Rotman

QUICK INTRO TO JMP

Tutorial / https://tdmdal.github.io/jmp-intro-2021/

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Goal for Today – Get You Started with JMP

- What is JMP
- JMP basics (demos & learning by doing)
  - JMP basic navigations
  - Open/Import datasets
  - Manipulate data: a few simple tasks
  - Analyze data: a simple linear regression model
- Learning resources

What is JMP

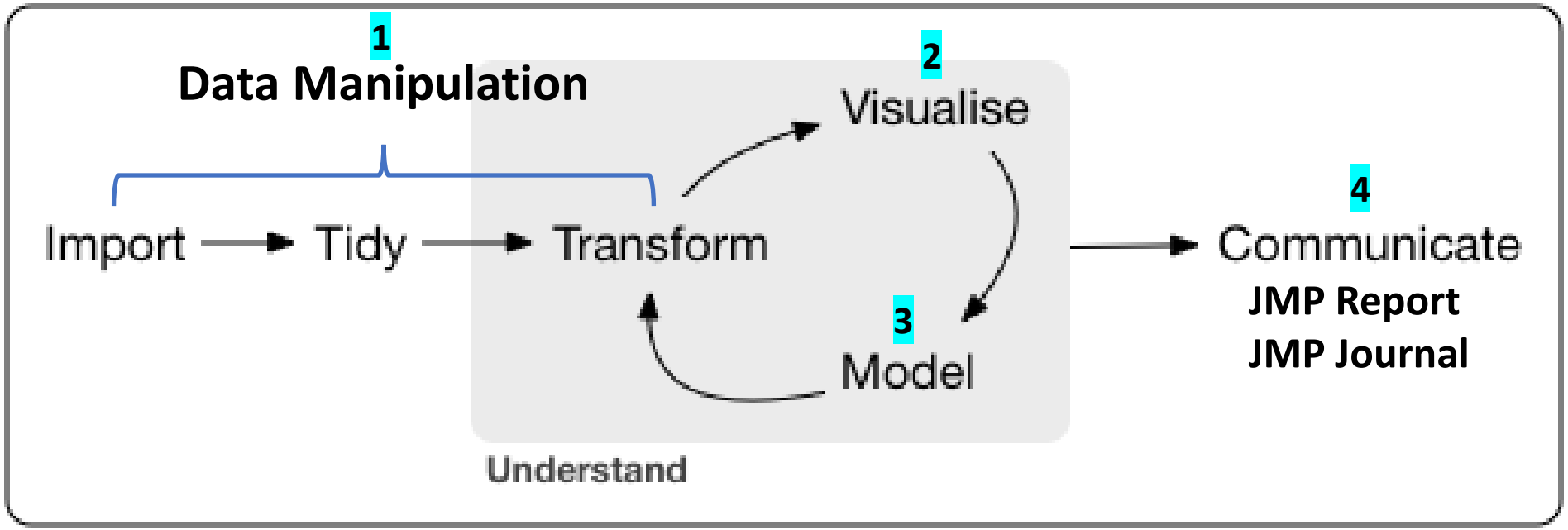
- Predictive analytics software from SAS Institute
  - data manipulation
  - visualization
  - statistical & machine learning modeling
  - reporting

- Intuitive beginner-friendly **point-and-click interface**
  - Analytics with zero/minimum coding

- Flexible and extensible for advanced users
  - JMP Scripting Language (JSL) for automating or extending point-and-click functionality
  - Connect to the richness of SAS: retrieve SAS data and submit SAS code
  - Connect to Database engine, Matlab, R, Python, Excel, Web API, etc.

See key features of JMP Pro at JMP Pro website.

