SEARCH ANALYTICS FOR YOUR SITE

Conversations with Your Customers

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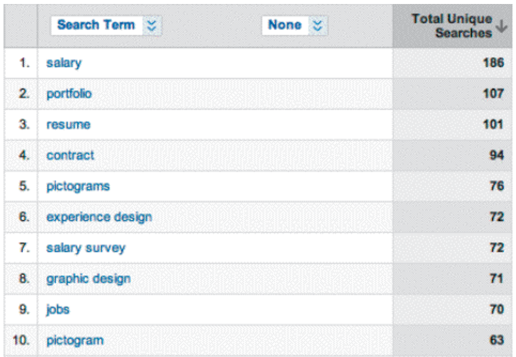
In the last chapter, I showed how Vanguard used (and continues to use) site search analytics to measure, monitor, and optimize its search system's performance. Not to mention that it improves the overall user experience, as well as saves money, promotes jobs, and avoids disaster. Now it's your turn to give it a try. The bulk of this book will teach you the nuts and bolts of SSA. Starting with Chapter 3, "Pattern Analysis," I'll show you how to analyze your data, gain actionable insights, and put them to good use so your organization can enjoy some of the same benefits as Vanguard. But before we go deep, we'll go broad. In this chapter, I'll briefly cover the nuts-and-bolts aspects of SSA: what it is, how it works, and why you would use it. Think of this chapter as an introduction to SSA in 20 pages or fewer.

What Is Site Search Analytics?

Site search analytics is, at its simplest, the analysis of the search queries entered by users of a specific search system (see Figures 2.1 and 2.2). What did they search? What do their searches tell you about them and their needs? How did their searches go? Does their experience suggest fixes or improvements to your site? Or does it raise follow-up questions to pursue through other forms of user research?

Note that in this book, we're exploring the searching performed on a Web site or intranet. We are *not* covering how people search the entire Web using Google or another search engine. There are certainly parallels, but as you'll see in the table in Figure 2.3, they're not the same; Referral Queries of the Michigan State University site came from Web search engines like Google; Local Queries were executed on MSU's own search engine.



	Search Term	None	Total Unique Searches
1.	salary		186
2.	portfolio		107
3.	resume		101
4.	contract		94
5.	pictograms		76
6.	experience design		72
7.	salary survey		72
8.	graphic design		71
9.	jobs		70
10.	pictogram		63

FIGURE 2.1
In SSA, you can analyze queries, like these frequent queries of the *AIGA.org* site, as reported by Google Analytics…

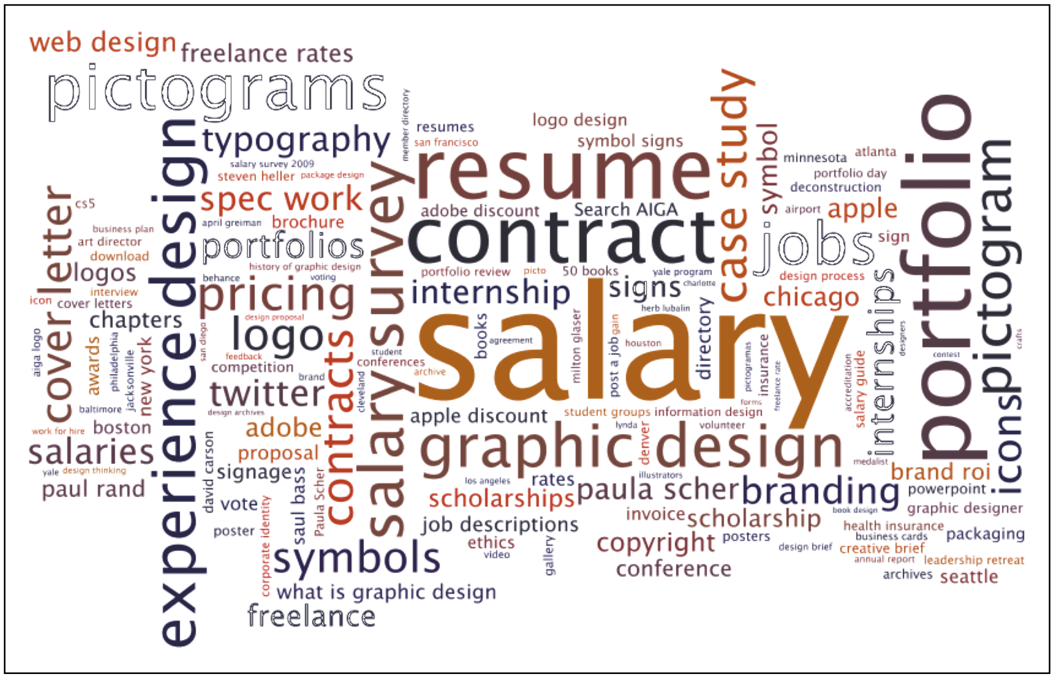
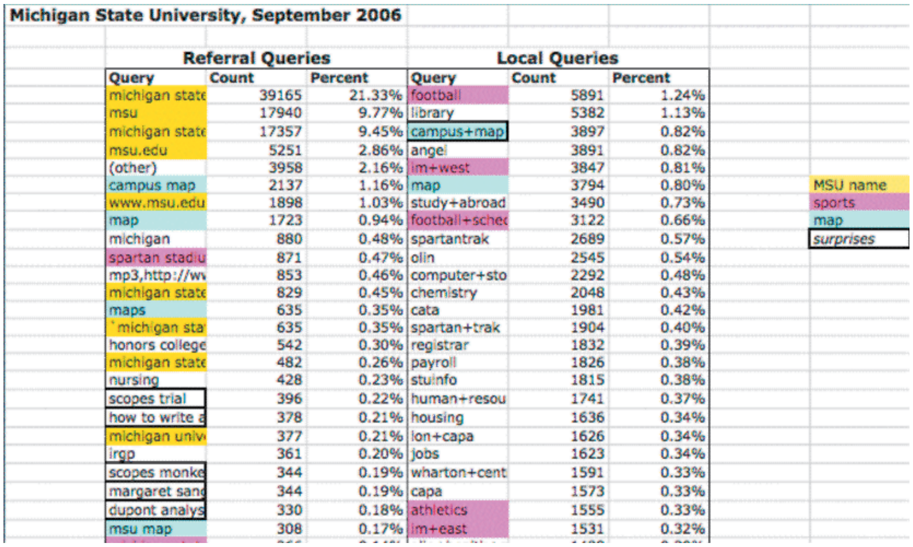


