

REDUCING DID NOT ATTENDS (DNAS) IN OUTPATIENT SERVICES USING ARTIFICIAL INTELLIGENCE

Toluwanimi Akinola (RBFT), Nikki Chan (University of Reading)

INTRODUCTION

Non-attendance of hospital appointments can have severe implications for patient safety and health outcomes. Reducing its occurrence is essential to enhance patient experience, free up capacity to treat patients on long waiting lists, and support the delivery of the NHS's plan for tackling the elective care backlog [1]. To address this, the Royal Berkshire NHS Foundation Trust (RBFT) and University of Reading (UoR) developed a "DNA (Did-Not-Attend) AI" application to predict likelihood of patients not attending and enable proactive interventions.

METHODOLOGY

The data set used in building the model is derived from in-hospital data (e.g., electronic patient records (EPR)) and outside hospital data (e.g., environmental, social, economic data). In EPR, information on over 150,000 outpatients spanning around 1.6 million records was gathered. The model variables cover various areas that could affect attendance, including demographic and patient profile, appointment characteristics and patient appointment history, deprivation attributes, and activities carried out after the patients' admission.

Upon completion of the Model, a front-end application for viewing the model's output was developed, enabling real-time tracking of phone calls and data capture for analyzing the tool's impact.

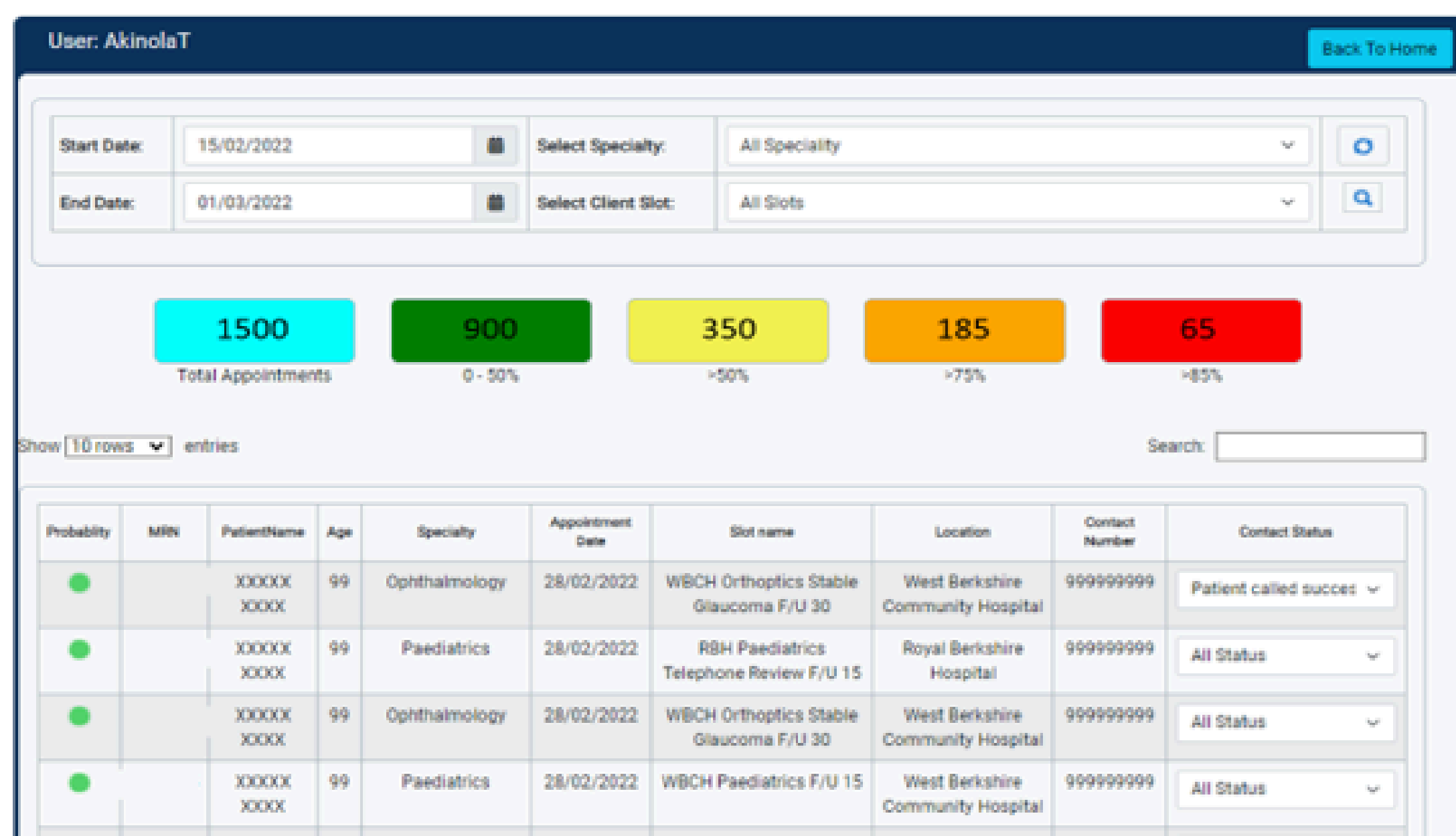


Figure 1 – Front end system

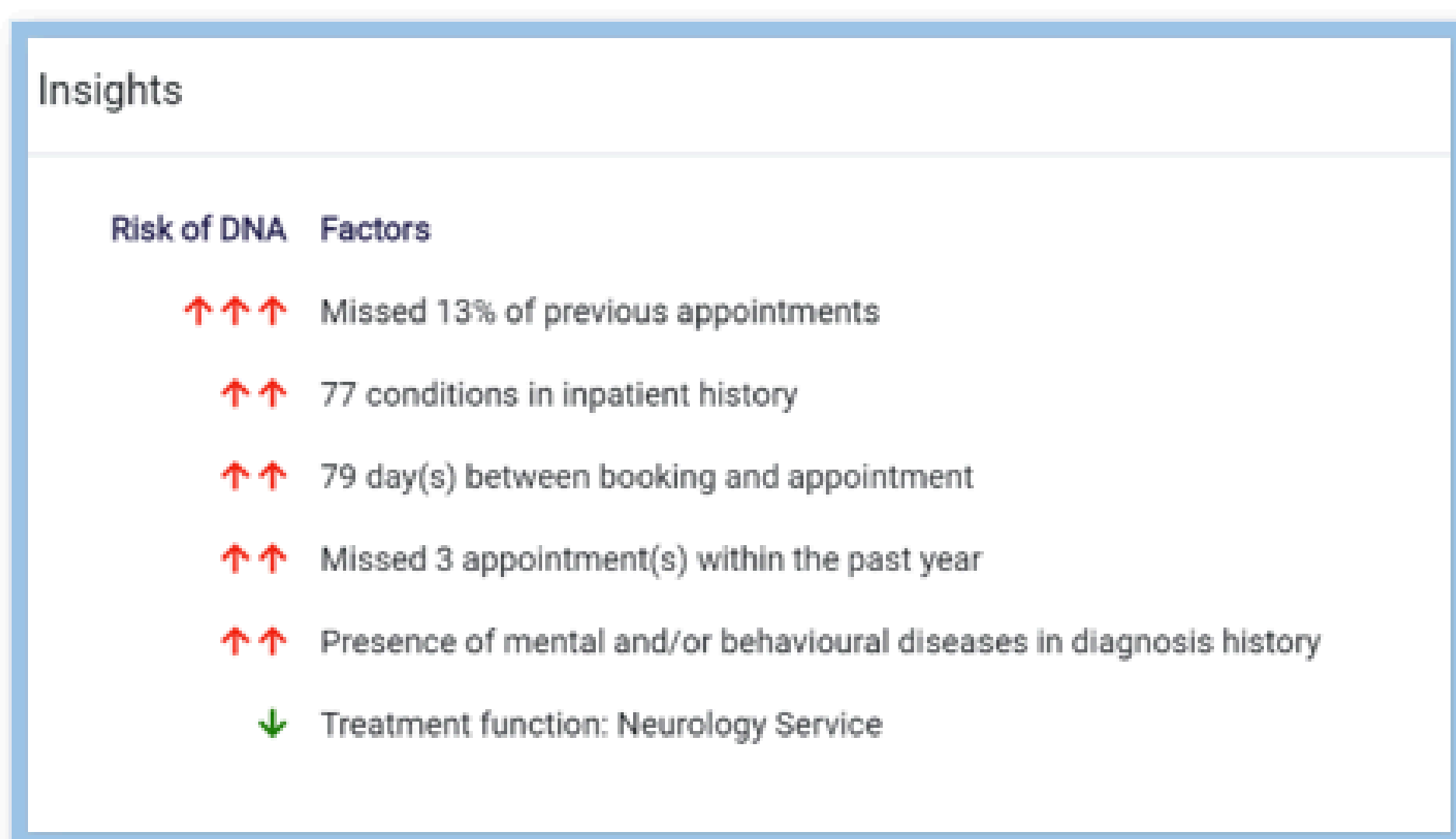


Figure 2 – Insights feature showing variables associated with assigned Risk score.