A Typical Workflow

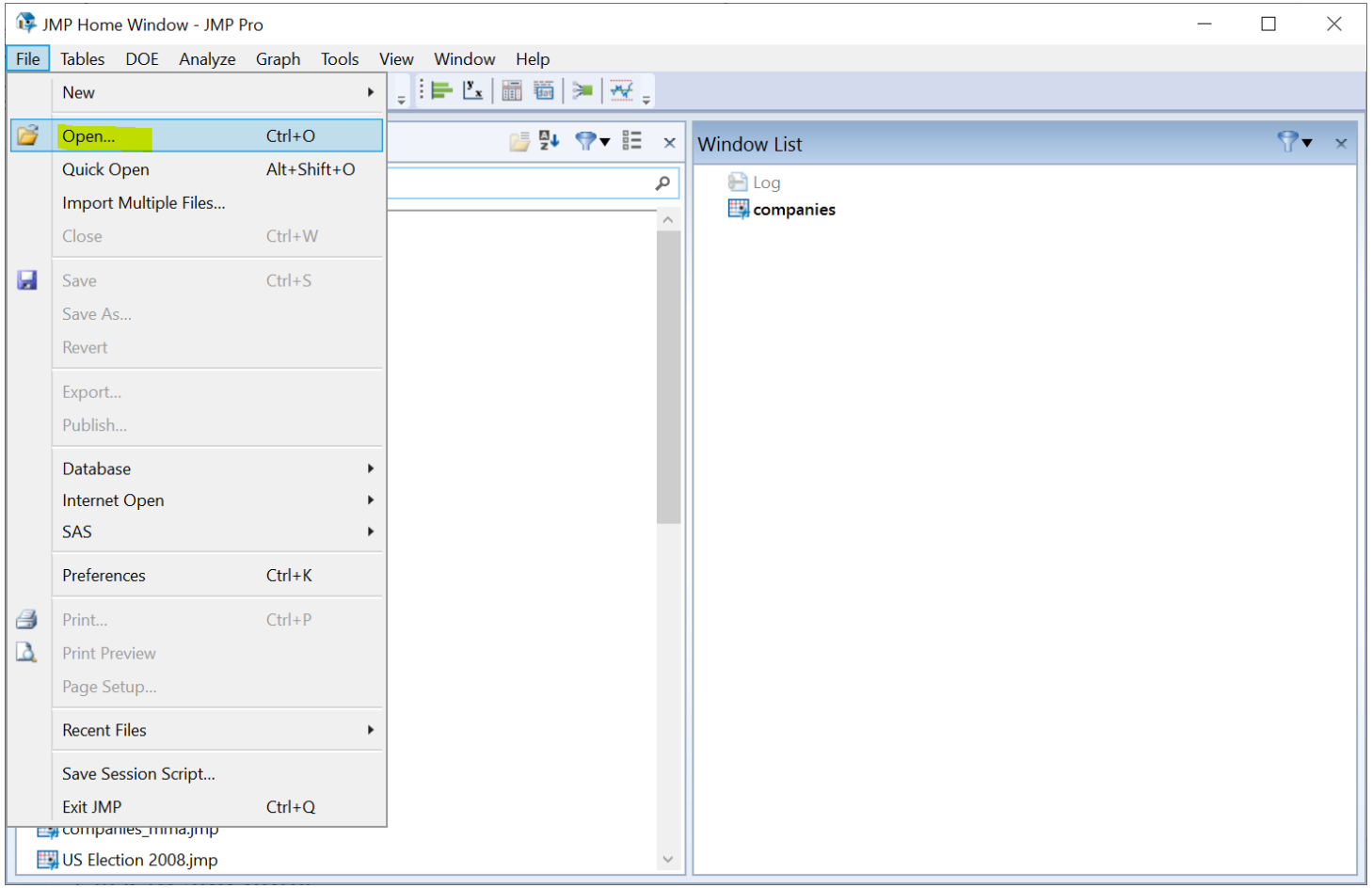


point-and-click & programming

Concept and graph adapted from https://r4ds.had.co.nz/introduction.html

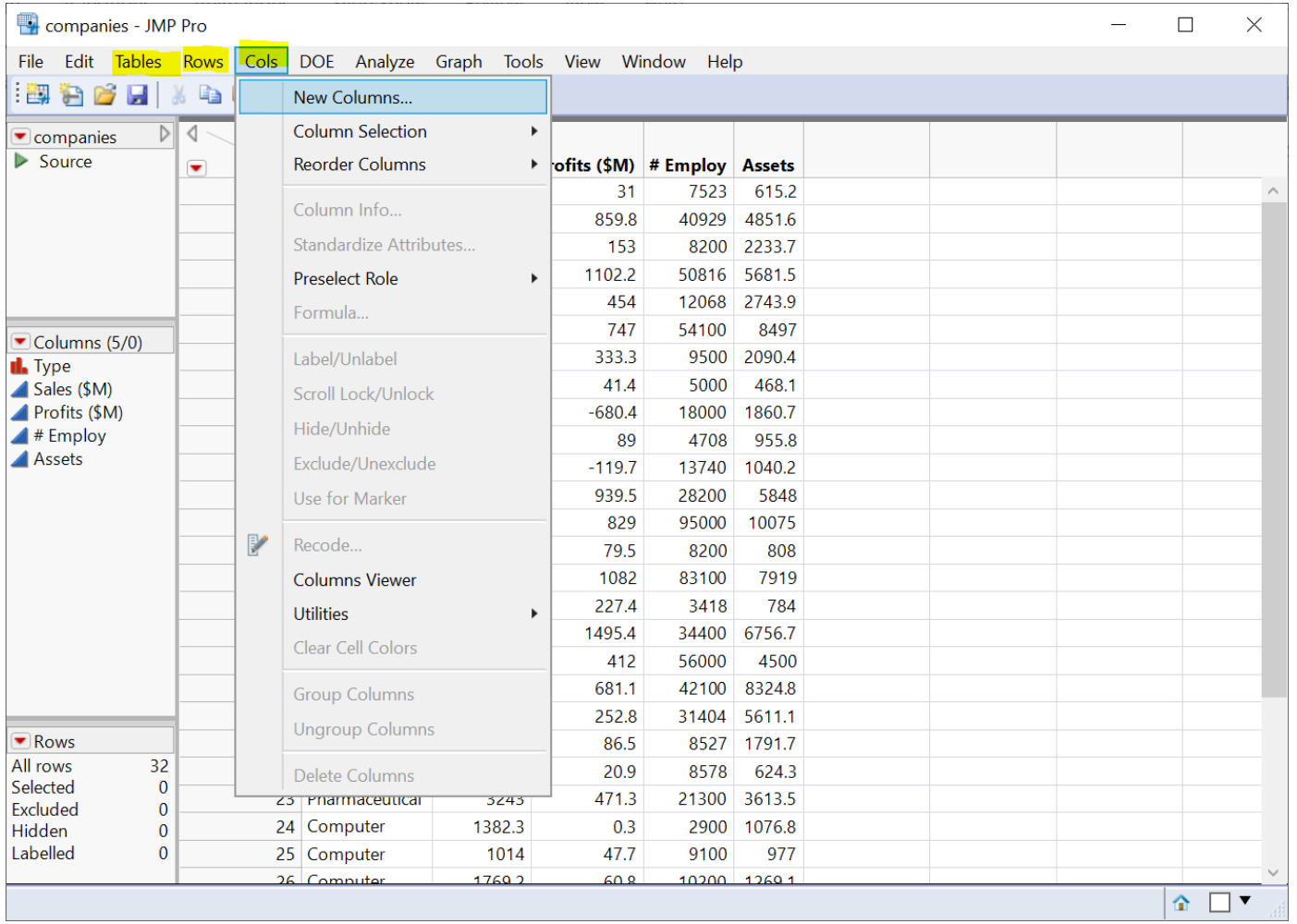
JMP Navigations: Open / Import Data

- Open native JMP data file
  - .jmp
- Import data files in other format
  - .csv files
  - Excel files
  - … many more



