



Google Analytics for Robust Website Analytics

Deepika Verma, Depanwita Seal, Atul Pandey

Table of Contents

I. INTRODUCTION	3
II. Method for obtaining data for web analysis.....	3
III. Types of metrics and values.....	4
IV. Data Collection and Analysis.....	5
V. Competitors.....	8
VI. Advantages of google analytics.....	10
VII. Recommendations.....	10
Acknowledgment.....	10
References.....	11

Abstract— Google Analytics is an enterprise-class based web analytics tool which provides a transparent view of website traffic and marketing effectiveness. Google Analytics has powerful and advance features that give rich insight into the websites and improve website ROI (Return on Investment). This research paper consists of case study on Google Analytics, which demonstrates features Google Analytics provides and reports it generates. On the basis of the evaluation of web usage, web site owners or E-business marketers can enhance the efficiency of marketing, and web traffics. This paper will also present the limitations of the Google Analytics and propose better approach to overcome the issues.

I. INTRODUCTION

In today's digital world, almost everyone is dependent on Internet. Internet enables E-commerce, E-learning, social networking, banking, discussions etc through online websites. To get more customers or visitors, E - business and website owners need to offer better quality website. Web Analytics serve the purpose of understanding and optimizing web usage.

Web Analytics collects, analyzes, and reports data about numbers and types of visitors, page views, and much more. Google Analytics is the most widely used web analytics application that helps to understand the behavior pattern of website visitors. Google Analytics emerged from Urchin Software Corporation, which Google bought in 2005. Over the years, Google analytics have managed to gain popularity because of its simplicity and numerous advanced features for site owners and professional marketers. The site owners and marketers can identify how visitors actually interact with the websites by using this tool. Auto generated report by Google Analytics facilitates the site owners and the marketers to improve site designs, drive targeted traffic, and increase profits.

II. METHOD FOR OBTAINING DATA FOR WEB ANALYSIS

There are two methods for obtaining web data:

- Web Server Log data: Data obtained from user's web server can be parsed by client-side software to make the data meaningful.
- Page Tag data: JavaScript code placed on each tracked page provides in-depth information about the page and the client's browser device.

A. Web Server Log Data

Web Server Logs give more accurate and comprehensive output, hence better insight in to website. They record various information from each request made to the server. Server logs also provide important information about time and type of request, domain request, referring URL, 404 requests, broken links, and various other informations. This way you can fix these problems to better accommodate your users and the search crawlers. Logs are very detailed as they contain information such as Image requests, CSS files, JavaScript files, Search engine bot traffic.

In Server logs it is difficult to track at user level, little information about how visitors use site, requests from search engine bots can distort figures and they don't count views of pages which are cached. Typically server logs are read with some Log Analysis Software such as AWStats (Advanced Web Statistics) and Webalizer.

Pros

- Counts every request to server
- User own the data

Cons

- Expensive initial investment
- Things / events cause counts to be inaccurate:
 - Search engine spiders
 - Proxies
 - Dynamic IP Addresses
 - Cache
- Data parsing required before analyzing
- Cumbersome management of Server Logs
- Storage intensive

B. Page Tag Data

Page tag-based web analytic systems obtain similar data as server logs. Additionally, they obtain information about the client's

browser, operating system, custom IDs and tags, as well as conversion data, unattainable from server logs.

Pros

- Cheaper to set up / Pay as you go
- Believed to be more accurate than server logs
- Speed of data reporting
- Flexibility of data collection

Cons

- Dependant on JavaScript & Cookies
- Implemented required for every tracked page
- Sometimes complex tag implementations
- Who owns the data?
- Privacy issues
- Slight performance issues

III. TYPES OF METRICS AND VALUES

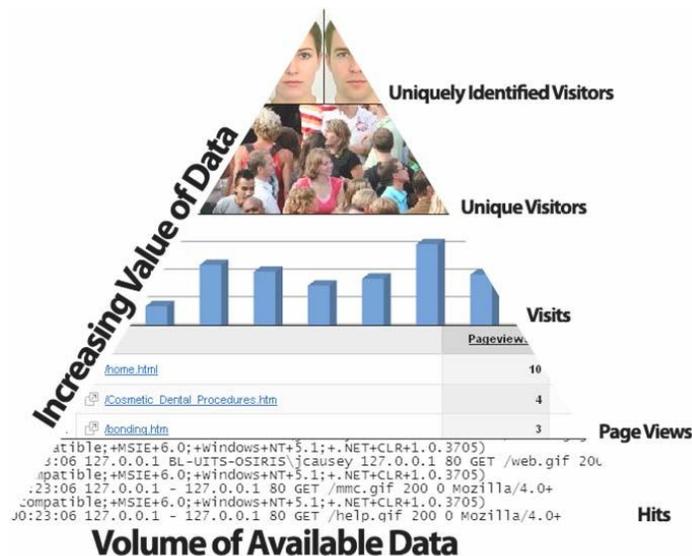


Fig. 1. This figure shows how the value of the data obtained increases as the data becomes more unique

