Draft Pick Analysis: Relative Performance and Payroll Efficiency

Colin Maher, Salary Cap Specialist and Contributor to No Trade Clause

In this research project, I answered two questions:

1. How often does a Draft Pick outperform the average production of picks higher in the draft? and
2. How does each Draft Pick rank when considering payroll efficiency?

Table of Contents

Introduction

With the new CBA rules tightening the belt on team salary inflation while also easing the signing of Second Round Picks, teams will be focusing now more than ever on bolstering their roster through the draft. With this in mind, I researched the value one Draft Pick has in relation to others.

Yes, regardless of the statistic used, we've all seen the downward sloping curves showing that production lessens the later into the draft you get.

But I had two questions in mind as I started my research that digs a little deeper than simply overall production of a Draft Pick:

3. How often does a Draft Pick outperform the average production of Picks higher in the draft? and
4. How does each Draft Pick rank when considering payroll efficiency?

Statistics Used - "WS4"

There are plenty of excellent, all-encapsulating statistics available to determine a player's production over time. I decided to use Win Shares, but with a twist.

I used Win Shares covering the first four seasons after the player's draft year. There are three reasons for this:

1. Total Win Shares would eliminate the more recent, more relevant, players still playing during a time when rosters have been expanded by two-way contracts/roster spots;
2. Win Shares per 48 Min. is skewed far too much in favor of players who may not play enough to be considered the "best player" (e.g. Rob Williams would be ranked #1 ahead of Nikola Jokic).
3. Finally, this is a draft-centric article, and we want to determine how these young players perform early in their career in relation to their Rookie Salaries and their counterparts.

I also tweaked the Win Share statistic by moving all negative numbers to zero. This is because those players who were drafted but never played also received a "0", and it doesn't make sense that someone who never made the NBA should statistically "outproduce" those who did, simply by not playing.

For purposes of this article, let's call this tweaked and filtered Win Share statistic "WS4" with the average being "AVGWS4."

I then limited the research to drafts from 2005 to 2019 (i.e. the first season with 60 picks to the most recent draft class playing four complete seasons).

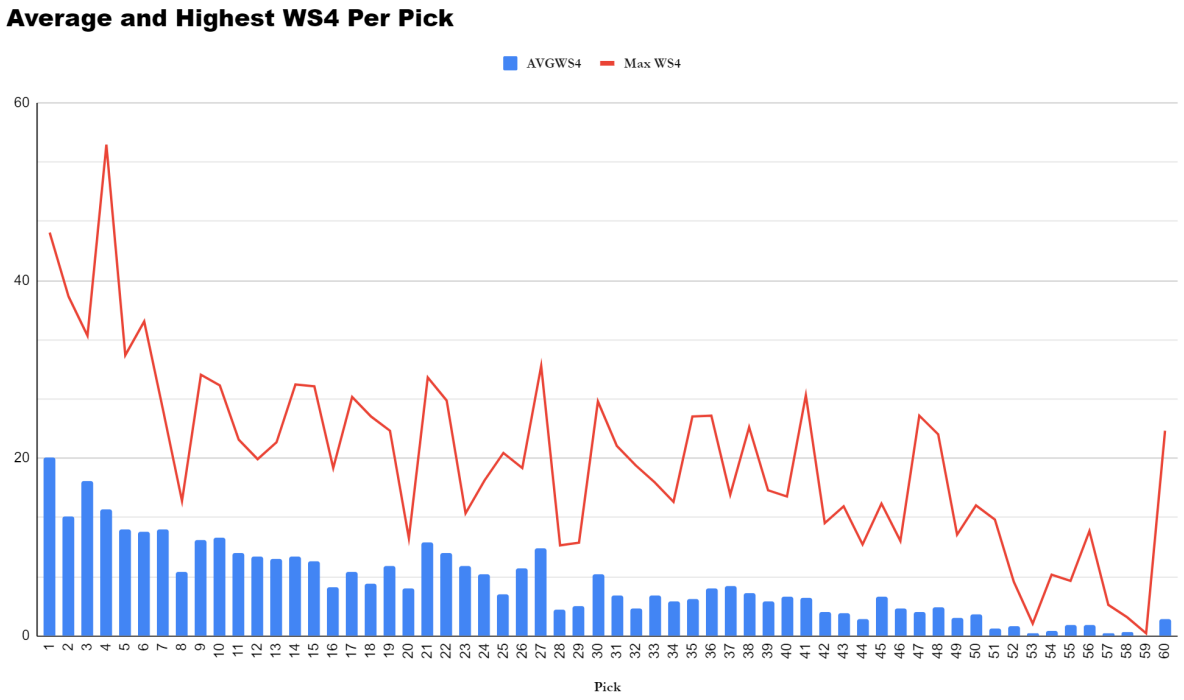
Dataset - This gave us 15 players at each draft position for a total of 900 players.

