**SUMMARY:**

The analysis of X Education's data aims to enhance resource allocation for leads, with a focus on those more likely to convert into paying customers. This strategic approach is projected to augment the overall lead conversion rate, contributing significantly to the company's growth objectives.

Upon thorough data analysis, an outlier was identified in the "TotalVisits" column, warranting attention for further investigation and potential treatment. Notably, the majority of converted users are hailing from "Mumbai," while a significant segment of the converted leads is categorized as "Unemployed." Among lead sources, "Google" and "Direct Traffic" emerge as the primary contributors.

An interesting trend reveals that leads spending more time on the website exhibit a higher likelihood of conversion. This underscores the need to enhance website engagement to encourage extended visit durations, thus potentially boosting conversion rates.

The examination of median values for converted and unconverted leads in relation to "Page Views Per Visit" indicates a lack of distinct differentiation, suggesting that this metric alone may not be indicative of lead conversion.

Incorporating dummy variables expanded the dataset to a total of 84 columns. Employing logistic regression yielded promising results, with an accuracy rate of 92%, sensitivity of 80%, and a commendable specificity of 93% on the training data. Precision score on the training data stands at 89%. Upon application to test data, the model demonstrated an accuracy of 93%, sensitivity of 91%, and a specificity of 94%.

Further refining the analysis, random forest feature selection identified three critical features contributing to lead conversion prediction:

1. Tags\_Will revert after reading the email
2. Total Time Spent on Website
3. Tags\_Ringing

These findings collectively provide valuable insights for X Education's lead conversion optimization efforts, offering a data-driven roadmap to target potential customers more effectively and elevate the overall success rate of lead conversion initiatives.