**Analyze A/B Test Results**

A/B tests are very commonly performed by data analysts and data scientists. It is important that you get some practice working with the difficulties of these.

For this project, you will be working to understand the results of an A/B test run by an e-commerce website. The company has developed a new web page in order to try and increase the number of users who "convert," meaning the number of users who decide to pay for the company's product. Your goal is to work through this notebook to help the company understand if they should implement this new page, keep the old page, or perhaps run the experiment longer to make their decision.

The data and the Jupyter Notebook, which are all of the files you need to complete the project, are provided for you in a downloadable zip file in the resources tab (as well as under "Supporting Materials" below). Note that portions of the notebook reference back to quizzes that are linked in this lesson to ensure you are on the right track.

Although the quizzes in this lesson are not necessary to successfully complete the project (though they are helpful), all of the items on the [Project Rubric](https://review.udacity.com/#!/projects/37e27304-ad47-4eb0-a1ab-8c12f60e43d0/rubric) must meet specifications to successfully complete the project.

Supporting Materials

[**AnalyzeABTestResults 2**](https://d17h27t6h515a5.cloudfront.net/topher/2017/December/5a32c9a0_analyzeabtestresults-2/analyzeabtestresults-2.zip)

Meets Specifications

**Code Quality**

**All code cells can be run without error.**

**Docstrings, comments, and variable names enable readability of the code.**

The code is well formatted and appropriately commented. That make it easy to follow the analysis steps and identify a specific functional operation.

**Statistical Analyses**

**All results from different analyses are correctly interpreted.**

For part II section 1 the mathematical expression of the null and alternative hypothesis include the symbol p\_null, and p\_alternative. I assume that you meant p\_new and p\_old as expressed in the word statements.

For part II section k, it is not sufficient to state that the p-value is large, please support your insight with the comparison between the obtained p-value and the suggested p-critical (0.05). <http://www.itl.nist.gov/div898/handbook/prc/section1/prc131.htm>

**For all numeric values, you should provide the correct results of the analysis.**

For part I section e. "The number of times the new\_page and treatment don't line up", the answer is not 1`928, please consider also the samples where, landing\_page !="new\_page" and group =="treatment".

**Conclusions should include not only statistical reasoning, but also practical reasoning for the situation.**

You are correct the z-test and the simulation was implemented as a one-tailed test while the regression solves a two-tailed problem.<http://reliawiki.org/index.php/Simple_Linear_Regression_Analysis#Hypothesis_Tests_in_Simple_Linear_Regression>

For part III section h, the question state "Though you have now looked at the individual factors of country and page on conversion, we would now like to look at an interaction between page and country...", one way to implement that is to multiply the dummy variable created with each country (dummy variable) with the 'ab\_page' dummy variable. For example,

joined\_data['UK\_ind\_ab\_page'] = joined\_data['UK\_ind']\*joined\_data['ab\_page']

Then you can include these new variables in the model to appreciate if the contribution is significant.

For Part III, section h. please "Provide the summary results, and your conclusions based on the results". **Do we have a reason to believe that the way page influences conversion is any different from one country to the next?**. Please discuss the p-values and the significance of the results.

[**DOWNLOAD PROJECT**](https://review-api.udacity.com/api/v1/submissions/1387938/archive)