Cheatsheets / **Hypothesis Testing with SciPy**

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Hypothesis Testing

Univariate T-test

A *univariate T-test* (or 1 Sample T-test) is a type of hypothesis test that compares a sample mean to a hypothetical population mean and determines the probability that the sample came from a distribution with the desired mean.
This can be performed in Python using the `ttest_1samp()` function of the `SciPy` library. The code block shows how to call `ttest_1samp()`. It requires two inputs, a sample distribution of values and an expected mean and returns two outputs, the t-statistic and the p-value.

```
from scipy.stats import ttest_1samp

t_stat, p_val =
ttest_1samp(example_distribution,
expected_mean)
```

Tukey's Range Hypothesis Tests

A *Tukey's Range* hypothesis test can be used to check if the relationship between two datasets is statistically significant.
The Tukey's Range test can be performed in Python using the `StatsModels` library function `pairwise_tukeyhsd()`. The example code block shows how to call `pairwise_tukeyhsd()`. It accepts a list of data, a list of labels, and the desired significance level.

```
from statsmodels.stats.multicomp import
pairwise_tukeyhsd

tukey_results = pairwise_tukeyhsd(data,
labels, alpha=significance_level)
```

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