FIGURE 2.2

...to learn about what your users want from your sites and your organizations.



Michigan State University, September 2006

Referral Queries			Local Queries			
Query	Count	Percent	Query	Count	Percent	
michigan state	39165	21.33%	football	5891	1.24%	
msu	17940	9.77%	library	5382	1.13%	
michigan state	17357	9.45%	campus+map	3897	0.82%	
msu.edu	5251	2.86%	angel	3891	0.82%	
(other)	3958	2.16%	im+west	3847	0.81%	
campus map	2137	1.16%	map	3794	0.80%	MSU name
www.msu.edu	1898	1.03%	study+abroad	3490	0.73%	sports
map	1723	0.94%	football+schec	3122	0.66%	map
michigan	880	0.48%	spartantrak	2689	0.57%	*surprises*
spartan stadiu	871	0.47%	olin	2545	0.54%	
mp3,http://wv	853	0.46%	computer+sto	2292	0.48%	
michigan state	829	0.45%	chemistry	2048	0.43%	
maps	635	0.35%	cata	1981	0.42%	
`michigan sta	635	0.35%	spartan+trak	1904	0.40%	
honors college	542	0.30%	registrar	1832	0.39%	
michigan state	482	0.26%	payroll	1826	0.38%	
nursing	428	0.23%	stuinfo	1815	0.38%	
scopes trial	396	0.22%	human+resou	1741	0.37%	
how to write a	378	0.21%	housing	1636	0.34%	
michigan univ	377	0.21%	lon+capa	1626	0.34%	
irgp	361	0.20%	jobs	1623	0.34%	
scopes monke	344	0.19%	wharton+cent	1591	0.33%	
margaret sang	344	0.19%	capa	1573	0.33%	
dupont analys	330	0.18%	athletics	1555	0.33%	
msu map	308	0.17%	im+east	1531	0.32%	

FIGURE 2.3

Rich Wiggins of Michigan State University assembled, categorized, and even color-coded the most frequent queries from the open Web versus those generated locally to illustrate their differences.

Unlike people searching the Web, your site's searchers typically have more specific needs. They also may be familiar with your organization, its products, and its content—after all, they had to find their way to your site in order to use its search system. So the knowledge you'll glean from SSA will be a bit different than (and complementary to) what you'll learn from SEO (Search Engine Optimization) and SEM (Search Engine Marketing). Consider this analogy: if people searching the Web are essentially the leads you want to attract, people searching your site are the customers you hope to retain.

Why You'll Want to Use SSA

SSA is unique: there truly is nothing like studying what people want from your site. It should be in your research toolkit—not by itself, mind you—but there's no reason for it not to be there, unless your site somehow doesn't have a search system.

