Comparing Google Analytics 4 and Universal Analytics metrics

What you need to know

Google Analytics 4 (GA4) represents a fundamental shift from the Universal Analytics (UA) we know. Data collection, setup and configuration are all different. The interface and reporting are very different. Due to these crucial differences, you cannot start tracking everything in GA4 and compare like for like.

Whilst there's lots that has been simplified in GA4 (interface, base setup, data model), the fact that it's so different means that you should spend more time on planning your migration and learning the platform. It might take you a year to collect enough meaningful and accurate data before being able to switch over. But the sooner you start, the sooner you'll be able to reap the benefits of GA4.

This guide explains the differences between key data in GA4 and UA. You will need some existing knowledge of Google's analytics platform and understanding of the terminology.

GA4 is still being developed so expect Google to roll out further updates to the interface, features and metrics.

Recommended approach

There are a few key considerations when comparing GA4 property data to your UA view data. Ensure the following is in place, or get someone with technical know-how to check and confirm:

- UA tracking ID and GA4 measurement ID are collecting data from the same domain(s) and web pages/app screens

- Both platforms have been set up equivalently, which means the core measurement infrastructure activates under the same conditions

- Tracking tags are firing successfully

- Reporting time zone in the settings is set the same

- If looking at the real time reports, wait for at least 30 minutes for the data to be collected and updated in both platforms

- You're comparing an unfiltered UA view to a single web data stream in GA4 property

Google Analytics 4 vs. **Universal Analytics**

What impacts data

When reviewing numbers between GA4 and UA, you might notice some stark differences between the two platforms. The analytics platform has evolved to have additional controls and flexibility, giving you more control over how data is handled at every step. This brings further complexity to comparing reported metrics.

When the tracking code collects data from the website or app, that information is packaged up into what is called "hits" and those hits are sent to Google Analytics for processing data into reports. On this journey, data will get modified depending on the configuration or logic in place, resulting in variations in data between GA4 and UA.
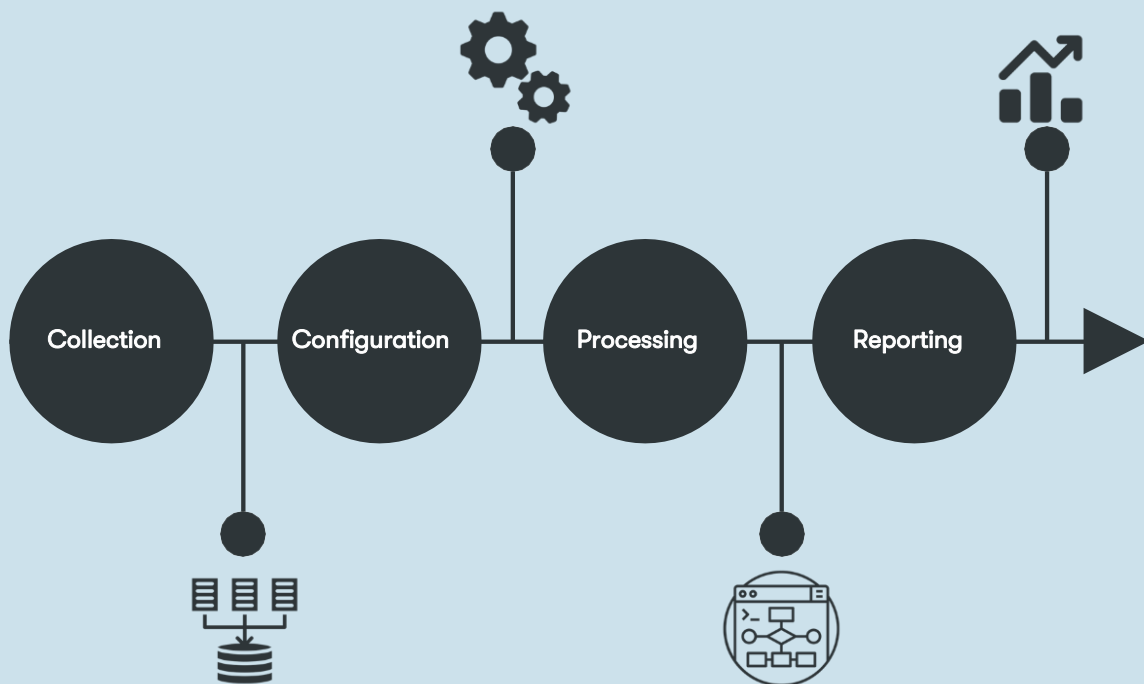
On this journey, various data modifications happen in the two key areas:

1. During data collection

- The data model dictates how data is collected and structured, and is vastly different between UA and GA4. Whilst UA has a hierarchical model of users, sessions and hits, GA4 has a more simplified model where everything is captured as an event. More on this on page 5.

