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ATE Google Analytics for Evaluation:
Handbook & Benchmarks

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> *"The purpose of web analytics is to give you the knowledge from which you can make informed decisions about changing your online strategy – for the better." (Clifton, 2010, p. 10)*

Google Analytics provides extensive data about the Web presence of ATE projects and centers that can be used as part of their evaluations. For example, Google Analytics data can help to address the following types of questions:

1. How many people are we reaching through the Web?

2. Are people using our resources?

3. Did web traffic increase after our booth at the science fair?

4. How strong are our partnerships?

5. How engaged are people with our content?

6. Where are the people we are reaching located?

7. What are the strengths and weaknesses of our website strategy?

8. How well do or blog, e-blast, or YouTube efforts drive traffic to our website?

This guide reviews the types of data available from Google Analytics and provide guidance about how use these data for evaluation purposes. Additional, the ATE Benchmarks Section provides aggregate Google Analytics data from 8 ATE centers.

Contents

How Google Analytics Relates to ATE Project and Center Evaluation

Most ATE grants have a presence on the web. Project and center sites range from a single page on a college website to large, multi-layer sites featuring various types of media. By simply embedding Google Analytics code into their websites, ATE grantees will have access to large amounts of data that can be used not only to evaluate their web presence, but other aspects of their grant work as well. The table below gives examples of some evaluation questions that could be addressed with various types of Google Analytics data. Each type of data is explained on the following pages.

Sample Evaluation Question	Data Type										Location in Google Analytics	Comments
	Visitors	Visits	Page-views	Pages/ Visit	Bounce Rate	Average Time on Site	New Visits	Traffic Sources	Content	Map Overlay		
1. How many people are we reaching through the web?	X										Dashboard & Visitors	
2. Are people using our resources?			X	X		X			X		Dashboard & Content	Look for the number of people accessing key pages on the content page to see if they are accessing/using your resources.
3. Did web traffic increase after our booth at the science fair?	X	X					X				Dashboard & Visitors	Look for spikes in your visitor graph as indication of dramatically increased interest.
4. How strong are our partnerships?								X			Traffic Sources	A high number of visits to your site originating from the websites or blogs of your project partners is an indicator of strong partnerships.
5. How engaged are people with our content?			X	X		X					Dashboard & Visitors	Pageviews and Pages/Visit indicate breadth of engagement; Time on Site indicates depth of time invested.
6. Where are the people we are reaching located?										X	Visitors	Click the map overlay to see the state or city of your visitors.
7. What are the strengths and weaknesses of our website strategy?	X	X	X	X	X	X	X	X		X	Dashboard, Visitors, Traffic Sources & Content	Comparing each data type to benchmarks and/or internal goals will help identify strengths/ weaknesses in website strategy.
8. How well do our blog, e-blast, or YouTube efforts drive traffic dashboard, visitors, and traffic sources pages to our website?	X	X	X				X	X				Traffic sources show visit originations (i.e. blog/YouTube), New Visits shows expanded reach, Visits/Visitors indicates overall reach.

The Google Analytics Dashboard
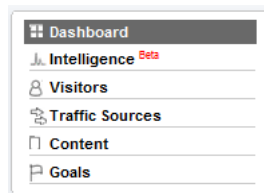
The main types of Google Analytics data are represented on the Google Analytics Dashboard. The dashboard provides an overview of data for your entire website and is the best place to start to understand the 'forest' before you dig further into the 'trees' of various details. The information reported in the Dashboard view may be adjusted by changing the date range and/or choosing different intervals (day, week, month) for the graph.

Glossary of Key Terms on This Page

> **Visit:** A period of interaction between a visitor's browser and a particular website, ending when the browser is closed or shut down or when the user has been inactive on that site for a specified period of

time. For the purpose of Google Analytics reports, a visit session is considered to have ended if the user has been inactive on the site for 30 minutes.

Pageview: A pageview is an instance of a page being loaded by a browser. Google Analytics logs a pageview each time the tracking code is executed, and can be either an HTML page or similar page with tracking code.

Note: The allowed duration of timeouts—how long a web page is left inactive by a visitor—is 30 minutes, meaning that continuing to browse the same website after 30 minutes of inactivity is considered to be a new repeat visit.

Bounce rate: Bounce rate is the percentage of single-page visits or visits in which the person left your site from the entrance (landing) page.

Average Time on Site: The average amount of time a visitor has spent on your website within the selected date range. Google Analytics ignores the last pageview of a visitor's session when calculating the time-on-site and time-on-page metrics as these are most prone to 'outlier' effects, such as leaving a page open when going to lunch.

New visitor: Google Analytics records a visitor as *new* when any page on your site has been accessed for the first time by a web browser. This is accomplished by setting a first-party cookie on that browser. Thus, new visitors are not identified by the personal information they provide on your site, but are rather uniquely identified by the web browser they used.

Direct Traffic: Percentage of visitors that accessed your website by directly entering your web address (i.e. www.evalu-ate.com) into their browser or clicking on a stored or bookmarked link.

Referring Sites: Percentage of visitors that accessed your website by clicking on a link from another website or blog. Note: Google Analytics "referrer" cookies last six months.

