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Staffing Model – Cargo Customer Service

Sebastian Cosgrove
Director, Global Customer Service - Cargo

The Problem

Currently, Air Canada Cargo Customer Service uses an Excel spreadsheet to calculate the required number of staff to achieve our desired service levels. With new channels of communication, we need a solution to estimate number of staff required to service our customers.

Context

Air Canada Cargo Customer Service creates a one-year staffing schedule based on historical data for emails and calls.

We build our staffing schedule on a typical Monday – Sunday week with operating hours of 0600 – 2200 EST including holidays.

Data Sets

- **Total Full-Time (F/T) employees: 36** (288 hours)
- F/T hour blocks: 8-hour blocks
  - Employees are handling calls/emails for 7 hours of each shift. This allows for 30 minutes for lunch and 30 minutes flex time.

- **Total Part-Time (P/T) employees: 10** (60 hours)
- P/T hour blocks: 6-hour blocks
  - Employees are handling calls/emails for 5 hours of each shift. This allows for 30 minutes flex time.

Historical phone and email data provided in the Excel spreadsheet.

Desired Outcome

- Create a standard seven (7) time of day estimate to optimize staff schedules
- 80% of calls should be answered with 60 seconds or less
- Emails should be answered with 60 minutes or less

Restrictions

-Shifts cannot be broken up; hours must be consecutive.
-If an uplift in staffing is required or projected, please highlight this.

Evaluation Criteria

- **Mean Absolute Error**
  - The MAE is defined as the average of the absolute difference between forecasted and true values. Where y_i is the expected value and x_i is the actual value (shown below formula). The letter n represents the total number of values in the test set.

$$\mathrm{MAE} = \frac{\sum_{i=1}^{n} |y_i - x_i|}{n}$$

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Thank you.