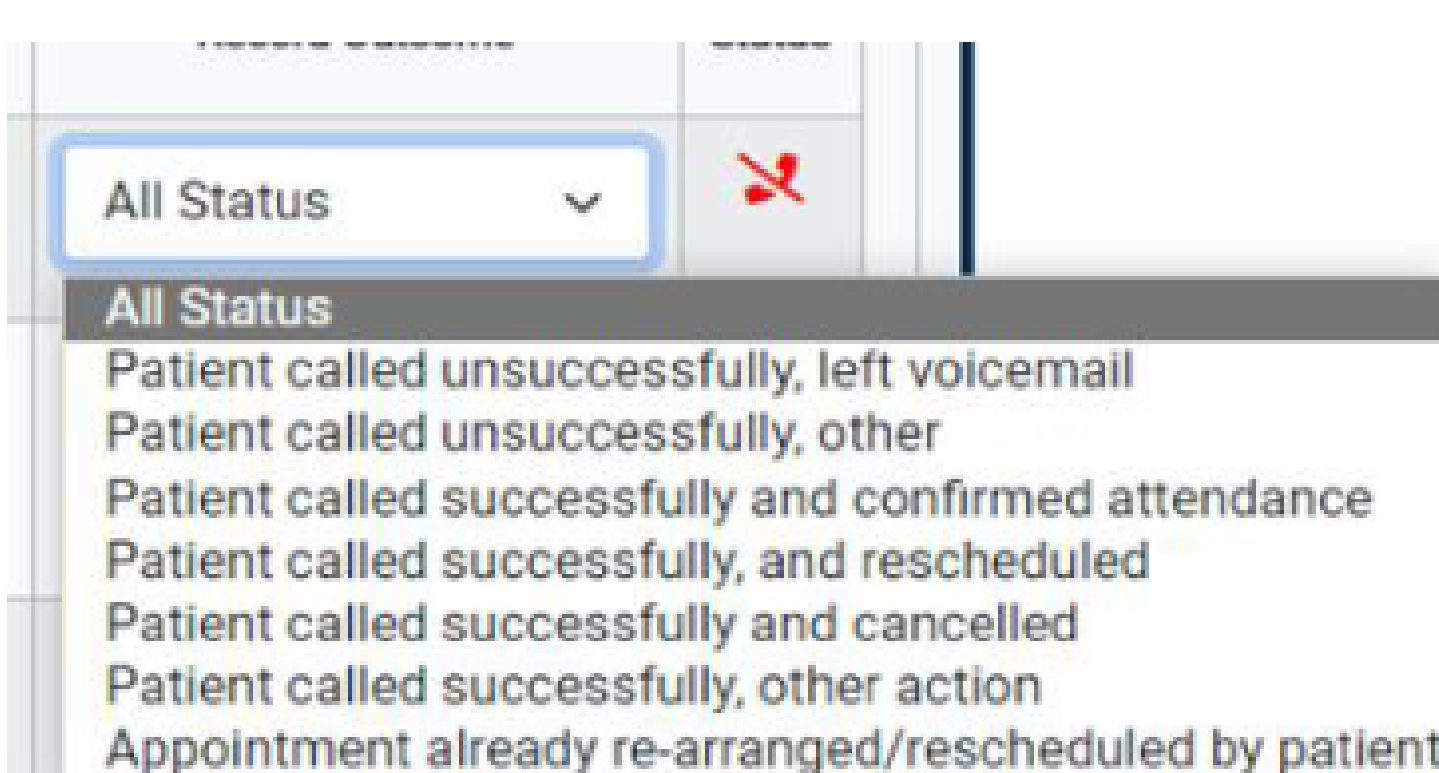
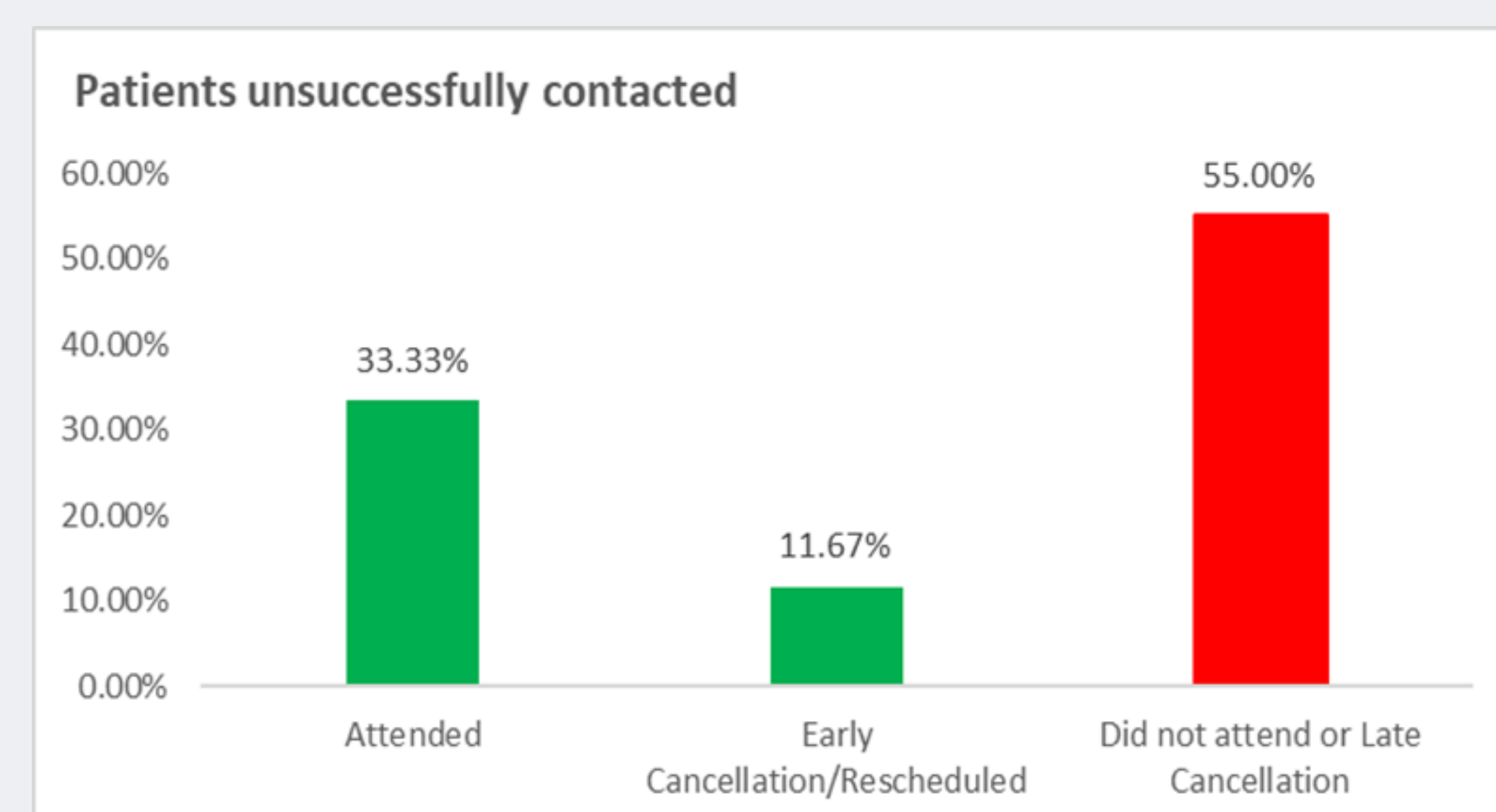