(All terms and notes were summarized from information found on the Google Analytics Glossary, 2011 and Clifton, 2010)

Intelligence
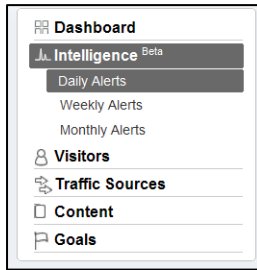
Analytics Intelligence is especially relevant for e-commerce and/or large sites (i.e., not necessarily as relevant for ATE sites) but provides a very powerful algorithmic intelligence engine that detects significant anomalies in your traffic patterns (similar to 'interrupted time series' evaluation designs— see Frechtling, et al., 2010)   The system is designed to identify abrupt changes or deviations from the established trend. The three categories show reports based on different timeframes: Daily Alerts, Weekly Alerts, Monthly Alerts.
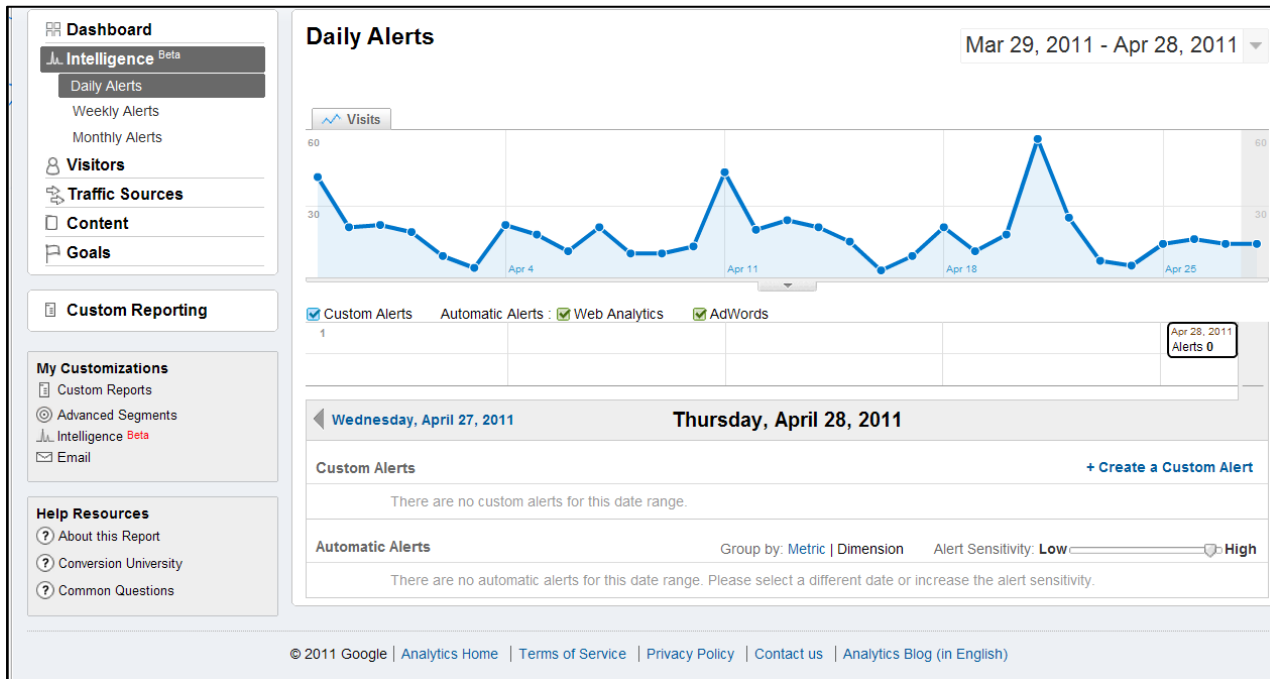
The Google Analytics intelligence system analyzes your data looking for significant changes in established traffic patterns and automatically posts 'alerts' to your account if an unusual event is detected; you don't need to do anything to set this up. That said, you have the additional option of setting specific alerts to let you know about achieving specific goals. For example, if your ATE project was going to be featured in a news report in New York City and you wanted to be alerted about the local impact on your web traffic, you would do the following: go the **Manage Intelligence Alerts** page, and set up the following custom alert:

> This applies to:
> **City** Matches: Exactly **New York**
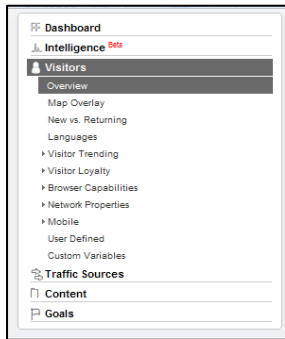> Alert me when:
> **Visits** % increases by more than **20%** Compared to **Same day in the previous week**

(Source: Summarized from Google Analytics, 2011
http://www.google.com/support/analytics/bin/answer.py?hl=en&answer=1011414)

