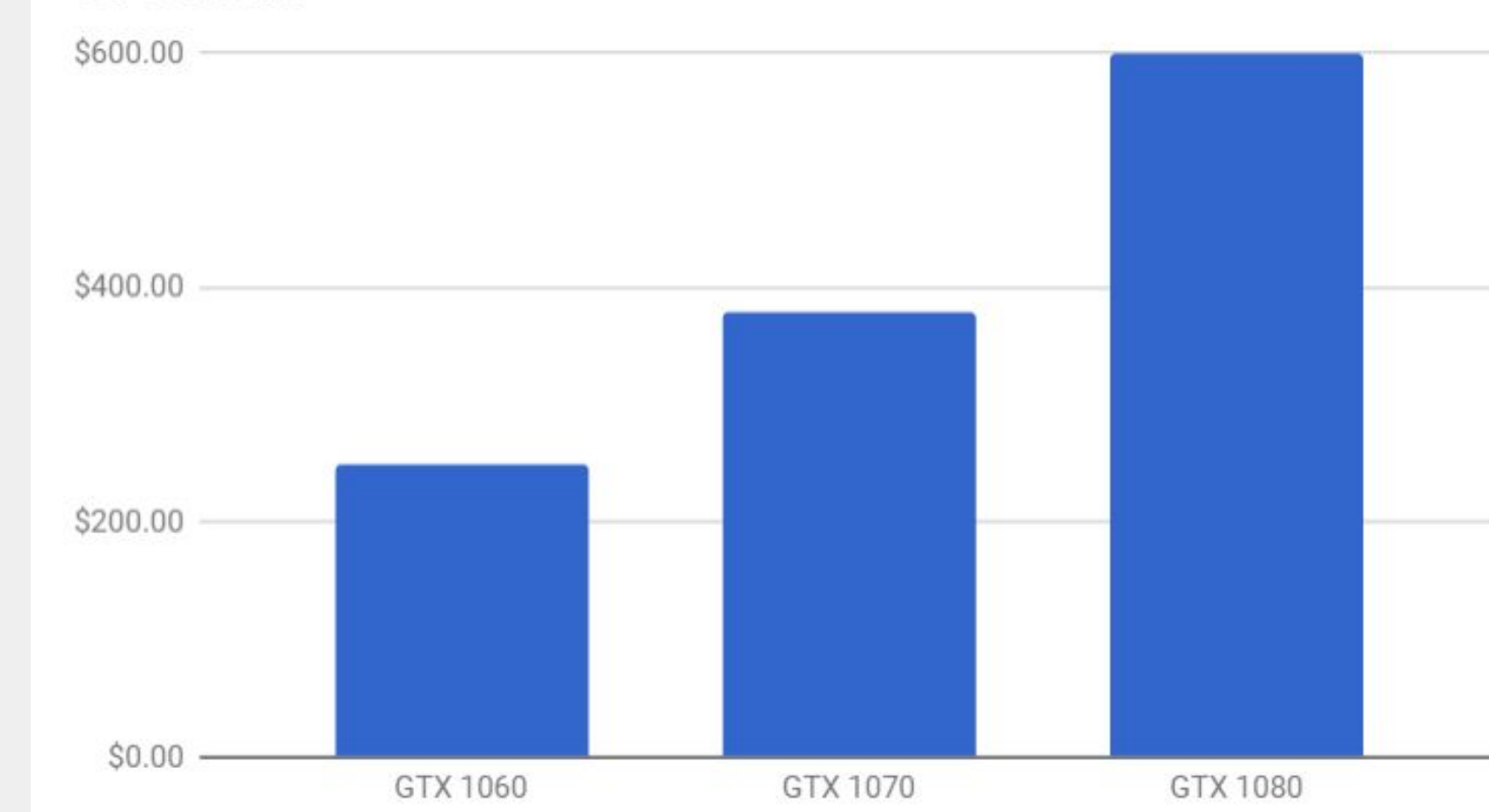
Step 4: The data was analyzed and compiled into various graphs and charts, which include a line graph of the price history of each GPU, a line graph of the average price of the GPUs compared to Bitcoin, and finally a line graph adjusted for the efficiency of each GPU.



