Case Study: Clinician Demand Analysis

Thank you for your interest in Axuall's Data Scientist position. To assess your ability to frame a healthcare provider data problem and select an appropriate solution approach, we have prepared a case study. You should be able to complete this case study in less than 3 hours.

Problem Statement

Healthcare facilities are challenged to understand the demand for their myriad healthcare services among their local population. This deficiency in data causes workforce planners to inefficiently determine staffing sizes across departments and specialties, leading to either waste (over-supply) or lost revenue (under-supply).

Your task is to analyze the Cleveland, OH market over the years 2021-2022 and identify trends in demand for Internal Medicine, Urology, and Anesthesiology services, in order to address the following topics:

1. What specialty of additional clinicians are most important to a growing hospital in 2023?
2. What specialty of clinicians can be reduced in 2023?
3. Are any cohorts of clinicians either over-utilized or under-utilized in relation to their peers?

Data

You are provided with a dataset containing the following:
- Information about the hospitals in Cleveland, OH
- Provider-facility affiliated claims at the hospitals in Cleveland in each quarter in 2021 and 2022.
- Demographic information about all relevant providers

Deliverable

Your job is to:
- Frame the Problem in terms of problem definition, stakeholder identification and business impact of the problem
- Analyze the provided data to understand its structure and quality, and select relevant features that can contribute to the model.
- Choose an appropriate statistical or machine learning approach to address the noted prompt with the supplied data, and explain the pro/con of this approach
- Test and refine the model as appropriate, and discuss any potential challenges in the evaluation process

- Prepare a presentation summarizing your findings, methodology and model performance. Be ready to communicate to both technical and non-technical stakeholders.
- Prepare to walk through your code if applicable

Evaluation

You will be evaluated on your ability to frame the problem, select an appropriate approach, and present your findings effectively.

Good luck with the case study, and feel free to reach out if you have any questions during the process. We look forward to discussing your results with you.