Visitors

Visitors data is the richest source of information about your site's traffic. This page in Google Analytics presents much of the same information as the Dashboard. It provides detailed information about the people that visit your website, allowing you to drill down into the various categories referenced on the dashboard. (See the previous description of the Dashboard for definitions of key terms.) The Technical Profile and Map Overlap features are described below.
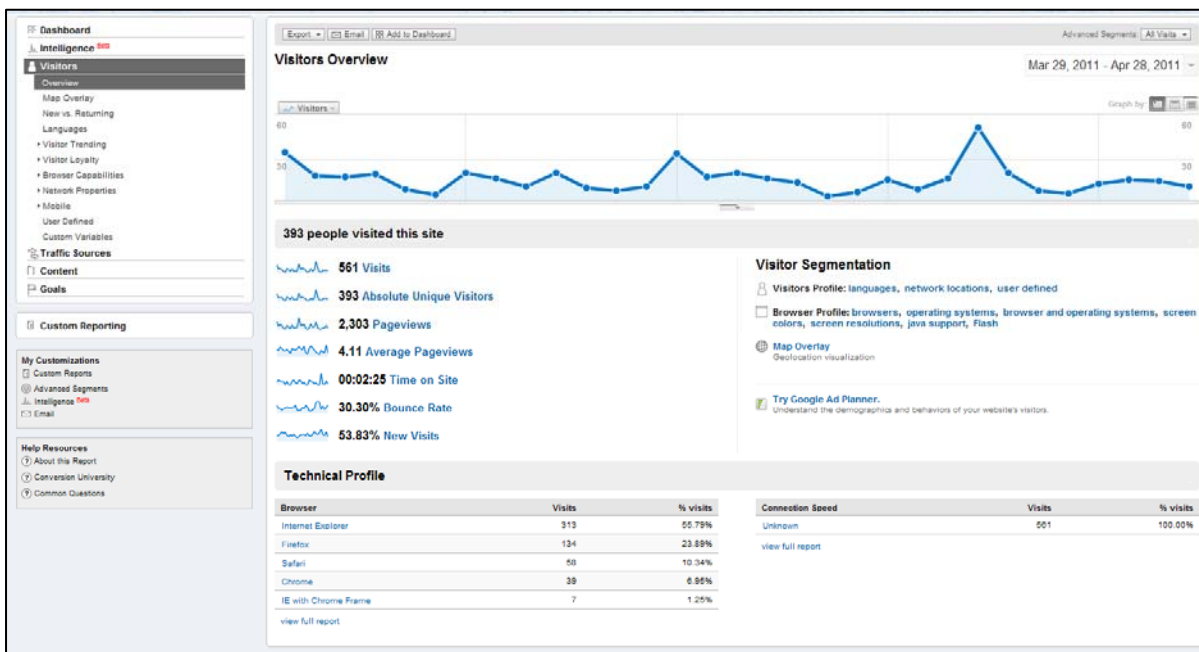
Technical Profile

While not as significant for current Web design practices, the technical profile gives Web designers an idea of the browsers used by most visitors so they can optimize the design/features accordingly. Additionally, while certainly a general view, this data also gives a sense of the type of users visiting your site, e.g., Safari is distributed and pre-loaded on Apple computers, Chrome is distributed by Google by free download, and Explorer is sold by Microsoft and preloaded on many business or mass-marketed computers.

Map Overlay

The Map overlay shows where the visitors to your website are located – within important technical limitations. This system works by mapping the registered physical address for the IP address of the computer accessing your site. While this will often be accurate, some users have dynamically assigned IP addresses, and the associated physical address will be different than their actual location.

Traffic Sources
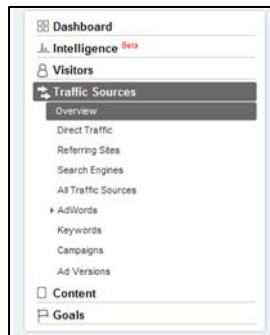
This page provides detailed information about the how people accessed your website, allowing you to drill down into many of the categories referenced on the dashboard. The three ways people can access your site (explained below) are as direct traffic, through a referring site, or through a search engine. The details for the specific sites associated with the referring sites are provided below and are one indication of how strong your partnerships are (i.e. if a college website is sending lots of traffic) and the keywords associated with the searches are provided below as well so you can identify what specific interests people had that led to you.
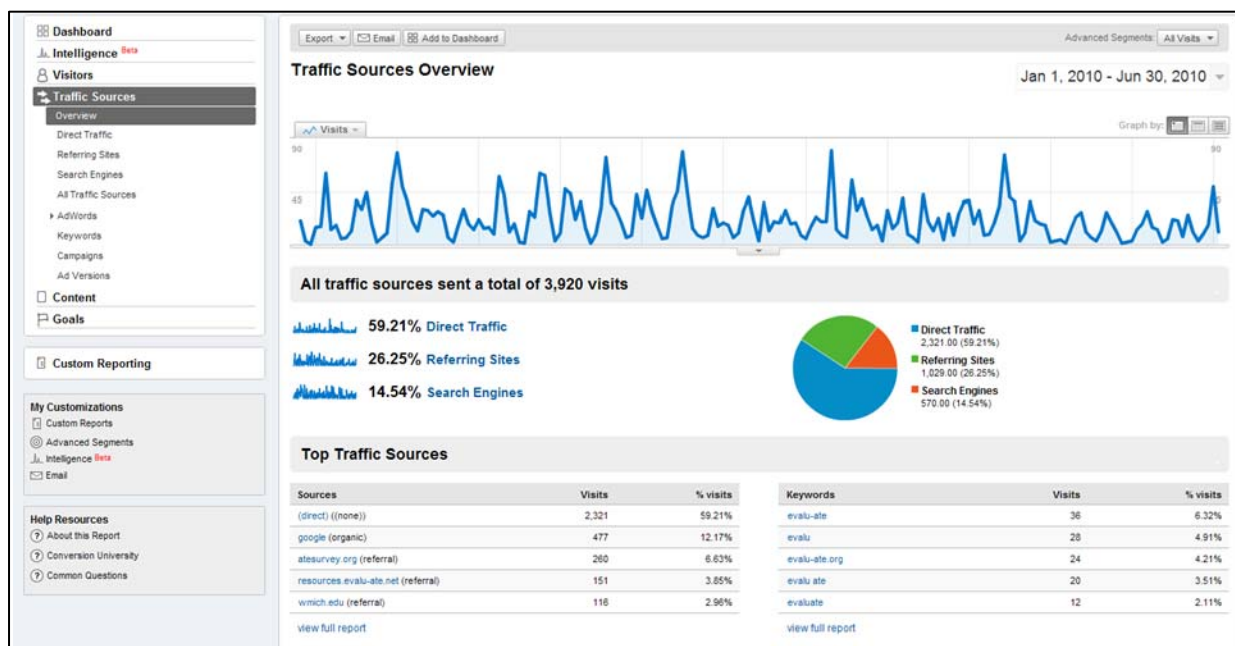
Glossary of Key Terms on This Page