The core metrics obtained through web analytics are:

- Hits

A hit represents a request to a web server. A web page may create several hits to a web server. One for the web page, other requests for each image on the page, any includes, etc. Therefore, a web page that contains 6 images would create 7 hits to a web server. So except for the needs of server support staff, this metric provides no business value.

- Page Views

The Page View metric represents the number of times a web page, be it static, or dynamic, has been displayed. It is useful for determining the popularity of select content.

- Visit

A Visit (or session as Web Trends refers to is) is represented by activity during a period of time (usually 30 minutes) that takes place on a website.

- Visitors

Visitors are one of the most unique metrics used in web analytics. By default, a visitor is represented by an IP address or a cookie. Uniquely identified visitors are cross referenced by another back-end system, usually an e-commerce or CRM system.

IV. DATA COLLECTION AND ANALYSIS

The data on Google Analytics is accessed by registering site on Google. After performing some basic configuration details, a small text file containing the security key needs to be download into the server. Then JavaScript snippet is added to each page of the site to activate the collection of data. Website <http://knowindiatourism.blogspot.com> is taken for doing data collection and analysis using Google Analytics. Google Analytics helps not only E-businesses but also helps sites which are not for commercial purposes such as personal Blogs. Google Analytics has developed numerous useful and valuable features that increase sales, profits, and visitor satisfaction. Google Analytics few key features are as following.

A. Setting Goals

By defining a goal in Google Analytics it tracks and generates reports to measure business objectives. It measures analytics users' site engagement goals against threshold levels that they define.



B. AdWords Integration

If site owners advertise through AdWords, Analytics will optimize AdWords performance of their sites with keywords, group, and campaign. For tracking ROI from AdWords, analytics users need identify which keywords, ads, and campaigns lead to conversions on their site. AdSense reports shows which site content generates most revenue.

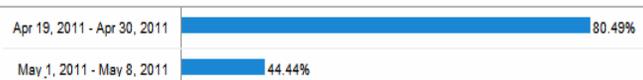
C. Complete campaign tracking capabilities

Google Analytics tracks data from various sources such as email campaign, banner ads, offline ads, and more to provide ROI analysis.

D. Bounce Rate

The bounce rate report presents how many people come to Google Analytics user's site and leave without going anywhere. High bounce rate indicates that visitors find webpage irrelevant. Analytics allows users to view bounce rate over time, and it shows how it varies from page to page.

69.49% Bounce Rate



E. Mobile tracking

Google Analytics has introduced mobile analytics tracking. It tracks mobile websites, mobile applications, and web enabled mobile devices. For mobile tracking reports, Google Analytics users need to install server side script.

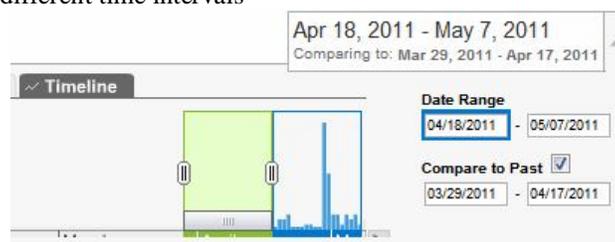
	Operating System	Visits
1.	iPhone	3
2.	Android	1

F. Flash, video, and social network application tracking

Google allows analytics users to track Flash, video, and social networking sites. It tracks usage of Flash, Ajax, social networking, and web 2.0 applications.

G. Comparing Date Range

Allows comparison between two different time intervals



H. Deep Geographic Data

It allows viewing how a user's site is performing in various city or country. It helps users to identify the most lucrative geographic markets.

Detail Level: Country/Territory		Visits ↓
1.	United States	46
2.	India	9
3.	Czech Republic	1
4.	United Kingdom	1

Detail Level: Region		Visits ↓
1.	California	43
2.	Georgia	2
3.	Ohio	1

I. Local Conversion Data

After setting up conversion goals, Google Analytics shows user the site conversion in different locales. For E-commerce sites, marketers can adjust their offers based on how they are performing geographically.

