WEB SITE MEASUREMENT HACKS

Tips & Tools to Help Optimize Your Online Business

Eric T. Peterson

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WEB SITE MEASUREMENT HACKS
Tips & Tools to Help Optimize Your Online Business

You’ve just spent hundreds of hours and tens of thousands of dollars redesigning your web site. A month later, will you know if it was worth it? Designed to help site operators and managers understand the “who, what, when, where, and why” for their sites, measurement and analysis software is a critical component for improving and growing any online business.

Web Site Measurement Hacks is your guidebook to using this powerful technology to discover how your visitors contribute to your business, what the data means, and how to use it. This book shows you how to:

- Get up to speed on what you need to build an effective measurement program, including best practices, common data sources, and software and vendor selection
- Implement a measurement solution that will help you learn about your visitors while respecting their privacy
- Quantify the effectiveness of banner ads, email campaigns, paid search, affiliate programs, and RSS feeds
- Improve site usability by measuring and interpreting the impact of changes to the checkout process, search functionality, and copy
- Use technographic data to guide design decisions, know where your visitors are coming from, and what languages they speak
- Enhance a retail site’s effectiveness by improving the shopping and checkout process and identifying the most valuable customer segments
- Report key performance indicators (KPIs) that will drive action throughout the organization
- Build your own web measurement solution

Written for the beginning to intermediate analytics user, Web Site Measurement Hacks is a must-read for anyone charged with improving and maintaining a Web site.

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Eric T. Peterson

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One of the most interesting aspects of web site measurement is that it overlaps with so many areas of a company’s business. A company’s web presence covers the whole of its interaction with the public. It is marketing and sales and customer relations and press office and recruitment. It has to inform the public, create new customers, and support existing customers.

Web analytics is the study of whether the web site is meeting its diverse goals. Just as important, it is the presentation of the results to the various divisions of the company in a comprehensible format. It is now an industry worth hundreds of millions of dollars annually.

It wasn’t always that way. I started writing Analog in 1995 when I was a student at the University of Cambridge Statistical Laboratory. Our department had just set up a web site, and we were keen to know how many people had been visiting it, but we found that none of the existing three programs worked well. So I decided to write my own little program, not guessing how it would take off.

Back then, the terms “web site measurement” and “web analytics” hadn’t yet been coined: it was usually called something like “web logfile analysis.” And the programs had a different emphasis than today’s commercial programs: they focused on more technical statistics, such as which pages had been viewed most often and how many bytes had been transferred, rather than on visitor behavior.

Several things happened to broaden the scope of web measurement. The most obvious is the growth in commercial activity on the Web in the late 1990s. As the Web became a major part of a company’s business and a major expenditure, it became necessary to justify that expenditure. This perhaps became even truer during the weaker economy of the last few years, as all expenditure had to be examined, and the Web came to be regarded as a marketing channel like any other.
Another important development was the growth in pay-per-click advertising in the last four or five years. When Overture and Google introduced the ability to place text ads on search engine results pages, it brought web advertising within the reach of many more companies. Compared to traditional banner ads, these new ads were better targeted, and charged only for actual clicks. They were also self-service, which made them cheap to set up and easy to change, and allowed companies to experiment with many different ads. Just as the Web gave everyone the ability to become a publisher, pay-per-click ads gave everyone the ability to become an advertiser.

One technical development also deserves a mention. JavaScript was invented in 1995 as a way to embed small programs within web pages. Its relevance to web measurement is that a piece of JavaScript code can alert a dedicated data-collection server when the page is displayed. This allowed vendors to offer measurement as an outsourced service, instead of as a software purchase. There is an ongoing debate as to whether the JavaScript method or the traditional logfile method is superior—each has advantages and disadvantages, as this book will discuss—but it is certain that JavaScript made web measurement available to many companies with less technical expertise, and to those whose web sites were hosted on third-party web servers.

In this environment, where companies were spending large amounts of money on their web sites and needing to examine the expenditure, web measurement vendors began to focus less on technical statistics, such as browser types and bytes transferred, and more on commercially relevant statistics, such as conversion rate and return on investment. The web measurement field gradually changed emphasis from “server analytics” to “visitor analytics.”

