



Web Analytics Definitions

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INTRODUCTION:

During the second half of 2006 the Web Analytics Association Standards committee embarked on an effort to define what was agreed upon as the three most important metrics – Unique Visitors, Visits/Sessions & Page Views.

The Standards committee determined that these three metrics make up the foundation for most web analytics definitions. In addition, since many other metrics rely on an understanding of these three, the decision was made to focus on these metrics first.

After multiple rounds within the committee a request was sent for feedback to the entire WAA membership base. Comments and feedback were reviewed and the definitions tuned.

After completing and publishing the “Big 3” definitions, the committee moved onto defining other key terms.

The WAA Standards Committee welcomes comments on the content of this publication. Please contact Jason Burby or Angie Brown at standards@webanalyticsassociation.org if you would like to provide feedback. The Committee exists to develop standard web analytics terminology and practices that are broadly applicable and beneficial to the analytics community. All comments received will be reviewed by the Committee with that goal in mind, and changes will be made as deemed appropriate by the Committee. The Committee is the final arbiter of all standards it publishes.

Definition Framework Overview

There are three types of Web analytics metrics – counts, ratios, and KPIs:

- **Count** — the most basic unit of measure; a single number, not a ratio. Often a whole number (Visits = 12,398), but not necessarily (Total Sales = \$52,126.37.).
- **Ratio** — typically, a count divided by a count, although a ratio can use either a count or a ratio in the numerator or denominator. (An example of a ratio fabricated from ratios is “Stickiness.”) Usually, it is not a whole number. Because it’s a ratio, “per” is typically in the name, such as “Page Views per Visit.” A ratio’s definition defines the ratio itself, as well as any underlying metrics.
- **KPI (Key Performance Indicator)** — while a KPI can be either a count or a ratio, it is frequently a ratio. While basic counts and ratios can be used by all Website types, a KPI is infused with business strategy — hence the term, “Key” — and therefore the set of appropriate KPIs typically differs between site and process types.

A fourth type of definition is included for terms that describe concepts instead of numbers.

- **Dimension** - A general source of data that can be used to define various types of segments or counts and represents a fundamental dimension of visitor behavior or site dynamics. Some examples are event and referrer. They can be interpreted the same as counts above, but typically they must be further qualified or segmented to be of actual interest. Therefore these define a more general class of metrics and represent a dimension of data that can be associated with each individual visitor.

Metrics are measured across the dimensions.

A metric can apply to three different universes:

- **Aggregate** — Total site traffic for a defined period of time.
- **Segmented** — A subset of the site traffic for a defined period of time, filtered in some way to gain greater analytical insight: e.g., by campaign (e-mail, banner, PPC, affiliate), by visitor type (new vs. returning, repeat buyers, high value), by referrer.
- **Individual** — Activity of a single Web visitor for a defined period of time.

Assumptions and Qualifications

There are certain statements and qualifications that can be added to every definition and therefore would become repetitive and redundant. This states those conditions that apply to every definition unless explicitly stated otherwise in the definition or comments.

- **All measures and metrics assume that they relate to an action by a human visitor.** This is implied by the reference to *unique visitor* in most of the definitions. The types of non-human “visitors” include robots, spiders and website crawlers that periodically scan or methodically download (scrape) content from a website. Many identify themselves via the user agent in the HTTP request that allows the website to provide a different version of the content to aid search engines and content aggregators. However there are many that do not identify themselves and can be confused with human traffic. Each web analytic provider has various techniques for identifying and filtering this traffic. The definitions below assume the provider has successfully extracted the traffic due to actual human visitor behavior.

Building Block Terms:

- Page
- Page Views
- Visits/Sessions
- Unique Visitors
 - New Visitor
 - Repeat Visitor
 - Return Visitor

TERM: Page

Type: Dimension

Universe: Aggregate, Segmented, Individual

Definition:

A page is an analyst definable unit of content.

Comments:

Most web analytics tools allow the client to specify what types of files or requests qualify as a “page.” Certain technologies including (but not limited to) Flash, AJAX, media files, downloads, documents, and PDFs do not follow the typical page paradigm but may be definable as pages (and their access counted as a page view) in specific tools.

TERM: Page Views

Type: Count

Universe: Aggregate, Segmented

Definition/Calculation:

The number of times a page (an analyst-definable unit of content) was viewed.

Comments:

Most web analytics tools allow the client to specify what types of files or requests qualify as a "page." Certain technologies including (but not limited to) Flash, AJAX, media files, downloads, documents, and PDFs do not follow the typical page paradigm but may be definable as pages in specific tools.