- User or session cookie expiration dictates how long a visitor or a visit is recognised by the analytics platform. Whilst there is a default expiration in place, which varies between browsers, businesses have some control over the expiration window, which can be configured within the tracking code and GA4.

- There's a myriad of ways how the analytics tracking code, tags and platform can be implemented. The set up is influenced by business and reporting requirements, best practise, business industry category, specific business preferences, governance, technical or business constraints, which can vary at the time of execution.

- There is no analytics tracking solution that collects all data perfectly so there will naturally be some variation between events and data that's been collected.

- GA4 comes with more settings than UA and allows you to enable further data collection settings to collect additional data about users and traffic.

2. During data processing

- Reporting time zone is used to determine the start and end times of your analytics reports. Choose the time zone that you operate in and where majority of your customers are based because when they cross the midnight, a new session starts.

- Filters are used to include or exclude data from analytics reports. They apply to data from the moment you add them in the settings and don't affect historical data. GA4 is limited in available filters to alter report data, whilst UA has more filters to exclude and modify data to suit your reporting needs.

- Reporting identity methods you have in place. More methods are available in GA4, which means you can improve your data reporting by using all available methods and implementing the most accurate ones. Reporting identity methods are device ID, user ID, session ID, modelling, signed-in Google users.

- UA applies data sampling to ad hoc report queries (when you apply a segment or secondary dimension) and custom reports, GA4 doesn't.

- Data in GA4 reports may be withheld when there's not enough users or events to keep data anonymous. Data thresholds are applied to keep user identity and basic information data hidden. You can identify reports with data thresholds by looking out for an orange data indicator at the top of the report.

- At times, data hits arrive late. GA4 processes these hits if they arrive up to 72 hours late, whilst UA processes hits if they arrive within 4 hours of the close of the preceding day. Any hits that arrive after that time are not processed.

- Logged Google Analytics 4 events are uploaded automatically when iOS apps are backgrounded. This is not the case in Universal Analytics. As a result, iOS-related metrics may be significantly higher in your GA4 reports.

For these various reasons, it's difficult to compare like for like and unpick how much exactly is each different element contributing to the difference in numbers.

We still recommend reviewing key analytics metrics between the two platforms to have a good idea of the changes in your reporting data when you switch over to GA4.

Everything is an event

One of the biggest differences is the underlying data model. To be able to give a full picture of the customer journey across web and app, Google has developed its analytics platform towards a unified data model that works across platforms. Everything is now an event.

In a Universal Analytics property, a hit type below...	... is captured in a Google Analytics 4 property as an...
Page View	Event
Event	Event
Social	Event
Transaction / e-commerce	Event
User timing	Event
Exception	Event
App / screen view	Event

You want to rethink how you implement analytics tracking on your site or app in terms of the GA4's data model, instead of transferring your existing UA event tracking over as is.

GA4	UA
Every user interaction or action, and page loads/pageviews are events.	Events are used to track user interactions other than page loads/pageviews.
There's no Event Category, Action, Label available to capture granular information about events. You now have parameters for capturing additional information about events.	Event has a hierarchical structure to capture information on three levels: Category, Action, Label.
Best practise is to reuse the same event name many times, differentiating the event by the parameter values collected. For example, use the same event name on every login button and use parameters to track where the login button was placed or any other additional information available when logging in.	

Data types or scopes

The data scope determines how the event is collected and formatted, how metrics and dimensions are calculated for reporting and how they relate to each other. Each dimension and metric can only have one scope. When looking at data, it's important to use metrics and dimensions of the same scope. If you don't and use data of different dimensions, you'll be making false conclusions based on incorrectly aggregated data.

UA has a rigid hierarchical scope structure. For example, in UA you can't look at sessions against pages because they have different data types or scopes. Session is a metric with session-level scope whilst page is a dimension with a hit level scope. They're not of the same type or scope, thus they are mismatched. Instead, to match the data scopes in this example, you would look at sessions against landing pages because landing page is a dimension with session-level scope.

