

# Healthcare Appointment No-Show Prediction

## Summary

1. A Decision Tree model was trained to predict patient no-shows using features like age, SMS reminders, day of the week, and scheduling gap.
2. SMS reminders significantly reduced no-show rates, highlighting their importance in improving attendance.
3. Younger and elderly patients, as well as appointments scheduled on weekends or short notice, had higher no-show rates.
4. Recommendations include sending timely SMS reminders, avoiding weekend appointments for at-risk groups, and offering flexible rescheduling options.

## Optimization Recommendations

1. Send SMS reminders 2-3 days before appointments to reduce no-shows, especially for first-time or younger patients.
2. Avoid scheduling elderly or high-risk patients on weekends or Mondays, when no-show rates tend to be higher.
3. Allow flexible rescheduling for appointments booked on short notice to increase attendance likelihood.
4. Prioritize reminder follow-ups for patients with chronic conditions like diabetes or hypertension.
5. Implement a risk scoring system using model predictions to flag high no-show risk patients for proactive outreach.
6. Use multi-channel reminders (SMS, phone calls, emails) for patients with a history of missed appointments.
7. Offer online self-service portals for patients to confirm, cancel, or reschedule appointments easily.
8. Monitor no-show trends by location or clinic to identify underperforming areas.
9. Introduce waitlists or overbooking strategies during high no-show time slots to maintain efficiency.
10. Educate patients about the impact of missed appointments through SMS or signage in clinics.
11. Segment patients by age and condition to personalize scheduling windows and reminders.
12. Incentivize attendance (e.g., through loyalty points or priority scheduling) for consistently attending patients.