Summary: Lead Conversion prediction for a Training Course

Problem Statement:

The goal is to identify factors which can influence student conversion to a professional training course offered online. The understanding of these factors will allow us to target effective marketing strategies and improve enrollment rates.

Analysis Approach:

1. Data Cleaning: The data was cleaned and organized, handling missing values, outliers, and categorical variables. We also explored data distributions and correlations.
2. Feature Engineering: The new features were created based on existing ones, like engagement ratios and visit/conversion ratios.
3. Model Building and Selection: The two logistic regression models were built: one with all features and one using RFE feature selection. We compared their performance on unseen test data.
4. Model Interpretation: The coefficients of the final model were analyzed to understand the relative importance and direction of influence of each feature on conversion.

Results:

- The key factors were identified influencing conversion, including:
  - Website engagement: Higher total visits, longer time spent on website, and more page views per visit led to increased conversion.
  - Specialization: Management specializations had higher conversion rates compared to others.
  - Occupation: Unemployed users and students were more likely to convert.
  - City: Users from Mumbai and Maharashtra in general showed higher conversion rates.
- The model with RFE-based feature selection achieved slightly better performance compared to the model with all features. This suggests that excluding irrelevant features can improve model accuracy and interpretability.

Visualizations:

- Histograms, boxplots, and heat maps were used to visualize data distributions, outliers, and correlations.
- Feature importance charts were used to illustrate the relative influence of each feature on conversion.

Conclusion:

This analysis successfully identified key factors influencing lead conversion for the professional training course. By focusing on website engagement, targeting relevant user segments (unemployed, students, management interests), and optimizing marketing efforts in Mumbai and Maharashtra, we can potentially increase enrollment rates and drive business growth.