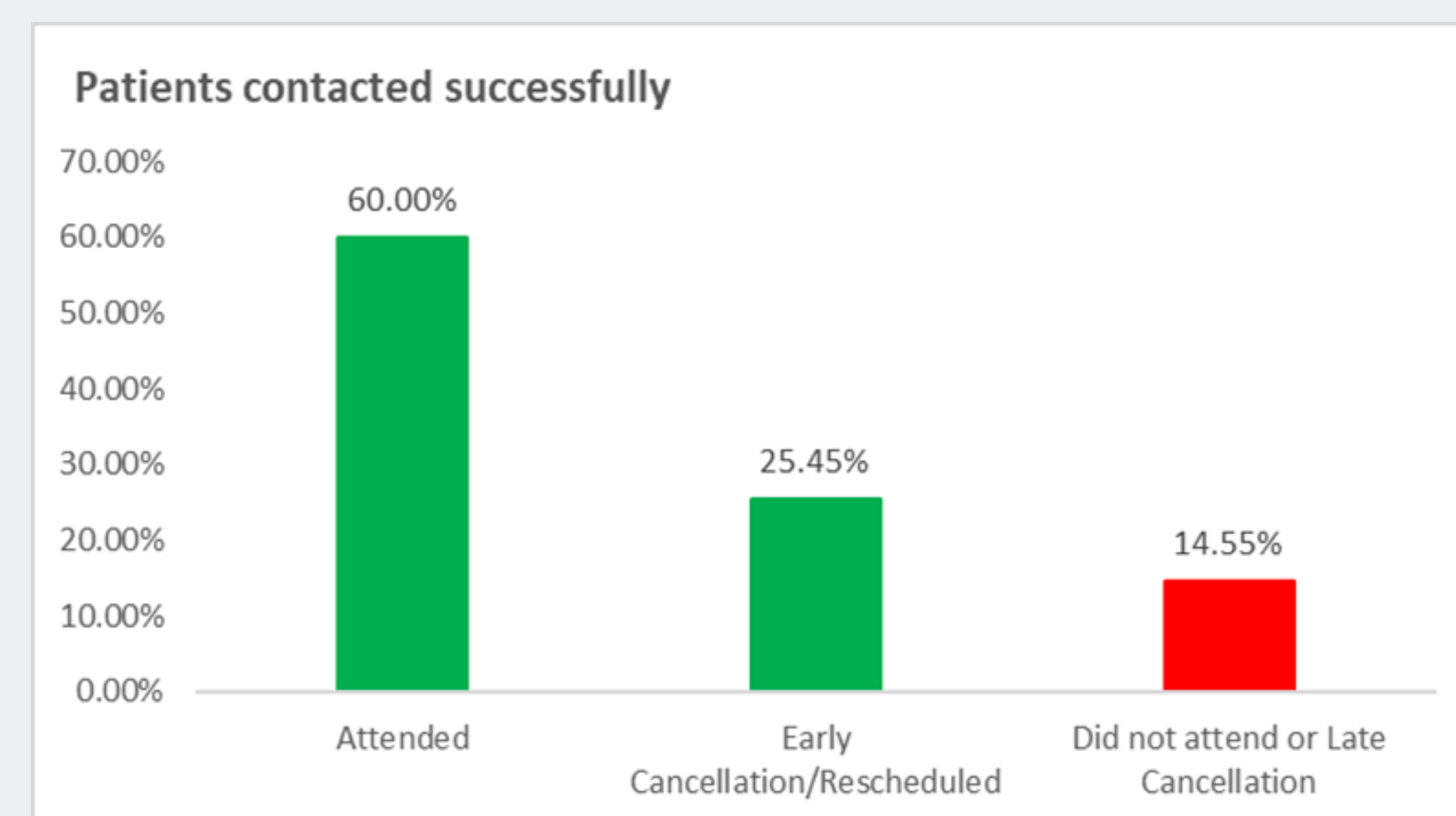


