Keyword Optimization

and

Expected Click Through Rates

Introduction

The evaluation of the effectiveness of an optimization campaign has many aspects that are not obvious at first glance. There are several variables that need to be scrutinized in order to determine whether the associated keywords are performing either above or below expectations. What we need to establish are guidelines by which we can understand not only the performance of the individual keywords but what potential each keyword has as further optimization is implemented.

Looking at a set of organic keyword rankings from four separate landing pages, the first step in the evaluation was to divide the data into four corresponding groups. There are subtle differences in the keyword sets as they relate to search intent. By industry definitions, these include branded, informational, commercial, and location centric keywords. It is extremely important to make this distinction as intent is a key factor in isolating keywords for future optimization. We'll discuss this in more detail below.

The question we posed was whether it was possible to look at keyword rankings and formulate an optimization plan based on potential? From this we had the additional question of how do we measure potential? The answer are seemingly either easy or obvious. However, when considered in the context of maximizing the return on optimization effort and hence on conversions, we need to carefully map out a strategy for analysis.

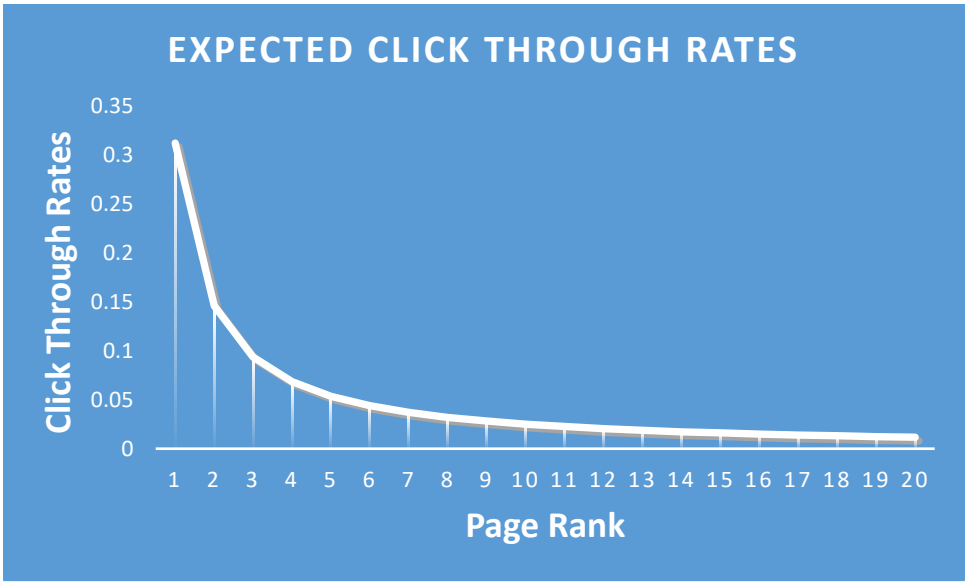
Click Through Rates

There have been many studies outlining methodologies for calculating the organic traffic potential of a website. Further studies have looked into the potential related to individual keywords. If we have the corresponding, click through rate (CTR) we certainly know quite a bit about the instant activity. What we want to know is what group of keywords should be further optimized based on a ranking of the potential. How we frame the selection process is the first step in the process.

Review of the AWR 2014 study (reference) has provided some guidance as far as keyword ranking and expected CTR. In order to be more precise, we took the CTR data from the AWR study and approximated a mathematical function to fit the data. This enabled us to "unbundle" the CTR data from second and third page rankings and yielded precise numerical values associated with each page rank.

CTR follows a negative exponential curve, much like a reverse hockey stick of exponential growth. One could argue that doing this makes a heroic assumption about the AWR CTR study and the underlying data that was used. While we do not argue this point, large datasets do offer insights from a statistical perspective that are compelling. Therefore, in the absence of a more robust source of data, we moved forward with the AWR results as our benchmark. The graph represents the function as described in the Appendix. The CTR values are very close approximations to the AWR CTR values with the added specificity for page ranks greater than 6. These values are identified as Expected Click Through Rates (ECTR)

ECTR Function



The requirement of specifying exact values for ECTR for page ranks above 6 allows for a more precise evaluation of the potential or expectation as further optimization improves page rank. But in order to evaluate an improvement, we needed to identify a criteria that encompassed not only CTR but conversion related information as well. To this end, we created a new variable, click through volume (CTV).

Click Through Volume

Click through volume (CTV) is simply CTR multiplied by search volume. This variable incorporates the two 'most important aspects of the data into one variable. Taking a decision to select keywords for further optimization needs to be based on the potential or expected returns. Search volume is a key component but as we have seen, certain keywords, branded keywords for example, have high search volumes but low click through rates. These keywords are important but another keyword with lower search volume and a high CTR may be more apt to produce better results as page rank is improved.

There are two variations of the CTV used in this study. First, we have ECTV, using ECTR from the function described above. This uses the actual search volume data from Google Analytics associated with each keyword. The second variable is CTV, which uses the same search volume data but applies the CTR from GWT. By comparing the two values, we can see where there are deviations. More importantly, we can identify keywords that are performing above industry expectations.

