

CS561- ARTIFICIAL INTELLIGENCE LAB

ASSIGNMENT-7: Linear Regression

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Data Loading & Exploration:

- Loaded data from the provided TSV (Tab-Separated Values) file.
- Detected inconsistencies in the data format and handled them for proper data reconstruction.

Model Development:

- Used a simple linear regression model to predict Sunday sales based on Daily sales.
- The model equation derived was:

$$\text{Sunday sales} = 1.3397 \times \text{Daily sales} + 13.8356$$

Prediction:

- Predicted Sunday sales for three distinct scenarios:
 1. Using the minimum daily sales observed in the dataset.
 2. Using the maximum daily sales observed in the dataset.
 3. Using the average daily sales observed in the dataset.

Determine Feasibility:

- For each of the above scenarios, identified newspapers that wouldn't achieve a Sunday sale that's at least 30% more than their daily sales.

Results:

1. For the minimum daily sales scenario, most newspapers were suggested to stop their Sunday edition.
2. For the maximum daily sales scenario, all newspapers met the criteria, suggesting they should continue their Sunday editions.
3. For the average daily sales scenario, several newspapers were highlighted that might consider re-evaluating the feasibility of their Sunday editions.

Conclusion:

- The linear regression model provides a foundational analysis to guide decision-making for newspaper companies.
- Decisions based on this model should be taken with caution, as more comprehensive models and additional data might offer a more nuanced analysis.

For the Minimum Daily Sales Scenario:

['Baltimore Sun ', 'Boston Globe', 'Boston Herald', 'Charlotte Observer', 'Chicago Sun Times', 'Chicago Tribune', 'Cincinnati Enquirer', 'Denver Post', 'Des Moines Register', 'Hartford Courant', 'Houston Chronicle', 'Kansas City Star', 'Los Angeles Daily News', 'Los Angeles Times', 'Miami Herald', 'Minneapolis Star Tribune', 'New Orleans Times-Picayune', 'New York Daily News', 'New York Times', 'Newsday', 'Omaha World Herald', 'Orange County Register', 'Philadelphia Inquirer', 'Pittsburgh Press', 'Portland Oregonian', 'Providence Journal-Bulletin', 'Rocky Mountain News', 'Sacramento Bee', 'San Francisco Chronicle', 'St. Louis Post-Dispatch', 'St. Paul Pioneer Press', 'Tampa Tribune', 'Washington Post']

For the Max Daily Sales Scenario:

[Empty List]

For the Average Daily Sales Scenario:

['Boston Globe', 'Chicago Sun Times', 'Chicago Tribune', 'Los Angeles Times', 'New York Daily News', 'New York Times', 'Newsday', 'Philadelphia Inquirer', 'San Francisco Chronicle', 'Washington Post']