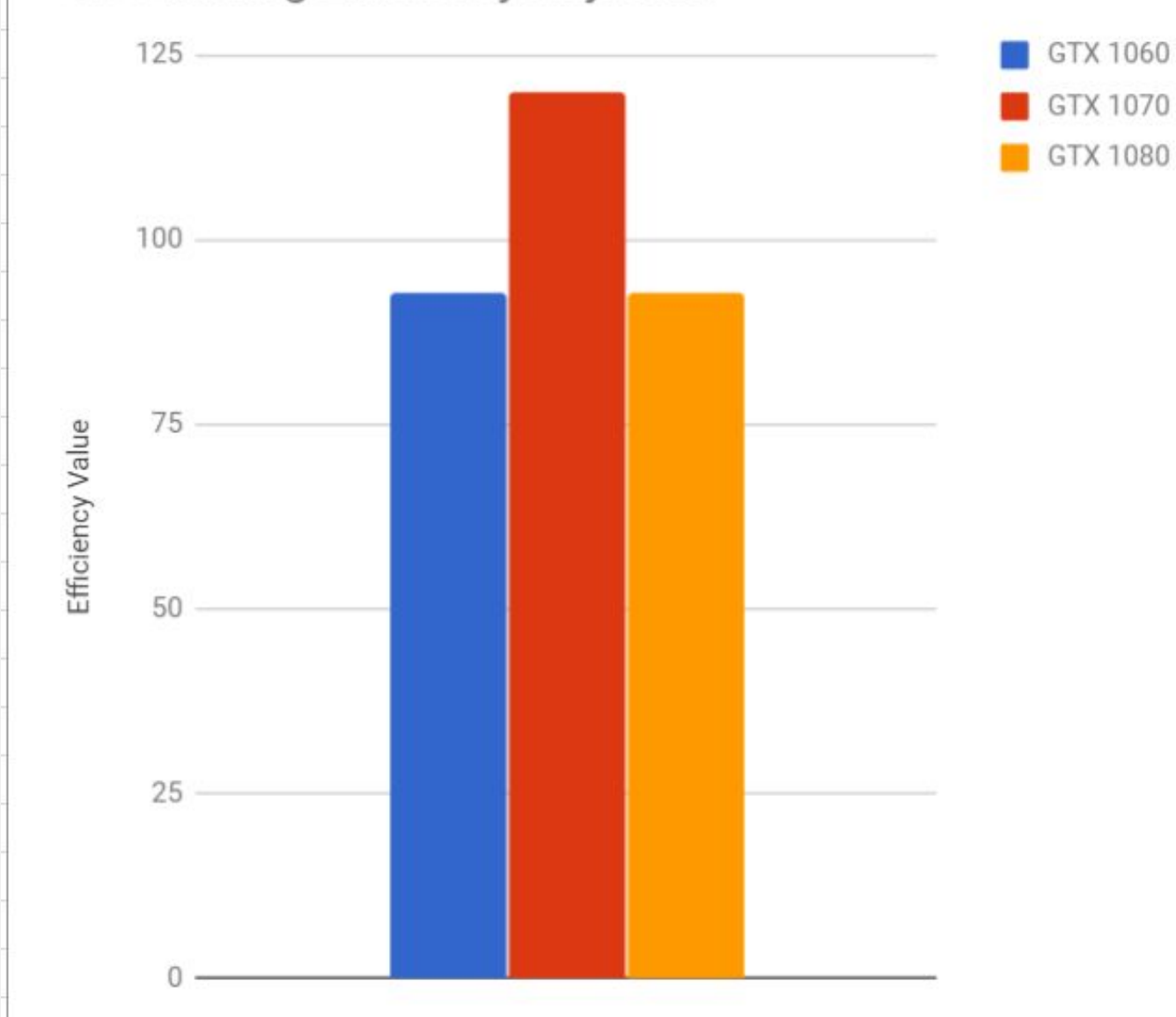
DATA



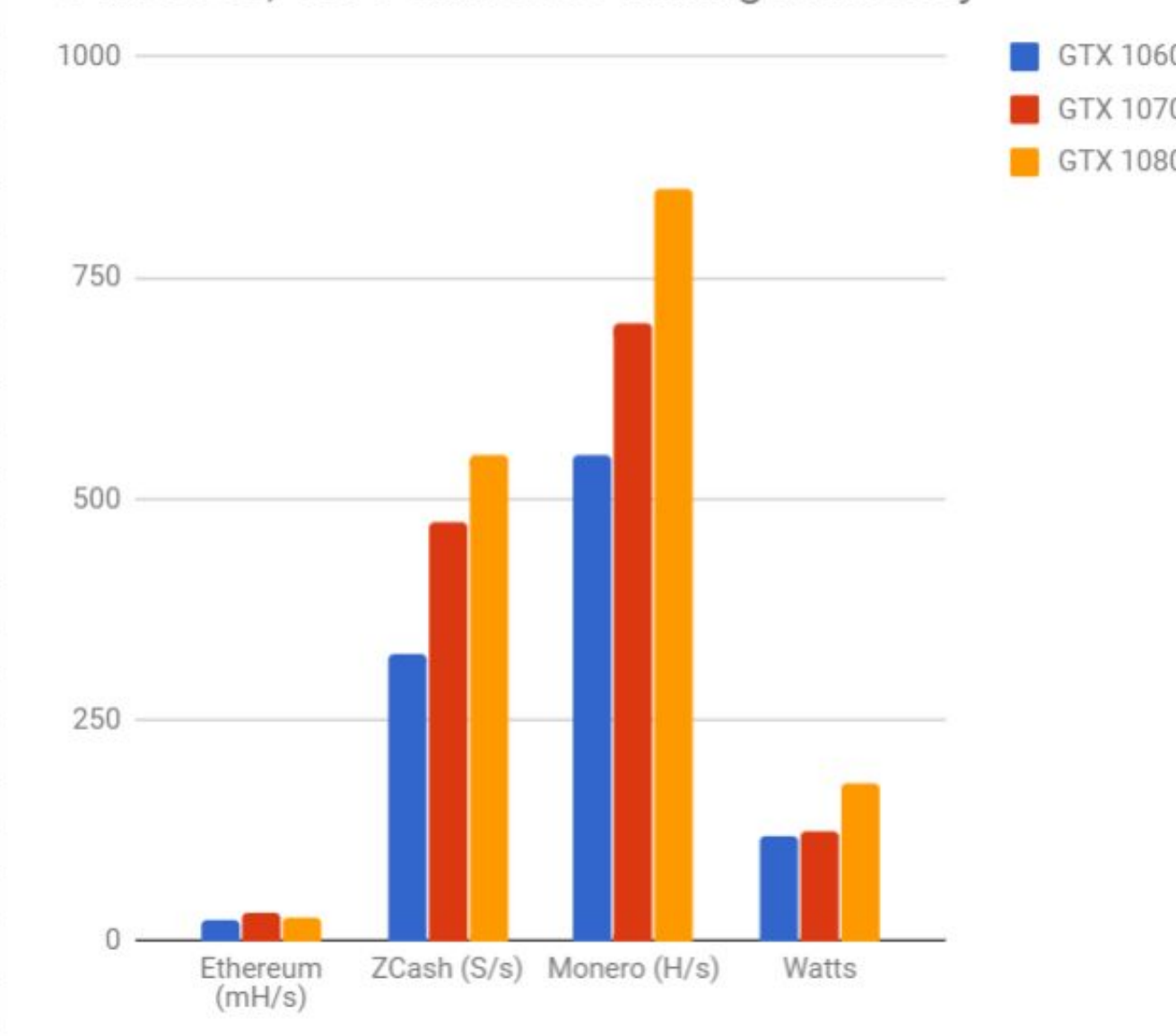
GPU MSRP



GPU Mining Efficiency Adjusted

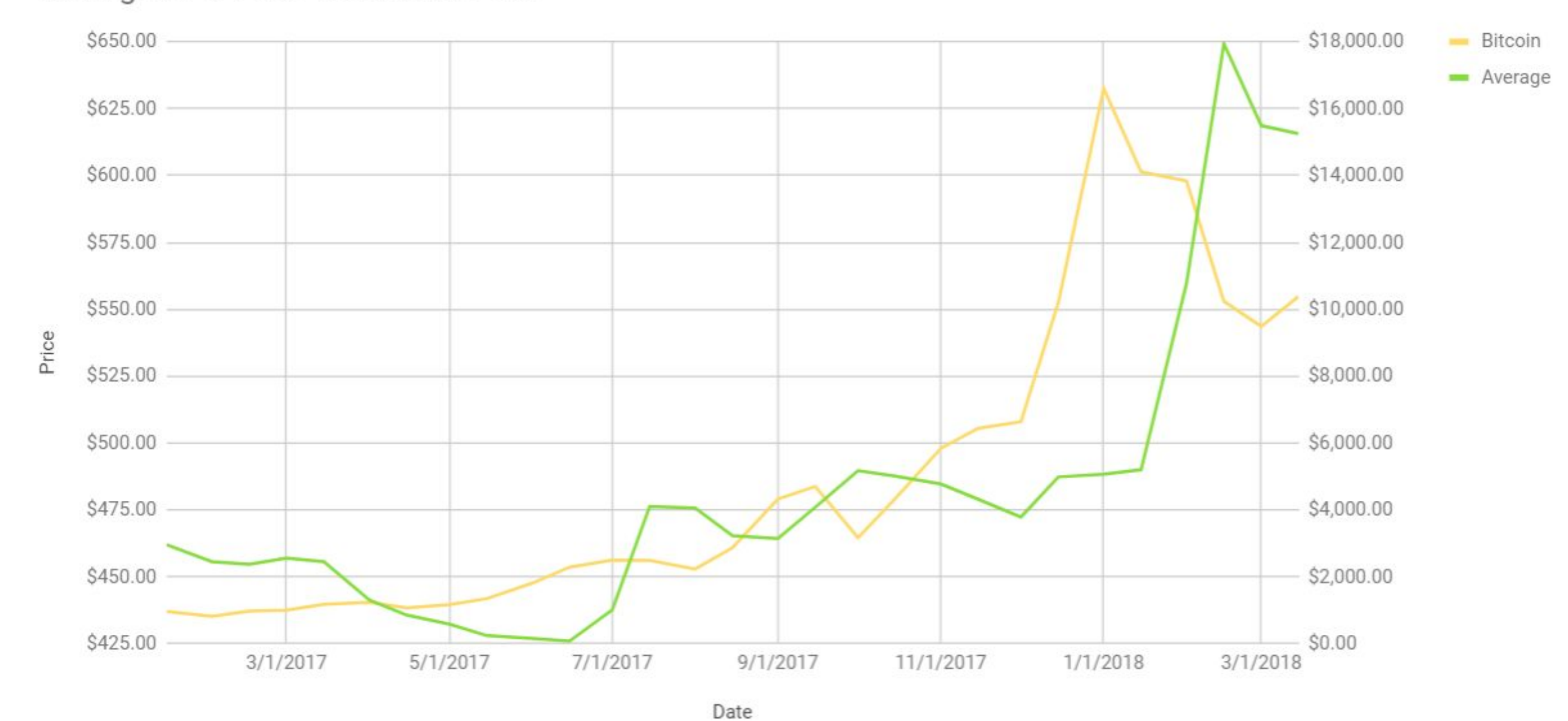


GTX 1060, 1070 and 1080 Mining Efficiency



*Efficiency Value = (Ethereum (mH/s) + ZCash (S/s) / 10 + Monero (H/s) / 10) / Watts * 100

Average GPU Price vs. Bitcoin Price



Analysis

- There is a clear correlation between Bitcoin prices and GPU prices.** Despite an opposing trend in the first half of 2017, GPU prices have increased almost identically compared to Bitcoin after an average 2 month delay. This delay is most likely attributed to the fact that it takes time before GPU stock decreases to a point where a price increase would be necessary. The data suggests that GPU prices increases are caused by stock decreases created by miners buying large quantities of GPUs shortly (2 month period) after Bitcoin price increases.
- A concrete correlation cannot be made between GPU efficiency and price.