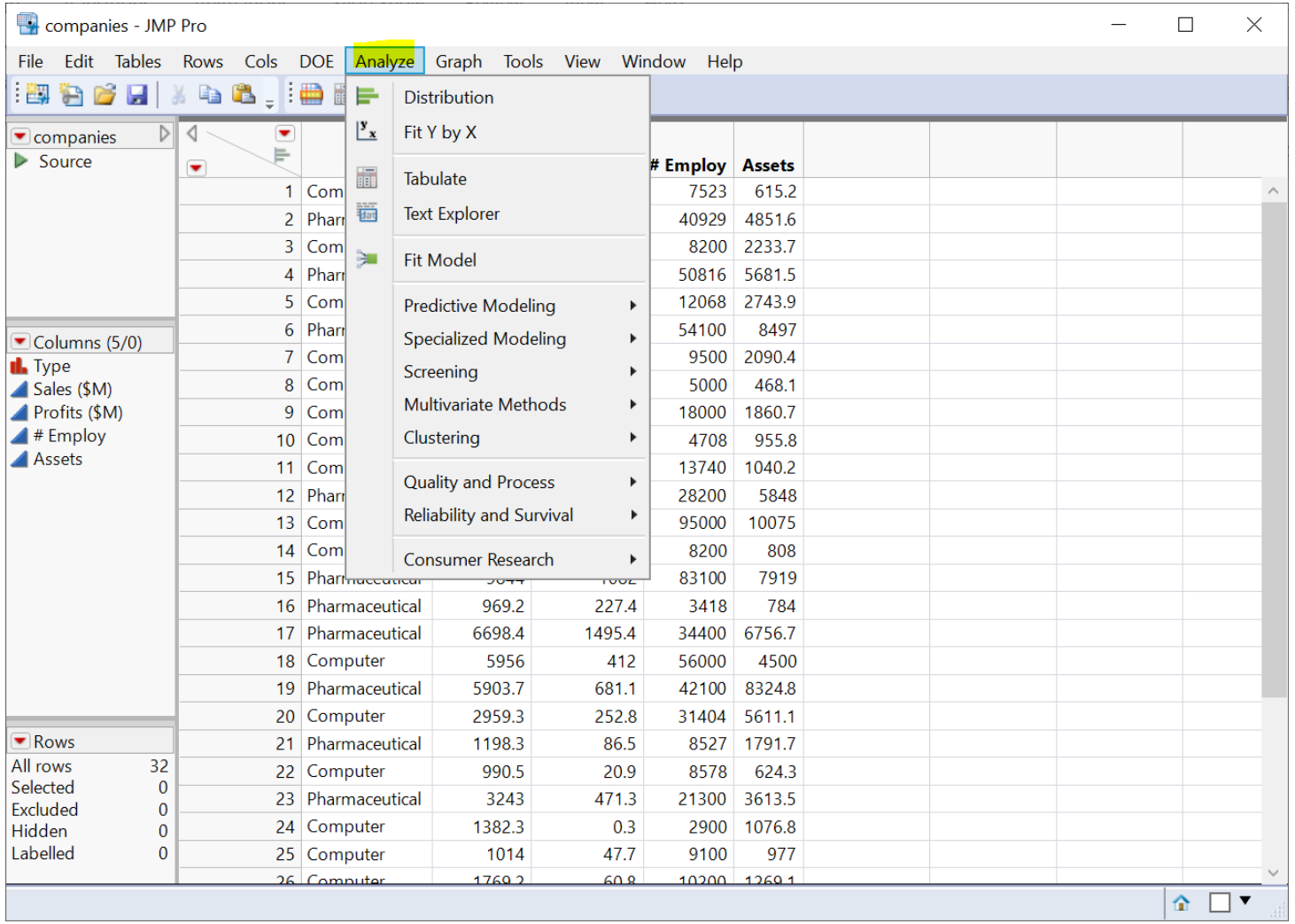
JMP Navigations: Data Manipulation

- Column operations
  - E.g., create a new col
- Row operations
  - E.g., filter rows
- Table operations
  - E.g., merge two tables



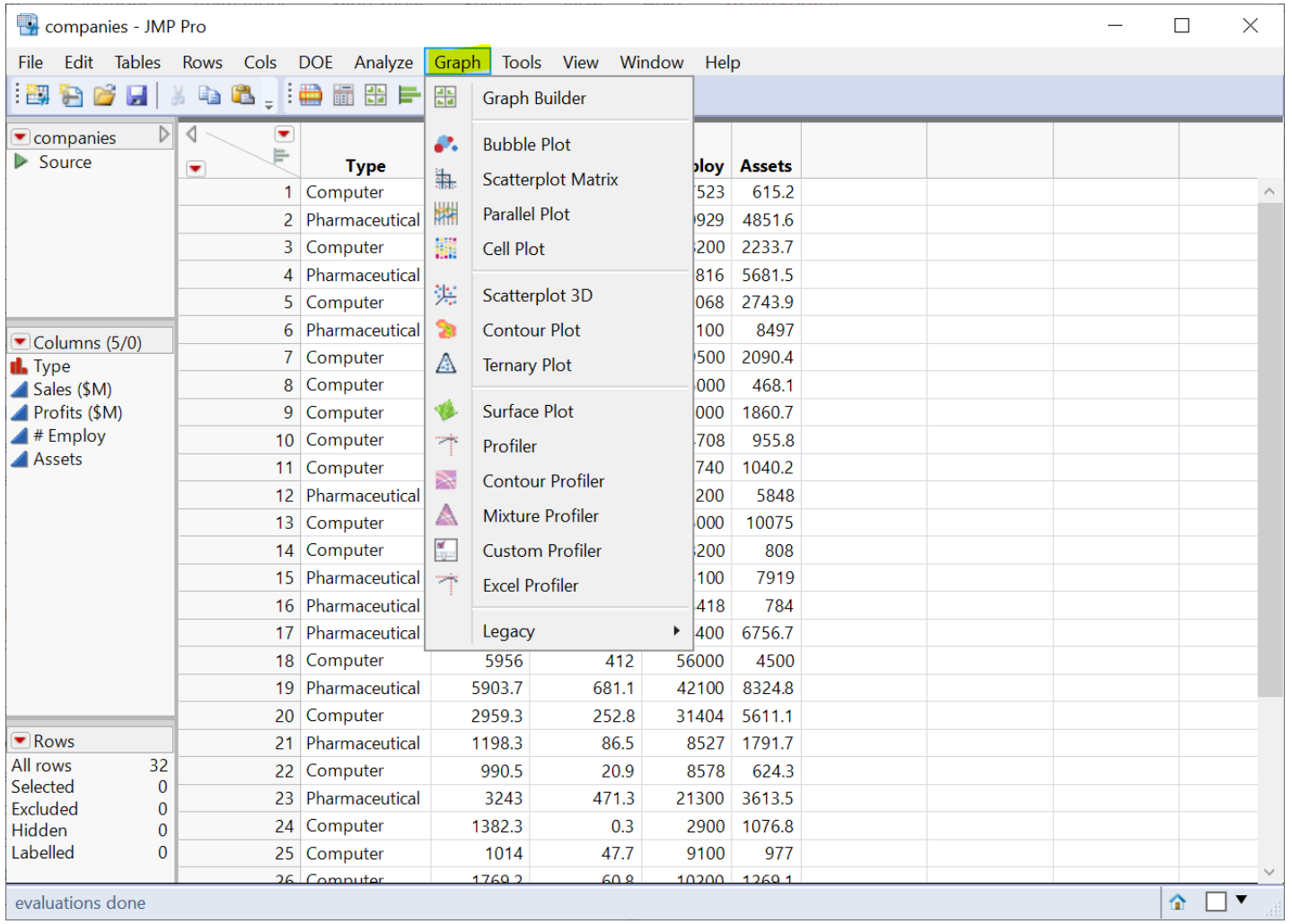
JMP Navigations: Modeling

- Crosstab analysis
  - Simple: Fit Y by X
  - Sophisticated (e.g. multiple responses, nested X): Consumer Research -> Categorical
- Regressions
  - Simple: Fit Y by X
  - Multiple: Fit Model
- K-means clustering
  - Clustering -> K Means Cluster
- Multidimensional Scaling
  - Multivariate Methods -> Multidimensional Scaling