Direct Traffic: Visitors accessing your site by typing your URL directly into their browser.

Referring Sites: Visitors accessing your site by clicking a link on another website and/or source (i.e. the website of a partner college or a blog).

Search Engines: Visitors accessing your site by clicking on a link from a search engine like Google, Yahoo or Bing.

Content
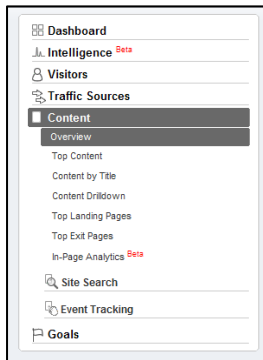
This page provides detail about the content on your website that the visitors accessed. (See Dashboard for glossary of key terms.) Review this page to see how many people visited important resource pages or to review the relative interest in different categories (e.g., calendar vs. contact us.)
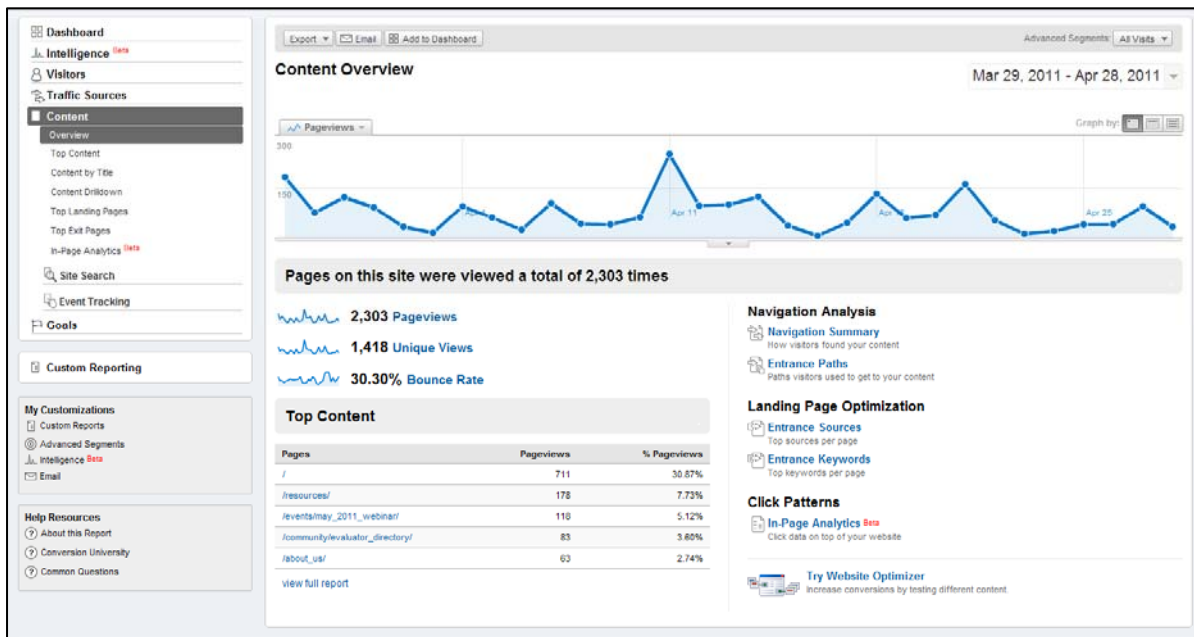
The pages receiving the most traffic on your site are listed under "Top Content." You can find out about specific pages by clicking on "view full report." The "/" page is the home page and typically has the most traffic, as it is typically the first page your visitors access.

The "Click Patterns" option in the lower right of this page provides a powerful visual display of your website, showing the percentage of visitors that clicked on the various links of each page of your website, and is a good tool to understand user interests as well as website design/organization.