There are plenty of ways you can track and learn from users' behaviors aside from SSA. For example, if you're a web analytics person, you might rely on clickstream analysis; if you're a user researcher, perhaps you perform eye-tracking studies. They'll all tell you something about user intent.

But none of these methods will tell you what users want *in their own words*. SSA provides an unmatched trove of *semantic richness*—not just what users want, but the tone and flavor of the language they use to express those needs. And it's without the biases introduced by testing and a lab environment. Plus, you have the data already. You certainly won't find it anywhere else or acquire it any other way.

It Always Starts with Data

SSA starts with raw data that describes what happens when a user interacts with a search system. It's ugly, and we'll break it down shortly, but here's what it typically looks like (this sample is from the Google Search Appliance):

```
XXX.XXX.X.104 - - [10/Jul/2006:10:25:46 -0800] "GET
/search?access=p&entqr=0&output=xml_no_dtd&sort=date%3AD%3AL%3Ad1&ud=1&site=All
Sites&ie=UTF-8&client=www&oe=UTF-
8&proxystylesheet=www&q=lincense+plate&ip=XXX.XXX.X.104 HTTP/1.1" 200 971 0
0.02
```

This data gets captured in a search log file—something your site's search engine likely does automatically. Or the search activity gets intercepted, like other analytics data, by a snippet of JavaScript code embedded in each page and template. The intercepted data then gets stored in a database. That's how Google Analytics, Omniture, Unica, and other analytics applications do it. You really don't need to know much about how this code works, but now you can at least claim to have seen it.

```
<script type="text/javascript" src="http://www.google-analytics.com/urchin.js ">

</script><script type="text/javascript">_uacct = "UA-xxxxxx-x"urchinTracker();

</script>
```

Although search engines and your analytics application may gather search data, they're traditionally and disappointingly remiss at providing reports on site search performance. Even when they do, you still may want to get at the raw data to analyze and learn things that the reports—which tend to be quite generic—won't tell you.[1] So it's useful to know the basic anatomy of search data because it will help you understand what *can* and *can't* be analyzed. We'll cover just the basics here. (See Avi Rappoport's more extensive coverage of the topic at the end of this chapter.)

Minimally, your data consists of records of queries that were submitted to your site's search engine. On a good day, your data will also include the *numbers of results* each query retrieved. On a really good day, each query will be *date/time stamped* so you can get an idea of when different searches were happening. On a really, really good day, your data will also include information on who—such as an individual, by way of tracking her cookie, or a segment of users that you determine by their login credentials—is actually doing the searching.

Here's a tiny sample of query data that must have arrived on one of those really, really good days. It comes from a U.S. state government Web site

[1] Once you have the raw data, you'll need to parse out the good stuff, and then use a spreadsheet or application to analyze it. Here's a PERL script from the good people at Michigan State University that you can use to parse it: www.rosenfeldmedia.com/books/searchanalytics/content/code_samples/. And here's a spreadsheet you can use to analyze it: http://rosenfeldmedia.com/books/searchanalytics/blog/free_ms_excel_template_for_ana/

that uses Google Search Appliance. It's really ugly stuff; so to make it more readable, we've bolded the critical elements: **IP address**, **time/date stamp**, **query**, and # **of results**:

```
XXX.XXX.X.104 - - [10/Jul/2006:10:25:46 -0800] "GET
/search?access=p&entqr=0&output=xml_no_dtd&sort=date%3AD%3AL%3Ad1&ud=1&site=
AllSites&ie=UTF-8&client=www&oe=UTF-
8&proxystylesheet=www&q=lincense+plate&ip=XXX.XXX.X.104 HTTP/1.1" 200 971 0
0.02
XXX.XXX.X.104 - - [10/Jul/2006:10:25:48 -0800] "GET
/search?access=p&entqr=0&output=xml_no_dtd&sort=date%3AD%3AL%3Ad1&ie=UTF-
8&client=www&q=license+plate
&ud=1&site=AllSites&spell=1&oe=UTF-8&proxystylesheet=www&ip=XXX.XXX.X.104
HTTP/1.1" 200 8283 146 0.16
```

Even with a little bit of data—in this case, two queries—we can learn something about how people search a site. In this case, the searcher from IP address ...104 entered lincense plate at 10:25 a.m. on July 10, 2006, and retrieved zero results (that's the next-to-last number in each record). No surprise there. Just a couple seconds later, the searcher entered license plate and retrieved 146 results.

