Web Analytics in 2025: Tools, Techniques, and How-to

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Web analytics is not a new concept for organizations. It has been a relevant topic for organizations since the mid-90s. Starting with usage patterns, organizations applied analytics and tracked key metrics in their business functions such as sales and marketing. However, modern web analytics tools have stronger capabilities now and they are regulated more stringently.

Strict data privacy laws such as GDPR are forcing businesses to be more careful about consumer's data. However, benefits and success stories of web analytics are so compelling that businesses are willing to invest more on web analytics. Thanks to artificial intelligence and machine learning, modern web analytics tools enable businesses to automate the analysis process with auto-generated and on-demand insights.

What is web analytics?

Web analytics is the collection, reporting, and analysis of website data through server logs or code embedded on webpages. The primary purpose of website analytics is to benchmark website performance and to track user behavioral data by creating and measuring Key Performance Indicators (KPIs).

How does it work?

Web analytics processes have these essential steps:

A map-out of web analytics process. Source: Wikipedia

Collection of data

To start an analysis, you first need to collect the necessary data. Most web analytics tools insert JavaScript code into HTML text of websites so that they can capture data and store it in database tables. Data they capture may include webpage clicks, the device user accessed, geographic location of the visitor and so on.

Processing data into information

This step involves transforming data into metrics by creating ratios from counts you obtained in the first step. For example, bounce rate is dividing the early-leavers count by total visitor. Though this metric is important to understand the success of the webpage, it needs to be combined with other metrics and information to generate actionable insights to develop a marketing/business strategy.

For example, bounce rate can be due to a slow loading website, dull content, bugs on the website etc. Additional information is necessary to understand the root cause and take action.

Tracking KPIs

Organization track metrics important to their business strategy which are commonly called Key Performance Indicators (KPIs). They provide history to key metrics so companies can measure how they are progressing over time. For example, conversion rate and cost per conversion are typical KPIs.

Identifying actions to take

Reviewing all the analytics information and their business goals, businesses need to decide what to do. Continuous analytics enables organization to test the results of their strategies and make changes accordingly. For example, A/B testing is used commonly to improve conversions by testing two different designs for a page.

What is the source data for web analytics?

The power of any analytics product is limited by the quality and diversity of its data sources. Web analytics commonly relies on these data sources:

Visitor data

This includes:

- Data captured via javascript code snippets or cookies
- Direct HTTP request data: Data sent by a web client (browser) to request a resource such as an image on a webpage
- Application-level data sent with HTTP requests**:** This data is generated and processed by applications such as JavaScript, PHP, and ASP.Net and includes how a visitor interacts with the web page. They are mostly collected by internal logs rather than web analytics services.
- External data needed to analyze visitor data. External data is combined with on-site data to help understand website behavior data. Most common example is understanding the geolocation of users since IP addresses associated with Geographic regions and internet service providers. This is a common feature offered by almost all web analytics software

CRM

If companies can connect visitors to leads in their CRM system, they can have an accurate view of where their revenue is coming from

Search engines

Search engines are a major source of traffic for companies and tools like Google Search Console or Bing Webmaster Tools can help companies better understand and optimize traffic from search engines.

Other search engine related data

There are numerous data providers that cover different aspects of search engine traffic such as competitors' rankings, search engine friendliness of the company's web properties, etc.

Server logs

These provide provide additional, aggregated information about visitors that do not allow their data to be tracked.

Source: Researchgate

How does GDPR change data collection?

Countries are creating data privacy laws to protect their citizens' data from being abused. These laws include

- GDPR (General Data Protection Regulation) in Europe
- CCPA (California Consumer Privacy Act) in California, USA
- POPIA (Protection Of Personal Information Act) in South Africa

Numerous countries either have published similar laws or are working on them. Most of these laws tend to be similar and we will focus on GDPR which has the largest geographic coverage.

In EU, GDPR is a regulation law on data protection and privacy. After GDPR, companies are required to acquire the user's consent to record their data. That is why most EU websites nowadays feature a cookie disclaimer that asks users to accept cookies. If users do not accept cookies, none of their personal data can be stored. And most users are unlikely to accept cookies unless they are forced to accept them and GDPR

prohibits companies from forcing users to accept cookies. However, this is not the end of your company's web analytics. We have seen 3 ways to mitigate the impact of GDPR:

- Users who consent to cookies can be analyzed to gain insights into user behavior. However, this provides only partial data, the cookie accepting users are likely to differ in their behavior when compared to cookie refusing users.
- Servers generate log files including non-individualized data such as visitor numbers per page. These can be used for high-level analytics as they do not constitute personal data
- Data without personal information can be valuable as well. Vendors like Salesviewer use visitor data without relying on cookies by focusing on attributes like IP, browser characteristics, etc. to build a device fingerprint. Comparing this against their database, they can identify user's companies which they share with website owners. Their legal advisors certified them to be compliant to GDPR as well as national data privacy laws since their data processing is limited, pseudonymous and allows for opt-out.

What are the key metrics you should be tracking?

Defining metrics is a vital part of web analytics process and tracking the right metrics can lead to the success of analytics projects. Google Analytics is the leading product among web analytics products. 30 million live websites are using Google Analytics. Here is the list of metrics that you can track via Google Analytics to gain insight into the website.

