

## Improving by proving : trial your website ideas with A/B testing

(Written Aug 2014)

### Summary

A/B testing helps you trial your ideas for website improvement using the behaviour of your own online audience to show the benefit (or otherwise) of those ideas. This guide explores the reasons to deploy A/B testing and gives you step by step instructions in how to set them up and analyse results using Google Analytics Experiments, a powerful A/B testing tool.

### Why is this important?

Producing and running a website is a hit and miss affair. The creative process seeks to match up the goals of the organisation with the desires of the audience, but a lot is based on guesswork, assumption or organisational structure, not solid evidence. Once you're up in running though, A/B testing gives you the chance to try out different approaches and see which ones work best with your own audiences.

### Who is this resource for?

This guide is for those responsible for the website (or parts of the website) for cultural organisations. You don't need to be a web developer to use this technique, but you will need some support from a developer. You will need some familiarity with Google Analytics, experience of or awareness of Goals within Google Analytics will be of advantage to you.

### Preparations

To use Google Analytics Experiments, you will need access to Google Analytics for your website. If you don't have this already, ask your web manager or developer. You will need to have sufficient permissions to add Experiments, so make sure they give you the right to "Edit" and "Collaborate" as well as "Read & Analyse".

Some code will need to be inserted into one or more of your web pages. If you don't have the skills or access to be able to do this yourself, then it's necessary to recruit somebody who does to your project. You won't be able to proceed with the Experiment without this step.

If you need more support with Google Analytics, please see the Further Reading section below for links to other useful Audience Finder resources as well as other suggested resources.

### Why run an A/B test?

Could your website perform better? If you made a change to the design of a page, or just to a word or two, would you get more engagement from your audience, more ticket sales or more newsletter sign ups? You probably have plenty of ideas for improvements, but how do you actually know if they'll work?

An A/B test allow you to test your new idea(s) against the site's current configuration and see if they do better or worse than the status quo. You set up a new page with your new approach, but you keep the old page live on your website as well. The old page could be known as "A", the new one as "B" and comparison as A/B – hence the phrase A/B testing.

If you use Google Analytics Experiments to run an A/B test, as per this guide, then for a set period of time, Google Analytics splits your online audience up, sending some visitors to the new page and some to the old one. It tracks how well each set of visitors perform against criteria that you set, and then lets you know which group (and thus which approach) was the most successful. From this data, you have solid evidence to help you decide whether to go ahead with the change, to leave things as they are, or to try a new plan.



### **How to set up A/B testing in Google Analytics (using Google Analytics Experiment):**

To run an A/B test through Google Analytics Experiments there are four essential steps:

- 1) **Define an objective (or “goal”)** that you want your website to achieve
  
- 2) **Create a new, variant, page** that contains your new idea for how to achieve that goal
  
- 3) **Configure the experiment in Google Analytics**, which involves setting up the URLs (web address) of the old and new pages to test, plus the goal
  
- 4) **Monitor data and analyse results** from the test to determine which approach is the “winner”

Let's run through those steps in detail...

## 1. Start with your objective

It's easy to jump in to an Experiment without properly considering what it is you want to measure. Ideas for changes can be motivated by a lot of factors, (for example aesthetics, complaints/compliments from audience members, changes in staff/volunteers, resources and so on) but an Experiment needs to have an outcome that can be clearly tested against. That outcome needs to be measurable against the way that the audience members "behave" as they interact with the site.

The easiest to track online objectives are called Goals within Google Analytics. Goals are generally quite specific measures of behaviour within a site and include:

- Sales – did a site visitor buy a ticket or a membership package
- Donations – did you get a contribution to your campaign
- Registration – did a site visitor join your mailing list
- Depth of visit – who visited 8 or more pages
- Social interaction – did your visitor share a page or other resource with their network

It is possible to also set up Experiments that measure a few other types of usage – "bounce rate" (the proportion of visitors who just visit one page within your site), "duration" (the average time people spend on your site) or "page views" (the average number of pages people visit). The difference is this measure group behaviour, rather than the actions of individuals.

To set up a Goal, go to the "Admin" section of your Google Analytics control panel. There you will find three columns of options ("Account", "Property" and "Views"), Goals are found under the "Views" column (see circled link in figure 1)<sup>1</sup>.

