Finlatics
ENABLING INSIGHTS

Sales Prediction Case Project

Analyze the impact of advertising expenditures across TV, Radio, and Newspapers on product sales to optimize marketing strategies.

A case study carried out by Aryan Singhal

OUTLINE

- Introduction
- Data cleaning
- Key visualizations
- Linear Regression

Introduction

Summary of Dataset

The dataset provides information on advertising expenditures across TV, Radio, and Newspapers, along with the corresponding product sales. It allows analysis of how spending in these areas impacts sales, making it useful for predictive modelling and understanding the effectiveness of different advertising strategies.

Column Descriptions

- **Campaign:** Identifier for each advertising campaign.
- **TV:** Spend on TV advertising.
- **Radio:** Spend on Radio advertising.
- **Newspaper:** Spend on Newspaper advertising.
- **Sales:** Units sold related to the ad spend.

Data cleaning

Resolving issues of messy and dirty data

Issues with Dataset

Dirty Data

- Missing Values

Messy Data

NOT APPLICABLE

Key visualizations

Visualizations from the dataset

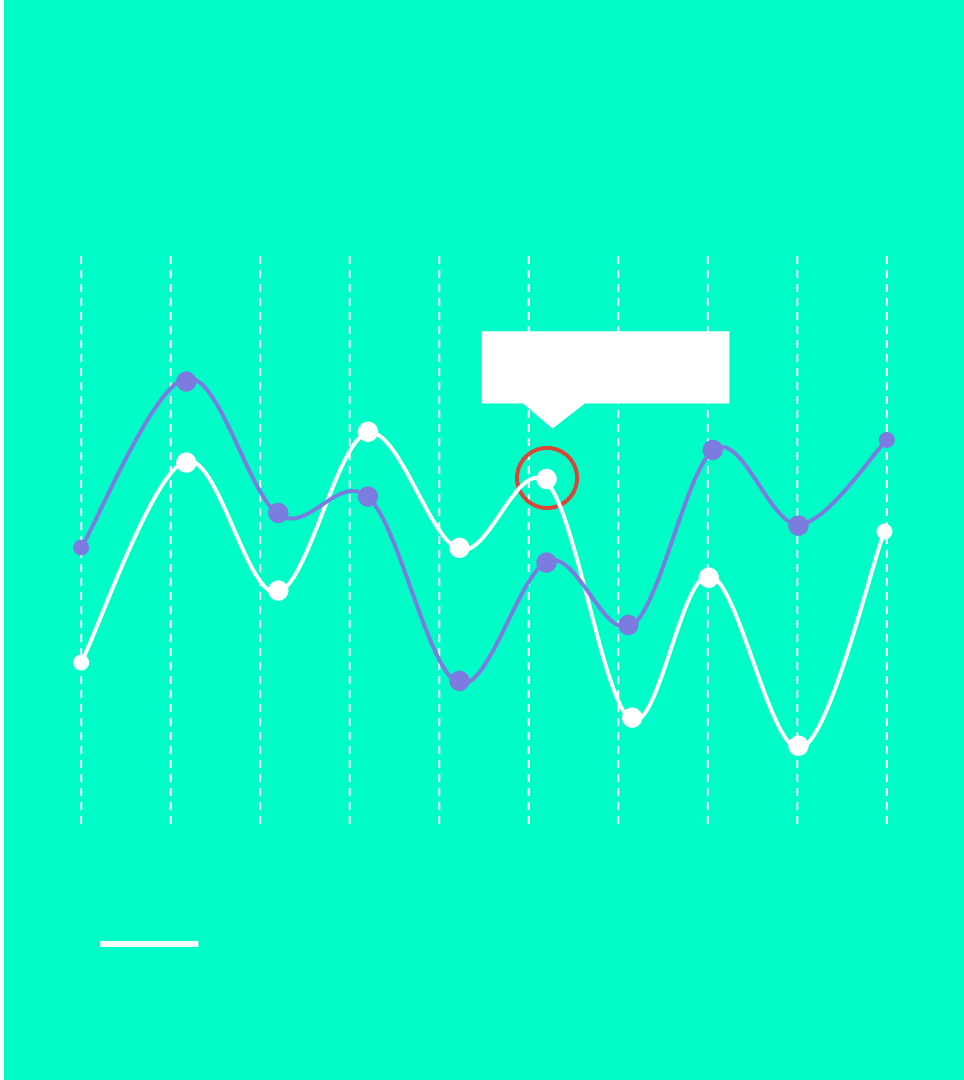


Chart 1: Avg. Spending on Tv ads

TV advertising expenditures are widely distributed around an average of $147, indicating varied spending strategies.

