**Student Performance in Portugal**

**Data questions to answer:**

**Student Demographics**

1. What is the distribution of students across different schools?
2. How does the gender ratio vary among the students?
3. What is the age distribution of the students?
4. How many students come from urban and rural areas?
5. What is the distribution of family sizes among the students?

**Parental Background**

1. What is the level of education of the students' mothers and fathers?
2. How many mothers and fathers are employed in different job categories?
3. What is the cohabitation status of the parents?
4. How does the choice of the school vary based on different reasons?
5. Who are the primary guardians for the students?

**Academic Performance and Support**

1. What is the average travel time from home to school?
2. How much time do students spend on weekly studies on average?
3. How many students have received extra educational support or family support?
4. How many students have taken paid classes within the course subject?
5. How many students participate in extra-curricular activities?

**Health and Well-being**

1. How do students rate the quality of family relationships?
2. How much free time do students have after school?
3. How frequently do students go out with friends?
4. What is the alcohol consumption level of students on workdays and weekends?
5. How do students rate their current health status?

**Attendance and Grades**

1. What is the distribution of the number of school absences among students?
2. How do the first period, second period, and final grades vary?
3. Are there any relationships between the grades and other attributes in the dataset?

**Categorical Questions**

1. What are the most common reasons for choosing a school?
2. What are the most common job categories for mothers and fathers?
3. How many students have internet access at home?
4. How many students are in a romantic relationship?
5. How many students aspire to pursue higher education?

**Actions to take based on answered questions:**

**Student Demographics**

1. **School Allocation**: Allocate appropriate resources and support based on the distribution of students across different schools.
2. **Gender-Based Initiatives**: Develop targeted initiatives to address specific needs or challenges faced by male or female students.
3. **Age-Specific Programs**: Design programs that cater to the specific age groups of the students.
4. **Urban vs. Rural Services**: Customize services and interventions based on the students' urban or rural background.
5. **Family-Size Considerations**: Consider family size when designing interventions or support systems.

**Parental Background**

1. **Education Support**: Provide additional support or resources to parents with lower education levels.
2. **Career Guidance**: Offer career guidance programs or initiatives to help students explore different job options based on their parents' professions.
3. **Parental Cohabitation Support**: Implement support systems to address challenges faced by students whose parents live apart.
4. **Effective School Selection**: Understand the primary reasons for school selection and align school offerings accordingly.
5. **Guardian Engagement**: Involve and engage different guardians to ensure a holistic support system for students.

**Academic Performance and Support**

1. **Transportation Accessibility**: Improve transportation facilities for students with longer travel times to reduce fatigue and enhance punctuality.
2. **Study Time Optimization**: Provide study time management guidance to help students effectively utilize their weekly study time.
3. **Targeted Support Programs**: Develop additional educational support programs or resources for students with higher needs.
4. **Paid Class Accessibility**: Assess the availability and affordability of paid classes to ensure equitable access for all students.
5. **Diverse Extra-curricular Activities**: Offer a wide range of extra-curricular activities to cater to students' interests and foster holistic development.

**Health and Well-being**

1. **Family Relationship Enhancement**: Develop programs or interventions to strengthen family relationships and improve family dynamics.
2. **Utilizing Free Time**: Provide guidance on how to make the best use of free time to promote personal growth and balance.
3. **Socialization Opportunities**: Organize social activities or events to promote healthy socializing and bonding among students.
4. **Alcohol Awareness**: Create awareness campaigns on responsible alcohol consumption and potential consequences.
5. **Health Support Services**: Enhance health support services within schools and provide resources for students to maintain good health.

**Attendance and Grades**

1. **Attendance Monitoring**: Implement strategies to monitor and address excessive school absences to ensure better student engagement.
2. **Performance Analysis**: Analyze factors that correlate with grade variations to identify areas for targeted improvement efforts.
3. **Individualized Support**: Provide personalized support to students based on their performance and identified needs.

**Categorical Questions**

1. **Reason-based Interventions**: Tailor interventions or offerings based on the primary reasons for choosing a school.
2. **Job-Specific Guidance**: Offer career guidance and exposure to job opportunities based on the prevalent job categories.
3. **Digital Accessibility**: Bridge the digital divide by providing internet access and resources to students without internet at home.
4. **Relationship Support**: Provide guidance or counseling services to students in romantic relationships to ensure a healthy balance.
5. **Higher Education Aspiration Support**: Develop programs to encourage and support students in pursuing higher education.

**Key questions and actions to prioritise.**

1. **What are the factors that significantly impact student grades?**
   * Action: Conduct a comprehensive analysis to identify the key factors influencing student grades. This can involve statistical modeling, correlation analysis, and feature importance determination. The insights gained can help tailor interventions and support systems to improve academic performance.
2. **Are there any disparities in academic support based on demographic factors such as gender, parental education, or family size?**
   * Action: Analyze the data to identify any discrepancies in academic support provided to different groups of students. Addressing these disparities can involve implementing targeted interventions, providing additional resources or support, and ensuring equal opportunities for all students.
3. **How does the level of family support impact student well-being and academic success?**
   * Action: Assess the relationship between family support (such as educational support, cohabitation status, and family relationships) and student well-being and academic performance. Develop initiatives to enhance family engagement, provide guidance to parents on supporting their children's education, and establish channels for effective communication between families and the school.
4. **What are the key reasons students choose a particular school, and how can those reasons inform school improvement efforts?**
   * Action: Determine the primary factors influencing students' choice of school through analysis. Leverage these insights to enhance school offerings, improve reputation, increase proximity to students' homes, or provide specialized programs to better meet student expectations and needs.
5. **How does student health and well-being impact their academic performance and attendance?**
   * Action: Explore the correlation between student health, well-being, attendance, and academic outcomes. Develop initiatives to promote physical and mental health, provide support services, and create a conducive learning environment that fosters student well-being and engagement.