Let's dive in.

Average Win Shares and Maximum Win Share Per Pick

I first wanted to create a baseline. I wanted to know (i) the AVGWS4 and the Max WS4 for each Draft Pick in our dataset.

Figure 1



To know surprise-and what all the research showed us in the past-there is a downward trend as you move later in the draft. Of course, there are outliers moving from pick to pick, but that's expected when only using a 15-player sample size for each Draft Pick.

The chart does show that while the average is a downward trend, there is a chance that players even into the forties can attain similar production as the earlier picks, but certainly in much rarer circumstances. *See* Jokic at Pick #41 with 27.1 and Paul Millsap at Pick #47 with 24.8.

If anyone is wondering, the extremely high peak in the chart is Chris Paul at Pick #4 with 55.3.

The "Outperformance Rate"

Next, I moved to answering my first question: At what rate does one Draft Pick outperform the typical production of higher Draft Picks?

To find this out, I took the WS4 of all 15 players from the Draft Pick and found how many times their individual WS4 was higher than the AVGWS4 of the higher Picks.

For example, the 15 Draft Picks selected at Pick #10 had WS4 scores from 28.2 down to 0.3 (*see* Figure 2).

Figure 2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WS4	28.2	24.6	20.3	19.4	15.7	14.6	11.8	7.8	6.3	5.9	3.9	2.9	2.4	2	0.3

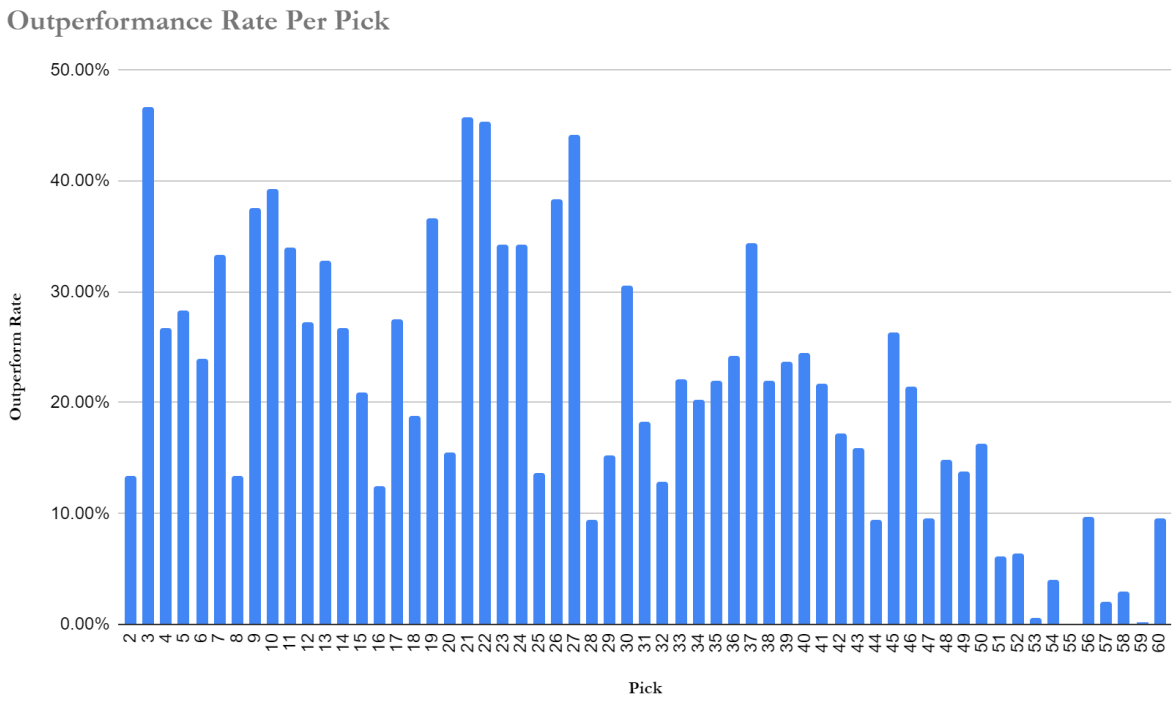
I then compared each of these WS4 scores to the AVGWS4 for Picks 1 through 9 (i.e. the higher Draft Picks)

