Author Contribution Statement

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- Confidence interval code in confidence.py: Gavril
- Wrote test suite for confidence.py, and added assert statements in confidence.py: Congo
- Contributed to docstrings in confidence.py: Congo
- Ensured all documents adhered to Pep8 and Pep257 style guidelines: Congo
- Contributed to debugging process for Analysis Part I: Congo
- Analysis part I and testing of overflow bug: Chen
- Analysis parts II-IV: Kalie
- Brief user guide: Kalie
- makefile for pdf rendering of notebooks: Kalie

Release Notes

Confidence Interval Code

- Developed `cibin` code base which finds the 2-sided 1-alpha confidence bounds for the average treatment effect. The method in Li and Deng is implemented to calculate the two sided confidence bounds.
- Helper functions developed to assist in calculating the two sided confidence bound
  - `N_generator` to generate the tables algebraically ocnsistent with data from an experiment with binary outcomes
  - `filterTable` to check whether summary table Nt of binary outcomes is consistent with observed counts.
  - `potential_outcomes` to make a 2xN table of potential outcomes from the 2x2 summary table Nt
- Docstrings written for main confidence interval code and all helper functions
- All functions contain input validation - ValueErrors for improper input

Test Suite

- All functions get tested for various types of erroneous inputs
- Accuracy of tau_twosided_ci is tested by comparing results to examples from Method 3 in Li & Ding's paper, as well as ensuring that with small numbers, the lower bound and upper bound are the same whether exact ==True or exact== False
- potential_outcomes is tested against manual calculations

Use Guide

- Preliminary use guide in `docs/01-Getting-Started.ipynb` to assist the user in implementing the `cibin` code base. The notebook contains some

background information on the mathematics being implemented as well as sample code.

Analysis of Regeneron study

- Used implemented methods to determine confidence bounds from recent Regeneron study on COVID-19 antibody study
- Analyzed other scenarios of Regeneron data that could be analyzed with implemented methods