



# Teaching Statistics: Intuitive, Visual and Fun with JMP

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Consortium for the Advancement  
of Undergraduate Statistics Education

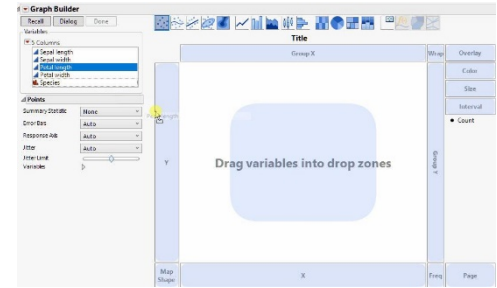


1. Explore some of the **visual and interactive features** that make teaching and learning in JMP engaging

2. Identify free and low-cost options to get **access to JMP** for the classroom

# visual and interactive features in JMP

- Dynamic Linking of data
- Data Filtering
- Drag-and-Drop Graph Builder
- Profiler
- Built-in Concept Applets
- Easy transition to data science
  - 3-clicks to a Validation column
  - Visual emphasis for partitioning (CART)
  - Profiler to understand model



# How to Get JMP

With affordable licensing options to fit every situation, it's easy to get academic access to JMP.

[https://www.jmp.com/en\\_us/academic/academic-licensing.html](https://www.jmp.com/en_us/academic/academic-licensing.html)

- The JMP Academic Suite: site license with access to JMP and JMP Pro for an unlimited number of academic users (including home use and virtualization)– check your University Software webpage for access or email **academic@jmp.com**
- 6- or 12-month student licenses of JMP for classroom use: **onthehub.com/jmp**
- JMP Student Edition bundled for free with many Introductory textbooks or available for a 3 year license at **jmp.com/getse**

# A few resources: jmp.com/learn



## Randomization Testing in JMP® Pro

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**JMP PRO** This page provides information on randomization testing, which is a re-sampling approach to significance testing. Randomization testing is also known as Permutation testing. Randomization Testing is available from all JMP® Pro analysis reports.

### Randomization Testing in JMP Pro

Here, we describe how to conduct a randomization test for two means using Fit Y by X.

- From an open JMP data table, right-click on the column header for the Nominal X variable (in this example, sex) and select **New Formula Column > Random > Sample With Replacement**.

This creates a new formula column, Resample[sex].

- Conduct a 2-Sample t-Test.

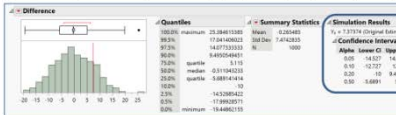
For this example, the Y, Response is Weight and the X, Factor is sex. See the page [Two Sample t-Tests and CIs](#) for information on how to conduct this test and interpret results.

- In the analysis report window, right-click on the statistic of interest and select **Simulate**. Here we right-click on the column of output containing the Difference (between means).

- In the Simulation window, select the column to switch out (sex) and the column to switch in (Resample[sex]), enter the desired number of samples (1000, in this example), and the random seed (if desired), and click **OK**.

JMP re-runs the analysis for each sample. For each iteration, the values of the X, Factor (sex) are resampled with replacement. The results are stored in a data table with statistics for the original sample and each of SimID > column identifies the resample number.

- Use the **Distribution** platform to explore the results for the statistics of interest. Confid interval estimate (the Difference, in this example) are provided, along with empirical (o



Interpretation: The empirical p-value for the two-tailed test is 0.3530. That is, 35.3% of resampled differences were as extreme or more extreme than the difference we actual

Notes: The **Randomization Testing Add-in** on the JMP User Community (community.jmp.com) interactive randomization testing for common hypothesis tests in JMP. For more details on Pro, search for **Simulate** in the JMP Help or in the book **Basic Analysis** (under **Help > Books**



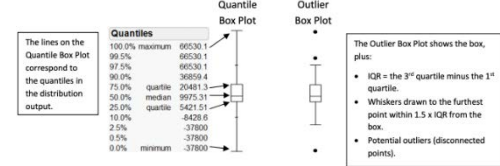
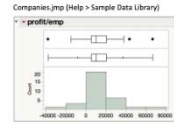
## Box Plots

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Use to display the distribution of continuous variables. They are also useful for comparing distributions.

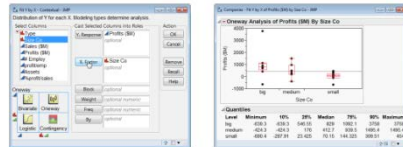
### Box Plots – One Variable

- From an open JMP® data table, select **Analyze > Distribution**.
- Click on one or more continuous variables from **Select Columns**, and select **Y, Columns** (continuous variables have blue triangles).
- Click **OK**. An outlier box plot is displayed by default next to the histogram (or above if horizontal layout). To display a quantile box plot, select the option from the **red triangle** for the variable.