In addition, vendors invented new ways to present data to wider audiences. Web statistics are useful to a business only if they can be understood by the people who have the authority to change the web site. If the statistics cannot be understood by people who can act upon them, they are merely an expensive curiosity. It was this that attracted me to making a career, not just a hobby, out of web analytics. I had refused previous job offers, but I joined ClickTracks because they wanted me to develop innovative ways to present the data—ways that were intuitive but still with an underlying mathematical rigor.

In this book, you’ll learn techniques to use today’s web measurement programs most effectively, written by many if not all of the leading experts in the field. To be successful, every modern business needs to understand the behavior of customers and potential customers on their web site; and if they do, they can see substantial reductions in costs and increases in revenue. It is the aim of the authors to give you new insights into the visitors to your web site: insights that will directly improve your business.

—Dr. Stephen Turner, Cambridge, England
About the Author

Eric T. Peterson is an author, analyst, and self-described “web measurement geek” from back in the day. Having been introduced to web traffic analysis in the late 1990s as a webmaster and web developer for WebTrends Corporation, Peterson has progressively become more deeply involved in the web measurement space and currently holds the position of senior analyst at JupiterResearch, focusing primarily on web measurement and search technologies. Peterson’s first book on the subject, *Web Analytics Demystified* (www.webanalyticsdemystified.com), has been extremely well received and served as the basis for a number of measurement-related side projects, including the founding of the world’s first web measurement discussion group (http://www.webanalyticsdemystified.com/discussion_list.asp).

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Finally, thanks to Chloe Michelle Peterson, who from age 18 months to 22 months was so sweet and understanding that “daddy had to write.”
When the Internet was first born, most of us were so delighted with the ability to share information across great distances with relative ease that we gave little thought to critical analysis of how that information was being consumed. With the advent of the modern browser giving way to not just information but nice-looking information, our delight only magnified. Like children in a sandbox, we built sites, added images and content, and told everyone who would listen, “Hey! You! Come to my web site. My web site is great!” At some point, somebody asked if anyone was coming. Nobody knew the answer.

The tools had not been developed, nor the practices established, to understand how people were interacting with these rapidly emerging web sites. The direct mailing crowd had cut their teeth on square inch analysis and DMA zones, and the television and radio folks had their Nielsen and Soundscan data. Physical stores had Underhill, his planograms, and spying college students. Even telesales operations had a notion of how well received their outgoing message was, based on the number of hang-ups they were getting. Web site operators had nothing more than the occasional webmaster@ email saying someone liked the site and was it OK to copy their code.

In 1993 at Honolulu Community College, an enterprising young man (Kevin “Kev” Hughes, for the record) wrote and announced getsites 1.4, a simple web server log analyzer (Figure P-1). All of the sudden, anyone with a reasonable knowledge of C and their local filesystem could finally see what pages people were looking at. It was basic at best, but it opened up a window on the web site measurement world. The tools had not been developed, nor the practices established, to understand how people were interacting with these rapidly emerging web sites. The direct mailing crowd had cut their teeth on square inch analysis and DMA zones, and the television and radio folks had their Nielsen and Soundscan data. Physical stores had Underhill, his planograms, and spying college students. Even telesales operations had a notion of how well received their outgoing message was, based on the number of hang-ups they were getting. Web site operators had nothing more than the occasional webmaster@ email saying someone liked the site and was it OK to copy their code.

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In 2005, web measurement applications are as important to the Internet business framework as web servers and commerce engines. Few serious businesses spend money online without having a tool in place to measure the effect of that expenditure, providing data for critical analysis of the question “Was that money well spent?” Today, companies like WebTrends, Omniture, and Visual Sciences routinely close deals worth hundreds of thousands of dollars—all so companies can understand who is coming to their sites, where they’re coming from, and what they’re viewing in an effort to understand “why.”

It is those questions we hope to answer in Web Site Measurement Hacks.

Why Web Site Measurement Hacks?
The term hacking has a bad reputation in the press. The press uses it to refer to those who break into systems or wreaks havoc with computers as their
weapon. Among people who write code, though, the term hack refers to a “quick-and-dirty” solution to a problem, or a clever way to get something done. And the term hacker is taken very much as a compliment, referring to someone as being creative, having the technical chops to get things done. The Hacks series is an attempt to reclaim the word, document the good ways people are hacking, and pass the hacker ethic of creative participation on to the uninitiated. Seeing how others approach systems and problems is often the quickest way to learn about a new technology.

