Forecasting Model for Sporadic Distributor Based Market
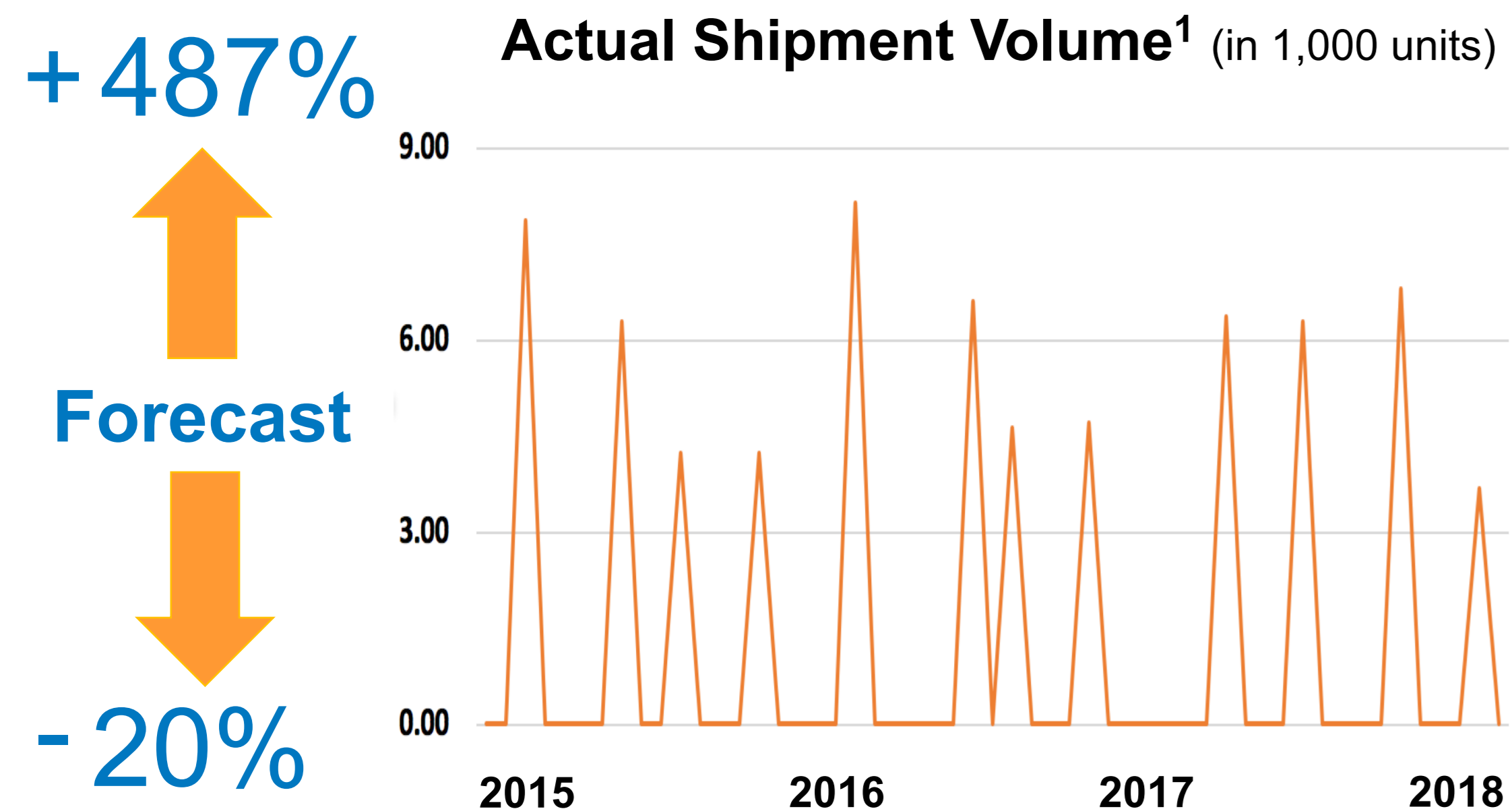
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Student: Stanley Park, SCM 2019
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Sponsor: Fast Moving Consumer Goods (FMCG) Company