Figure 3 – Feature for recording call outcomes

RESULTS

During a six-month pilot, RBFT admin teams contacted patients highlighted as high-risk ($\geq 50\%$) by the algorithm.

From the patients spoken to, 15% did not attend their appointments, and of the high-risk but unreachable patients, 55% did not attend. Qualitative benefits of this targeted approach were also identified. For example, a patient was considering cancellation because they were anxious about attending a virtual group appointment. When they spoke with the PPC (who got advice from a nurse), they agreed to attend the meeting without turning on their camera and just participate using their microphone.



CONCLUSION

The DNA AI application has demonstrated impact on reducing DNAs in outpatient services. By leveraging historical data and predictive modeling, the tool enables administrative teams to identify and proactively engage with high-risk patients, offering tailored interventions and support to address potential barriers to attendance. Since the successful pilot phase, the application has been rolled out to 15+ specialties within the trust, and it holds tremendous potential for further development and integration with broader healthcare datasets.

REFERENCES

1. Reducing did not attends (DNAs) in outpatient services - NHS England <https://www.england.nhs.uk/long-read/reducing-did-not-attends-dnas-in-outpatient-services/>
2. M. Dashtban & Weizi Li (2021): Predicting non-attendance in hospital outpatient appointments using deep learning approach, Health Systems,