There are plenty of sources for purely technical information about web data—how to parse logfiles, optimize server performance, and write cool JavaScript. Unfortunately, it is usually the “why,” not the “how,” that leaves businesses hanging. Web data collection is a simple practice, as is parsing the data into relatively meaningful buckets. The hard part is the analysis—figuring out what data is important and what it means relative to the business problem at hand. Web site measurement is something software can do, enabled by a variety of data collection algorithms and parsing strategies. Web analytics is something that requires people—bright people willing to roll up their sleeves, hunker down, and answer the hard questions.

The hacks in this book are designed to help you know what to do to gain insight into how people use your web site—bits and bytes of information that will help you better explore, understand, and unearth information about how people interact with their sites. Sure, there are scripts and technical tricks, but the essence of hacking in this context is analysis. This compendium of interesting ideas, built upon a foundation of relevant and important information about how the Web is measured, is designed to turn you into a sophisticated web data analyst (or at least push you in the right direction).

The result is 100 hacks, over half of which have been written by some of the best and brightest minds in web measurement today, all of which will hopefully push the limits of your understanding of web measurement, give you ideas about how better to answer the intangible “why,” and, most of all, encourage you to “hack” into your web measurement data.

**How This Book Is Organized**

You can read this book from cover to cover if you like, but each hack stands on its own, so feel free to browse and jump to the different sections that interest you most. If there’s a prerequisite you need to know about, a cross-reference will guide you to the right hack.

As you can imagine, it’s impossible to write on web measurement and analysis than we could possibly cover in 100 hacks. Each of the four dominant business models (retail, advertising, support, and lead generation) has
enough subtly and complexity in how it should be measured to merit a book of its own. Still, the goal in *Web Site Measurement Hacks* is to get your gears turning and mind humming thinking about the most common problems companies encounter, regardless of business model. To this end, the book is broken into seven chapters:

Chapter 1, *Web Measurement Basics*

In Chapter 1, we’ll tackle the most important aspects of web measurement, especially if you’re new to the subject, including the languages used and technologies deployed, then take a look at the vendor selection process.

Chapter 2, *Implementation and Setup*

This chapter is a walk through the litany of things you need to be thinking about when you’re implementing a measurement application for your site. We cover the differences between common data sources, integration of commerce and custom data, privacy policies, and the impact that robots and spiders can have on your analysis.

Chapter 3, *Online Marketing Measurement*

The number one thing that companies do with web measurement applications is collect data that will help them justify their marketing investment. Whether you buy banner ads, send email, bid on search keywords or advertising for your site in the offline world, this collection of hacks will get you focused like a laser beam.

Chapter 4, *Measuring Web Site Usability*

More than anything, site owners want to believe their creations are easy to use and easy to understand. Unfortunately, this is rarely the case. Fortunately, web measurement tools provide a plethora of data about usability, allowing site owners to iteratively improve the overall visitor experience (hopefully for the better).

Chapter 5, *Technographics and “Demographics”*

It wouldn’t be an O’Reilly book without some geeky stuff about the ugly underbelly of the Internet, would it? Chapter 5 explores how web measurement applications can be leveraged to improve your site’s design and your internal testing and refinement strategies.

Chapter 6, *Web Measurement and the Online Retail Model*

Given the fact that there are four equally valuable business models online, how do we justify devoting an entire chapter to online retail? Simple, online retailers spend a great deal of money on web measurement, more than the other three business models combined by some estimates. This chapter deals with a dozen or so of the most common measurement needs for online retailers, including shopping carts, checkout processes, and the lifetime value of a customer.
Chapter 7, Reporting Strategies and Key Performance Indicators

Many vendors would have you believe that the interface they provide into the data is the only thing you’ll need to be successful. They’re wrong. Extensive interviews and experience tell us that most companies are successful with web measurement data when it’s presented in a format they’re comfortable with. In this chapter, we present key performance indicators and discuss how they can be used to improve the likelihood of adoption and action for web data.

About the Use of Screenshots and Vendor Information in This Book

By some estimates, there are well over 100 vendors providing web measurement tools plus nearly as many free solutions—far too many to adequately treat in a single book. The author and editor of this book have worked diligently to be as fair as possible in our coverage of the vendor landscape and have made every effort to distribute the inclusion of screenshots and examples as equitably as possible.