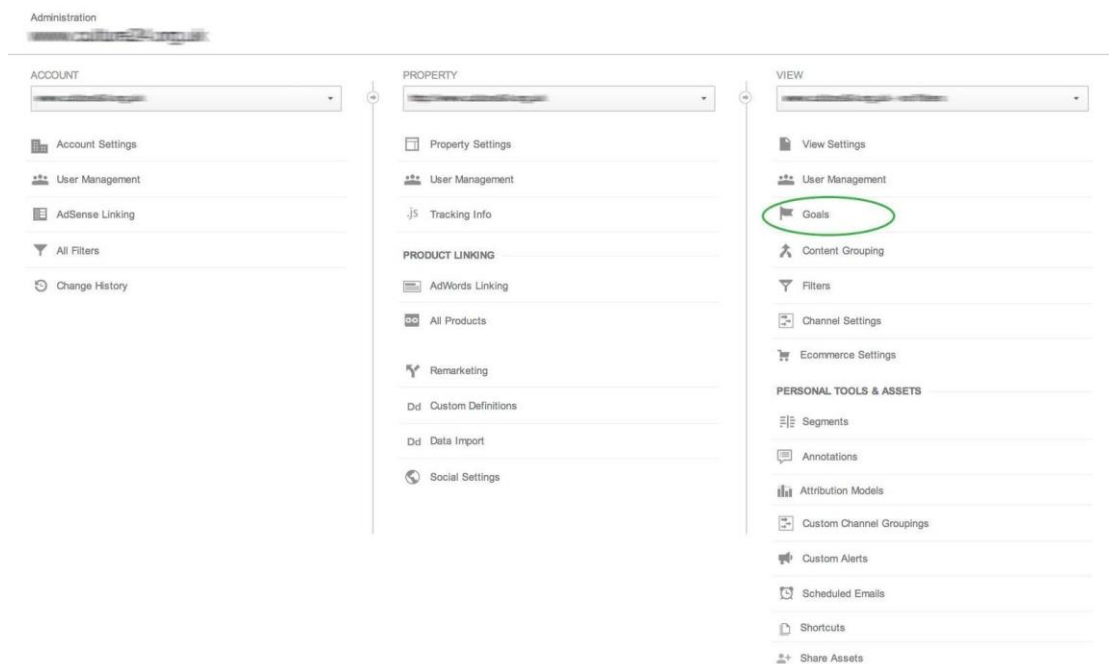


Figure 1

<sup>1</sup> This screenshot (and other selected ones) have been anonymised in places

Once in the right section press the “New Goal” button. You will be prompted to give it a name and choose a type of action (Figure 2).

**1 Goal description**

**Name**

Join newsletter Goal ID 3 / Goal Set 1

**Type**

- Destination** ex: thanks.html
- Duration** ex: 5 minutes or more
- Pages/Screens per session** ex: 3 pages
- Event** ex: played a video

**Next step** **Cancel**

Figure 2

For functionality such as shopping carts, newsletter sign up forms and event booking, there is usually a “thank you” page that the visitor is shown at the end of the process. This is a “destination” that you want them to achieve (a perfect goal).

**Goal description** Edit

Name: *Join newsletter*  
Goal type: *Destination*

**2 Goal details**

**Destination**

Equals to   Case sensitive

For example, use *My Screen* for an app and */thankyou.html* instead of *www.example.com/thankyou.html* for a web page

**Value OPTIONAL**

Off  Assign a monetary value to the conversion.

**Funnel OPTIONAL**

Off  Specify a path you expect traffic to take towards the destination. Use it to analyze the entrance and exit points that impact your Goal.

[Verify this Goal](#) See how often this Goal would have converted based on your data from the past 7 days.

Figure 3

To measure this Destination, move to the next step (figure 3) and enter the URL of the thank you page in the first field shown. If your content management system adds tracking elements to your URLs, you might change the setting here to “Begins with” rather than “Equals to”.

There are two other options at this stage, “Value” and “Funnel”. “Value” is very useful if you’re tracking something like membership, where there is an obvious fixed value to the transaction,

but some organisations use a rough figure here based on average sales. But this is optional so we'll leave this option "off" as it's not hugely our example - a mailing list registration.

"Funnel" is a means to track all the steps that visitors go through to get to your destination page. For example with a shopping section of a site, the visitor might need to visit the catalogue, add items to their shopping cart, go to the checkout, then fill in their details and finally pay for the items before reaching the thank you page. You can add each of these steps to the goal and Analytics can then track drop off rates at each point. Again, this isn't very useful for our example.