JMP Navigations: Visualization & Reporting

- Visualization
  - Analysis graphs (comes with modeling)
  - Specialized graphs
- Reporting
  - Analysis reports (comes with modeling)
  - JMP journal for presentation



JMP Navigations: Demo

- A simple example
  - import data
  - fit y by x: Profit by Sales per employee (a simple linear model)

- Data (companies.csv)

```
Type,Sales ($M),Profits ($M),# Employ,Assets
Computer,855.1,31.0,7523,615.2
Pharmaceutical,5453.5,859.8,40929,4851.6
Computer,2153.7,153.0,8200,2233.7
…
```

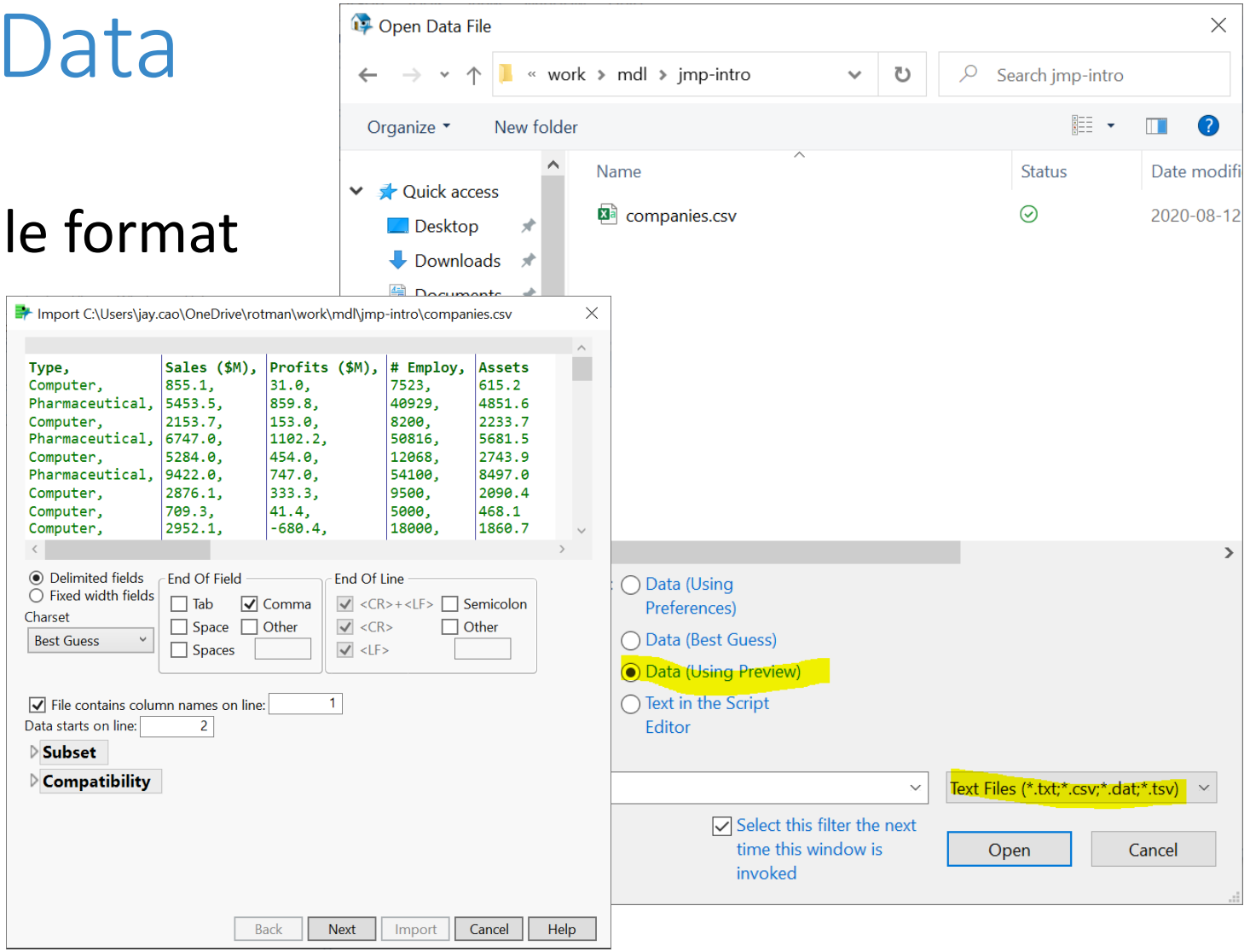
Your Turn (Hands-on; 10 mins)

- Repeat the demo I just did
  - import the dataset to a JMP data table
  - fit y by x (Profit by Sales per employee)
  - save the analysis script in the data table

- Challenge: run a multiple linear regression
  - predict Profits using two variables: Sales and Size
  - Size is a categorical variable defined as
    - if # Employ < 10000, then size = “small”
    - Otherwise, Size = “large”

