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FAQs - Common Statistical Tests

1. Why do I get the below error and how to resolve it?

Tags: [#error](#) [#hypothesis](#)

```
ttest_1samp() got an unexpected keyword argument 'alternative'
```

The parameter `alternative = 'greater'` and `alternative = 'less'` has been introduced in the SciPy version 1.6.0. onwards. So, you will get an error if you run the code in an older SciPy version. When you remove the parameter 'alternative', you get the p-value for the two-tailed test as implemented by the previous version. But, we would recommend that you install the latest SciPy version in your system to perform the hypothesis test.

You can run the below command in the jupyter notebook to update the SciPy version.

```
!pip install scipy --upgrade
```

If the above code throws a User related Environment Error, then please run the below code:

```
!pip install scipy --upgrade --user
```

After installing the new SciPy version, restart the jupyter notebook and run the below code to check the current Scipy version in your system.

```
import scipy
scipy.__version__
```

If you see that the version has been updated successfully, then you can use the 'alternative' parameter with values 'less', 'greater', or 'two-sided'.

2. How can I assume two or more population variances/standard deviations to be equal?

Tags: [#sample](#) [#population](#) [#standard deviations](#) [#population variances](#)

When the sample standard deviations are almost equal, the population standard deviations may be assumed to be equal. An empirical rule can be applied to check the same. If the ratio of two sample standard deviations is between 0.7 and 1.4, the population standard deviations may be assumed to be equal.

Alternatively, the [levene\(\)](#) test can be applied to check whether all input samples are from populations with equal variances or not. This test has been covered in the ANOVA video.

3. Why do I get an error for the below code?

Tags: [#p-value](#) [#code](#) [#error](#)

```
stats, p_value = proportions_ztest (24, 90, value = 0.5, alternative = 'greater')
```

`proportion_ztest()` is a function from statsmodel package; not scipy package. Hence, you should use the parameter `alternative = 'larger'` for `proportion_ztest()` instead of `alternative = 'greater'`. Similarly, the parameter `alternative = 'smaller'` should be used in `proportion_ztest()`

instead of `alternative = 'less'`. Please refer to the documentation of the [proportion_ztest\(\)](#) for more details.

4. Why is the *value* parameter set as 0.5 in the below code?

Tags: #z-test #parameter

```
proportions_ztest(24, 90, value = 0.5, alternative = 'larger')
```

The '*value*' parameter refers to the value of the hypothesized population parameter. Here, the proportion of the people who voted for the Democratic party is the population parameter. Hence, the '*value*' should refer to the population proportion. The Democratic party will win if more than 50% of people vote for it. Hence, the hypothesized population proportion should be 0.5.

5. How is the value 7.843455779613616e-05 less than 0.05?

Tags: #0.05

Python writes scientific notation using 'e' for example, 7.84×10^{-5} is displayed as 7.84e-05. So the value 7.84e-05 i.e 7.84×10^{-5} is less than 0.05.

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