Goals
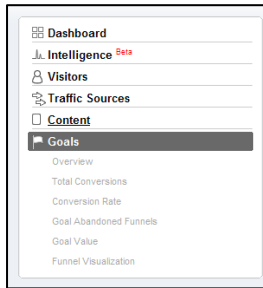
The "Goals" functions are most relevant to e-commerce websites or those that advertise with Google Adwords and will not likely be used by many ATE programs. That said, this section of Google Analytics provides a valuable resource for specific situations, such as measuring the impact of a promotional campaign or changes in website navigation. Sample goals and potential uses for ATE programs are noted below.
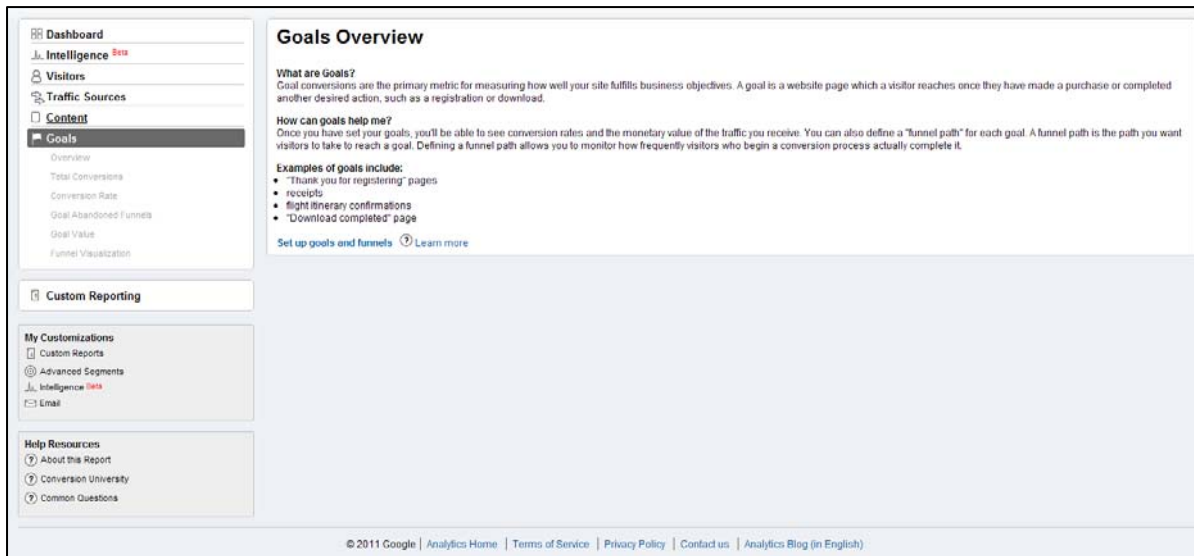
This page allows you to enter up to 20 goals, which can include:

URL Destination: If there is a specific web page that is of high importance (e.g., a resource download page or a "thank you" page for a product purchase), you can enter that page as a URL destination goal to specifically track how many times that page is accessed.

Time on Site: The amount of time a visitor spends on your website is a measure of overall engagement with your content, so a time on site threshold could be set as a goal.

Pages/Visit: Similar to Time on site above, Pages/Visit is a measure of visitor engagement with your content, so you could set an appropriate threshold as a goal.

Step-by-Step Guide for Exporting Google Analytics Data

While seeing the data in your Google Analytics account can be helpful, it is often necessary to share that information with others and/or include it in other documents, such as evaluation reports. Google Analytics provides a very simple process for exporting the data as either a pdf file (i.e., to view the data formatted similarly to the Google Analytics pages) or as an .XML file to be able to view and manipulate the data in Excel. The following is a step-by-step guide for exporting the data:

1) Open the Google Analytics page with the data you want to export.

2) Click the "Export" tab in the upper left

3) Click "PDF" to download Adobe Acrobat file or "XML" to download a file for use in Excel.

4) Locate the downloaded file on your desktop. A PDF document will open directly in Acrobat. To open an XML file in Excel, after you locate the file on your desktop, right click the icon and select "Open with Microsoft Office Excel," and follow the additional instructions below.

5) Click "OK' for open as XML Table
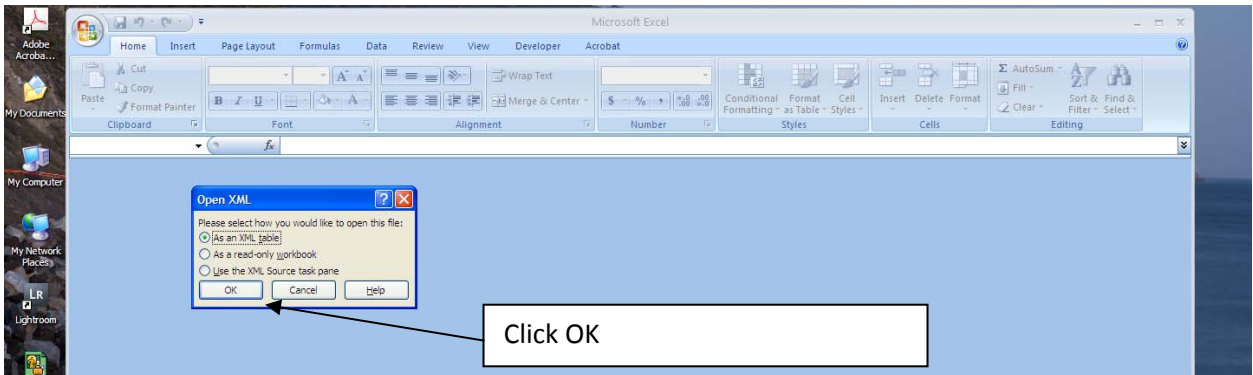
Click OK

6) Click "OK" for Excel to create schema based on the XML source data.