Review: Import Data

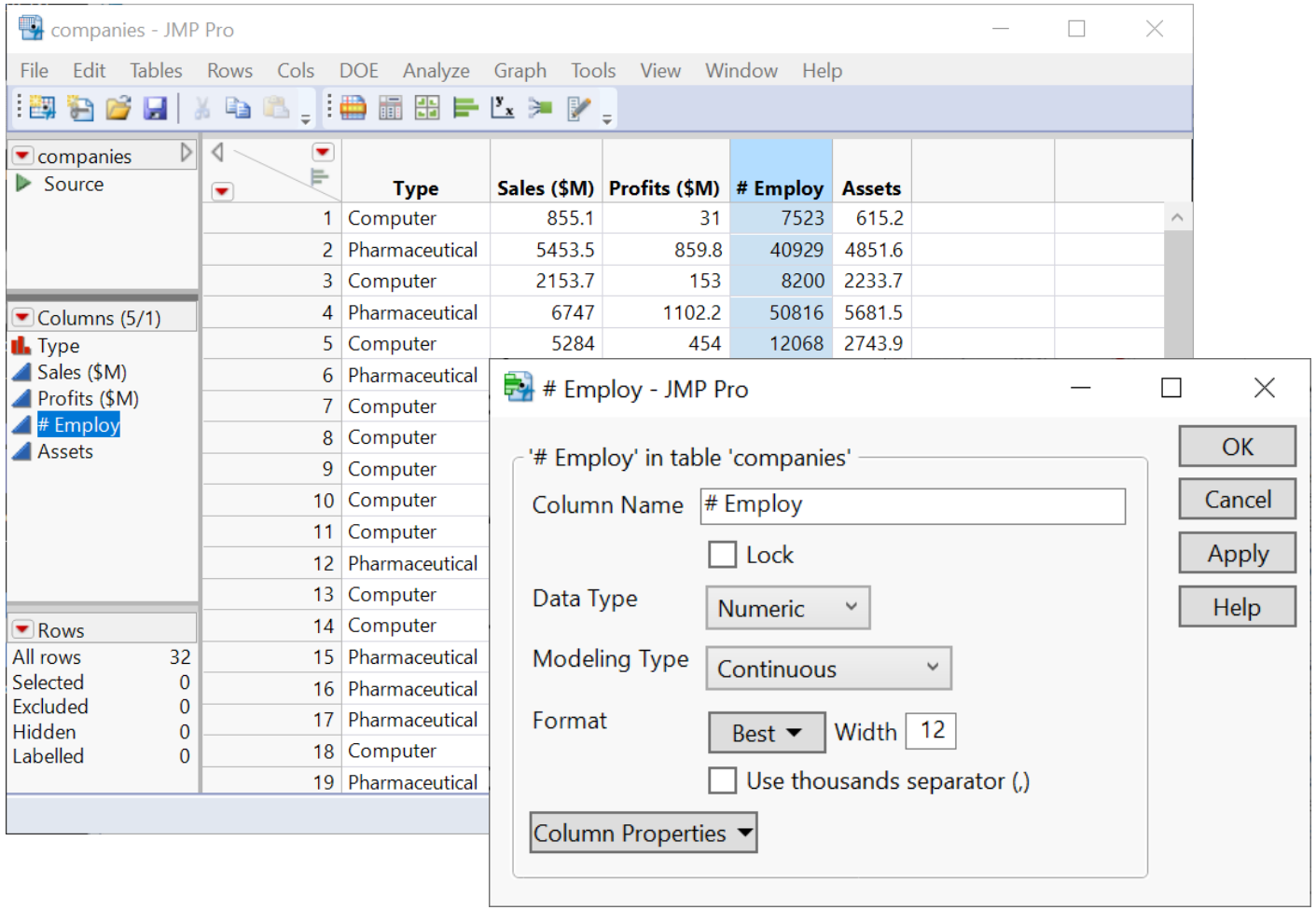
- Import support many file format
  - csv
  - Excel
  - json
  - many more
- JMP native data file
  - .jmp



https://www.jmp.com/support/help/en/15.2/#page/jmp/import-your-data.shtml#

Review: Data Table

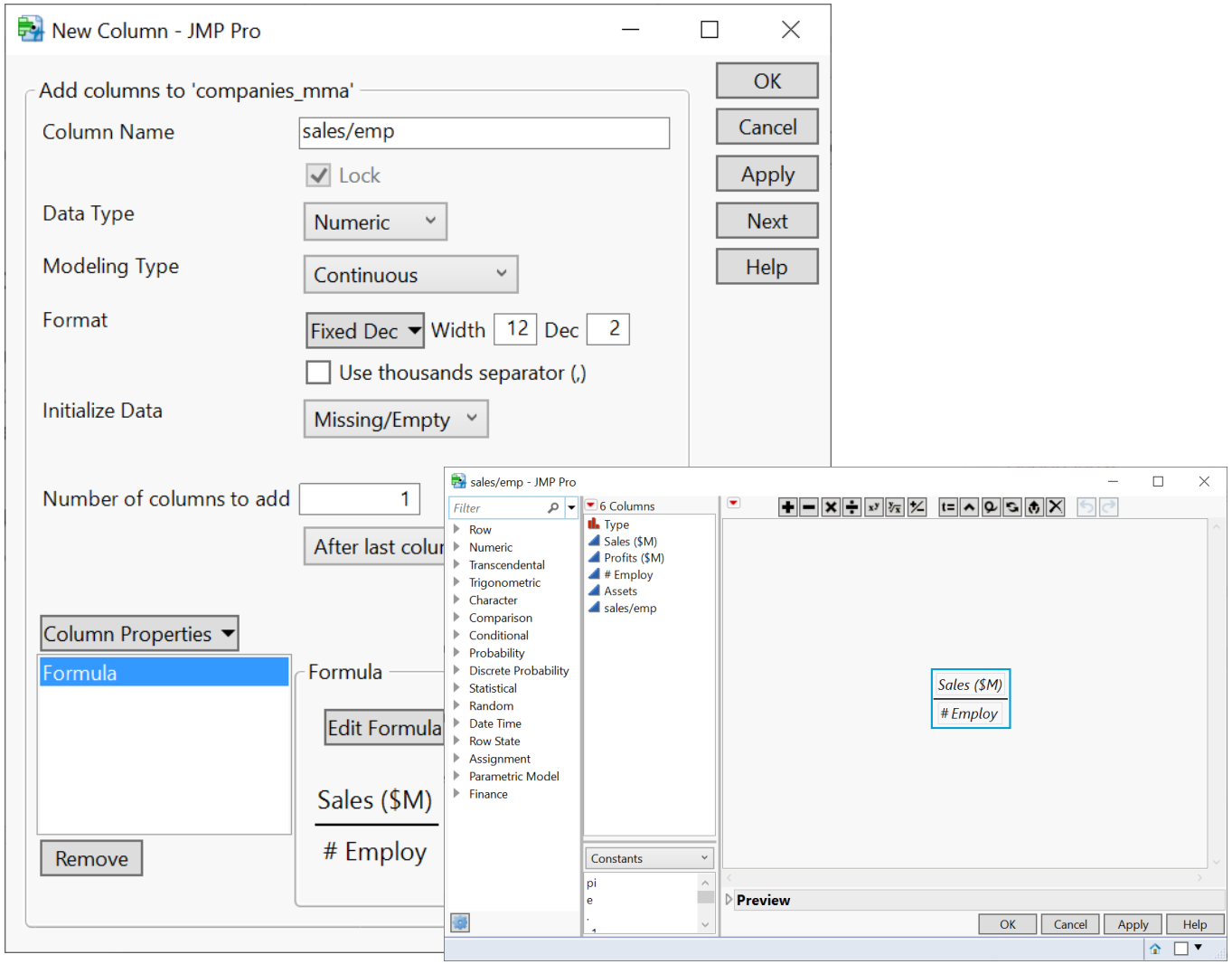
- Three panels on the left
  - Table (JMP Script)
  - Columns
  - Rows
- Column Info