The 10th Pick outperformed the higher Draft Picks on 53 total occurrences out of 135 opportunities. Meaning the 10th Pick outperformed the average WS4 of the higher Draft Picks at a 39.26% "Outperformance Rate." See Figure 3 for a visual comparison.

Figure 3

Picks 1-9	AVGWS4	Pick 10
1	20.12	**3**
2	13.44666667	**6**
3	17.38	**4**
4	14.23333333	**6**
5	12.01333333	**6**
6	11.66	**7**
7	12	**6**
8	7.233333333	**8**
9	10.75333333	**7**

I tested the Outperformance Rate for every Draft Pick (other than Pick #1, which cannot outperform a higher Pick). See Figure 4 for the Outperformance Rate of each Draft Pick.



The Outperformance Rate per Pick does not significantly correlate with the downward trend of the AVGWS4, except as you look toward Picks 51 to 60.

To simplify things visually and allow for less variance, I thought it best to segment the Draft Picks. For example, just because Pick #8 has both a lower AVGWS4 and Outperformance Rate than Picks 9 and 10 doesn't mean it's better to have Pick 9 or 10 in the draft.

Therefore, I broke the Outperformance Rates into segments of 5 and segments of 10. Those results are below in Figures 5 and 6.

Figure 5

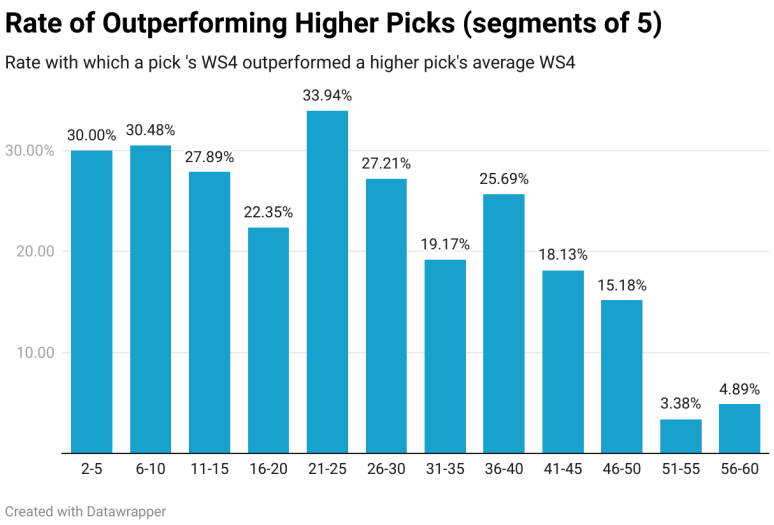
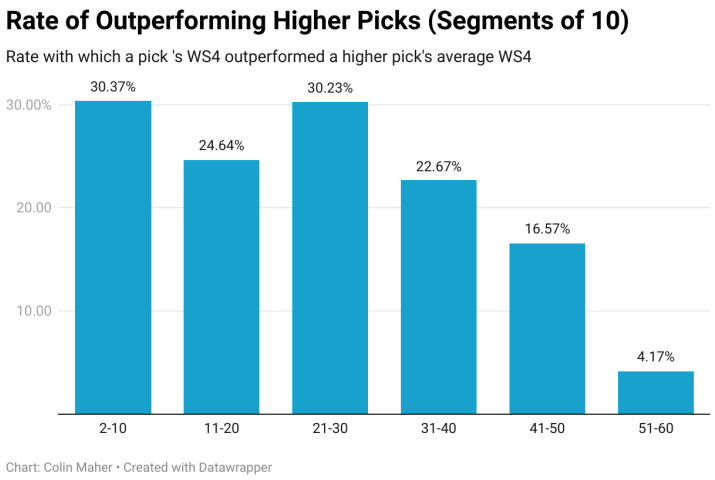


Figure 6



When breaking the Draft Picks into segments of five, some lower drafts outperformed higher draft positions. In fact, Picks 21 to 30 outperformed every other five-part segment of the draft. This carried into the segments of 10, where Segment 21 to 30 was only outpaced by the top 10 by 0.15%.