You can check your configuration by clicking the "Verify this goal" link at the bottom of the form. This will assess how many people would have completed your goal in the past week - if you get more than zero results, it's likely you have configured your settings correctly.

Finally click "Create this goal" to finish the process and activate the goal.

## 2. Create your variation(s)

Once you've established the audience behaviour that you want to test, you then need to create one or more alternative pages with different approaches to encouraging greater achievement of goals.

You might consider the following aspects as subjects for your experiments:

- **Design:** would a change of graphic design improve usage?
- **Headings:** would rewording or changing the emphasis of headings help?
- **Order:** would rearranging the order of elements on the page enhance results?
- **Calls to action:** will clearer instructions on what to do encourage the audience to achieve more with your site?
- **Less information / more information:** will a change to the length and depth of content attain more of your goals?
- **Visual / textual balance:** does greater reliance on imagery or on text make a difference to results?

If you have high traffic to your site, you can test more than one variation at a time. But if your visitor numbers are more modest, you will get better results by just testing two pages against each other.

To use an example for this resource, we're going to see if a change to the "Join our mailing list" page of a website will improve sign up rates.

This screenshot (figure 4) shows how the mailing list sign up form appears currently.

Home Features Blogs Projects Listings Directory About Contact us Art forms:

Visual Arts >

Performing Arts >

Literature >

Film and Television >

The National Disability Arts Collection and Archive

**NDACA**  
National Disability Arts Collection & Archive

Supported by  
The National Lottery  
lottery fund

Join our mailing list!

Join our mailing list!

Figure 4

The form itself is quite far down the page and asks users for “snail mail” details as well as name and email address. We suspect that this might be off-putting for potential mailing list subscribers (even though these fields are optional) so we’ll trial a simplified form against this one.

Using the website’s own content management system, we create a duplicate of this page and remove the extra fields (figure 5). Some of the supporting text for the form is moved beneath the fields themselves. Overall, the form feels simpler and less daunting, even though the changes made have not been huge.



