

INTRODUCTION TO A/B TESTING

WHY SHOULD I READ THIS DOCUMENT?

The 'A/B Testing Starter Kit' will guide you through the process of what is needed to complete this type of analysis with step-by-step workflow examples, and should provide you with a level of confidence that will help you make the right decisions for your business. Before you get into the details of the process in the actual kit in Alteryx, this document will help explain the bigger picture of how the process works and what you will need to create a test that will give you that confidence.

INTRODUCTION TO A/B TESTING

In business many times, you try to determine if doing something different will make things better or worse. You may ask questions like:

- Will a new menu help improve sales in my restaurant?
- Will a different design of a web page make a difference in how many clicks I get?
- Will lowering (or increasing) the price of a product increase my net profit?
- Will changing the wording in a marketing email improve the response rate?

You think to yourself...if only I could test this out in an environment where I can compare the results of changing or not changing something, but yet not roll out the changes to my entire company.

A/B testing is a statistical approach to evaluating the answers to these types of questions, but doing so while only affecting a small subset of your market. Instead of changing something across your whole company - which could backfire if it turns out that the change makes business worse, A/B testing involves applying the change to just a portion of your business and using statistical techniques to infer the potential benefits or detriments of applying the change across the rest of the company.

SETTING THE STAGE

The first thing you need to do is set up your 'test environment' so that you can truly evaluate the results of a change. To do this you need to define two groups of whatever your 'units' are. (Keep in mind that the 'units' of what you are testing can be on whatever you want to test; e.g., they can be stores, customers, applicants, web pages, or email recipients.) The first group of units (sometimes called 'treatment units' in A/B testing) would be the units to which you would apply your business changes. The second group of units (known as 'control units' in A/B testing) would be the units to which you would compare the results in the first group.

The critical piece of this is that you want to try to get the units in the first group matched up with units in the second group that are as closely alike as possible. This way when you perform the test, you have more assurance that the business change is what really made the difference and not other market conditions. For example, you may decide to test a price increase on a product within a given set of stores. If your ‘treatment’ set of stores varies widely from your ‘control’ stores you are comparing to (for example in the demographics or business behavior), you won’t be able to tell whether any change in profit was a result of the price increase, or if it was some other factor that might have caused the difference.

SELECTING TREATMENT UNITS

Many times the treatment units may be determined by considerations not within the control of the analyst (e.g., they need to be within an operational or regional group to save costs on the test, or upper management has made that decision for you). Sometimes it is just a practical choice that makes the most business sense (i.e., you need the units to be convenient and adaptable to change. (Some retailers have a designated set of stores that are staffed and trained to handle testing like this and consistently use them as treatment stores.) That is the case you will see in the Starter Kit...the assumption that the treatment stores have already been determined.

If you need to pick treatment units, you will need to take into consideration elements such as convenience, representation of those units to the total company, support of the test process, etc. These can all affect you pick your treatment units...the key is that you *don’t* want them to be ‘outliers’ in behavior (since that will make it difficult to finding good matching control units). The Alteryx AB Treatments tool provides one method to identify potential treatment units based on finding groups that come closest to just being ‘average’.

SELECTING CONTROL UNITS

As mentioned above the critical part of setting up the test environment is ensuring that you have chosen control units which are as closely matched as possible to the treatment units. (We all know that we don’t want to test “apples to oranges”...we want an “apples to apples” test.) You can basically use any unit ‘attributes’ that might make sense for this matching process. With stores, for example, you could use store volume, gross sales, store traffic, or any other metric that makes sense to your business. For something like a web page or an email, this is easy to control in that you can have everything exactly the same except for the feature you are wanting to test (e.g., something as simple as changing the color of the response button).

When considering these metrics, especially in retail sales situations, something that is important to incorporate is the trend and seasonality of the metric. (Stores may have the same volume of sales over the past

year, but could have different ‘directions’ of trend, or significantly different seasonality patterns. These wouldn’t be good candidates from matching.) Alteryx provides the AB Trend tool that will measure the trend and seasonality of metric and provide a method to include these new metrics in the matching process.

Once you have chosen the metrics for the match process, you can use the AB Controls tool in Alteryx to help determine which units in the overall ‘population’ of units best match with the treatment units. You have the option to select the number of control units per treatment unit. (Keep in mind that matching more than one control unit to each treatment unit provides a better basis of comparison, which can provide a higher level of confidence.)

About Alteryx

Alteryx is the leader in data blending and advanced analytics software. Alteryx Analytics provides analysts with an intuitive workflow for data blending and advanced analytics that leads to deeper insights in hours, not the weeks typical of traditional approaches. Analysts love the Alteryx analytics platform because they can deliver deeper insights by seamlessly blending internal, third-party, and cloud data, and then analyze it using spatial and predictive drag-and-drop tools. This is all done in a single workflow, with no programming required. Thousands of customers, including Experian, Kaiser, Ford, and McDonald’s, and 200,000+ users worldwide rely on Alteryx daily. Visit www.alteryx.com or call 1-888-836-4274

SETTING UP YOUR DATA

Now having set up your ‘test environment’, you need to determine when and for how long the test of your business change will take effect. This is really dependent on what it is you are testing. (For example, when testing the results of a web page, testing over the space of a week may be sufficient; however, if testing the effects of a pricing change in a retail store, you may want to run the test for four to six weeks.) Whatever the timeframe, keep in mind that you will need data prior to the test for however long will provide you with the ability to account for any seasonality in the test process. (Again, for a web page, you might want to have at least one or two weeks of data prior to the test and would want it and potentially an hourly granularity in order to account for differences in hitting the web site over weekends or in the evening. For the pricing change example, you need previous data for at least same amount of time as what you are testing; and if you want to utilize the AB Trend tool, you need a full year’s additional data.)

PERFORMING THE TEST

Having determined that you have the data identified that you will need, you are ready to implement the test. Once the test timeframe is completed, it is a matter of running the data through the AB Analysis tool which will provide you with graphical and statistical results to determine whether your business change had a positive business effect.

NEXT STEPS

Now that you understand a high-level view of the A/B Testing process, you are ready to work through the tutorial workflow portion of the Alteryx A/B Starter Kit to see how you might use the tools inside of Alteryx to complete an A/B test.

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