Payroll Efficiency By Draft Pick

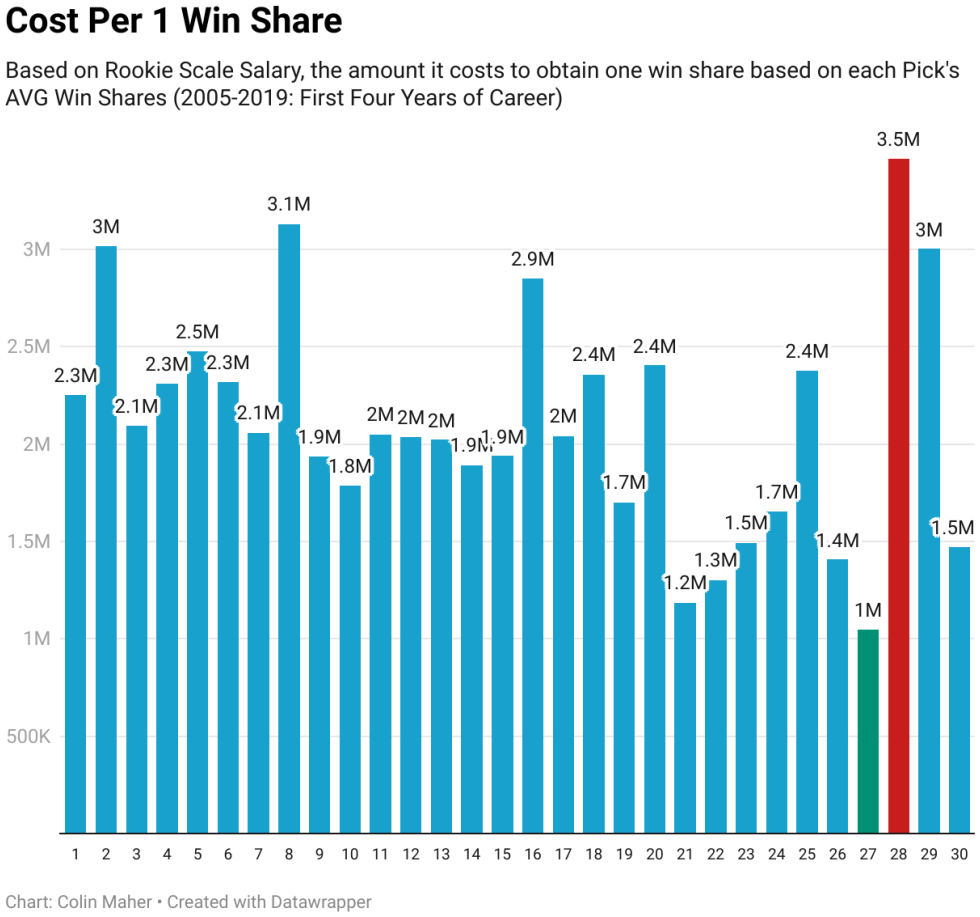
Now to answer my second question: How efficient is each Draft Pick's Salary in relation to all other Draft Picks?

We already know Rookie Scale Contracts are generally more valuable in comparison to veteran extensions and free agent contracts. I wanted to dig deeper into *how* efficient one Draft Pick has been in comparison to its counterparts.

To do so, I took the AVGWS4 for each Draft Pick over the 15 years (2005 to 2019). I then used the *total* four-year salary for each Draft Pick based upon the projected 2023-2024 Rookie Scale Salaries.[1] Of course, this analysis can only be applied to the First Round.[2]

Cost Per Win Share

Below is the amount it costs to attain 1 Win Share for each Draft Pick ("Cost Per Win Share"). See Figure 7 for the breakdown. The formula: [Cost Per Win Share] = [Total Rookie Scale Salary] / [AVGWS4]



[1] Note the actual Salary Cap figures were released while writing this article (I was using the projected figures). While the dollar figures may change, the percentages would not and thus the efficiency numbers are essentially going to reach the same result.
[2] While there is a new Second Round Pick Exception, it is not a fixed scale, I hope to use the 2023-2024 signings as a baseline and apply them in an updated article after this offseason concludes.

