AIR CANADA CARGO

Industrial Problem-Solving Workshop (IPSW) 2026

Cargo Pricing Intelligence Challenge

Forecasting Flight-Level Pricing Opportunities for Air Canada Cargo

Statement of Work Contents

Business Context

Revenue Management plays a critical role in Air Canada Cargo's ability to maximize revenue while maintaining market competitiveness and commercial performance. Every day, pricing decisions must be made across hundreds of flights using a combination of market intelligence, capacity information, commercial performance indicators and competitive positioning.

These decisions directly influence:

- Revenue generation
- Market share
- Capacity utilization
- Customer adoption
- Commercial profitability

Despite the availability of large volumes of operational and commercial data, identifying the pricing level that the market is most likely to support remains a complex challenge.

Current Challenge

Air Canada Cargo has developed an internal methodology to estimate **historical pricing opportunities** using observed market outcomes and commercial performance indicators.

This methodology produces an:

ESTIMATED_OPPORTUNITY_RATE_PER_KG

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which represents Air Canada Cargo's estimate of the pricing level that could have been supported by market conditions after the fact.

However, pricing decisions are made in advance and must evolve dynamically as new information becomes available, often with reporting delays.

Problem Statement

At the time of pricing decisions, Revenue Management teams must assess demand, capacity, commercial performance, and competitive positioning without having full visibility on future market conditions.

Objective

The objective is to develop a methodology capable of forecasting the *Estimated Opportunity Rate per Kg* for future flights using only the information available at decision time.

Scope

The challenge focuses on:

- General Cargo products
- Shipments greater than or equal to 1,000 kg
- Flights departing from EMEA
- Flight-level pricing decisions

Data Provided

Air Canada Cargo will provide historical datasets containing only information that would have been available at the time pricing decisions were made. Datasets have been specifically prepared to prevent data leakage and replicate real Revenue Management decision-making conditions.

Students should assume that all features reflect the information that was realistically available when pricing recommendations were established or subsequently reviewed. Because certain market indicators become available only after reporting delays, some information may not be available in its most current form at the time of a pricing decision. This reflects the real-world environment in which Revenue Management teams operate and continuously adjust pricing recommendations as new information becomes available.

Student teams will receive:

1. Flight-Level Features

Examples may include:

- Flight characteristics
- Departure information
- Aircraft characteristics
- Capacity indicators
- Commercial indicators
- Pricing indicators

- Market-Level Features

2. Where flight-level information is not available, market indicators may be aggregated at Leg OD level.

Examples may include:

- Third-Party Market Demand Indicators
- Third-Party Market Rate Indicators
- Market Share Indicators
- Historical Benchmark

3. Air Canada Cargo will provide a historical benchmark:

ESTIMATED_OPPORTUNITY_RATE_PER_KG

This benchmark represents Air Canada Cargo's estimate of the pricing level that could have been supported by observed market conditions. The benchmark should not be interpreted as an observed market price. Rather, it represents an internally developed pricing opportunity benchmark used for model training, evaluation, and comparison purposes.

Expected Deliverables

1. Pricing Opportunity Estimation Model

Develop a methodology capable of estimating:

ESTIMATED_OPPORTUNITY_RATE_PER_KG

for future Air Canada Cargo flights.

2. Technical Documentation

Describe:

- Data preparation methodology
- Feature engineering approach
- Modeling methodology
- Validation approach
- Assumptions and limitations

3. Business Interpretation

Explain:

- Key pricing drivers
- Most influential variables
- Business interpretation of predictions
- Potential business applications
- Solutions should remain explainable and suitable for Revenue Management decision-making.

Bonus Challenges

Challenge 2 - Pricing Opportunity Sensitivity Analysis

Estimate:

- Minimum Supported Market Rate
- Estimated Opportunity Rate
- Maximum Supported Market Rate

for future flights.

The objective is to estimate a realistic pricing range rather than a single pricing recommendation.

Teams should propose a methodology capable of quantifying pricing uncertainty and supporting scenario-based decision-making.

Challenge 3 - Explainable Pricing Intelligence

Provide explainability mechanisms capable of answering:

- Why was this rate recommended?
- Which variables influenced the recommendation?
- What market conditions support the pricing opportunity?

Examples may include:

- SHAP Analysis
- Feature Importance
- Driver Contribution Analysis

Evaluation Criteria

Student teams are expected to evaluate and demonstrate the performance of their proposed methodology using a combination of technical, business, and decision-support metrics.

1. Opportunity Rate Accuracy

Measures how accurately the proposed methodology estimates the historical pricing opportunity benchmark.

Metric	Formula	Objective
Opportunity Ratte Accuracy	Average Absolute Error between Predicted Opportunity Rate and Estimated Opportunity Rate	Minimize

Student teams should demonstrate the accuracy of their methodology against the historical benchmark.

2. Revenue Opportunity Recovery

Measures the potential revenue opportunity identified by the proposed methodology compared to the historical Revenue Management pricing decision.

Metric	Formula	Objective
Revenue Opportunity Recovery	(Predicted Opportunity Rate – Historical Market Rate) * Shipment Weight	Maximize

Student teams should quantify and demonstrate the potential revenue impact associated with their recommendations.

3. Opportunity Identification Accuracy

Measures the ability of the proposed methodology to correctly identify the direction of the pricing opportunity.

Metric	Formula	Objective
Opportunity Identification Accuracy	Correct Opportunity Directions ÷ Total Flights	Maximize

Opportunity directions are classified as:

- Increase
- Maintain
- Decrease

Student teams should demonstrate how effectively their methodology identifies the appropriate pricing action.

Additional Evaluation Considerations

Solutions will also be evaluated on:

- Explainability
- Business relevance
- Operational feasibility
- Innovation
- Scalability
- Revenue Management applicability

Final Objective

The ultimate objective of this challenge is to help Air Canada Cargo improve its ability to identify and quantify future pricing opportunities through the development of a robust, explainable, and business-oriented pricing intelligence solution.

The winning solution should demonstrate how advanced analytics and machine learning can support Revenue Management teams in making better-informed pricing decisions while remaining practical for real-world deployment.