That said, nobody is perfect, and you cannot please all of the people all of the time.

Inevitably, some vendors’ work will be represented more frequently throughout this book. Specifically, at the time this book was being written, the author had demonstration access to applications provided by Omniture, WebSideStory, and Visual Sciences. Because of this, these vendors may appear more frequently throughout the book than, say, Urchin, ClickTracks, or Sane Solutions. Neither slight nor preference was intended. I can assure you, it was only laziness on the part of the author that prevented each and every vendor from being represented with the exact same number of screenshots, contributed hacks, and mentions throughout the book.

Conventions Used in This Book

The following is a list of the typographical conventions used in this book:

*Italics*

Indicates URLs, filenames, filename extensions, and directory/folder names. For example, a path in the filesystem appears as `/Developer/Applications`.

*Constant width*

Used to show code excerpts, the contents of files, console output, as well as the names of modules, variables, commands, and other code excerpts.

*Constant width bold*

Used to highlight portions of code, typically new additions to old code.
**Constant width italic**

Used in code examples and tables to show sample text to be replaced with your own values.

**Color**

The second color is used to indicate a cross-reference within the text.

You should pay special attention to notes set apart from the text with the following icons:

![This is a tip, suggestion, or general note. It contains useful supplementary information about the topic at hand.]

This is a tip, suggestion, or general note. It contains useful supplementary information about the topic at hand.

![This is a warning or note of caution, often indicating that your money or your privacy might be at risk.]

This is a warning or note of caution, often indicating that your money or your privacy might be at risk.

The thermometer icons, found next to each hack, indicate the relative complexity of the hack:

1. beginner
2. moderate
3. expert

**Using Code Examples**

This book is here to help you get your job done. In general, you may use the code in this book in your programs and documentation. You do not need to contact us for permission unless you’re reproducing a significant portion of the code. For example, writing a program that uses several chunks of code from this book does not require permission. Selling or distributing a CD-ROM of examples from O’Reilly books does require permission. Answering a question by citing this book and quoting example code does not require permission. Incorporating a significant amount of example code from this book into your product’s documentation does require permission.

We appreciate, but do not require, attribution. An attribution includes the title, author, publisher, and ISBN. For example: “Web Site Measurement Hacks by Eric T. Peterson. Copyright 2005 O’Reilly Media, Inc., 0-596-00988-7.”

If you feel your use of code examples falls outside fair use or the permission given above, feel free to contact us at permissions@oreilly.com.
Colophon

Our look is the result of reader comments, our own experimentation, and feedback from distribution channels. Distinctive covers complement our distinctive approach to technical topics, breathing personality and life into potentially dry subjects.

The tool on the cover of Web Site Measurement Hacks is a combination square, a carpentry tool used primarily to mark and measure 45- and 90-degree angles. Many variations of combination squares are available, but each has the square, used to to measure the accuracy of right angles, as one of its components. While the square may be found in combination with various other tools, the combination square on the cover of Web Site Measurement Hacks has a scribe (for transferring the contours of one item onto another) and a level.

Jamie Peppard was the production editor for Web Site Measurement Hacks. Linley Dolby was the copy editor and Ann Schirmer was the proofreader. Sarah Sherman, Genevieve d’Entremont, and Darren Kelly provided quality control. Angela Howard wrote the index.

Ellie Volckhausen designed the cover of this book, based on a series design by Edie Freedman. The cover image is a photograph taken from the Comstock CD. Karen Montgomery produced the cover layout with Adobe InDesign CS using Adobe’s Helvetica Neue and ITC Garamond fonts.

David Futato designed the interior layout. This book was converted by Keith Fahlgren to FrameMaker 5.5.6 with a format conversion tool created by Erik Ray, Jason McIntosh, Neil Walls, and Mike Sierra that uses Perl and XML technologies. The text font is Linotype Birka; the heading font is Adobe Helvetica Neue Condensed; and the code font is LucasFont’s TheSans Mono Condensed. The illustrations that appear in the book were produced by Robert Romano, Jessamyn Read, and Lesley Borash using Macromedia FreeHand MX and Adobe Photoshop CS. This colophon was written by Jamie Peppard.