Unique Website Visitors

This is the number of first time visitor over a period of time (organizations mostly prefers to use per month). This metric is important because you can measure the popularity of the website. By focusing on spikes and lags, you may identify what is causing trends.

Bounce Rate

This is the percentage of single-page site visits. This metric is neither good nor bad metric because it cannot identify the web page's success. The user may get what they want in one click.

Sessions

This metric indicates the website's total number of visitors. Though this metric is the third most tracked metric of Google Analytics, it not very useful for marketers because it may count same people twice or more if they log multiple sessions.

Average session duration

The average amount of time users spend on your website. This is another metric that is neither good nor bad because you can not increase this average by advertising or stuffing more keywords onto the page.

Percentage of new sessions

Google explains this metric as “An estimate of the percentage of first-time visits.”. This metric reveals important insights such as how fast your brand and website are growing. It is calculated as unique visitors/sessions.

Sessions by channel

Your website is growing as new visitors come but how did they find you in the first place? Google Analytics enables you to group and track the performance of channels such as organic, paid, direct, social, email, referral, etc. Marketers can decide which channels they need to invest more or which channels are under-performing despite their budget.

Pages per session

The average number of pages viewed during a session on your website. Measuring this KPI indicates the interest of an average user about your company.

Goal conversion rate

Businesses mostly start web analytics with a goal such as increasing sign up number, purchase, or click to other pages. With Google Analytics, you can create your goals and start tracking your success rate.

Page views

Page views is the total number of pages viewed on your website within a given time. It includes repeated views of a single page that's why it is considered as generous measurement.

Page views by page

This metric is the total number of views for each page within a given time. It is a generous measurement same as page views.

Exit Rate

Exit rate is a metric like bounce rate with one difference. A bounce is always an exit, but an exit doesn't have to be a bounce because the bounce rate is measured against the number of entrances while the exit rate is measured against a particular page.

Breakdown by location

Tracking the location of visitors and filtering them based on location help businesses improve their local marketing and SEO efforts for specific countries.

Breakdown by device

Knowing the devices and browser of web visitors help businesses optimize and plan the resources they will use. For instance, checking the percentage of mobile users can influence businesses' decisions on spending money for mobile SEO. They can look at the average CTR of mobile users and decide whether to make their website more mobile-friendly.

Breakdown by browser

Type of browser website users use can help businesses identify quick actions. For example, Chrome users can see the URL and name of images once they place their cursor on images (As seen on the left corner of the image below). And if Chrome is the dominant browser option among your audience, writing a related title for the image file can be an initiative to improve the user experience of Chrome users.

What are the benefits of web analytics?

Web analytics enables companies to prioritize their actions to improve their online and offline sales. For example:

- Web analytics can help you measure the profit contribution of online marketing. You can measure which goals did you achieved at a certain time and how these goals helped you increase the revenue.
- When you see patterns in customer behavior, you can predict future trends and better position your digital properties in the future.
- You can gain insights about customer behavior which can be used in marketing. For example, you can offer more personalized content with a recommendation engine.
- You can optimize your website according to user behavior. For example, heatmaps and A/B testing can help you improve the design of the website. A heatmap enables you to see which areas users find least interesting and A/B testing offers you to try out different variations of your website (or single components such as size of the price tag), to see which converts best.

How is web analytics different than mobile analytics?

The minor differences between web and mobile analytics tools are eroding. Today, there is not a significant difference between these tools.

Mobile analytics developed much later than web analytics, after the rise of smartphones in late 200s. While web analytics focused on page views and conversions, mobile analytics solutions measured events like clicks and scroll in detail. For example, Google Analytics (GA) users needed to manually define events for GA to record them.

However, event tracking is becoming more widespread in the web world as well. Google facilitated using the capabilities of its mobile analytics platform, Firebase, in 2019 for web analytics users. Now users can automatically track all of their web events without any manual configuration for each event.

How does machine learning contribute to web analytics?

Auto generated insights

There are hundreds of data points created by each user in a single visit to a single webpage. These include the time they spend on the page, details about their browser and its extensions, their device, their location, their mouse movements, etc. No one can manually analyze all that data and companies are automating this analysis.

AI and machine learning algorithms can make analysis faster and more accurate by speeding up data processing. With anomaly detection algorithms, organizations can find something that does not fit the expected pattern and act faster to solve the problem. We've written a comprehensive article about how AI shapes analytics, feel free to learn more.

Examples of website analytics tools providing auto-generated insights include:

Google Analytics insights

Google Analytics insights section helps companies identify anomalies:

Millimetric.ai

Millimetric.ai provides anomaly detection capabilities based on multiple sources like Google Analytics, Google Search Console etc.

Answering questions

Google Analytics Insights on demand section answers common questions about website analytics. Users can navigate to more detailed questions or ask their own questions:

What are the popular products?

Closed sources:

- Adobe Analytics

- Chartbeat
- Clicktale
- Clicky
- CrazyEgg
- Google Analytics
- Kissmetrics
- Mint
- Mixpanel
- Millimetric.ai
- Spring Metrics
- Woopra

Open sources:

- Matomo

You can also check our data-driven list of analytics platforms, to find the option that best suits your needs.