Content, such as XML feeds (RSS or Atom) and emails that can be delivered to both web browsers and non-browser clients are not typically counted as page views because the request or receipt of the content does not always correspond to the content being displayed. As an alternative, image based page tags can be placed inside such content to track the views of all or portions of the content.

Web server responses returning status codes indicating the requested content was missing (400 to 499) or there was a server error (500 to 599) should not be counted as a page view unless the web server has been configured to return a real page in the same response with the status code. Returning a page such as a site map, search page or support request form instead of the default missing or error messages is configurable in the most widely used web serving applications (Apache and IIS).

Web server responses returning status codes indicating redirection to another page (300 to 399) are also not typically counted as page views but can be used to track events such as click throughs with systems specifically designed to use the redirect as a counting mechanism. Most redirect counting is done with a status code of 302.

Within the status codes that indicate a successful response (200 to 299) there are few status codes which also may or may not be counted as a page view: The 202 status code (Accepted) is returned in cases where the request has been accepted by the server and the server might or might not return content to the request at a later time. It is not possible from this response to determine if the content was ever sent so it would typically be excluded from page view counts. The 204 status code (No Response) tells the web browser there is no content to return but no error has occurred so the browser should stay on the page prior to the request. It is essentially a non-event. The 206 status code (Partial Download) usually occurs with the delivery of larger file downloads such as PDFs. This code indicates that only a part of the file was delivered so it typically should not be counted as a page view.

Filtering by status codes to remove requests that should not be counted is generally needed only when processing raw web server log files and is not usually needed in page tag based implementations. Vendors do make different distinctions in deciding what should be counted. Consult your tool provider for more information on your implementation.

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TERM: Visits/Sessions

Type: Count

Universe: Aggregate, Segmented

Definition/Calculation:

A visit is an interaction, by an individual, with a website consisting of one or more requests for an analyst-definable unit of content (i.e. "page view"). If an individual has not taken another action (typically additional page views) on the site within a specified time period, the visit session will terminate.

Comments:

Different tool providers use different methodologies to track sessions. Ask your tool provider how this metric is computed. A typical time-out period for a visit is 30 minutes, but this time period is configurable in many web analytics applications.

A visit typically consists of one or more page views (see page view definition). However, in the case of sites where interaction consists solely of file downloads, streaming media, Flash, or other non-HTML content, a request for this content may or may not be defined as a "page" in a specific web analytics program but could still be viewed as a valid request as part of a visit. The key is that a visitor interaction with the site is represented.

Visits can be added together over time, but not over page views or over groups of content, because one visit can include multiple pages.

TERM: Unique Visitors

Type: Count

Universe: Aggregate, Segmented

Definition/Calculation:

The number of inferred individual people (filtered for spiders and robots), within a designated reporting timeframe, with activity consisting of one or more visits to a site. Each individual is counted only once in the unique visitor measure for the reporting period.

Comments:

Authentication, either active or passive, is the most accurate way to track unique visitors. However, because most sites do not require a user login, the most predominant method of identifying unique visitors is via a persistent cookie that stores and returns a unique id value. Because different methods are used to track unique visitors, you should ask your tool provider how they calculate this metric.

A unique visitor count is always associated with a time period (most often day, week, or month), and it is a “non-additive” metric. This means that unique visitors can not be added together over time, over page views, or over groups of content, because one visitor can view multiple pages or make multiple visits in the time frame studied. Their activity will be over-represented unless they are de-duplicated.

The deletion of cookies, whether 1st party or 3rd party, will cause unique visitors to be inflated over the actual number of people visiting the site. Users that block cookies may or may not be counted as unique visitors, and this metric is handled in different ways depending on the analytics tool used. Ask your tool provider how blocked cookies are managed in their tool: it is important to understand how this impacts other metrics with regard to these visitors.

Specific Visitor Types:

New Visitor, Repeat Visitor, Return Visitor

TERM: New Visitor

Type: Count

Universe: Aggregate, Segmented

Definition/Calculation:

The number of Unique Visitors with activity including a first-ever Visit to a site during a reporting period.

Comments:

Each individual is counted only once in the reporting period.

A visitor can only be counted as a new visitor if it is the first time to your site. So, if a visitor comes to your Website for the first time on Monday, and returns on Wednesday, that is counted as a daily unique visitor on both days, but as a new visitor only on Monday. The new visitor metric, when compared with the return visitor metric, is helpful in determining the overall loyalty and affinity of visitors to the site being analyzed. Additionally, when segmented correctly, the new visitor behavior is especially helpful when compared to return visitor behavior in determining the difference, if any, between how new and presumably unfamiliar visitors utilize a website versus the usage habits of visitors that have some level of experience interacting with the site.