** Although it would seem logical that the most efficient card would increase in price the most as demand would cause stock to diminish, this was not observed. The GTX 1070 was the most efficient GPU; however, it increased in price marginally less than the lower-efficiency GTX 1060. Additionally, the GTX 1080, with an efficiency almost identical to the GTX 1060, increased in price almost 30% less than the other two.
- More expensive MSRP affected the price increase.** Although the MSRP to price increase correlation was not proportional, it can be determined that as MSRP increases, future price increases due to Bitcoin mining are less severe. This is demonstrated by the GTX 1080, GTX 1070, and GTX 1060 which had an MSRP of \$499, \$379, and \$239 respectively and a price increase of 20.9%, 47.1%, and 52.6% respectively.

CONCLUSIONS, IMPLICATIONS, AND NEXT STEPS

In conclusion, as Bitcoin prices continue to rise and fall, GPU prices will mimic that of Bitcoin after a 2 month delay. Unfortunately, Bitcoin mining hurts the consumer GPU market because it artificially inflates prices, making it difficult to purchase these extremely crucial pieces of computer hardware at a reasonable price. As Bitcoin becomes more popular, the demand for GPUs will increase, resulting in the manufacturers not being able to produce enough cards in a short time span. This research project is important to consumers because it informs them that GPU prices will continue to fluctuate as Bitcoin continues to be in a state of uncertainty. More importantly, the evidence displays that it is currently not a good time to purchase any GPU because prices are at all-time highs. I believe that there need to be more mining-specific cards to alleviate the stress that miners put on the consumer GPU market. In the future, some steps that I could possibly take would be to track whether or not prices inflate even after nVidia eventually releases their mining oriented GPUs. However, it is hard to say whether or not the cryptocurrency trend will continue in the future, potentially making further research useless.

ACKNOWLEDGEMENTS / REFERENCES

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Works Cited:

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