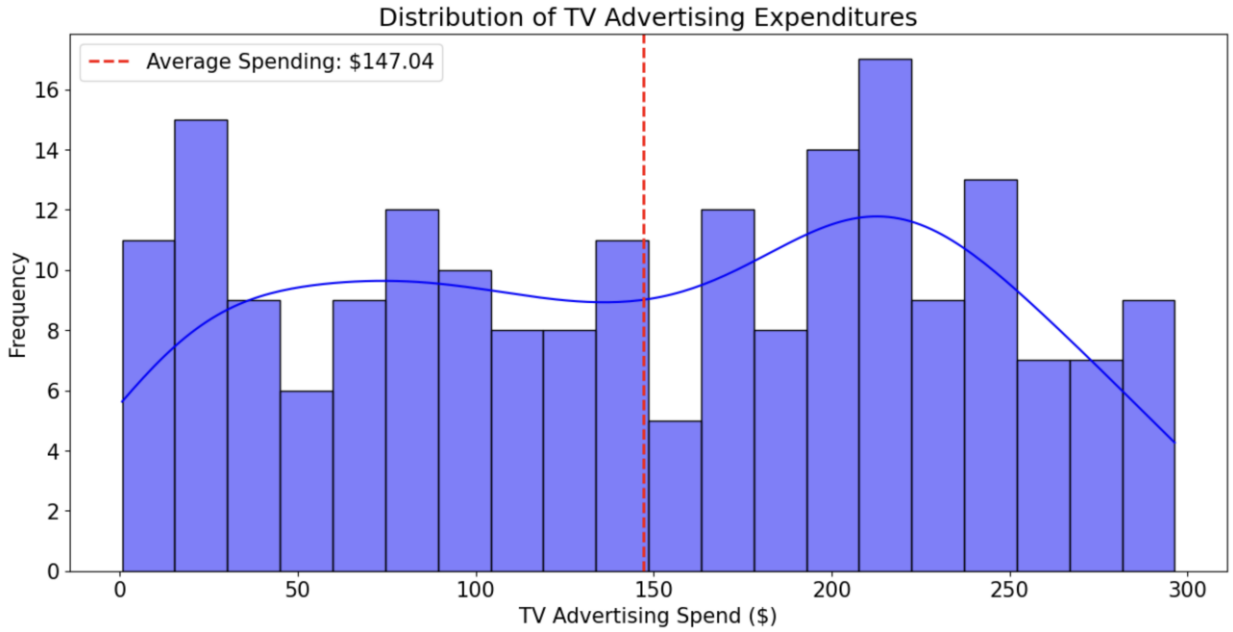


Chart 2: Radio-ads vs Sales

Radio advertising expenditure has a weak positive correlation with sales (Pearson: 0.35, Spearman: 0.34), indicating a limited impact.