https://www.jmp.com/support/help/en/15.2/#page/jmp/work-with-data-tables.shtml#

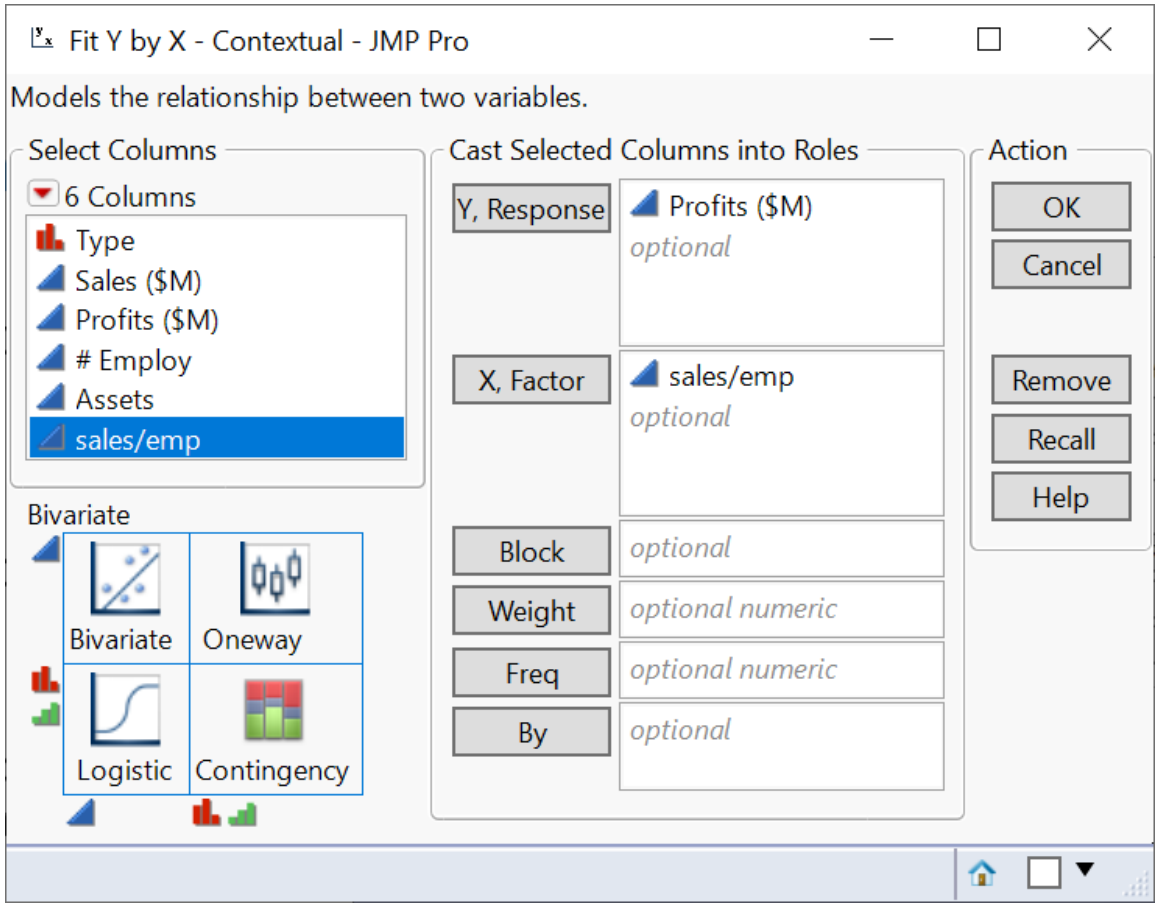
Review: Create a New Column / Variable

- Create a new column
  - Col name: sales/emp
  - Data type: Numeric
  - Col property: Formula
  - Formula: Sales ($M) / # Employ
- A note on column names
  - JMP is flexible with col names
  - In general, special symbols in col names is not a good idea
- Formula editor



Review: Fit Y by X Platform

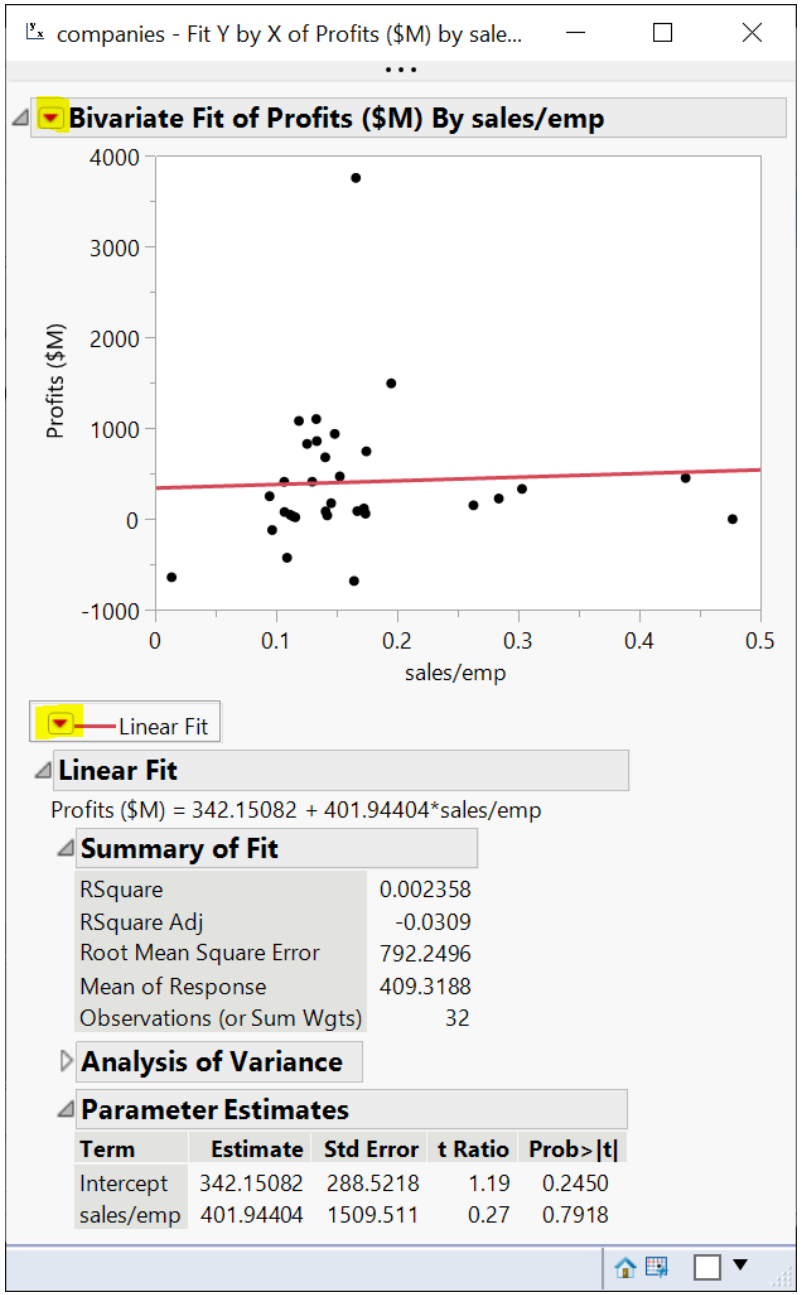
- Relationships between **two** variables
- Model choice depends on Y and X variable types
  - four model choices under bivariate model



