

## Data Science Career Track

### Mini-Project: Frequentist Inference

#### Learning Objective

- Learn to calculate probabilities from probability density functions
- Learn how and when to calculate descriptive statistics and test statistics.
- Learn how the central limit theorem applies to sampling distributions.
- Learn to calculate confidence intervals and p-values.
- Learn to apply these steps to perform hypothesis testing on real data.

**Time Estimate: 2 - 3 Hours**

Criteria	Meets Expectations
Completion	<ul style="list-style-type: none"><li>• The code runs successfully (no errors are printed).</li><li>• All plots are clearly labeled (especially axes) and interpretable.</li><li>• Appropriate use is made of markdown cells for written answers.</li></ul>
Process and Understanding	<ul style="list-style-type: none"><li>• The submission shows that the student used the correct calculations or functions to answer questions.</li><li>• The submission shows the correct solutions to all of the questions have been supplied. NB use of the specified random seed should produce consistent results, but differing orders of execution may yield slightly varying results, which is acceptable.</li><li>• The submission shows that all questions were answered correctly, in detail, and the explanations demonstrate an understanding of the relevant methods and their appropriate application to a problem.</li></ul>

Presentation	<ul style="list-style-type: none"><li>• The project is delivered in a Jupyter notebook, uploaded to GitHub, and doesn't contain any unnecessary printouts.</li></ul>
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*Excellence: The explanations and visualizations produced are above and beyond what is required.*