**Propensity Score Matching Tool**

**Overview**

This repository offers a free, Python-based code for performing **propensity score (PS) matching**. Designed for clinicians and researchers, this tool simplifies PS matching and provides comprehensive visualizations to assess matching quality. The included features aim to facilitate comparisons between treatment groups with reduced selection bias, ensuring robust and reliable results.

**What is Propensity Score Matching?**

The propensity score is the probability of a subject being assigned to a treatment (or being a case), estimated using logistic regression based on covariates that are associated with the outcome or treatment decision. PS matching equates treatment groups with respect to measured baseline covariates, mitigating confounding bias.

This tool implements: Logistic regression to calculate PS. 1:N matching using the **K-nearest neighbor (KNN)** algorithm with a customizable caliper. Sampling without replacement to ensure robust matching. Visualizations for assessing matching quality.

**Outputs**

* Matched pairs saved as a .csv file.
* Diagnostic plots saved in the specified output folder.

This project is licensed under the MIT License, and was developed with assistance and refinement provided by OpenAI's ChatGPT.