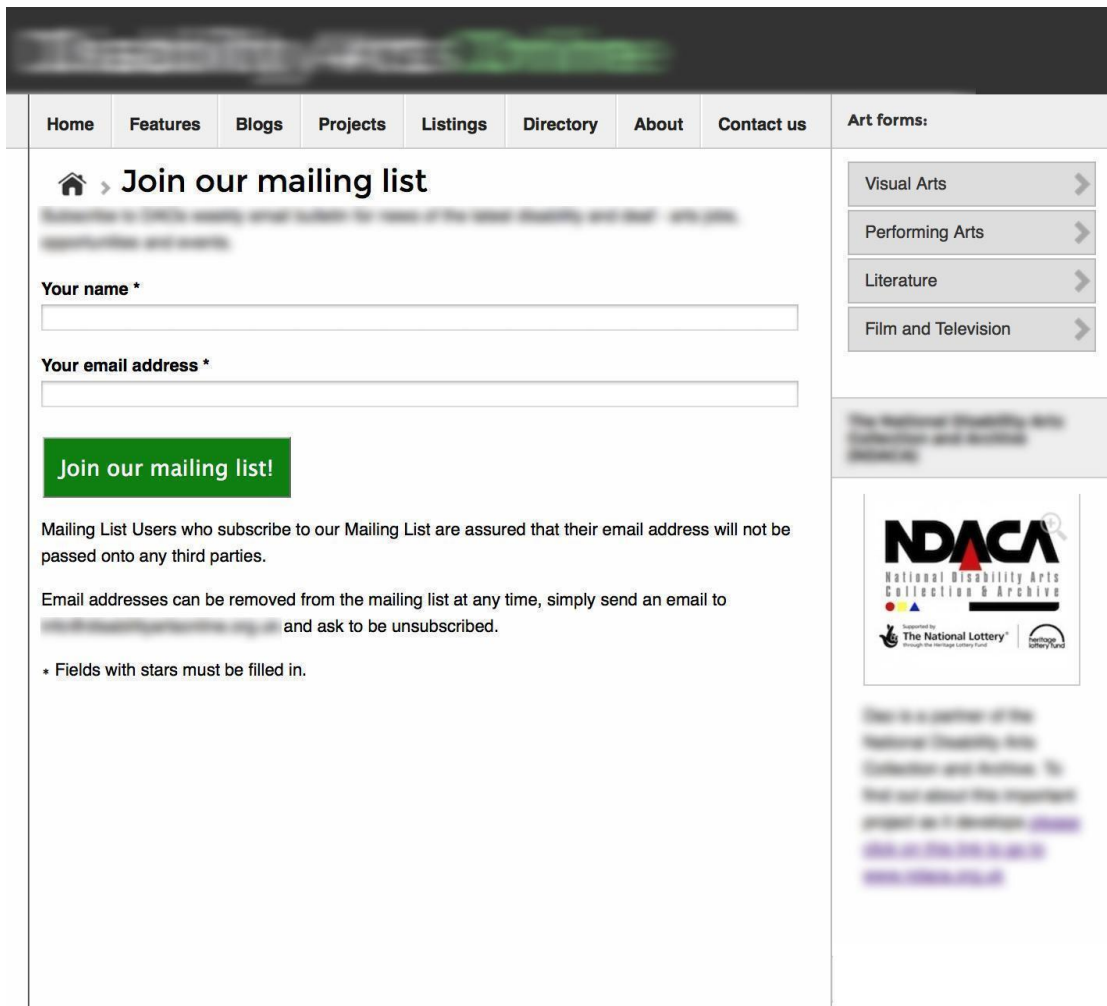


Figure 5

We are now ready to set up an Experiment to see if our idea for improvement turns out to have a positive effect in real life.

### 3. Configure the experiment in Google Analytics

Now we move back to Google Analytics and find the Experiments section. You can navigate to the Experiments section through the left hand navigation under the “Reporting” tab. Go to “Behaviour” and then beneath that menu click “Experiments” (figure 6).

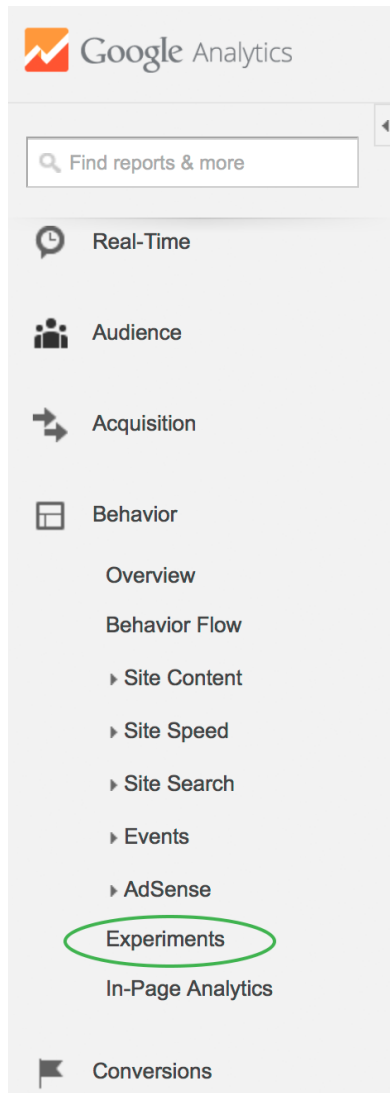


Figure 6

We click on the “Create Experiment” button at the top of the page. We are then presented with the form below (figure 7):

## Content Experiments - Create a new experiment

### 1 Choose an experiment objective

Name for this experiment

Mailing list - full vs simple

Objective for this experiment ?

Newsletter sign up (Goal 1 Completions) - or - [Create a new objective](#)

Percentage of traffic to experiment ?

100%

Email notification for important changes

OFF

[Advanced Options ?](#)

[Next Step](#)

[Save for Later](#)

[Discard](#)

### 2 Configure your experiment

### 3 Setting up your experiment code

### 4 Review and start

Figure 7

We give the experiment a name – here “Mailing list – full vs simple”. Underneath that we are asked for an objective for the experiment. Clicking on the button reveals all the goals we have previously set up, as well as the aggregate options (such as Duration).

The percentage of traffic to experiment option allows you to control how many people you try the variation out on. If your change is minor, like ours, then you can safely split 100% of your traffic to the different variations. If your change carries a higher degree of risk, you might want to test against a subset of your site’s traffic. But if you do so, make sure that the proportion leaves you with enough traffic to run your test effectively.

You can opt to be kept up to date with the experiment by email as part of this screen.

The advanced options allow you to change the length of time of the experiment, to vary the split of traffic between variants from 50/50 to another proportion and to change the “confidence threshold” – this is the statistical confidence of which variant should be declared the “winner”. Unless you have run a few tests already you can safely ignore these details!

