FUEL COST PREDICTION MODEL for Cobify

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PROBLEM & GOAL

Our goal was to help Cobify, a ride-hailing company, reduce operational fuel costs by analyzing historical trip data. Instead of just predicting fuel consumption, we enriched the dataset by simulating realistic fuel prices for E10 and SP98. This allowed us to calculate the actual cost per trip in USD — a business-critical metric

DATA ENRICHMENT

Since live fuel price APIs were restricted, we simulated average fuel prices:

- E10 at $1.48/liter
- SP98 at $1.68/liter

Using this, we derived a new column called cost_per_trip_usd, calculated from:

Cost =((distance*consume)/100)* fuel_price_usd

This conversion made our analysis much more meaningful to Cobify’s financial planning.

PREDICTIVE MODEL

We then built a linear regression model to predict cost_per_trip_usd using the following input features:

- Distance
- Speed
- Inside temperature
- Outside temperature

The idea was to help forecast trip costs based on operational or environmental conditions.

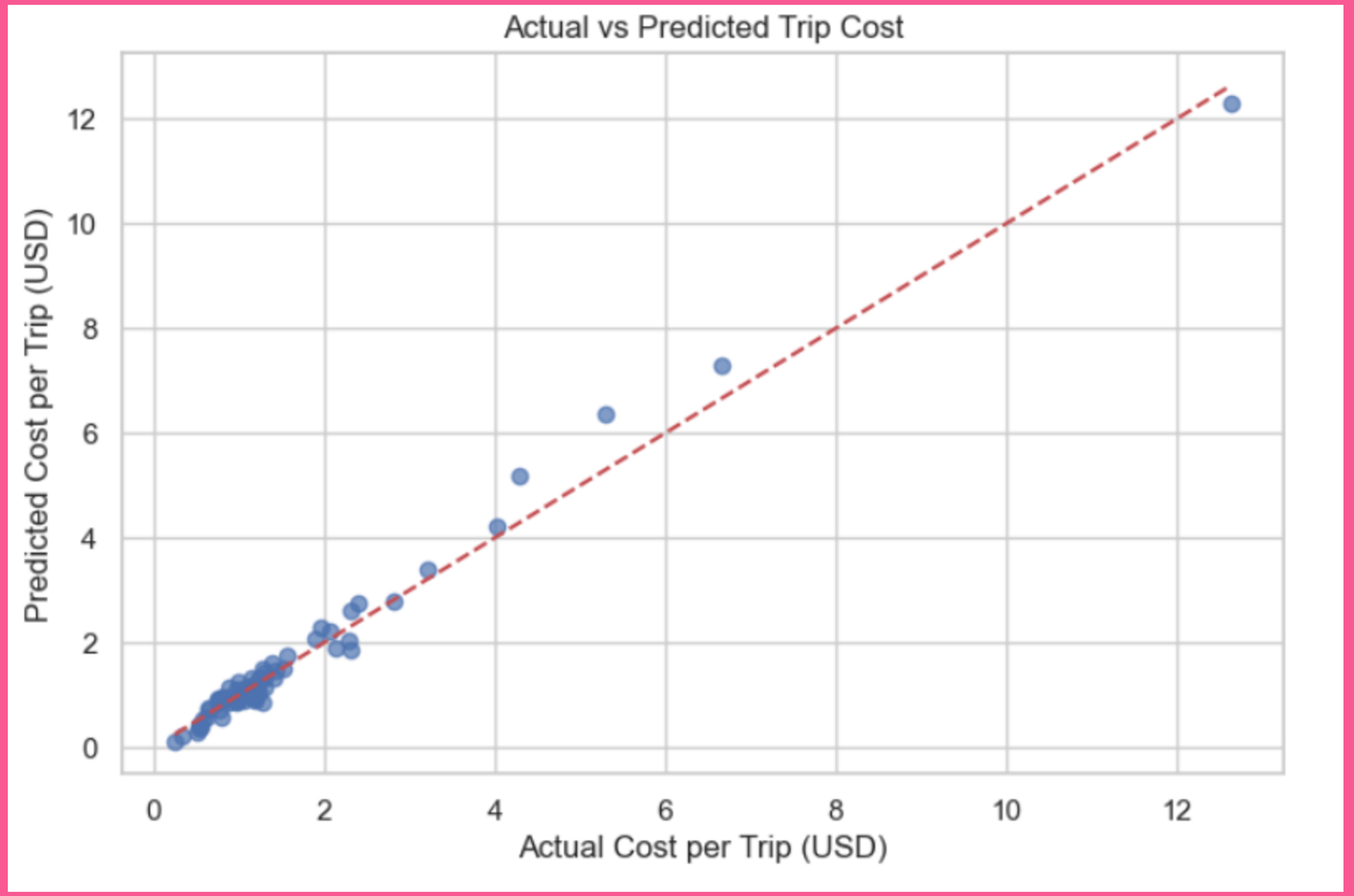
RESULTS

The model performed extremely well:

- R^2 Score: 0.98 – it explains 98% of the variance in trip cost.
- RMSE: 0.24 USD – on average, the error in prediction is just 24 cents.

This strong performance suggests that linear regression is already a solid baseline for estimating trip-level fuel costs.

MODEL VISUALIZATION



MODEL VISUALIZATION

Here you can see the actual vs predicted cost plot.
Most points lie very close to the red dotted line, indicating a strong agreement between real and predicted values.

This level of accuracy means we can trust this model for practical use — such as budgeting, dynamic pricing, or even route planning.

BUSINESS RECOMMENDATION

Based on cost efficiency and comparable fuel consumption between E10 and SP98, we recommend Cobify consider:

- Standardizing on E10 unless SP98 provides significant engine performance benefits.
- Using this model in a dashboard or mobile app to forecast trip cost for route optimization.

This approach not only improves operational efficiency but also supports Cobify’s goal of cost transparency and sustainability.