J. Funnel Visualization

A funnel represents the route that users expect visitors to take on their way to converting to the goal. Funnel visualization page allows users to see how frequently visitors abandon goals. By knowing the information, site owners can fix the pages that result in lost opportunities and where their customers go.

More Sophisticated Conversion Funnel

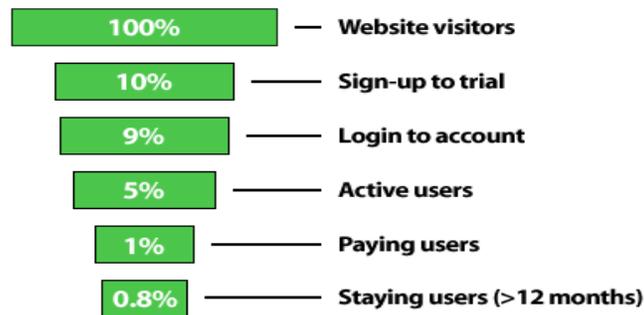


Fig. 2. This figure shows an example of how a funnel is divided in to various segments and what visitor activity at each level is.

K. Navigation Summary

It Google Analytics can be used for Visitor navigation patterns. If visitors are not following the desired navigation, then site owners need to redesign the webpage.

L. Email Reports

Google Analytics has a feature to set up reports, and schedule to whom and when they will automatically be sent. Google Analytics sends report to specified email addresses.

Set Up Email: Dashboard

[Back to report](#)

Send to others:
(Separate multiple addresses with a comma)

Send to me

Subject:

Description:

Format:

CSV
 PDF
 TSV
 XML
 CSV for Excel

Word Verification: Type the characters you see in the picture below.



M. Exclude internal traffic

Usually a user of Google Analytics spends more time on his site than anyone else. If it is not excluded, data can be skewed. Google Analytics filters out traffic from IP address, which website owner specifies.

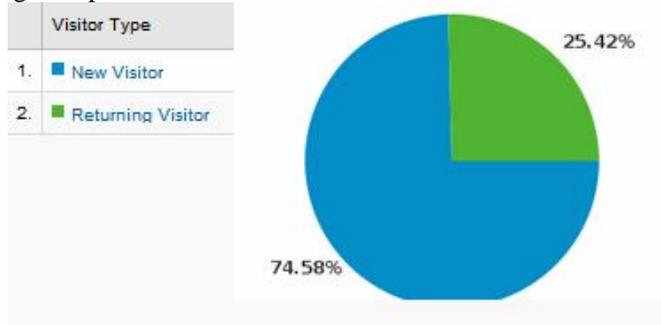
N. Search engine traffic

Google Analytics shows data pertaining to search engines. It shows names of various search engines and the traffic each one of them is sending. It informs the site owner about the comparison between search engines traffic with other traffic sources. It also identifies which search engine sends the most traffic, so it helps site owners to improve their websites based on SEO efforts.



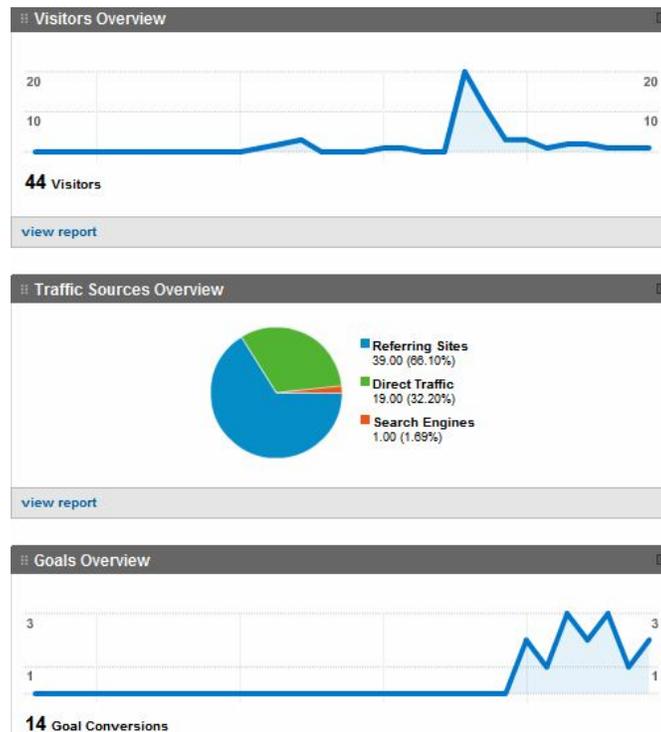
O. Advanced segmentation

Segments allow certain types of visitors such as new visitors, returning visitors, paid traffic, and more accumulate together. It facilitates compare and analyzes segment performance.



