# SNEAKERS DATA PROJECT

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## Introduction

This dataset was provided by StockX, a marketplace for selling and buying sneakers and other items, for a data competition. The data spans four years, from 2015 to 2019 and includes only two brands: Yeezy 350 (Adidas) and Off-White x Nike. Yeezy and Off-White are designer brand labels for Adidas and Off-White respectively. Out of the 99,956 sneakers that were sold, there were 50 different kinds of sneakers.

In my exploratory data analysis I set out to find answers to these questions:

* Which sneaker(s) is the most popular (had the most purchases)?
* Which sneaker(s) is the most profitable on the secondary market (on a place like StockX)?
* Can I predict when the best time to sale a sneaker on StockX for maximum profit?

Some terminology: “silhouette” means the shape of the sneaker and “colorway” is the name of the colors that are on the sneaker.

## Analysis

I engaged in the data cycle: collected data, cleaned the data, visualized and analyzed the data, then finally will present the data.

##### First, some summary statistics for the whole data set.

The key values have been highlighted.



##### Next, I will compare the brands: Yeezy vs. Off-White.

* Out of the 99,956 total sneakers that sold on StockX, 72.2% of them were Yeezy 350s and 27.8% of them were Off-Whites.
* The total profit margin (sale price – retail price) for 2015-2019 was $23,791,940. Off-white made up the majority of the profit, 57.5%, while Yeezys had 42.5%.
* There are only two Yeezy 350 silhouettes in the data set and the 350 v2 made up almost all the Yeezy sales: 71,707 for 350 v2 compared to 455 for 350 v1.
* Off-White comes in 11 silhouettes, the top three being Air Jordan 1 Retro High, Nike Air Presto, and Nike Blazer Mid.
* Yeezy 350 v2s come in 15 colorways and Off-White x Nikes come in 18 colorways.

##### Now, for my first question: Which sneaker is most popular?

* The most popular silhouette is the Yeezy 350 v2: 72% of all sneakers in the dataset are Yeezy 350 v2.
* The most popular sneaker overall is the Yeezy 350 v2 in Butter. 11,423 were sold, which is 11.4% of the total.
* The most popular Off-White sneaker is the Air Jordan 1 Retro High silhouette in University Blue, selling 4,635 pairs (4.6% of total)

##### My next question is: Which sneaker is most profitable?

* The most profitable sneaker is the Air Jordan 1 Retro High in University Blue. It comprised a total of $3,063,056 in profit (sale price – retail price) over the four years that the dataset spans, which is 12.9% of all profit. It is 1.63 times as profitable as the next sneaker, the Yeezy 350 v2 Beluga 2.0.
* The sneaker that had the single highest sale price (so the price someone would pay if purchasing from StockX) is the Air Jordan 1 Retro High sneaker in Chicago colorway. The sale price was $4,050 for a men’s size 6 (women’s size 7.5). That sneaker retailed for $190.
* The most profitable silhouette overall is the Yeezy 350 v2, totaling $9.7 million to that of the AJ1 silhouettes, $4.8 million. It comes in 11 colorways, while the AJ1 only came in 3.

**My last question:** **Can I predict the best time to sell a sneaker on StockX?**

I was not able to answer this question full as I did not do any modeling or machine learning. So I attempted to find out what is influencing the higher sale prices on StockX. Here is what I found:

* The time between retail date and order date didn’t have much of an effect on sale price. But there emerged an interesting find: Yeezys are on the market for much longer than the Off-Whites. I suspect that this is because there are less Off-White x Nikes produced in the first place – they are limited.
* There is a moderate correlation between the number of sneakers that were sold on StockX and the median sale price on Stock X. In general, the most sneakers that were sold, the lower the profit margin. This makes sense in a supply and demand context. The less there is of something the more it will cost.

## Conclusion

I will summarize the findings from the viewpoints of four stakeholders:

* StockX: Off-White x Nike sneakers are exclusive and as whole generate the most dollars of sales. Yeezy 350 v2 are vastly more popular and generates the most profit as a silhouette. Since StockX takes a cut of all sneakers sold on their platform, they should promote the sale of both kinds of sneakers.
* Collectors: The Air Jordan 1 Retro High in Chicago is the most hyped sneaker and the Off-White collaboration is rare and is worth a lot of money. Collect that shoe. Also collect the other two colorways of the AJ1 Retro High (University Blue and White) to collect the full suite. Sell the Yeezy 350 v2 Butter if you are worried that it is too widely available.
* Enthusiasts: Try to get the sneaker when it retails so that you pay less overall. The most sneakers that are released will result in a lower price point, so definitely try to cop a pair of exclusives at retail.
* Average Joes and Janes: The median retail price of all the Yeezy and Off-White x Nike sneakers in this dataset is $220 while the median resale is $370. You will be paying more for the designer label. If you don’t want to spend this much on sneakers, there are definitely other options out there with a less expensive price point.