On the next screen (figure 8) we enter the URLs for the two pages and give them each a name.

## 2 Configure your experiment

**Original Page** URLs with dynamic parameters are supported. ?

Web page to experiment ?

http://

Name for the page

Original

Consolidate experiment for other content reports ?



**Variation 1** ?

Web page to experiment ?

http://

Name for the page

Simplified



[+ Add Variation](#)

[Next Step](#)

[Save for Later](#)

[Discard](#)

Figure 8

You can opt to add more variations on this screen, however we will stick to just two.

On the next step, Google Analytics gives you some tracking code that you need to insert into the “original” page (the old one). It gives you an option to email this code to your developer or to do the work yourself (figure 9).

**3** Setting up your experiment code editing...

How do you want to set up your experiment code?

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**Adding script code to your page** ?

1. Make sure your original and variation pages have [Google Analytics tracking code installed](#).
2. Then, paste this experiment code immediately after the opening head tag at **the top** of your original page.

```

<!-- Google Analytics Content Experiment code -->
<script>function utmx_section(){function utmx(){function(){var
k='9909651-3',d=document,l=d.location,c=d.cookie;
if(l.search.indexOf('utm_expid='+k)>0)return;
function f(n){if(c){var i=c.indexOf(n+'=');if(i>-1){var j=c.
indexOf(';');return escape(c.substring(i+n.length+1,j<0?c.
length:))}}var x=f('__utmx'),xx=f('__utmxx'),h=l.hash;d.write(
'<sc+ript src="'+http+(l.protocol=='https':'s://ssl':
'://www')+'.google-analytics.com/ga_exp.js?'+'utmxkey='+k+
'&utmx='+x?'x:'+'&utmxx='+xx?'xx:'+'&utmxtime='+new Date().
valueOf()+(h?'&utmhash='+escape(h.substr(1)):'')+
'" type="text/javascript" charset="utf-8"></sc+ript>')}();
</script><script>utmx('url','A/B');</script>
<!-- End of Google Analytics Content Experiment code -->
    
```

**Additional information for your experiment code:**  
**Experiment ID:** GU98ME\_8RDWf--Wn0MYDJA  
**Experiment Key:** 9909651-3

**Publish experiment pages**  
 Publish your original and variation pages to the web.  
 When you're done - Click **Next Step** to continue.

Figure 9

Once the tracking code is in place, we can move to the next step (figure 10). Here the code is verified and we add a note to remind us what the experiment is all about.

**4** Review and start

Experiment Code Validation

- ✓ Original: Experiment code found. Google Analytics code found.
- ✓ Simplified: Google Analytics code found.

Notes for this experiment

Test to see if simplified mailing list sign up improves conversion rates

Figure 10

Then we start the experiment.

#### 4. Monitoring the experiment

Now we just let Google Analytics do its thing and gather visitor data. We can check back in at any point to see how things are going, but a “winner” will not be declared until a certain amount of time has run (usually a couple of weeks).

Now that the test is running, clicking into the Experiments section of Google Analytics will show its name as part of a list of other past and current experiments (figure 11).

**All Experiments**

Create experiment

Experiment Name	Status	Details	Sessions	Start Date	End Date
Mailing list - full vs simple	Running		11	Jul 25, 2014	Still running
Copy of Ads vs no ads	Ended	Stopped manually	--	Dec 23, 2013	Dec 23, 2013
Copy of Ads vs no ads	Ended	Stopped manually	--	Dec 23, 2013	Dec 23, 2013
Ads vs no ads	Ended	Stopped manually	--	Dec 23, 2013	Dec 23, 2013

Show rows: 10 Go to: 1 1 - 4 of 4

Figure 11

Clicking on that name will reveal a graph and table of results from the experiment. This depicts the objectives achieved (goals or other) for the two (or more) variations (figure 12).