These are just two queries, but they certainly can get you thinking. For example, we might reasonably guess that the first effort was a typo. If, during our analysis, we saw lots more typos, we probably ought to make sure the search engine could handle spellchecking. And we might want to make extra sure that, if license plate was a frequent query, the site contained good content on license plates, and that it always came up at the top of the search results page. There are many more questions and ideas that would come up from reviewing the search data. But most of all, we'd like to know if the users were happy with the experience. In this example, were they?

Heaven knows. The data is good at telling us *what* happened, but it doesn't tell *why* the session ended there. You'll need to use a qualitative research method if you wanted to learn more. (We'll get into this *what/why* dichotomy quite a bit in Chapter 11, "Bridging Web Analytics and User Experience.")

George Kingsley Zipf, Harvard Linguist and Hockey Star

Of course, we've just been looking at a tiny slice of a search log. And as interesting as it is, the true power of SSA comes from collectively analyzing the thousands or millions of such interactions that take place on your site during a given period of time. That's when the patterns emerge, when trends take shape, and when there's enough activity to merit measuring—and drawing interesting conclusions.

Nowhere is the value of statistical analysis more apparent than when viewing the Zipf Distribution, named for Harvard linguist George Kingsley Zipf, who, as you'd expect from a linguist, liked to count words.[2] He found that a few terms were used quite often, while many were hardly used at all. We find the same thing when tallying up queries from most to least frequent, as in Figure 2.4.

The Zipf distribution—which emerges when tallying just about any site's search data—shows that the few most common queries account for a surprisingly large portion of all search activity during any given period. (Remember in Chapter 1, "How Search Site Analytics Can Save Your Butt," how John Ferrara focused exclusively on those common queries.) You can see how tall and narrow what we'll call the "short head" is, and how quickly it drops down to the "long tail" of esoteric queries (technically, described as "twosies" and "onesies"). In fact, we're only showing the first 500 or so queries here; in reality, this site's long tail would extend into the tens of thousands, many meters to the right of where you sit.

[2] You may not have heard of Zipf, but you've probably heard of the 80/20 Rule, the Pareto Principle, or Power Laws. All relate to the hockey-stick curve's dramatic dropoff from "short head" to long tail.

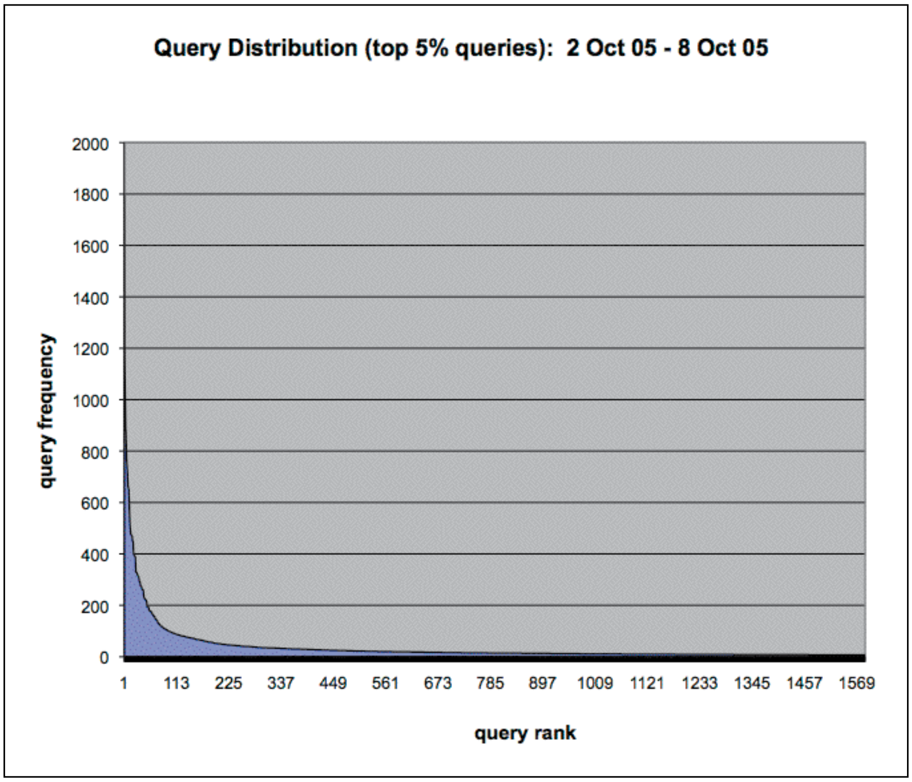


FIGURE 2.4
The hockey-stick-shaped Zipf Distribution shows that a few queries are very popular, while most are not. This example is from Michigan State University, but this distribution is true of just about every Web site and intranet.

