

Ivory Insights: Delivery Cost Analysis Summary

Problem Summary:

The client reported a 15% rise in delivery costs over the last 6 months, while shipment volume remained stable. This analysis investigates the increase and identifies key cost drivers using a mock dataset.

Key Insights:

- While costs did appear to rise, statistical testing found no significant increase in average delivery cost over the last 6 months.
- A separate analysis confirms the clients observation: shipping volume has remained stable.
- Cost efficiency metrics such as Cost_Per_Package and Cost_Per_Hour are the top predictors of delivery cost.
- Driver Hours significantly contribute to cost, confirming labor as a key operational expense.
- Vendor and Region also affect cost variability, with some vendors showing higher median costs.
- A deep learning model was tested as an experimental approach for future scalability, achieving $R = 0.89$.

Recommended Actions:

- Benchmark and monitor Cost_Per_Package across routes and vendors to spot inefficiencies.
- Optimize Driver Hours through route planning and workforce tracking.
- Re-evaluate vendor contracts, especially those with higher delivery medians.
- Track Cost_Per_Hour as an internal KPI to monitor workforce efficiency.

Potential ROI:

A 510% reduction in Driver Hours and Cost_Per_Package across top routes could reduce overall delivery cost by an estimated 812%, assuming the current cost structure.