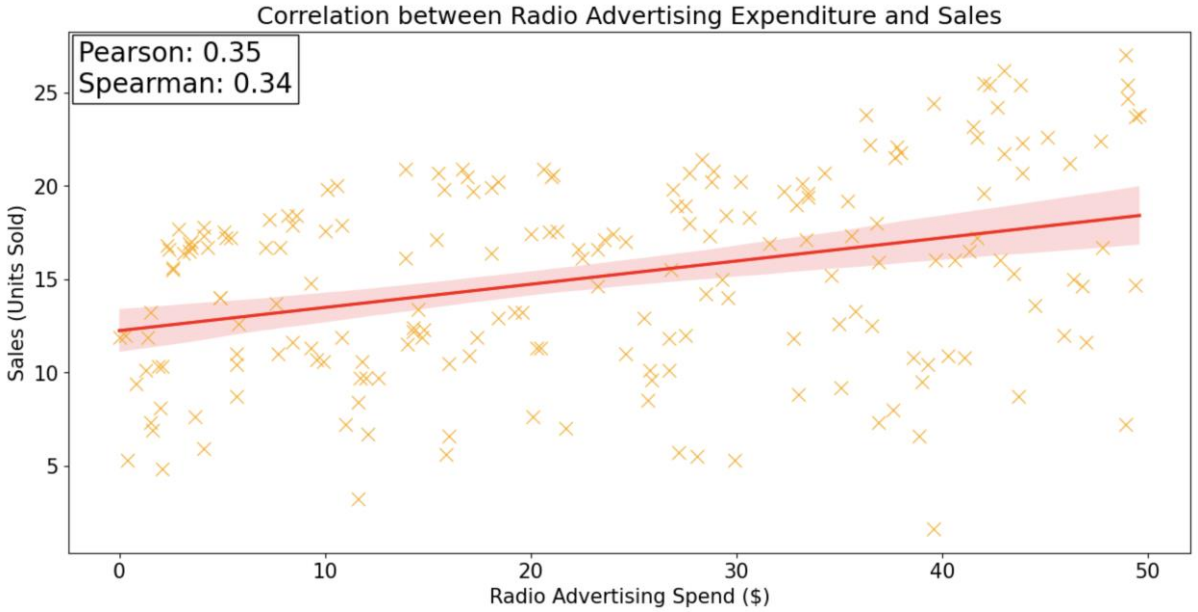
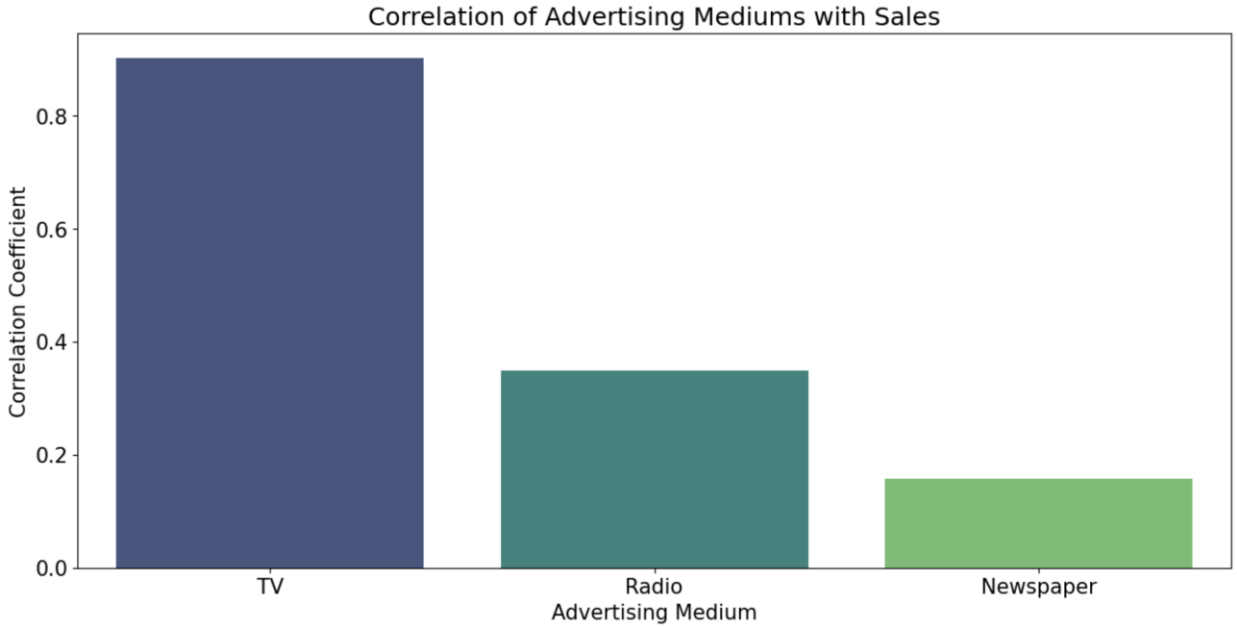
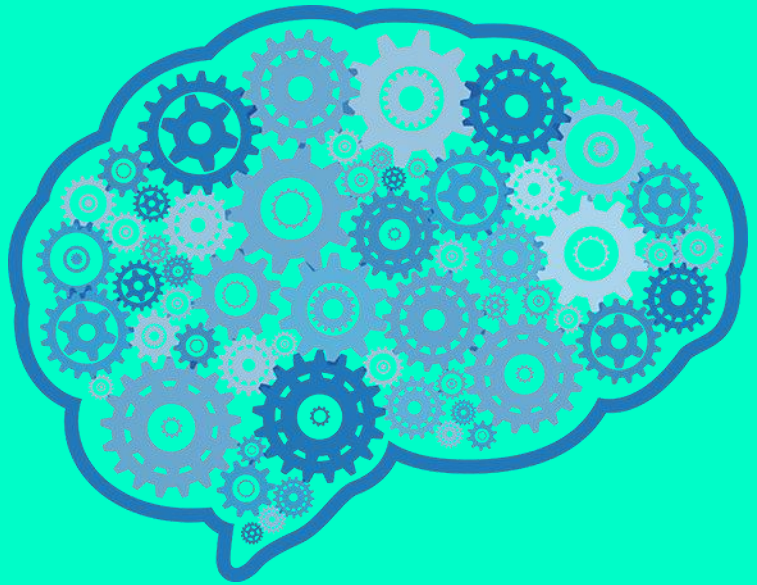