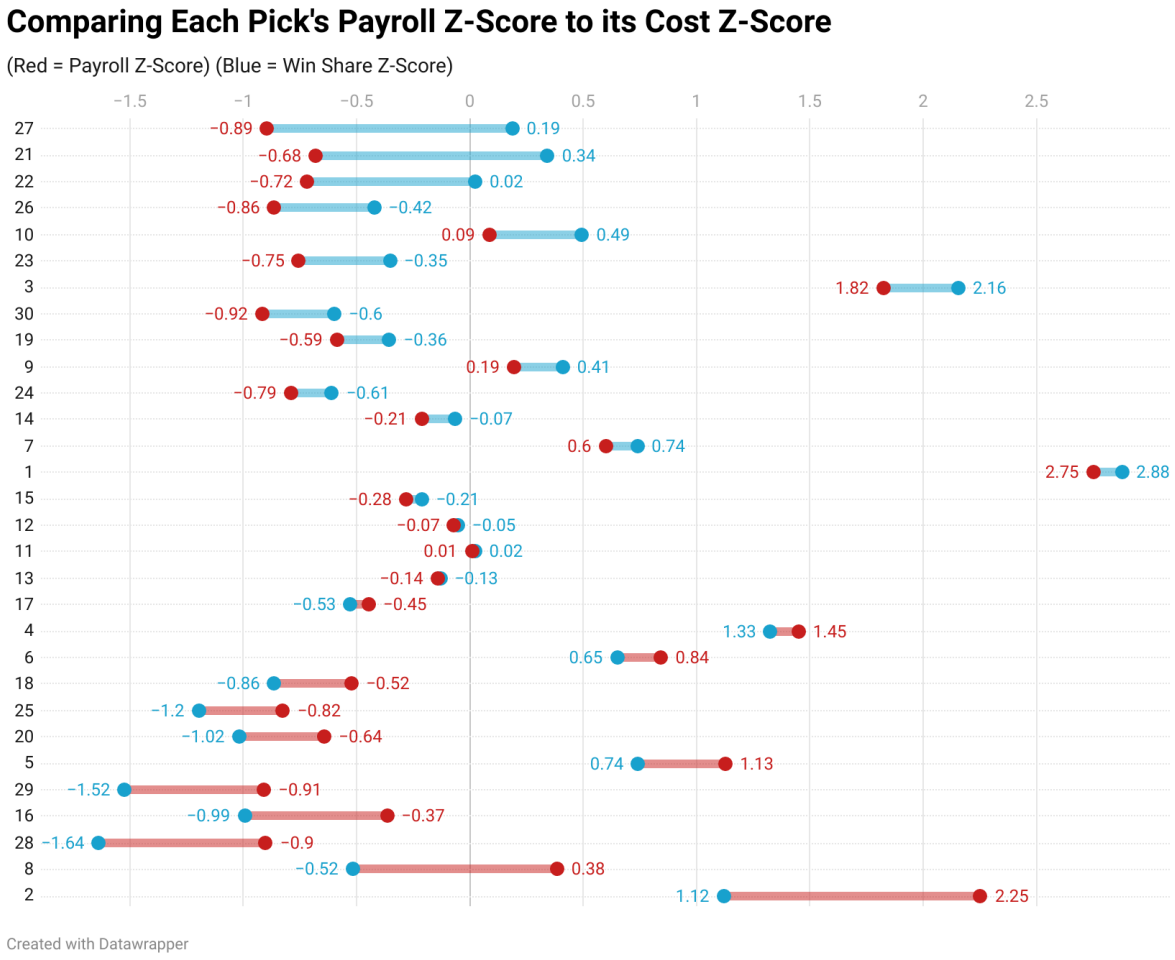
Coincidentally, the 27th and 28th Draft Pick go back to back as the cheapest and most expensive Cost Per Win Share, respectively.

More importantly, when you begin factoring in cost, the downward trend of production seen in Figure 1 does not correlate. As it becomes more important to stay below the two Aprons, finding value in player salary will become a requirement. Teams can find value in the later Draft Picks.