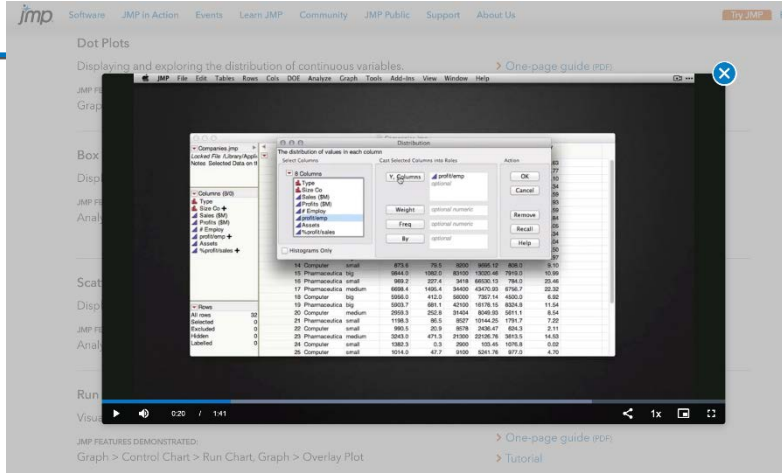


### Box Plots – Two Variables

- Select **Analyze > Fit Y by X**.
- Click on a continuous variable from **Select Columns**, and Click **Y, Response**.
- Click on a categorical variable and click **X, Factor** (categorical variables have red or green bars).
- Click **OK**. The **Oneway Analysis** output window will display.
- Click on the **red triangle**, and select **Display Options > Box Plots** to display quantile box plots, or select **Quantiles** to display both box plots and quantiles (shown right).



Notes: Box plots for one or more variables can also be generated from **Graph > Graph Builder**. For more information on box plots, see the book **Using JMP Student Edition** (under **Help > Books**).



<https://community.jmp.com/t5/JMP-Blog/Shifting-to-online-instruction-Teaching-online-made-easier-with/ba-p/253959>

The screenshot shows a web browser window with the URL [community.jmp.com/t5/JMP-Blog/Shifting-to-online-instruction-Teaching-online-made-easier-with/ba-p/253959](https://community.jmp.com/t5/JMP-Blog/Shifting-to-online-instruction-Teaching-online-made-easier-with/ba-p/253959). The browser's address bar and navigation icons are visible. Below the browser, the JMP community website header is shown with navigation links: Community, Discussions, File Exchange, JSL Cookbook, JMP Wish List, and JMP Blogs. A 'Sign In' button is located in the top right corner. The main content area features a breadcrumb trail: JMP User Community > Blogs > JMP Blog > Shifting to online instruction: Teaching online made easier with JMP. Below the breadcrumb is an 'Article Options' section with a red heart icon. The author's profile is displayed, including a profile picture, the name 'volker\_kraft', and the role 'STAFF'. A 'Choose Language' link is positioned to the right of the author's name. The main title of the article is 'Shifting to online instruction: Teaching online made easier with JMP', rendered in a large, bold, orange font. Below the title, the date and time 'MAR 24, 2020 7:53 AM' are shown. The article's text begins with a paragraph discussing the transition to online teaching and mentions that JMP has always been a great choice for Blended Learning. A second paragraph starts with 'We already covered "Self-paced learning and practice" in part 4 of our recent blog series on academic resources.' and continues to discuss the benefits of online teaching.

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JMP User Community > Blogs > JMP Blog > Shifting to online instruction: Teaching online made easier with JMP

Article Options

volker\_kraft STAFF Choose Language

## Shifting to online instruction: Teaching online made easier with JMP

MAR 24, 2020 7:53 AM

Whether you were curious how to leverage options for online teaching in your class for a long time already, or if you are now asked (or even forced?) to teach your students from home: [JMP](#) has always been a great choice for Blended Learning, and we are expanding our distance learning support even more to help you with the transition from classroom to online teaching as much as we can.

We already covered "Self-paced learning and practice" in [part 4 of our recent blog series on academic resources](#). However, this additional seventh article in [the series](#) should get you started by pointing you to the most useful resources supporting your statistics course. And don't get us wrong: By "online teaching" we don't mean just a virtual classroom where you present your slides over the internet. Instead, we want to suggest options to engage your students more and further improve their learning experience, while the lecturer enables and enjoys more active learning rather than delivering one-way presentations.

# <https://community.jmp.com/t5/JMP-Blog/The-bread-and-butter-when-teaching-with-JMP-Introduction-to/ba-p/239124>

The bread and butter when teaching with JMP: Introduction to academic resources (1/6)

DEC 19, 2019 3:25 PM

Are you teaching with data? If your answer is yes, then hang on: This series of six blog posts can help you to bring statistical concepts to life and to engage your students by using state-of-the-art course material.

Rather than boring your students with dusty lab exercises, get them inspired about statistical thinking and real-world problem solving.

This series will introduce you to different types of content, like interactive demos, e-learning courses or how-to guides. For all types of content, you will see sample use cases, teaching best practices and where to access the material. All resources are easily available and free (just a few types require a JMP academic site license being in place).



*Engage students in data analytics without wasting class time to teach the tools.*

### Why Professors Like JMP Academic Resources

JMP teaching resources are appreciated by many professors globally because they make their academic lives a bit easier. Here's what they say:

- "I like teaching with JMP because the software is so easy to use for my students, and in the rare cases of questions students can find most answers themselves in the JMP resources," says **Imma Oliveras**, Lecturer in Ecosystems Science and Deputy Programme Leader on

Questions?  
[academic@jmp.com](mailto:academic@jmp.com)

[jmp.com](http://jmp.com)