It is not possible for a Visitor be counted as both a New Visitor and Return Visitor in the same reporting period.

Some tool providers may define new visitors differently. Ask your tool provider how these metrics are computed.

TERM: Repeat Visitor

Type: Count

Universe: Aggregate, Segmented

Definition/Calculation:

The number of Unique Visitors with activity consisting of two or more Visits to a site during a reporting period.

Comments:

Repeat Visitors, as a metric, is the measure of the amount of Visit activity during a reporting period. New Visitors and Return Visitors qualifies when the Visitor started visiting the site. It is possible for a visitor to be counted as both New and Repeat or both Return and Repeat during a reporting period. It is not possible for a Visitor be counted as both New and Return in the same reporting period.

For example, during a reporting period of one day, if a Visitor has their first ever visit in the morning and then engages in a second visit in the afternoon the Visitor would be counted as New and Repeat but not Return.

Some tool providers may define repeat and return visitors differently. Ask your tool provider how these metrics are computed.

TERM: Return Visitor

Type: Count

Universe: Aggregate, Segmented

Definition/Calculation:

The number of Unique Visitors with activity consisting of a Visit to a site during a reporting period and where the Unique Visitor also Visited the site prior to the reporting period.

Comments:

Each individual is counted only once in the reporting period.

The return visitor metric, when compared with the new visitor metric, is helpful in determining the overall loyalty and affinity of visitors to the site being analyzed. Additionally, when segmented correctly, the return visitor behavior is especially helpful when compared to new visitor behavior in determining the difference, if any, between how new and presumably unfamiliar visitors utilize a website versus the usage habits of visitors that have some level of experience interacting with the site.

It is not possible for a Visitor be counted as both a New Visitor and Return Visitor in the same reporting period.

Some tool providers may define repeat and return visitors differently. Ask your tool provider how these metrics are computed.

Visit Characterization:

- Entry Page
- Landing Page
- Exit Page
- Visit Duration
- Referrer
 - Internal Referrer
 - External Referrer
 - Search Referrer
 - Visit Referrer
 - Original Referrer
- Click-through
- Click-through Rate
- Page Views per Visit

TERM: Entry Page

Type: Dimension

Universe: Aggregate, Segmented

Definition/Calculation:

The first page of a visit.

Comments:

Entry page is the first page in the visit regardless of how the sessions are calculated; different sessionization methods may give different results.

Entry page is typically presented as a list of URLs or their page titles, showing the top entry pages and the number of visits for which each was an entry. Because each visit contains at least one "page," the total number of entry pages equals the total number of visits for any given time frame.

Entry page should not be equated or confused with landing page.

TERM: Landing Page

Type: Dimension

Universe: Aggregated, Segmented

Definition/Calculation:

A page intended to identify the beginning of the user experience resulting from a defined marketing effort.

Comments:

Landing pages are often optimized for specific keywords, audiences, or calls to action. Since they represent a touch point or an opportunity to present your message to the visitor, they have a particular importance in conveying information to motivate the visitor to become more engaged with the site.

A landing page is not necessarily an entry page although it could be. For many sites using search Ads, the visitor may return several times during a session. A useful metric may be number of landing pages per session which indicates the degree that visitors move on and off a website.

Typically Landing Page is used in on-line marketing channels to describe the call to action of an advertisement. Special parameters are sometimes used, alone or in combination with the referring URL, to identify the marketing channel or tactic responsible for the lead.

In some situations, it may be appropriate to limit landing pages to only those pages with an external referrer.

TERM: Exit Page

Type: Dimension

Universe: Aggregate, Segmented

Definition/Calculation:

The last page on a site accessed during a visit, signifying the end of a visit/session.

Comments:

In a tabbed or multi-window browser environment it should still be the final page accessed that is recorded as the Exit Page though it cannot be definitively known that this was the last page the visitor viewed. Contact your vendor for information regarding your specific implementation.

Because each visit contains at least one "page," the total number of exit pages equals the total number of completed visits for any given time frame.

The use of cookies to track visit sessions or another reliable visit session method is necessary to accurately track this measure.

TERM: Visit Duration

Type: Count

Universe: Aggregate, Segmented

Definition/Calculation:

The length of time in a session. Calculation is typically the timestamp of the last activity in the session minus the timestamp of the first activity of the session.

Comments:

When there is only one piece of activity in a session (a single-page visit or single-event visit), no visit duration is typically reported.

TERM: Referrer

Type: Dimension

Universe: Aggregate, Segmented, Individual

Definition/Calculation:

The referrer is the page URL that originally generated the request for the current page view or object.