https://www.jmp.com/support/help/en/15.2/#page/jmp/analyze-relationships.shtml#

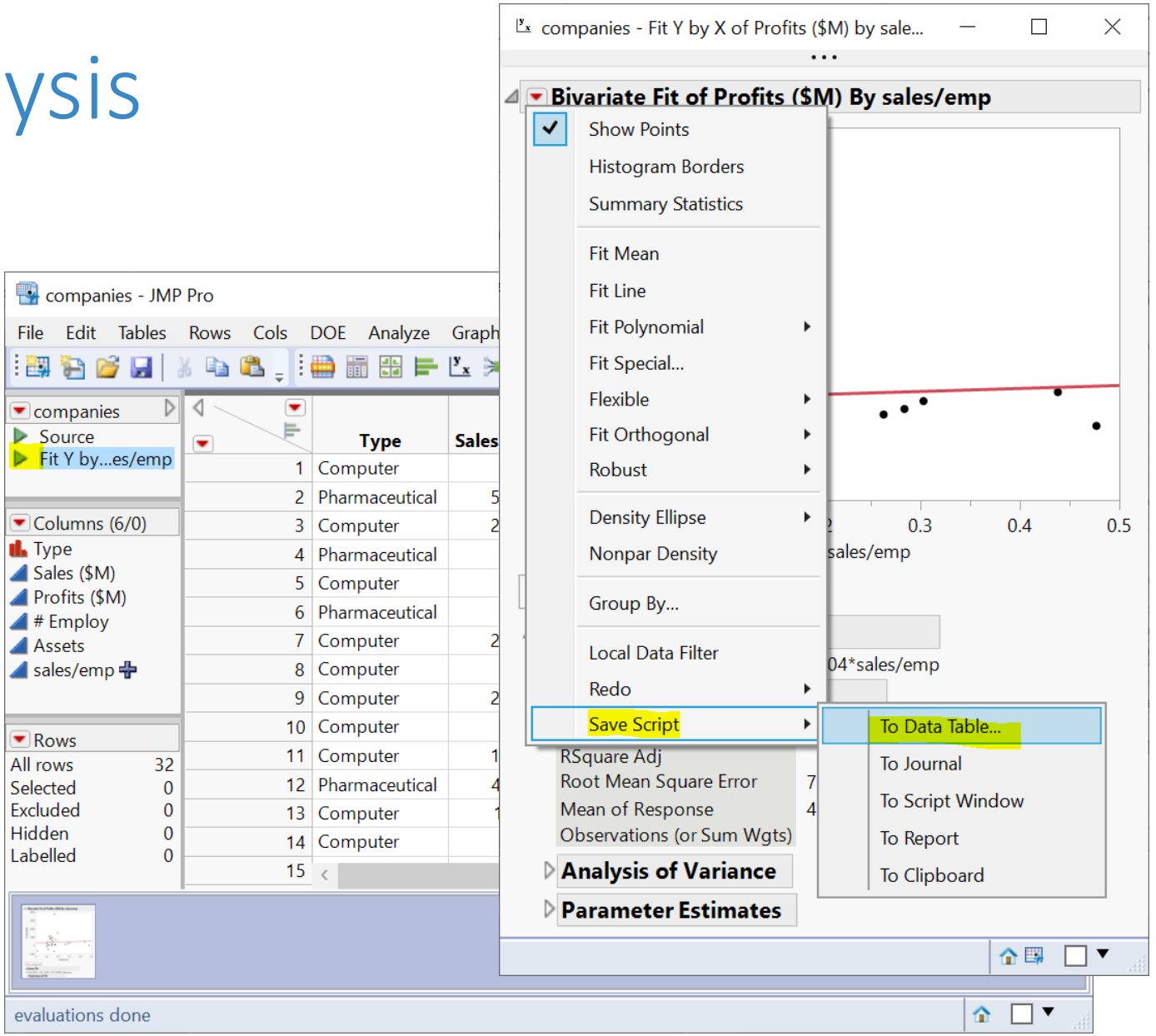
Review: Analysis Report

- Many actions are available under the red triangle buttons
  - Fit line
  - Redo -> Redo Analysis
  - Redo -> Automatic Recalc
  - Save Script -> To Data Table…