Motivation / Background

+487%

Forecast

-20%

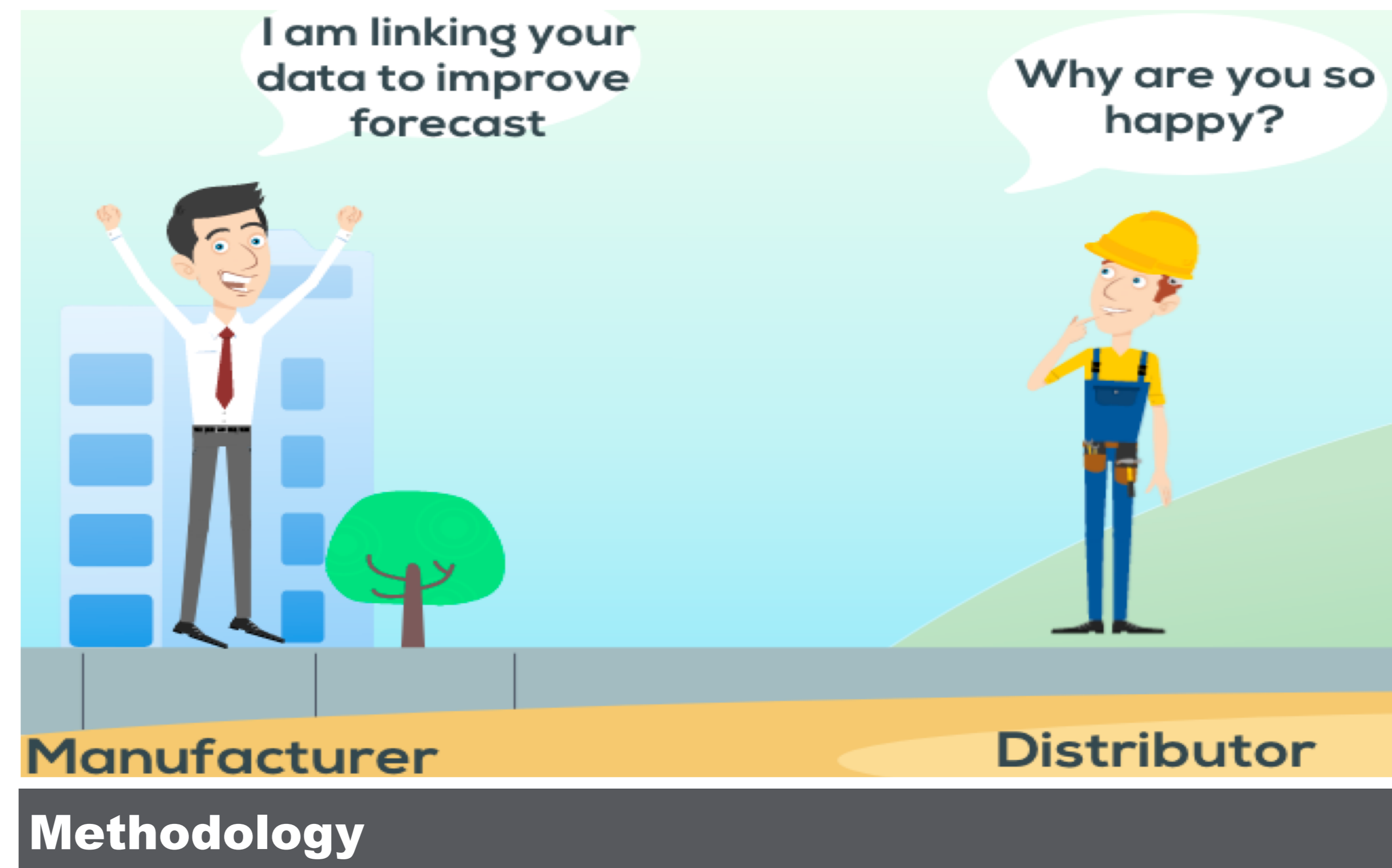**Actual Shipment Volume[1]** (in 1,000 units)

- Wide discrepancy between forecast and actual shipment impacts business (Missing sales, high inventory costs)

Key Question / Hypothesis

- What is the best model to forecast long & short term shipments for sporadic distributor based markets?

- How can we link distributor data to improve the E2E (End to End) supply network?

- [Hypothesis] Downstream dynamic affects the shipments of company

Relevant Literature

Charles W. Chase, Jr., Demand-Driven Forecasting, Second Edition, John Wiley & Sons, 2013

J. D. Croston, Forecasting and stock control for intermittent demands, Operational Research Quarterly, 1977

Manufacturer   **Distributor**

Methodology

#of Shipments

Function of

Sales, Inventory, Promotions…

- **Initiation**
  - Planning
  - Literature review

- **Data Management**
  - Collection
  - Cleaning

- **Modeling**
  - Initial models
  - Validation

- **Prediction & Evaluation**
  - Prediction
  - Measuring accuracy
  - Comparison

Factory

Retailer   Retailer

Distributor

Initial Results

Shipment vs. Sales

- Correlation exists between distributor shipment and sell-out
- Further analysis required to integrate further data points

Expected Contribution

- Investigating relationship between distributor data (ex. stock level, promotion, wholesale price) and the actual shipment

- Developing the forecast model that accurately integrates data across E2E supply network

- Applying the forecast model to other regions / category / brand / products of the company

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1. The graph represents shipment of one particular SKU