



Chris Kirchberg  
JMP Systems Engineer  
chris.kirchberg@jmp.com

## Exploratory Data Analysis and Dynamic Graphics

### Introduction

- Use JMP to examine relationships, patterns and outliers to gain insight into a business problem
- Use Supply Chain Late Orders as an example

### Description of Problem and Data

- Situation:
  - A supply chain group within a large organization was experiencing late shipments that were impacting their ability to make and deliver products to customers.
  - Late shipments resulted in reduced profitability due to internal production delays and customer late order penalties.
- Questions: Team needs to analyze available data through JMP to answer the following:
  - Can I get a summary of late shipment impact on profit?
  - Can I find key patterns that drive late shipment occurrences?
  - Can I create a model that allows predictions of late shipment performance?

### Dataset

- Analyzed one months worth of detailed shipment data for late shipment occurrence and impact
  - Major outputs are probability of late shipments and the impact of late shipments (in dollars)
  - Major inputs are parameters around shipment type, delivery locations, and product make-up
- [Supply Chain Late Orders Master](#)

### Summarizing

- Methods for summarizing data to show late shipment impact on profit interactively using Tabulate, Graph Builder, Data Filter and Bubble Plot.

## Summarizing

### Supply Chain Late Orders Summary

## Analysis

- Analyze data to uncover key variables impacting late shipments. Use Distribution, Data Filter, Recursive Partitioning, Contingency Analysis, One-Way Analysis and others

## Modeling

- Model data to predict and provide information for correcting, late shipments. Use Fit Model, Parameter Estimates, Prediction Profiler and others

## Summary

- Can I get a summary of the supplier late shipment impact on profit? - Graph Builder helped show differences in late order performance among Suppliers (Stand outs: Smith - worst in class & Perkins – best in class)
- Can I find key patterns that drive late shipment occurrences? - Distribution and Partition helped uncover drivers of high late order probability and values. (Drivers: Shipment Type, Shipment Method and Product Grade)
- Can I create a model that allows predictions of late shipment performance? - Profiler helped show impact of driver combinations in the field on late order and probability and values. (Over \$3,000 difference late order fines in some instances!)