Z-Scores

We can also use "Z-Scores" to standardize each unit (AVGWS4 and Cost Per Win Share) to see how far above or below average each Draft Pick lands.

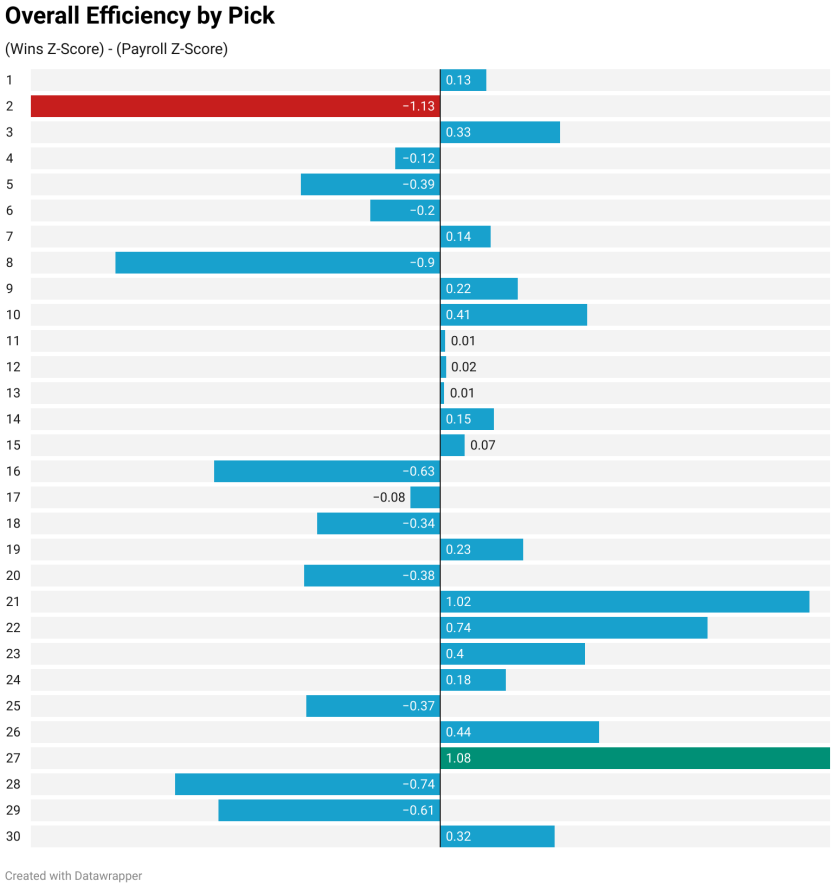
In Figure 8, the chart shows just how efficient each Draft Pick is when the measure is centered at zero. The blue bar indicates an AVGWS4 Z-Score (blue dot) greater than the Cost Per Win Share Z-Score (red dot). The longer the blue bar, the more efficient the Draft Pick has been over the 15 years. Vice-versa goes for the red bar.



You can see Draft Picks in the twenties take four of the top five most efficient rankings. However, you can also see the #1 and #3 Picks are far and away the most productive in relation to the other First Round Picks.

Efficiency Score

Similarly, an overall "efficiency score" combining these statistics provides a helpful way to consolidate the information. The "efficiency score" requires subtracting the Cost Per Win Share Z-Score from the AVGWS4 Z-Score. Those numbers are set out in Figure 9 below, with the #2 and #27 being the least efficient and most efficient, respectively.



Conclusion

Overall production, as expected, skews downward as one moves down the draft. However, Outperformance Rates and Cost Per Win Share/Efficiency do not directly correlate with draft positioning. The higher Draft Pick may have a higher chance of production, but history shows a, depending on draft positions, almost a one-third chance of being outperformed by its lower counterparts. Also, depending on the Player's rate of productivity, it still may not be as efficient from a payroll standpoint as a lower pick that is slightly less productive.

Acknowledgments

1. Basketball-reference.com - Win Share data curated from this Basketball Reference.
2. Harvard Sports Analysis Collective (HSAC) - The idea to apply Z-Scores to the statistics curated were generated from an article I read from the HSAC entitled "NBA Payroll Efficiency: Which Teams are the Smartest Spenders."
3. RStudio - Rstudio used to generate the majority of data used in this article after importing the raw Win Share data from Basketball Reference.
4. Datawrapper and Google Sheets - Both used to generate the graphs used in this article.