Chart 3: Sales vs Advertising mediums

TV advertising has the highest correlation with sales, while Radio and Newspaper have much weaker correlations.



Linear Regression

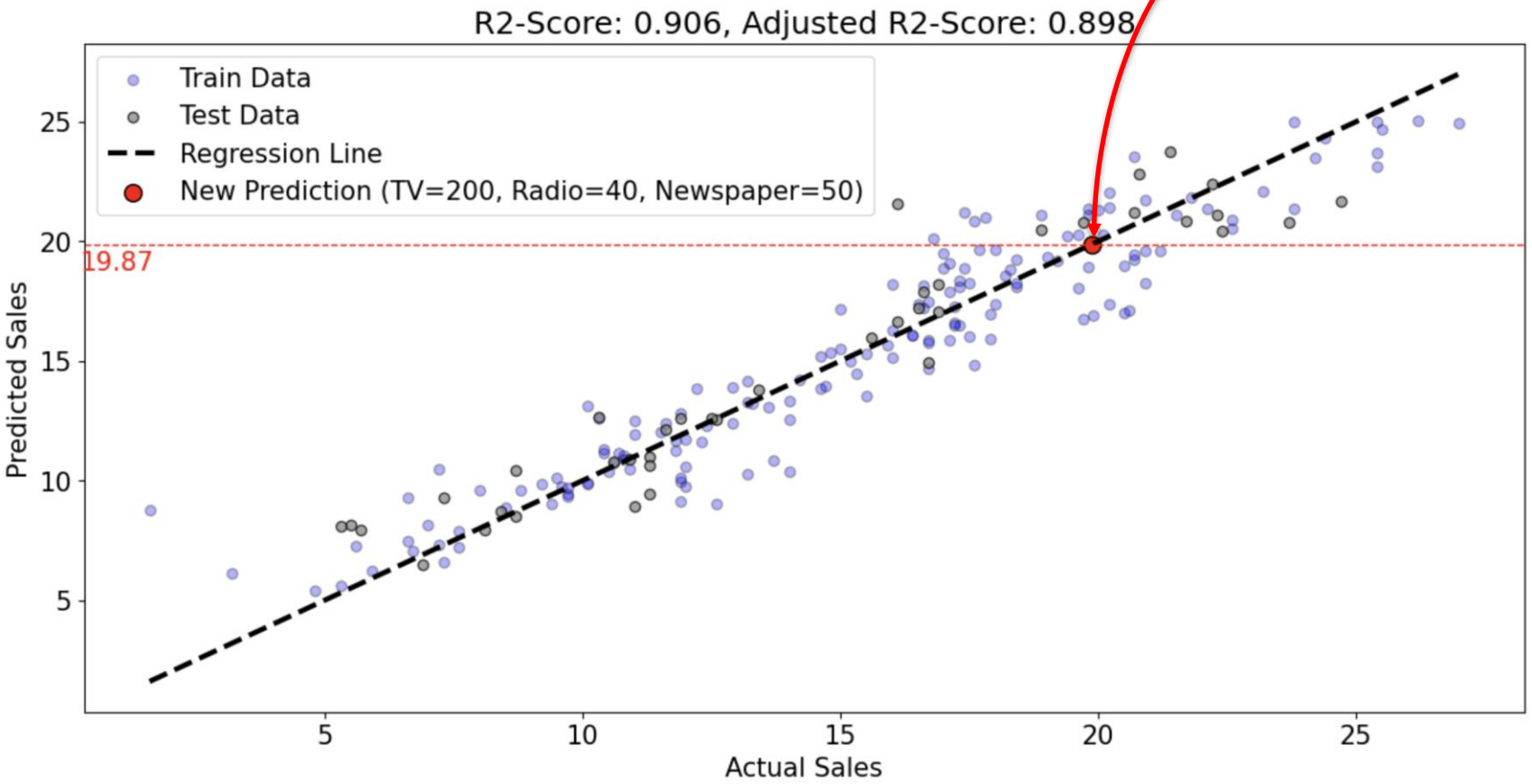