Click OK
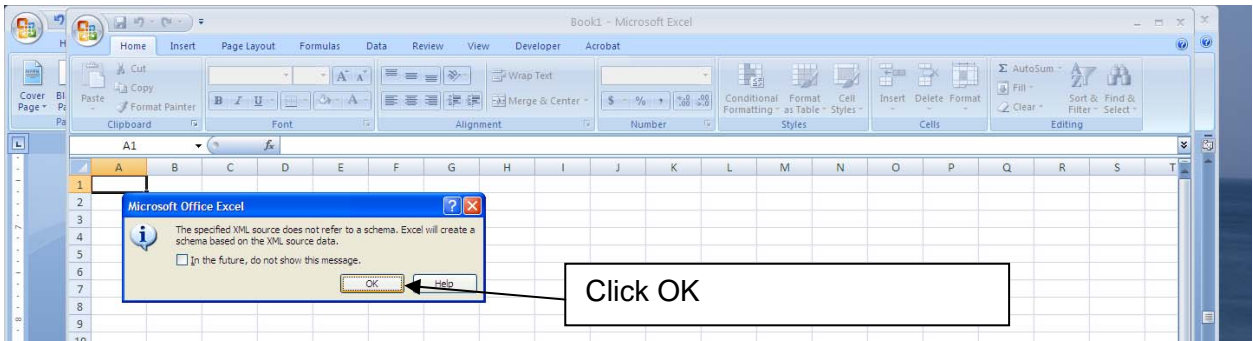
7) The Excel spreadsheet is often VERY large (over 8,000 rows long / 190 columns wide) and the data is arranged in a 'stair step' pattern moving down from left to right. Use the 'find and select' feature in Excel to search for the metric you are interested in (i.e. visits, pageviews, etc.) to locate the relevant section of the spreadsheet.

	A	B	C	D	E	F	G	H	
1	name	id	LineType	Content	Type	Compare	id2	CompareStateHelp	Show
2	Dashboard	Narrative	NORMAL	Site Usage	DASHBOARD	FALSE			
3	Dashboard	NarrativeTitle	NORMAL	5,185 people visited this site	NORMAL	FALSE			
4	Dashboard	Narrative	NORMAL	Technical Profile	NORMAL	FALSE			
5	Dashboard	NarrativeTitle	NORMAL	All traffic sources sent a total of 7,606 visits	NORMAL	FALSE			
6	Dashboard	Narrative	NORMAL	Top Traffic Sources	NORMAL	FALSE			
7	Dashboard	Narrative	NORMAL	7,606 visits came from 83 countries/territories	NORMAL	FALSE			
8	Dashboard	SummaryNarrative	NORMAL	Pages on this site were viewed a total of 15,488 times	NORMAL	FALSE			
9	Dashboard	Narrative	NORMAL	Top Content	NORMAL	FALSE			
10	Dashboard						Title	Compare report data to overall site performance and include report da	
11	Dashboard						Title	Compare report data to overall site performance and include report da	
12	Dashboard						Title	Compare report data to overall site performance and include report da	
13	Dashboard						Title	Compare report data to overall site performance and include report da	
14	Dashboard						Title	Compare report data to overall site performance and include report da	
15	Dashboard								
16	Dashboard								
17	Dashboard								
18	Dashboard								

ATE Website Benchmarks

The abundance of data provided by Google Analytics can be simultaneously interesting and overwhelming, and some of the data may not be especially useful without a relevant reference point for comparison. The following benchmarks were developed using data aggregated from 8 different ATE websites, as further described below. There are three primary types of benchmark presented below, and are appropriate for the following sample situations:

1) 15-Month Average (i.e., from 1/1/2010 – 3/31/2011): These benchmarks provide a good reference point for an overall comparison and are the best place to start in analyzing your data.

   Example: if your site had 1,000 visits in the last month, by comparing that to the 15 month average of 725, you can determine that your site is getting about 38 percent more visits than the overall average.

2) Trend: This benchmark is presented in the right column of the 1-5 Month Average table to give an idea of how that category is changing over time. It is calculated as the difference between the monthly average from the first quarter of 2011 and the monthly average from 2010, such that increases in the more RECENT average are shown as positive, and decreases in the more RECENT average are shown as negative.

   Example: If you see that your percentage of new visitors has increased in the latest quarter by 20 percent, but the average trend is -1.88 percent, you can know that while the ATE sites in the sample are attracting fewer new visitors, for some reason your site is attracting substantially (about 20 times) more.

3) Min/Max: These benchmarks are broken out into two date ranges – the 12 months of 2010 and the first quarter of 2011, and show the lowest and highest values for each data type. While the 15-month average gives you an overall reference, these benchmarks show both the range and outliers, and used together the two benchmarks give you a better picture for how your data compares to the sample ATE sites.

   Example: Using the 1,000 visitors/month data point from the first example, the Min/Max gives you a better sense for how that compares. The maximum number of visitors in the 12 months of 2010 was 14,934, which when divided by 12 months = 1,244/month, indicating that your site had slightly fewer than the average number of visitors from the highest traffic site in our sample. Similarly, the max number in the first quarter of 2011 was 4,992, which when divided by 3 months = 1,664; even though 1,000 visits is 38 percent more visitors than the overall average (per example 1) it is 66 percent lower than the highest in the most recent date range.

Benchmark Sampling and Methodology

The process for developing the benchmarks included the following steps:

1) All 36 ATE Centers websites were searched to identify if the Google Analytics tracking code is installed/operational.