Universal Analytics data model:

User level		User		
Session level		Session 1		Session 2
Hit level	Page view hit	Event hit	Page view hit	Page view hit
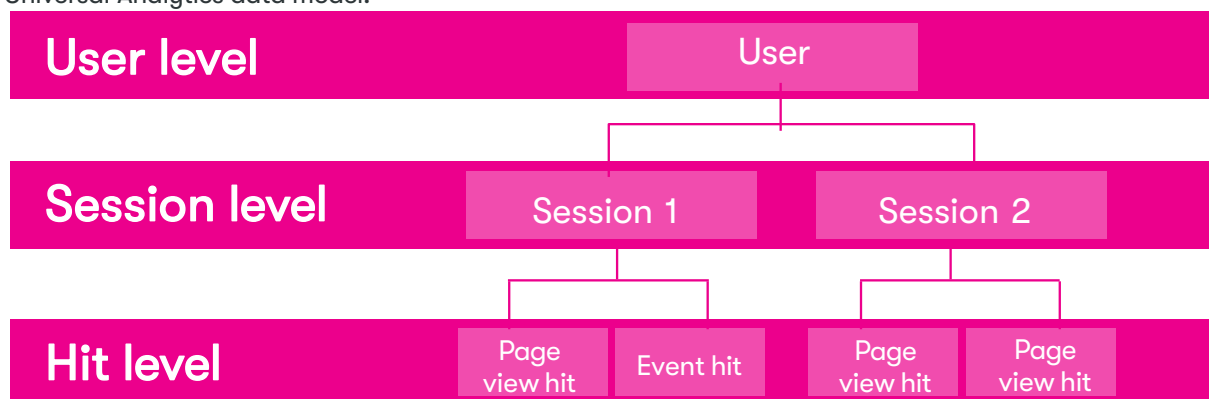
GA4's event-based data model means that this has become more flexible and easier to use, allowing you to mix and match most dimensions and metrics without compromising the integrity of your analysis.

Google Analytics 4 data model:

User level		User	
Event level		Event 1	Event 2
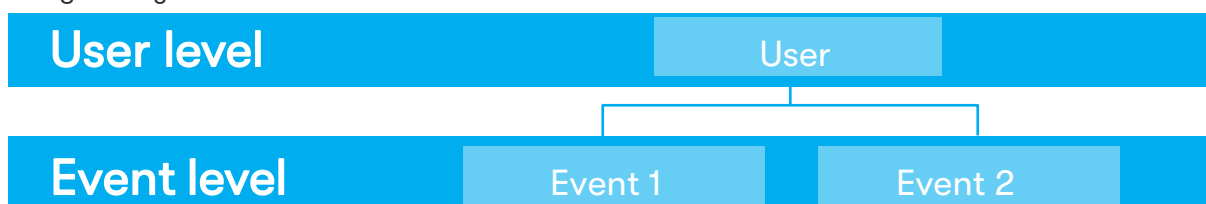
Look out for additional scopes being introduced to GA4 later down the line, which means you'll have extra scopes to be mindful of when comparing data.

GA4	UA
GA4 offers two scopes: event and user. Product/item and session scopes are on the product roadmap.	UA has four scopes: hit, user, session, product.
You cannot change scope for custom dimensions or metrics. If you need the dimension or metric with a different scope, you'll have to archive the existing dimension or metric, and create a new one with required scope.	You can change scope for custom dimension or metric, and it will apply to custom dimension or metric from when you've changed it and not retroactively.

Users

The default *Users* metric you see in both platforms means different things. While the name is the same, calculation and context are different because GA4 *Users* looks at *Active Users* and UA looks at *Total Users*.

Filters, settings and user behaviour can lead to differences in the count. *Total Users* in UA and *Total Users* in GA4 may be more comparable than the GA4's *Users* metric. You will need to set up a custom Explore report to compare those numbers.

GA4	UA
Primary user metric is Active Users. Active users are automatically detected. It's the count of distinct users who visited your site/app and had an engaged session (more than 10 secs or had a conversion event or 2 or more page or app screen views).	*Active Users* counts the number of users who visited the site or app at least once. Detecting active users relies on manual instrumentation, such as firing of an interactive event.
Total Users counts the total number of users. This metric isn't included in standard reports. You can find it by setting up a custom Explore report.	*Total Users* counts the total number of users and is a primary metric.
New Users counts the number of *Active Users* who have no previous sessions.	*New Users* is the number of first-time visitors.