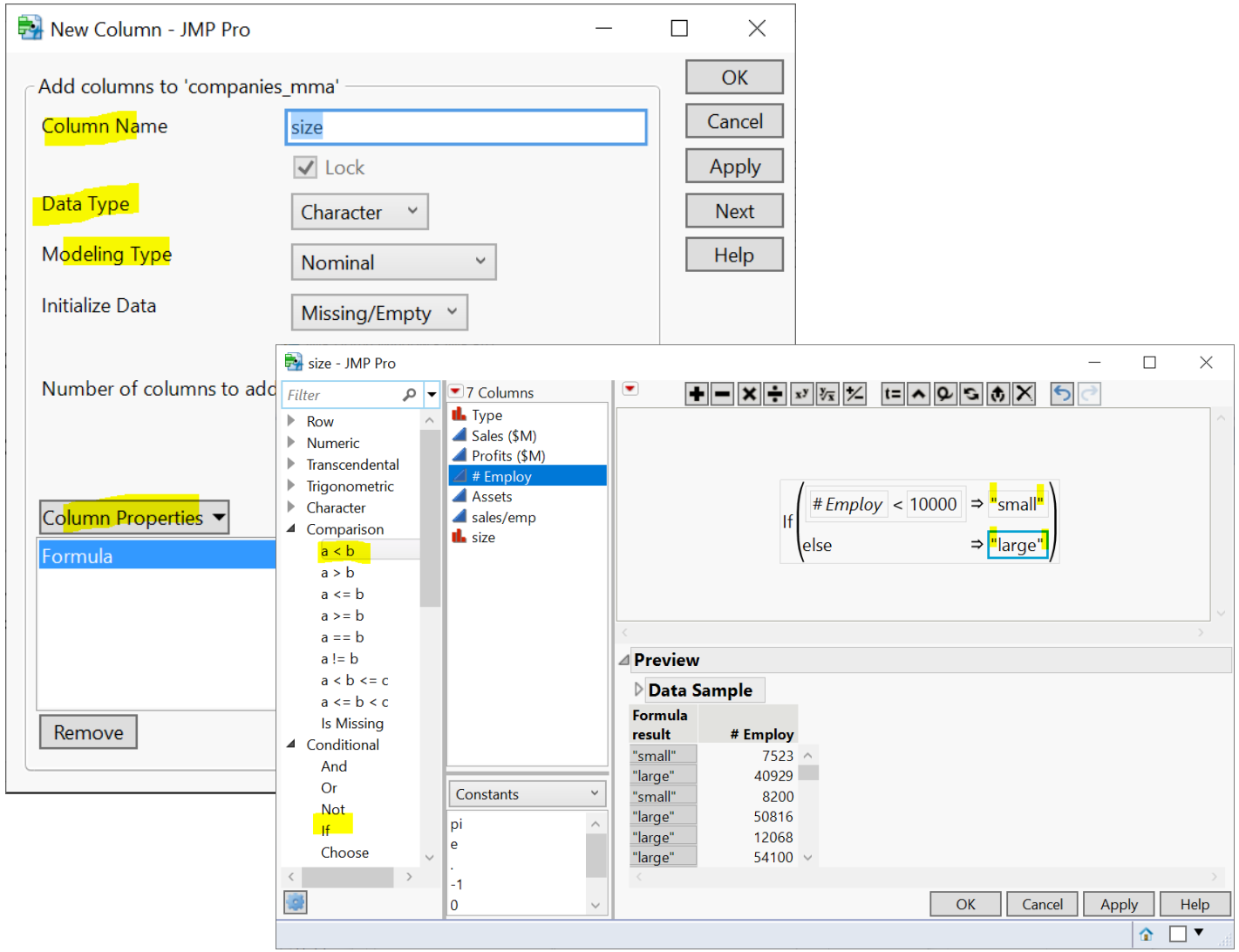
Review: Save Analysis

- Save data table
- Capture the script for analysis report



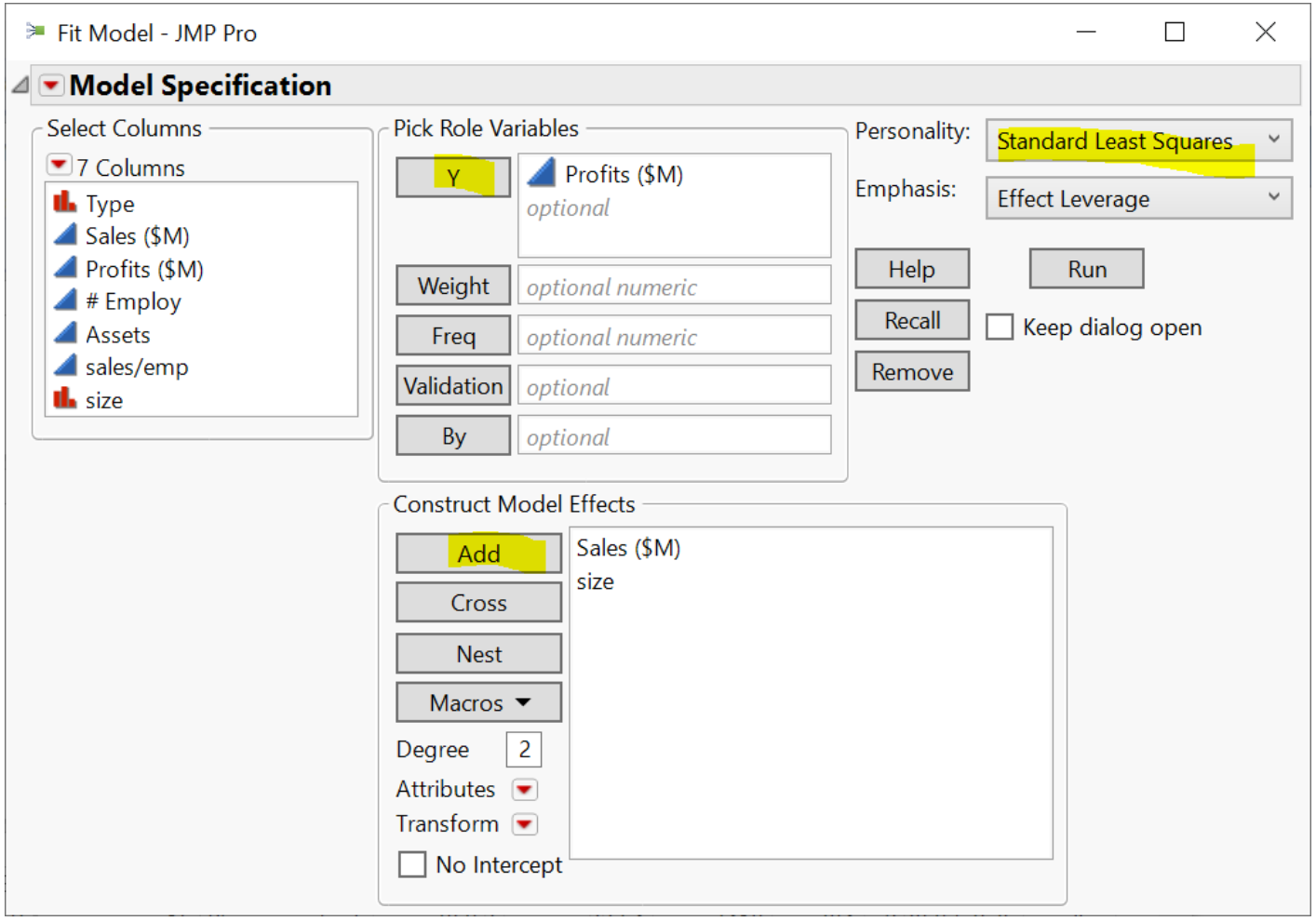
Review: Create a Categorical Variable/Col

- Cols -> New Columns
  - Col Name: size
  - Data Type: Character
  - Model Type: Nominal
  - Col Property: Formula
- It's a categorical variable
  - if # Employ < 10000, then size = "small"
  - else, size = "large"



Review: Fit Model - Multiple Linear Reg

- Analyze > Fit Model



Learning Resources (jmp.com)

- JMP Academic (Students) 
  - JMP Basics (great beginner videos!)
  - Go Deeper (one-page guide, short videos, webinars, and a full course.)

- JMP Documentation Library (many examples on included datasets)
  - Getting started document: Discovering JMP
  - Basics
    - Using JMP (data table)
    - Basic Analysis
    - Essential Graphing
  - Specific topics
    - Fitting Linear Models
    - Predictive and Specialized Modeling