P. Customize Dashboard

Google Analytics Dashboard plug-in for word press gives user holistic view about Google Analytics data. Customizable dashboard gives an opportunity to user for incorporating report through drag and drop functionality. User can run custom dashboard as an interactive web application on intranets, websites or Blogs, etc.



Q. Analytics intelligence

Google Analytics Intelligence tool creates custom alerts, for major changes in website behavior. It automatically notifies the site owner, when threshold reaches the target.

R. Advanced Analysis Tools

It performs advanced table filtering. Users can sort and filters their tables of data. This tool allows users to analysis data deeply and manipulates data in the right report table.

S. Data export

Analytics allows exporting any data or report with Data Export API or email into PDF, Excel, CSV, TSV, or XML files.

V. COMPETITORS

Google Analytics has various open source as well premium based competitors. This research reports compare few of the competitors in both the categories with Google Analytics.

A. Piwik vs. Google Analytics

Features of Piwik:

- Is a PHP MySQL software program
- It has a excellent interface that can be configured as well.
- It is also free.
- It can be easily installed but not as easy as Google-Analytics. It needs some programming skills to be installed.
- The data is stored on local servers. This helps us to control the data and helps in further analysis. This data can also be connected to other different data as well.

Features of Google Analytics:

- It's absolutely free.
- It provides a decent interface which is easy to use.
- It is easily understandable.
- It is quite easy to be installed.
- It does not run on local servers but on Google servers.

Conclusion: Piwik is basically for those having their own websites and not for Blogs and Google pages. To access raw data, Piwik is pretty good alternative. However, Google analytics is easy to access and one does not need to install it. Also, accessing

raw data on ones' won sever consumes a lot bandwidth and apace.

B. Omniture Site Catalyst vs. Google Analytics

Features of Omniture Site Catalyst:

- Its premium software
- Extremely customizable implementation however very complex
- The site catalyst reports are more detailed and are much better and superior than the Google analytics reports.
- The collected data is one's own and is kept private and confidential.

Features of Google Analytics:

- It's absolutely free.
- It provides a decent interface which is easy to use.
- It is easily understandable.
- It is quite easy to be installed.
- It does not run on local servers but on Google servers.
- Real Time Reporting System
- Implementation is quite easy that included copying some code into the site's source code.

Conclusion: No doubt, Omniture is more robust than Google Analytics. However it does not matter at all for the higher education websites. This is because the use in higher education has not reached that far. So, keeping in mind the complexity of Omniture, Google Analytics must be preferred.

C. Yahoo Web Analytics vs. Google Analytics

Features of Yahoo Web Analytics:

- Its Yahoo is also free. However, it provides much greater page view limitations.
- Reports are generated in HTML, Access, PDF or CSV.
- Yahoo is in the process to develop an application support. However, it is not certain.
- User management is quite easy. It also allows users to access on site basis like Google Analytics.
- Along with IP filtering, Yahoo also uses cookie-based filtering.
- Data is stored on Yahoo server.

Features of Google Analytics:

- It's free of cost.
- It provides customized reports in the form of PDF, XML, CSV and TSV. However, it allows users to have only one dashboard for each site. So, no multiple dashboards allowed.
- As it's a free service, there is no guarantee of application support when using Google analytics. However, Google support frequently monitors various forums to help the customers.
- Users can only use one of the two of privilege/access (read only) levels for each website.
- Filtering is done in many ways including by domain, ip address, site section, referrer, page title etc.
- Data is stored on Google server.

Conclusion: Yahoo Web Analytics is better than Google Web Analytics in many ways. However, Yahoo Web Analytics is unavailable to the masses and a bit complex for them to understand.

D. W3Counter Web Analytical tool vs. Google Analytics

Features of W3Counter PRO:

- It is not free with PRO version.
- It tracks multiple website with a single user account.
- With a pro account page views has been increased to 1, 00,000 pages.
- It has Real time view of activity over one's website. It is also auto updating.
- It has a secure and invisible tracking code.
- Rests of the features are similar to Google Analytics

Features of Google Analytics:

- It's free of cost.
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- As it's a free service, there is no guarantee of application support when using Google analytics. However, Google

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- Users can only use one of the two of privilege/access (read only) levels for each website.
- Filtering is done in many ways including by domain, IP address, site section, referrer, page title etc.
- Data is stored on Google server.