Workflow

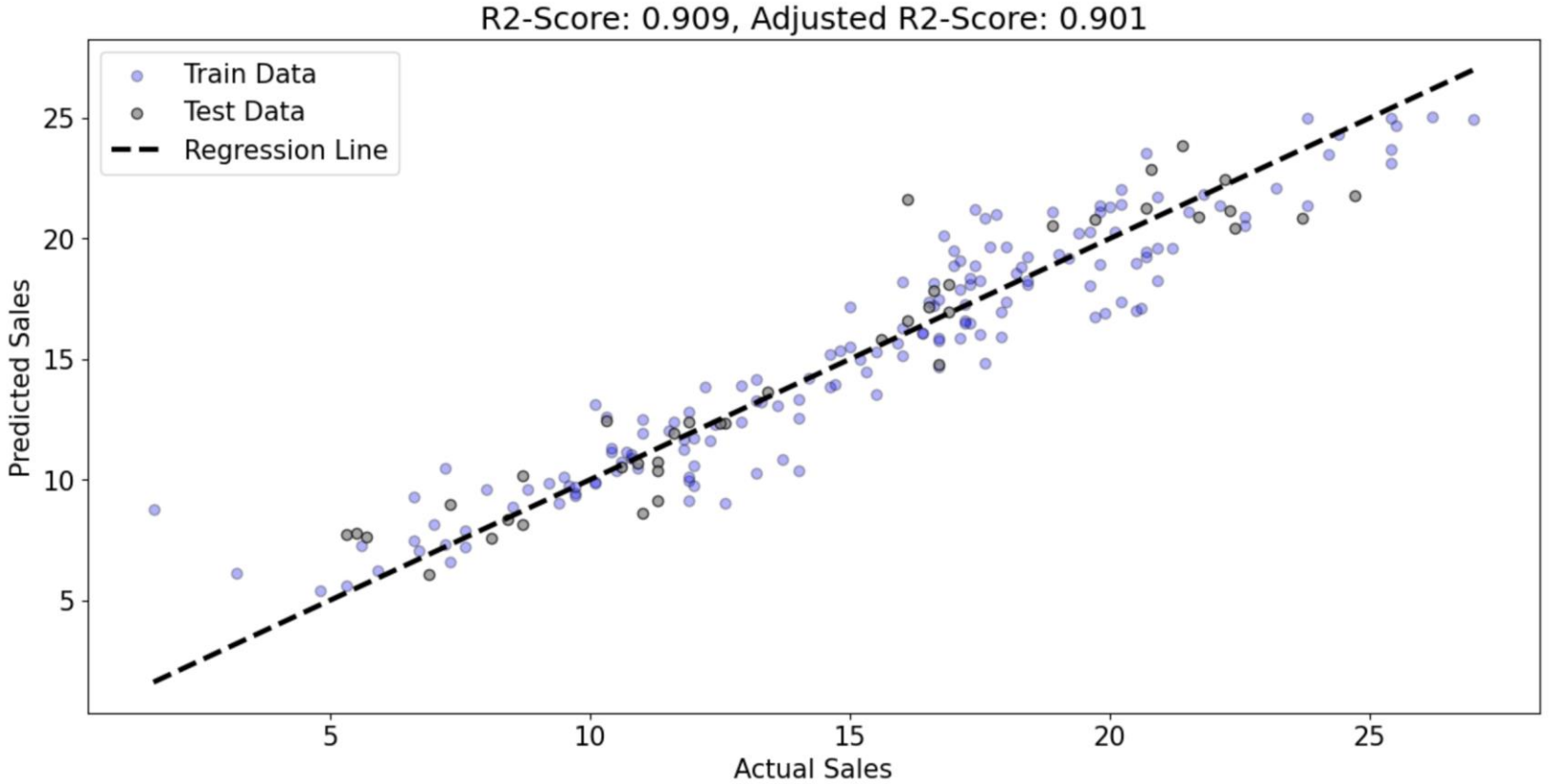
- Train-Test Split
- Fit Linear Regression Model
- Normalize the data and re-fit the model
- Leaving out TV as a predictor to reflect its significance

