Welcome to Aidoc's assignment for the Clinical Data Analyst Position!

~~ Please have the assignment completed within 1 week of receiving this.

Our company develops AI solutions to help optimize radiologist workflow and expedite patient care. For this exercise we will focus on a specific metric called Wait Time. The Wait Time is defined as the time interval between the study acquisition and the case open for reporting events. This metric is helpful to understand how long a case has been sitting unopened on the radiologist reading list.

A customer "HealthyVibes" has just deployed and integrated a set of our AI solutions in their radiologist workflow. The radiologists now get real time alerts for cases suspected to be positive. "HealthyVibes" would like to explore the impact of this AI driven workflow. "HealthyVibes" has kindly provided an export of 6 months of data since the solution went live.

The data contains the following data elements:

- accession: A unique study level identifier
- aidoc_site: The name of the site
- algorithm: The algorithm the case was run on
- patient_class: The patient class "source" of the patient, which can be from the emergency department, admitted/inpatient or ambulatory/outpatient.
- aidoc_result: The AI result and if the cases was found to be suspected positive by the algorithm
- wait_time_minutes: The time interval in minutes = (case_open_time - study_aquisition_time)
- study_aquistion_time: The date time of when the scan of the patient was acquired.
- case_open_time: The date time of when the case was opened for reporting by the radiologist.

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“HealthyVibes” is so excited by the adoption of our solution, they are now wanting to set up a research study to measure the impact of our solution on study prioritization. They have asked us to perform an analysis for Wait Time and explore if AI helps expedite cases for reporting.

We would like you to conduct this analysis. You should explore the data across different dimensions of the data such as algorithm and patient class. You should create helpful statistics such as the mean, median, etc. to generate a good understanding of the Wait Time distributions.

You should produce figures of your findings such as scatter plots or boxplots to provide easy to understand visualizations. The analysis should ideally be performed in python, but other languages will be considered if you find them more appropriate. We will require a copy of your script/code.

You will then prepare a 10 to 15 minute PowerPoint presentation to give a high level overview of your methodology, steps and the findings, focusing on the most impactful use cases you find.

Some leading questions - that you might find helpful:

- Are there past published Aidoc studies that have performed similar analysis?
- Is Wait Time the same across different patient classes?
- Are there statistical significance tests that can be performed to add credibility to the results?
- Are there techniques that can help clean up the signal such as reducing outliers?
- Are there other ways to stratify the data to look at additional subgroups?

If you need any clarifications or have more questions - feel free to reach out to Meaghan or Jerome.

Good luck!