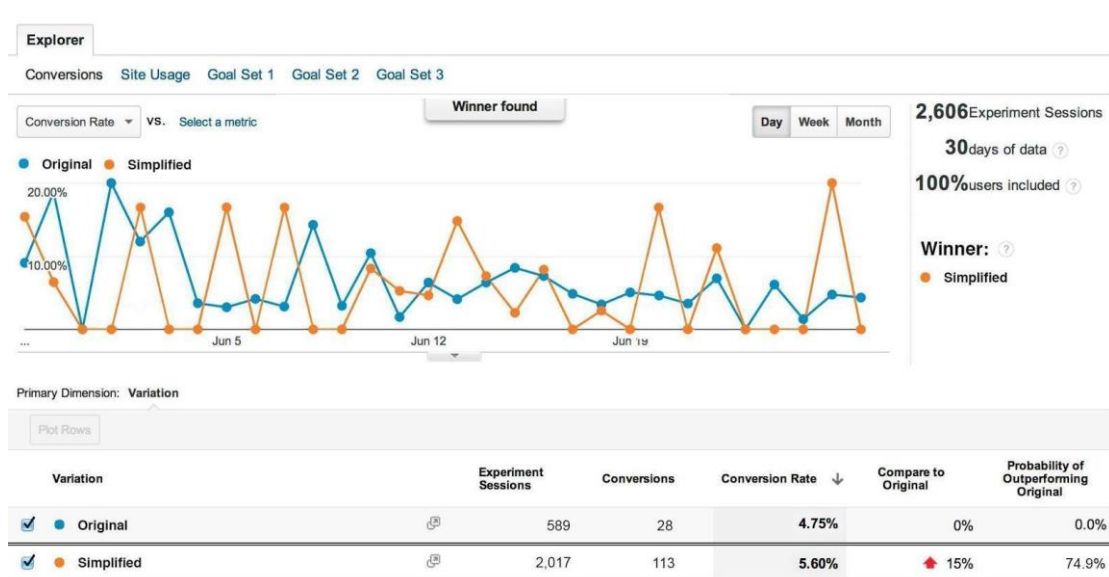


Figure 12

Once the test period has run, Google Analytics declares a “winner” for which variation has performed best. It casts this as a “Probability of Outperforming Original” (to find out about the somewhat complex logic behind this calculation, see “Multi-armed Bandit Experiments” in the Further Reading section below), helping you to remember that the relative performance of web pages are not 100% comparable – there may be variables that cannot be taken into account. However, a high probability means you can be reasonably assured that that variation will perform better in the long run.

With our example, we can see that the new, simplified version delivered a higher conversion rate. From this, we can see that a less complex form does indeed increase the readiness of the site's audience to sign up to the mailing list.

### **Conclusion**

Try *A/B testing using Google Experiments* for yourself. By testing your assumptions against real life experience you will find your confidence about the performance of the site will grow, even if it just proves that what you have already is working. You will also find that evidence, or even the potential to gather evidence, will help with advocacy for change – both internally and externally.

## **Glossary**

**Bounce rate:** the proportion of visitors to a website who visit just one page then leave for another website altogether. Generally accepted as a negative metric, so lower bounce rates are considered better.

**Conversion rate:** the percentage of visits to a site that achieve a certain goal as defined by the site's operators

**Destination:** a page that a website publisher wishes the site's visitors will reach, thus achieving a goal.

**Duration:** the amount of time a visitor spends on a website

**Funnel:** the pages a visitor must go through to reach a goal

**Goal:** An objective for visitor behaviour within a website. Can include reaching a certain page (such as "thank you for your order") or interacting with a certain set of functionality or pages.

**Tracking code:** JavaScript code inserted into web pages to allow Google Analytics to track pages and to separate traffic into "A" and "B" pages

## **Further reading**

### **Google Analytics Academy**

For more background information regarding Google Analytics set up and use we recommend consulting the Google Analytics Academy free online course on Google Analytics fundamentals

<https://analyticsacademy.withgoogle.com/course01>

### **Other Audience Finder resources**

Also please consult some of the other Audience Finder resources – particularly those focusing on Google Analytics Healthchecks <http://bit.ly/1cmtJWP> and Segments <http://bit.ly/18jWO9C>

### **Google Analytics - Experiments**

[https://support.google.com/analytics/answer/1745147?hl=en-GB&ref\\_topic=1745207&rd=1](https://support.google.com/analytics/answer/1745147?hl=en-GB&ref_topic=1745207&rd=1)

Help pages from Google themselves.

### **Multi-armed Bandit Experiments**

<http://analytics.blogspot.co.uk/2013/01/multi-armed-bandit-experiments.html>

A description of how Experiments works "behind the scenes" with multiple variants.

***Note: Google are actively developing their Analytics product, adding new features and re-organising the Analytics user interface. This resource is based on the look, feel and functionality of Google Analytics as at August 2014.***