Linear Regression

Prediction on a new Data Point

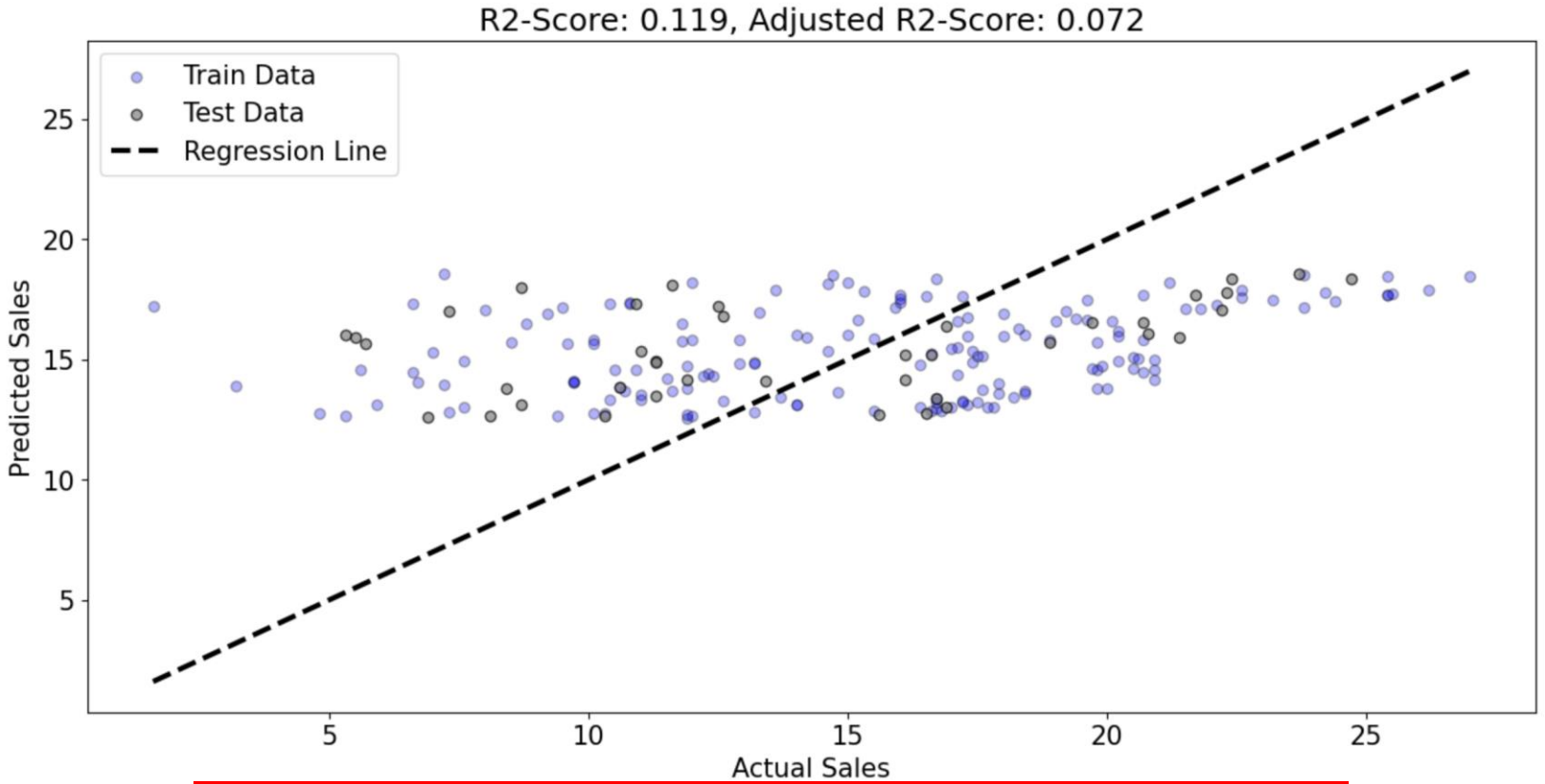


Linear Regression after Normalization



Normalization slightly improves the R^2 score (0.909 vs. 0.906) by aligning feature scales.

Linear Regression Leaving out TV



Excluding TV drops the R^2 to 0.119, showing its critical role in predicting sales.

THANK YOU!