Conclusion: It is recognized as one of the few best alternatives to Google Analytics. However, it is not free and without the Pro account it has very limited features. So, this is the only reason it cannot beat Google Analytics.

VI. ADVANTAGES OF GOOGLE ANALYTICS

A. *Cost*

It is absolutely free. This is the coolest feature for most of the people involved.

B. *Usability*

It is not just bound to the experts. Anyone without having strong programming skill can use it. It has made analyzing very easy for both the specialists and the non-specialists.

C. *Availability of tutorials*

Google provides an online tutorial to learn about Google Analytics. It has made learning the system extremely easy.

D. *Installation*

It is easily installable. There is no programming skills required to install it unlike in other analytical tools.

E. *Visitors views by Geography, Timeframe and Source.*

It allows getting and viewing the number of visitors to the site based on some time frame. It also allows one to find the geographical location of all the visitors and also the source which helped them find it.

F. *Visitor's details*

It also provides details of each visitor including the time of their stay on the website, the web pages the accessed, the number of links they clicked on etc. There is also a concept of Bounce Rate that shows the number of visitors in and out of a web page and also the visitors who stayed longer.

VII. RECOMMENDATIONS

A. *Technology*

Google Analytics uses Page Tagging technology. This means it can only record information on browsers with JavaScript. Few Browsers do not support JavaScript. Some examples of spiders are GoogleBot, MSNBot etc. While Google Analytics performs quite well in tracking human visitors, it fails in doing the same with the spiders. Hence, Google Analytics should come up with technology which could not only intercept JavaScript enabled pages but also non-JavaScript pages. This will help in increasing the accuracy of the data and analysis.

B. *Real Time Data*

Google Analytics should work towards real time data availability so that user can view the results/analysis in real time. Right now, there is no availability of data report in real-time. It takes around a day to see one's data.

C. *Privacy*

Google should work towards security of user's data. The data is not stored in one's local server. It is stored in the Google server. Thus, Google has full access to user's data and user is not aware how Google uses his or her data.

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REFERENCES

- [1] IEEE Paper- Analysis of Users' Behavior on Web 2.0 Social Network Sites: An Empirical Study by Shwu-Min Horng
- [2] Plaza, Beatriz. "Google Analytics." *Online* 34.5 (2010): 33-37. *Academic Search Premier*. EBSCO. Web. 9 May 2011
- [3] <http://www.listrak.com/Whitepaper/Google-Analytics-and-Email/2/>
- [4] <http://www.ga-experts.com/google-analytics-book.php>
- [5] http://inkriti.com/ideas/whitepaper_google_analytics_websearch
- [6] <http://www.smashingmagazine.com/2009/07/16/a-guide-to-google-analytics-and-useful-tools/>
- [7] <http://pm4web.blogspot.com/2010/11/understanding-google-analytics-reports.html>
- [8] <http://projects-with-google-analytics-custom-segments.html>
- [9] <http://www.jonbishop.com/2010/10/competitor-website-reports-and-analytics/>
- [10] <http://thegooleanalytics.org/limitations-of-google-analytics/>
- [11] <http://www.searchenginejournal.com/google-analytics-fails-for-seo-purposes/5722/>
- [12] <http://www.googleanalyticsresearch.com/2011/02/limitations-of-google-analytics-as-seo-tool/>
- [13] <http://affiliate-marketing-forums.5staraffiliateprograms.com/search-engine-marketing-seo-forum/27097-google-analytics-limitations-caveats.html>
- [14] <http://engineeredweb.com/blog/10/9/tracking-custom-variables-google-analytics>
- [15] <http://stackoverflow.com/questions/4623980/google-analytics-variables-limitations>
- [16] <http://blog.go-optimisation.co.uk/2011/01/07/when-not-to-use-google-analytics/>
- [17] <http://www.marcfoster.ca/a-first-look-at-google-analytics-5/>
- [18] <http://blog.nextdigital.com/2010/07/30/google-analytics-vs-enterprise-analytics/>
- [19] <http://www.kevstrong.com/search-engine-optimisation/google-analytics-bombing/>
- [20] <http://4rapiddev.com/internet/php-open-source-google-analytics-competitor/>
- [21] <http://4rapiddev.com/internet/top-free-real-time-website-analytics-services-and-tools/>
- [22] <http://www.cloudsurfing.com/site/3582-Google-Analytics/competitors/>