

# Summary Report: Identifying Predictors of Severe Chronic Absenteeism and Targeting Interventions

## Introduction

Severe chronic absenteeism (SCA) is a critical issue impacting student performance and overall school success. The goal of this project is to identify the most significant predictors of severe chronic absenteeism and to propose targeted interventions for improving overall attendance rate of the students. Using data analysis, I explored several factors such as attendance rates, GPA, family structure, and socio-economic status to identify students at risk from categorizing into SCA and to design effective interventions to raise the school's overall attendance rate by at least 6%.

## Part 1: Data Analysis – Significant Predictors of Severe Chronic Absenteeism

### Key Predictors of SCA

Through statistical analysis, I identified the following key predictors of severe chronic absenteeism:

#### 1. Total Attendance Rate (Total\_Att\_rt)

- **Correlation:** Strong negative correlation (-0.77) with SCA.
- **Interpretation:** Students with lower attendance rates are significantly more likely to be classified as severely chronically absent. This finding highlights the importance of regular attendance as a critical factor in preventing severe absenteeism. Students who already have low attendance are the most likely to fall into the SCA category.
- **Rationale:** Given the strong correlation, this is the primary factor used to identify students at risk of severe absenteeism.

#### 2. Cumulative and Current Weighted GPA

- **Correlation:** Moderate negative correlation (-0.32) with SCA.
- **Interpretation:** Students with lower GPAs are more likely to be severely chronically absent. Poor academic performance often correlates with disengagement from school, which leads to higher absenteeism rates.
- **Rationale:** Academic performance is a key indicator of student engagement. Students with low GPAs are likely to feel disconnected from school, further increasing the risk of absenteeism.

#### 3. Single Parent Status

- **Correlation:** Weak positive correlation (+0.15) with SCA.
- **Interpretation:** While family structure alone is not a strong predictor, students from single-parent households showed a slightly higher likelihood of being severely absent. This suggests that external factors related to family dynamics may play a role in absenteeism.
- **Rationale:** Although not a dominant predictor, single-parent households may face unique challenges that contribute to higher absenteeism.

#### 4. Special Education Status

- **Correlation:** Weak positive correlation (around +0.11) with SCA.
- **Interpretation:** Students receiving special education services showed a slight tendency to have higher absenteeism, likely due to additional health or behavioral challenges.
- **Rationale:** While the impact is minimal, students with special needs may require targeted support to ensure consistent attendance.

### Model Performance

The logistic regression model used to predict SCA highlighted the importance of **Total Attendance Rate** and **GPA** as the most significant predictors. The model performed well at identifying students who were not severely chronically absent, with a high recall for Class 0 (non-SCA). However, it struggled with identifying severely absent students (Class 1) due to the smaller size of the group. This discrepancy indicates a need for further refinement of the model, especially to improve the recall for Class 1.

### Part 2: Intervention Proposal – Targeting Students for Improved Attendance

#### Identifying Students for Targeted Intervention

Based on the findings from Part 1, we focused on students with attendance rates between 81% and 90%, who are at risk of becoming severely chronically absent but have not yet crossed the 80% threshold. The rationale for this approach is that students in this range have a greater potential for improvement, as their attendance is still manageable with timely intervention. By addressing the attendance issues in this group, one could maximize the impact on the overall school attendance rate.

- **Target Group:** Students with attendance rates between 81% and 90%, low GPA (below 2.5), or those from single-parent households.
- **Rationale:** These students are more likely to improve their attendance due to their current attendance rates being below 90% but not severely low. Students with lower GPAs and challenging family or special education circumstances may also be at higher risk of falling into severe absenteeism without intervention.

## **Estimation of Impact**

By focusing on students with attendance rates between 81% and 90%, it is estimated that a significant portion of these students can improve their attendance by 5-10%, contributing significantly to the overall school attendance increase. Given the larger room for improvement in this group (a student with 81% attendance can improve by 19%, whereas a student with 90% attendance can only improve by 10%), the impact of targeted interventions is expected to be maximized.

## **Proposed Interventions**

To effectively improve attendance and prevent students from falling into severe chronic absenteeism, the following interventions are proposed based on the key predictors identified:

### **1. Academic Support for Students with Low GPA**

- **Description:** Provide tutoring and mentorship programs for students with low academic performance to help them improve their engagement with school.
- **Rationale:** By improving students' academic performance, academic assistance can reduce students' likelihood of absenteeism, as students who perform better tend to attend school more regularly.

### **2. Parental Engagement for Students from Single-Parent Households**

- **Description:** Implement parent-teacher conferences, family counseling, and home visits to engage parents in supporting their child's school attendance.
- **Rationale:** Single-parent households may face unique challenges, and increased parental involvement can help mitigate factors contributing to absenteeism.

### **3. Attendance Monitoring and Incentives for Moderate Absenteeism (81% - 90%)**

- **Description:** Introduce attendance tracking systems with positive reinforcement for students who improve their attendance. Provide mentorship from teachers or counselors to encourage regular attendance.
- **Rationale:** Early intervention with regular monitoring can prevent students from slipping into severe absenteeism. Rewards for improved attendance can motivate students to attend more frequently.

#### 4. Socio-Economic Support for SED Students

- **Description:** Provide free meals, transportation assistance, and school supplies for socio-economically disadvantaged students to remove barriers to attending school regularly.
- **Rationale:** Addressing the basic needs of SED students can improve their attendance by reducing financial pressures that may cause them to miss school.

### Conclusion

The analysis identified ***Total Attendance Rate*** and ***GPA*** as the strongest predictors of severe chronic absenteeism. Students with lower attendance and poor academic performance are at the highest risk and should be the focus of targeted interventions. By implementing strategies that address the specific needs of at-risk students, including academic support, parental engagement, and socio-economic assistance, the school can significantly reduce severe absenteeism and improve the overall attendance rate by at least **6%**. The proposed interventions aim to address the root causes of absenteeism and provide students with the resources and support needed to stay engaged in their education.