It's equally enlightening to examine the same phenomenon when presented textually, as shown in Table 2.1

The most common query, campus map, accounts for 1.4% of all the search activity during this time period. That number, 1.4%, doesn't sound like much, but those top queries add up very quickly—the top 14 most common queries account for 10% of all search activity. (Note to MSU. edu webmaster: better make sure that relevant results come up when users search campus map!)

TABLE 2.1

THE ZIPF DISTRIBUTION SHOWN TEXTUALLY

Rank	Cumulative %	Count	Query Terms
1	1.40%	7,218	campus map
14	10.53%	2,464	housing
42	20.18%	1,351	webenroll
98	30.01%	650	computer center
221	40.05%	295	msu union
500	50.02%	124	hotels
7,877	80.00%	7	department of surgery

Note how few queries are required to account for 10% of all search activity. (This data is also from Michigan State University.)

That's incredible—it means that if you invested the small amount of effort needed to ensure that the top 14 queries performed well, you'd improve the search experience for 10% of all users. And if, say, half of your site's users were search dominant,[3] then you've just improved the overall user experience by 5% (10% × 50%). Numbers like this can and should be challenged, and 5% may not sound like much. But 5% here, 3% there... these quickly add up.

It bears noting that we just started with a simple report—presented both visually and as a table—and quickly drew some useful conclusions based on the data presented. That there, folks, is analysis. And that's why reports are only *means,* not *goals.*

And equally important, this analysis scales beautifully. Have the time and resources to go beyond the top 14 queries? No problem—tuning the top 42 queries will get you to the 20% mark. About a 100 gets you to 30%, and so on.

[3] Usability expert Jakob Nielsen suggests that this is the case; see www.useit.com/alertbox/9707b.html

Ways to Use SSA (and This Book)

So what's the message here? That SSA is an incredibly important tool for helping you understand what users want from your site. And once you have a sense of what they want, you can evaluate and improve all sorts of things that are there to help users get what they want. For instance, you can improve your site as follows:

- **Search system:** SSA will help you understand how people entered searches, where they were when they entered them, and how they interpreted the search results. (We cover this in Chapter 8, "Practical Tips for Improving Search.")
- **Navigation and metadata:** Do certain pages generate a lot more search activity than others? What kinds of searches? And does this suggest that certain navigational options are missing or labeled in a confusing way? SSA will also give you tips on how to shore up your site's navigation and metadata. (We cover this in Chapter 9, "Practical Tips for Improving Site Navigation and Metadata.")
- **Content:** For example, you can study queries that retrieve zero results. Is this because there isn't content on the topic? Should there be? Or is the relevant content mistitled? Or poorly written? SSA will help you determine what content is missing and what to do to existing content to make sure it gets found. (We cover this in Chapter 10, "Practical Tips for Improving Content.")

Whatever design challenges you face, SSA—like any other data analysis—will back up your design decisions with actual facts.

Of course, as much as you'd like to make users happy, you also have to make your employers happy. They have goals—for your organization and for the site itself. (They ought to, at least.) These can be expressed and measured as KPI—Key Performance Indicators. The types of search-related metrics that you saw in Chapter 1 can serve as components to these KPIs—in fact, many organizations that are otherwise sophisticated in their measurement of performance often fall down when it comes to measuring findability. In Chapter 3, we'll help you do what John Ferrara did: use goal-based analysis to measure, monitor, and optimize performance, again and again.

Finally, there are some other important ways to analyze search data:

- **Pattern analysis:** What patterns emerge when you "play" with the data? Can you use those patterns to determine what types of metadata and content are the most important to your searchers? Can you detect changes in seachers' behavior and needs that are seasonal? Do you also find instructive surprises and outliers? (We cover this in Chapter 3, "Pattern Analysis.")
- **Failure analysis:** When searches return no results—or poor results—what can we learn? And what can we do to fix those problems and improve performance? (We cover this in Chapter 4, "Failure Analysis.")
- **Session analysis:** What happens during a specific search session? How do searchers' needs and understanding of the content change as they search? (We cover this in Chapter 5, "Session Analysis.")
- **Audience analysis:** How might we uncover the differences between audience segments and their information needs? And how might we better address those differing needs? (We cover this in Chapter 6, "Audience Analysis.")

What Gets in the Way of SSA?

So you're wondering: if SSA is so valuable, why don't you hear more about it? And why haven't you been taking advantage of it?

There are a few predictable and mostly mundane reasons, such as the following:

- **Lack of awareness:** The idea has been around for years, but so was the Web before it took off. There's simply a lack of critical mass behind SSA getting more attention; hence this book.