Sessions

In UA, a session can consist of multiple pageviews and user interactions, actions or purchases. In GA4, sessions are actually session starts. This and other nuances are very likely to lead to differences in the sessions count, and it's expected that sessions will vary highly between businesses.

Filters, settings, user behaviour, use of manual and automatic campaign parameters will all contribute to the differences in the *Session* metric.

GA4	UA
Session is a start of a session on the website or app. *Session Duration* is based on the time span between the first and last event in the session.	*Session* is a group of user interactions with a site or app within a given time frame. It can consist of pageviews, transactions, events.
Session ends when there has been 30 minutes of inactivity, and not restarted at midnight or with new campaign parameters.	*Session* ends when: • There has been 30 minutes of inactivity • At midnight • Traffic arrives with new campaign parameters
The number of sessions is estimated by using a statistical approach to estimate the number of unique sessions (based on session ID). This method is said to count sessions more efficiently with high accuracy and low error rate.	There is no estimation of sessions.

Purchases

Out of all metrics, web sales should match the closest, as long as you have consistent implementation in place. For this, ensure that sales tracking includes a unique order id in both GA4 and UA to help align the metric, and that purchase data is sent to either platform at the same time. In both cases, you should be collecting all required parameters as part of sales tracking to ensure that sales data is recorded in both platforms as consistently as possible.

If order id is inconsistently applied, it's likely that there will be noticeable differences between tracked numbers.

Views

Google says that *Pageviews* should be close because each time the core Google tag fires, it generates a pageview. We have found that the differences can vary significantly due to data modifications that happen during data collection and processing (see pages 2-3 for more).

Bear in mind that UA tracks app data, including screenviews, in a dedicated app tracking property, which is separate from UA's web tracking property. In GA4's case, web and app data are merged in the same property.

GA4	UA
Has one metric, *Views*, which counts every view of app screen or web page. There's no *Unique Pageview* or *Unique View* metric.	Has two metrics, *Pageviews* and *Unique Pageviews*. *Pageviews* counts every view of a single page, and *Unique Pageviews* counts the total number of pages viewed without counting duplicate views from the same user.

When tracking both web and app data in a GA4 property, remember that *Views* is showing you combined views data. This will make it look higher if you're comparing it against UA property that is tracking website data only.

Conversions

Conversions are much simpler and quicker to manage in GA4, and they can be quite close to UA if your GA4 tracking matches how you've set up your *Goal Completions* in UA.

GA4	UA
Conversions counts every instance of the conversion that took place. If you submit the same form twice, it's counted twice. This can result in significant differences.	*Goal Completions* count one instance of repeated conversions per session. If you submit the same form twice, it's counted once.
Conversions are tracked by marking which tracked events you want to count as *Conversions*. This is done using a simple toggle.	*Goal Completions* are tracked by defining the logic that dictates which particular user action is considered *Goal Completion*.
Everything is an event so all conversions are of event type. You can't duplicate smart or duration *Goal Completions* using GA4 *Conversions*.	There are five goal types tracked against a page, duration, number of pages viewed, engagement, events.

Bounce Rate

Bounce Rate wasn't meant to be part of GA4 to start with, but this has changed. Similarly to other metrics, it might be using a very familiar name, but it certainly doesn't work the same way.

Although UA's *Bounce Rate* was frequently included in reports and data analyses, it wasn't a good metric to use because it didn't say anything meaningful about user engagement with the site. A user could scroll through the whole page, check out videos or images on the page, then leave the site, and if you weren't tracking any of those actions, this visit would be considered a bounce. To get a true *Bounce Rate*, you'd have to track every single interaction possible. This would make the final calculation more representative of user behaviour.

An update to GA4's *Bounce Rate* offers a more useful way of measuring how customers are engaging with the site or app.

GA4	UA
Bounce Rate is the percentage of sessions that weren't active enough to be counted as an engaged session. An engaged session is a session that: • Lasted at least 10 seconds • Has at least 1 conversion • Has at least 2 views Anything else is considered a bounce.	*Bounce Rate* is a percentage of sessions where 1 page was viewed without any recorded interactions.
A bounced session has a duration of up to 10 seconds.	A bounced session has a duration of 0 seconds.
Bounce Rate is the inverse of *Engagement Rate*.	