Comments:

The referrer is a field in the request header from a client. Most of the time the referrer is the value of this field. If the link is contained within a frame, most analytic tools will navigate through the frames to collect the referrer of the top-most page containing the frame. Also the original link may be redirected to another URL one or more times. Typically the redirecting server will maintain the original referrer so that rendered page will have the referrer URL of the page that started the sequence of requests. For log-based analytic tools, the referrer is the referrer value in the request header.

Each hit to a website has a referrer. However there are several situations where the referrer value is empty or null. Some user agents such as email clients or news readers may not set the referrer value in the request header. For browser user-agents, an empty referral string usually indicates that the user either directly entered the URL or selected from a list of bookmarks. These are often reported as "No Referrer" or "Direct Navigation".

In the case when the visitor is coming from outside the website, the referrer value is the only way of determining where the visitor came from or who referred the visitor to the website. Furthermore the referrer URL may be accompanied by parameters that convey additional important information. For example, the content that was viewed or the keyword that was searched in the case of search portals may be passed through parameters.

Specific Referrer Types:

Internal Referrer, External Referrer, Search Referrer, Visit Referrer, Original Referrer

TERM: Internal Referrer

Type: Dimension

Universe: Aggregate, Segmented

Definition/Calculation:

The internal referrer is a page URL that is internal to the website or a web-property within the website as defined by the user.

Comments:

Typically the internal referrer shares the same URL domain as the page URL that was requested. Often relative URLs are a strong indicator of local or internal content.

However there are many situations where this is either not true or not sufficient. The website may have many different domains or use domains to track special promotions or link off line activity. It may use external transaction engines to manage shopping carts or finances that should be treated as internal to the website. A hosted website may share the same domain as other websites and the file path must be used to distinguish internal from external content. Likewise a large site may have many properties that the user wants to track as separate entities or roll up into one overall website entity.

Most analytic tools will attempt to take all these factors into consideration and allow the user to enter precisely the domains and URL paths that should be considered internal to the web property. Determining what is internal to a web property or website is a key element of being able to track activity onto and off the site.

TERM: External Referrer

Type: Dimension

Universe: Aggregate, Segmented

Definition/Calculation:

The external referrer is a page URL where the traffic is external or outside of the website or a web-property defined by the user.

Comments:

Typically external referrers are counted and aggregated by the domain in the URL. The major domain indicates the external website that referred the request for the page. For large complex portals, the subdomain typically identifies the property making the referral. For hosted sites such as merchant stores or blogs, the path within the referrer URL may be needed to identify the specific website that has included a link to your site.

TERM: Search Referrer

Type: Dimension

Universe: Aggregate, Segmented

Definition/Calculation:

The search referrer is an internal or external referrer for which the URL has been generated by a search function.

Comments:

The URLs generated by different search engines have characteristic patterns that identify the engine generating the search results. Often the keyword phrase that generated the request is included. The domain identifies the specific portal that displayed the search results. For internal site search engines the portal is the website itself and the referrer is internal. In all other cases, the search referrer is a type of external referrer.

With the search referrer we can understand where the visitor came from and the specific search query that include a link to your website. You can also understand which search engines have crawled and searched your website and from the landing page, what content was processed.

It should be noted that not all search portals are the same as search engines. Also note that not all search engine results include keyword phrases. Those search referrers that include the keyword are counted as search referrals and counted and aggregated at the keyword and keyword phrase level. The aggregate counts from search portals and search engines if identified will be different.

TERM: Visit Referrer

Type: Dimension

Universe: Aggregate, Segmented

Definition/Calculation:

The visit referrer is the first referrer in a session, whether internal, external or null.

Comments:

(none)

TERM: Original Referrer

Type: Dimension

Universe: Aggregate, Segmented

Definition/Calculation:

The original referrer is the first referrer in a visitor's first session, whether internal, external or null.

Comments:

The visitor's "first" session may be with respect to a specified attribution window, or it may be with respect to the life of the data. Ask your tool vendor how this is calculated for your application.

External referrers represent the sources of new visitors to your website or property.

If large counts of your original referrers are internal, this could be indicative of potential problems (tagging problems, mid-session cookie churn, etc.).

TERM: Click-through

Type: Count

Universe: Aggregate, Segmented, Individual

Definition/Calculation:

Number of times a link was clicked by a visitor.

Comments:

Click-throughs are typically associated with advertising activities, whether external or internal to the site. Note that click-throughs measured on the sending side (as reported by your ad server, for example) and on the receiving side (as reported by your web analytics tool) often do not match. Minor discrepancies are normal, but large discrepancies may require investigation.