2) 18 ATE Centers were identified as having the Google Analytics tracking code currently installed, and all 18 were emailed a request to participate in the benchmark development.

3) The following eight ATE centers contributed to this study by providing their Google analytics data for benchmarking:

   Agrowknow.org
   Cyberwatchcenter.org
   Evalu-ATE.org
   Time-Center.org
   FL-ATE.org
   Madeinflorida.org
   ICTCenter.org
   Matecnetworks.org

4) Two .XML files (opened in Excel) were exported from the Google Analytics dashboard of each of the participating ATE centers, one for each of the following two date ranges:

   a. 1/1/2010 – 12/31/2010
   b. 1/1/2011 – 3/31/2011

5) The relevant data were extracted from the .XML files and compiled into Excel workbooks for analysis.

6) As more fully explained above, three categories of reference (benchmark) data were developed:

   a. 15-Month Average: The average of the 15 months of gathered data (i.e., from 1/1/2010 – 3/31/2011)

   b. Trend: The difference between the monthly average from the first quarter of 2011 and the monthly average from 2010.

   c. Min/Max: The lowest and highest value in each category for each date range.

15-Month Average Dashboard Benchmarks

Note: Please refer to the "Using Benchmarks" and "Sampling and Methodology" sections above for context and suggestions for using these data.

	Monthly Average	**Trend**
Site Usage		
Visits	725.26	+133.79
Pageviews	2108.22	+360.35
Pages/Visit	2.80	+0.06
Bounce Rate	52.9%	-3.18%
Average Time on Site - Min/Sec	2:36	-6.10
New Visits	62.4%	-1.88%
Visitors Overview:		
Visitors	471.63	+95.20
Traffic Sources Overview:		
Direct	39.6%	-3.83%
Referral	26.2%	+0.46%
Search	34.2%	+3.37%

15 Month Average Country of Visitor Benchmarks

	Monthly Average	**Trend**
Map Overlay		
USA - # Visitors	641.53	+100.59
Non USA - # Visitors*	83.73	+33.20
USA/Non Reference Ratio*	7.66	-0.19

*These benchmarks are calculated sums as a reference - not found in Google Analytics

15-Month Average Technical Profile Benchmarks

	Monthly	Average		Trend	
	Visits	%Visits		Visits	%Visits
Internet Explorer	416.29	57.91%		60.16	-1.21%
Firefox	178.78	24.22%		35.28	+0.15%
Safari	76.00	10.47%		3.65	-0.06%
Chrome	41.57	6.35%		18.04	+2.00%
Other	3.50	0.55%		1.20	+0.06%

Min/Max Dashboard Benchmarks

Note: Please refer to the sampling and methodology section above for information about how these benchmarks were developed.

	2010 (12 months)		1st Q 2011 (3 months)	
Site Usage	Min	Max	Min	Max
Visits	2,561.00	14,934.00	749.00	4,992.00
Pageviews	8,454.00	55,878.00	2,306.00	15,310.00
Pages/Visit	1.66	3.74	1.70	3.88
Bounce Rate	42.78%	73.13%	27.64%	74.33%
Average Time on Site - Min/Sec				
New Visits	49.64%	71.83%	46.88%	75.06%
Visitors Overview				
Visitors	1,706.00	9,607.00	503.00	3,343.00
Traffic Sources Overview				
Direct	28.58%	61.20%	27.66%	53.82%
Referral	17.20%	43.81%	18.22%	46.78%
Search	5.17%	46.82%	8.05%	51.48%

MIN/MAX Country of Visitor Benchmarks

	2010 (12 months)		1st Q 2011 (3 months)	
	Min	Max	Min	Max
USA - # Visitors	2235.00	13434.00	680.00	4,494.00
Non USA - # Visitors*	279.00	2007.00	49.00	613.00
USA/Non Reference Ratio*	3.47	25.18	2.44	35.31

*These benchmarks are calculated sums as a reference - not found in Google Analytics

MIN/MAX Technical Profile Benchmarks

2010

	Min Visits	Max Visits	Min Visits %	Max Visits%
Internet Explorer	16,55.00	8,527.00	39.78%	71.98%
Firefox	541.00	5043.00	16.76%	33.77%
Safari	155.00	2075.00	4.92%	20.99%
Chrome	145.00	1097.00	3.63%	7.35%
Other	13.00	63.00	0.18%	0.94%

1st Q 2011

	Min Visits	Max Visits	Min Visits %	Max Visits%
Internet Explorer	453.00	2,120.00	34.58%	69.49%
Firefox	186.00	1,675.00	17.14%	35.86%
Safari	43.00	618.00	5.52%	17.93%
Chrome	54.00	525.00	4.50%	10.52%
Other	6.00	23.00	0.32%	0.84%

Resources

Best Overall Google Analytics Reference/Resource Book:

http://www.amazon.com/Advanced-Metrics-Google-Analytics-ebook/dp/B001BOO0BY
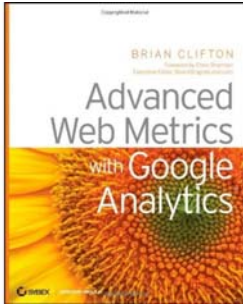
Google Analytics Training Resources & 'Individual Qualification' Certification:

Google Analytics provides a free online training course consisting of 25 videos in 4 categories: First Steps, Interpreting Results, Fundamentals, and In Depth Analysis. User proficiency in this material is assessed with an online test (which costs $50) and those that passed are provided 'Google Analytics Individual Qualification' certification. See http://www.conversionuniversity.com

Google Analytics YouTube Channel (tutorial videos):

http://www.youtube.com/user/googleanalytics#p/u

References

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http://www.google.com/support/googleanalytics/bin/topic.py?hl=en&topic=11285

Frechtling, J., Mark, M., Rog, D., Thomas, V., Frierson, H., Hood, S., Hughes, G., Johnson, E. (2010). *The 2010 User-Friendly Handbook for Project Evaluation.* National Science Foundation. Retrieved from:
http://stepcentral.net/library/posts/213/

Appendix: How Google Analytics Works
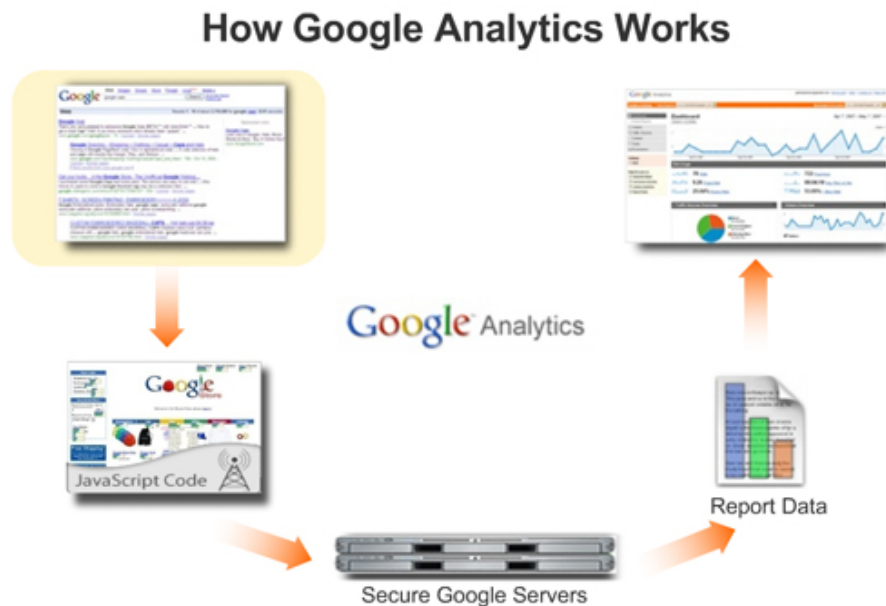
1. A visitor arrives at your website. This can happen through any means, such as directly typing in your URL, clicking a link in a search engine like Google or Yahoo, or linked from another website or blog.

2. When the visitor accesses a page that has the Google Analytics Tracking Code (GATC), an automatic request is made for the file at http://www.google-analytics.com/ga.js This Google Analytics master file – an 18Kb JavaScript file that is downloaded only once during a visitor session. Further requests for it will be retrieved from the visitor's browser cache. With the ga.js file in place, referrer information plus other visitor data (for page URL, timestamp, unique ID, screen resolution, color depth) are collected, and a set of first-party cookies is created to identify the visitor - or updated if the visitor is a returning one.

3. For each pageview, the GATC sends this information to Google data collection servers via a call of a transparent, 1 x I-pixel GIF image at google-analytics.com. In-page visitor actions can also be tracked in this way, for example, clicking to start a Flash animation. The entire transmission of data takes a fraction of a second.

4. Each hour, Google processes the collected data and updates your Google reports. However, because of the methodology and the huge quantity data involved, reports are typically displayed 3-4 hours in arrears and sometimes longer, though not more than 24 hours.

(Summarized from Clifton, 2010, pp 56-57)

Three Important Web Analytics Technical Terms: Logfiles, Page Tags & Cookies

Logfiles: Refers to data collected by your website server itself – essentially capturing the information that flows into and out of the 'box' that your website lives on independently of a visitor's browser: The web server logs its activity to a text file that is usually stored on the web server itself and is therefore known as '*server-side data collection*." Many website servers have this type of analytics installed.

Page tags: Refers to data collected via the visitor's web browser which sends information to remote data-collection servers. The analytics customer views reports from a remote service. This information is usually captured by JavaScript code (known as tags or beacons) placed on each page of a website. This technique is known as *client-side data collection*, and Google Analytics uses this method.

Cookies: Page tags track visitors by using cookies. Cookies are small text messages that a web server transmits to a web browser so that it can keep track of the user's activity on a specific website. The visitor's browser stores the cookie information on the local hard drive as name-value pairs. Google Analytics uses first-party anonymous cookies only.

(Summarized from Clifton, 2010, pp. 20-22)

Limitations of Cookies Impacting Google Analytics Data

1) Web browsers can be set to reject and/or delete cookies.

2) Users can own and/or share multiple computers…or different users can use the same computer with the same cookie settings.

3) Offline visits or interaction can skew data collection: Connecting offline purchases with online visitor behavior is a long-standing enigma for web analytics tools. Currently, the best-practice way to overcome this limitation is to use online voucher schemes that visitors can print and take with them to claim a free gift, upgrade, or discount at your store.

4) PDF Files: A special consideration for page tag solutions, it is not the completed PDF download that is reported, but the fact that a visitor has clicked a PDF file link.

(Summarized from Clifton, 2010, pp. 28-29)