Again, we must point out that differing intent affects search volume as well as CTR. This is a given but we are driven by the data that is available. We may be struggling with data precision, but perhaps we can look to the long-term evolution of data collection in this context to improve the precision of analysis. Our goal is to outline a roadmap for the cost benefit analysis of SEO campaigns.
Bounce

Data

CTV vs. ECTV

Each of the four groups in the dataset included approximately 650 keywords related to their associated landing pages. For each keyword, we had page rank, clicks, impressions, and CTR. Each group was further partitioned into subgroups according to page rank. Within these subgroups, we were able to calculate CTV, ECTV, a full array of descriptive statistics for these variables.

The question was how disperse were the actual CTV and ECTV values within each page rank? By using a student's t-statistic for each keyword relative to the mean and standard error of CTV and ECTV for each page rank, we were able to identify keywords that outperformed expectations. Given that the CTV and ECTV variables included search volume, these outperforming keywords clearly identified targets for further optimization that would theoretically lead to higher search volumes and ultimately the holy grail of increased conversions.

The most interesting aspect of the results was we saw a number of keywords in the 6-10 page rank area that had significant search volumes with CTR values well above the ECTR values. Where these "second page" keywords may have been relegated to lesser importance in the past, based on these results, they were targeted as important in order to drive traffic and increase conversions.

Essentially, we are attempting to answer the key SEO practitioner questions:

- the cost-benefit of increasing a keyword rank 1 position
- what is the expected value of increased traffic by improving 1 position

- the amount of searches per month for the keyword
- can we get conversion rate data related to the increased traffic
- finally and most importantly, can we quantify the value per conversion for that traffic

We also looked at increasing the keyword rank 2 and 3 positions. With the ECTR values, this was a straightforward process. The cumulative impact in terms of impressions was significant. As rank improves, ECTR is higher and thus the impressions increase, often dramatically. As impressions increase, it follows that conversions will increase.

Summary

It is clear that by targeting specific keywords with the highest potential, not only is the benefit to cost ratio increased in terms of SEO effort, we can trace this optimization focus to conversions and ultimately client revenue.

Conclusion
Implementation!

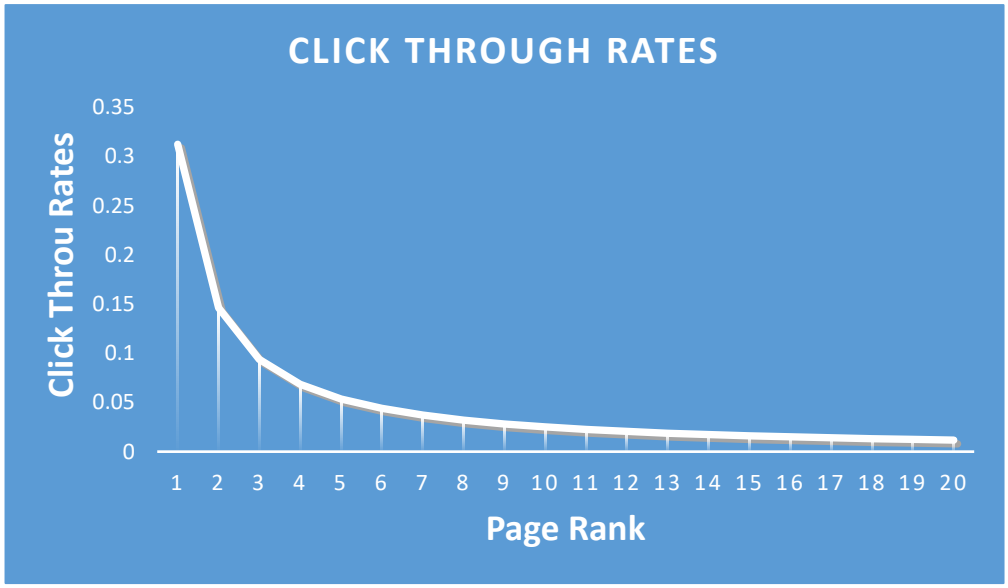
Appendix Below

Appendix

Click Through Function

AWR Based Expected CTR

1	0.3124
2	0.146246
3	0.093813
4	0.068463
5	0.053621
6	0.043917
7	0.037096
8	0.03205
9	0.028172
10	0.025102
11	0.022614
12	0.020559
13	0.018834
14	0.017366
15	0.016102
16	0.015004
17	0.01404
18	0.013188
19	0.01243
20	0.011751



$y = .3124 * x^{-1.095}$

click through rate equals .3124 times page rank to the minus 1.095 power

A negative exponent just means that the base is on the wrong side of the fraction line, so you need to flip the base to the other side. For instance, "x^{-2}" (ecks to the minus two) just means "x^2, but underneath, as in $1/(x^2)$".

For a negative fractional exponent, $x^{-3/2}$, we do the same with one additional operation: for example $4^{-3/2}$ equals $1/(\sqrt{4})^3$ or $1/2^3 = 1/8$.