TERM: Click-through Rate/Ratio

Type: Ratio

Universe: Aggregate, segmented

Definition/Calculation:

The number of click-throughs for a specific link divided by the number of times that link was viewed.

Comments:

Both the click-throughs and the views of the link are measured for the same designated reporting time period.

TERM: Page Views per Visit

Type: Ratio

Universe: Aggregate, Segmented, Individual

Definition/Calculation:

The number of page views in a reporting period divided by number of visits in the same reporting period.

Comments:

(none)

Content Characterization

Page Exit Ratio

Single Page Visits

Single Page View Visits (Bounces)

Bounce Rate

TERM: Page Exit Ratio

Type: Ratio

Universe: Aggregate, Segmented

Definition/Calculation:

Number of exits from a page divided by total number of page views of that page.

Comments:

Page exit ratio should not be confused with bounce rate, which is an indicator of single-page-view visits on your site. Page exit ratio applies to all visits regardless of length.

Be aware that some tools may calculate page exit ratio using visits in the denominator instead of page views. Page view count is a more appropriate denominator because a visitor may travel through the same page multiple times in a visit.

TERM: Single-Page Visits

Type: Count

Universe: Aggregate, Segmented

Definition/Calculation:

Visits that consist of one page regardless of the number of times the page was viewed.

Comments:

For a single-page visit, the entry page and exit page are the same page.

Single-page visits should not be equated or confused with single page view visits.

TERM: Single Page View Visits (Bounces)

Type: Count

Universe: Aggregate, Segmented

Definition/Calculation:

Visits that consist of one page-view.

Comments:

Just as for a single-page visit, the entry page and exit page are the same page.

Single page view visits should not be equated or confused with single page visits.

TERM: Bounce Rate

Type: Ratio

Universe: Aggregate, Segmented

Definition/Calculation:

Single page view visits divided by entry pages.

Comments:

If bounce rate is being calculated for a specific page, then it is the number of times that page was a single page view visit divided by the number of times that page was an entry. If bounce rate is calculated for a group of pages, then it is the number of times pages in that group was a single page view visit divided by the number of times pages in that group were entry pages. A site-wide bounce rate represents the percentage of total visits that were single page view visits.

Conversion Metrics

Event

Conversion

TERM: Event

Type: Dimension (same term is also used for count)

Universe: Aggregate, Segmented, Individual

Definition/Calculation:

Any logged or recorded action that has a specific date and time assigned to it by either the browser or server.

Comments:

The occurrence of an event can be counted in three ways:

Event – Each occurrence of the event is counted.

Visit – Each visit where the event occurs at least once is counted.

Visitor – Each unique visitor that executed the event at least once is counted.

These counts are always associated within designated reporting timeframes such as an hour, day, week or month.

These counts can be performed for any event. These can be page views, page events such as page load and unload, starting and completing transactions, clicks, ad impressions, and visitor state changes. These counts can also be applied to any conversion, since conversions are a type of event.

When event counts are displayed, the report must make clear the method of counting (Event, Visit, or Visitor) and the time interval of the count aggregate. For example if the report is a day report, it may be assumed that all counts are day interval counts. Then if reports focus on visits, the method assumed is visit counts of the event.

When all three count methods are displayed for the same time period, it should always be true that event count \geq visit count \geq visitor count. The differences in the counts reflect that an event can occur multiple times within a visit and a visitor can have multiple visits within a given time period.

An example is counting page views per day. The event count gives the total number of page views loaded during the day, visit count is the number of visits (that downloaded at least one page view) during the day, and the visitor count gives the number of unique visitors (that downloaded at least one page view) that visited the site during the day.

TERM: Conversion

Type: Dimension (same term is also used for count)

Universe: Aggregate, Segmented, Individual

Definition/Calculation:

A visitor completing a target action.

Definition/Calculation:

This is a method of segmenting behavior as visitors interact with a web property. The event represents a transition in the visitor state that may indicate 1) potential for future behavior such as clicking on an advertisement, or registering for more information, or starting a check out process; or 2) completion of a goal milestone event such as completing a purchase on-line or requesting a quote. The latter (2) are sometimes designated as target or goal conversions, and the former (1) are sometimes referred to as step, support, mini, or micro conversions.

A conversion can be viewed and counted as any other event. In addition, conversions provide a general framework for segmenting visits or visitors and attributing various marketing activity and visitor actions to these segments. They provide the marketer an additional tool for segmenting visitors other than demographics. In practice the two approaches work together to understand the visitor and their on and off line behavior with respect to various marketing activities. The best conversions indicate that a visitor has successfully completed an objective of the site or business.