

# stat teaser

## Workshop Schedule

### Crash Course on DOE for Sales and Marketing

June 22: Chicago, IL

A fast and practical introduction to DOE in a non-industrial setting. \$995\* (\$795 each, 3 or more)

### Statistics for Technical Professionals

June 28–29: Minneapolis, MN

Revitalize the statistical skills you need to stay competitive. \$995\* (\$795 each, 3 or more)

### Experiment Design Made Easy

May 9–11: Minneapolis, MN

June 6–8: San Jose, CA

July 11–13: Minneapolis, MN

August 22–24: Minneapolis, MN

Study the practical aspects of DOE. Learn about simple, but powerful, two-level factorial designs. \$1495\* (\$1195 each, 3 or more)

### Response Surface Methods for Process Optimization

September 26–28: Minneapolis, MN

Maximize profitability by discovering optimal process settings. \$1495\* (\$1195 each, 3 or more)

### Mixture Design for Optimal Formulations

June 13–15: Minneapolis, MN

August 15–17: Minneapolis, MN

Find the ideal recipes for your mixtures with high-powered statistical tools. \$1495\* (\$1195 each, 3 or more)

### Robust Design: DOE Tools for Reducing Variability

September 12–13: Minneapolis, MN

Use DOE to create products and processes robust to varying conditions. A must for Six Sigma. *Factorial and RSM proficiency are required.* \$1195\* (\$995 each, 3 or more)

### PreDOE: Basic Statistics for Experimenters (Web-Based)

PreDOE is an entry-level course for those who need to go back to the basics. See [http://www.statease.com/clas\\_pre.html](http://www.statease.com/clas_pre.html) for more information. \$95

\*Includes a \$95 student materials fee which is subject to state and local taxes.

Attendance is limited to 20. Contact Sherry at 612.378.9449 x18 or [sherry@statease.com](mailto:sherry@statease.com).

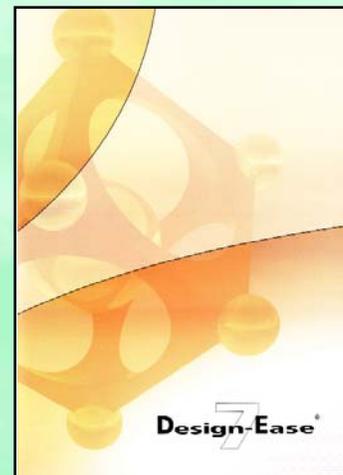


ABOUT STAT-EASE® SOFTWARE, TRAINING, AND CONSULTING FOR DOE

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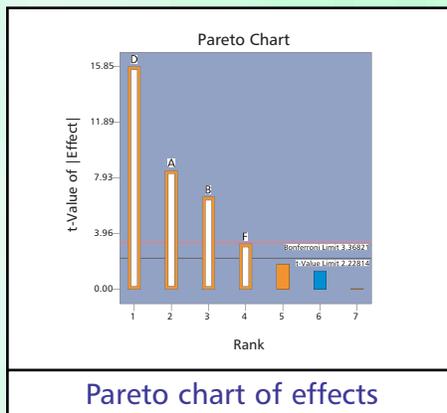
## Design-Ease® 7 Software Released!

Stat-Ease is proud to announce the release of Design-Ease 7 (DE7), the “light” version of Design-Expert®7 (DX7) software, which was released in September 2005. Five years in the making, DE7 offers dozens of new features including innovative design options, enhanced augmentation tools, stronger analysis capabilities, better diagnostics, updated graphics, an improved user interface, plus more options for design evaluation, expanded help, and new import/export tools.



Whether you already use Design-Ease software or are looking at it for the first time, you will be impressed with this new release. Try it free for 45 days by downloading the fully-functional trial version at [http://www.statease.com/soft\\_ftp.html](http://www.statease.com/soft_ftp.html). Here are highlights of the features you will find in Version 7:

\*Pareto chart of effects: Quickly see



the vital few effects from two-level factorial experiments.

\*Numerical Optimization: Find optimal combinations of settings, even when you have multiple responses.

\*Min-Run Res IV (two-level factorial) designs for 5 to 50 factors: Take advantage of designs requiring only a minimum number of runs to screen main effects.

\*Min-Run Res V designs for 6 to 31 factors: Resolve two-factor interactions (2FI's) with a minimum number of runs.

\*Two-level fractional factorials for up to 21 factors: Accommodate more factors than ever-before possible.

\*Full-color contour and 3D surface plots: Graduated or banded colorization adds life to reports and presentations.

\*New "Color By" option: Color-code points on graphs according to the level of another factor—a great way to incorporate another piece of

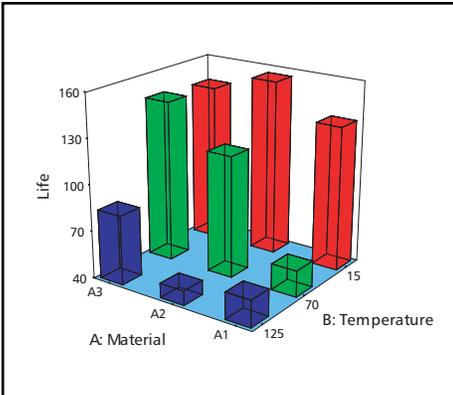
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information into a graph.

**\*Screen tips:** Press the new tips button for enlightenment on the current screen—this is especially helpful for novice users.

**\*3D surface plots for categorical factors:** See colored bars towering above others where effects are the greatest.



3D surface plot for categorical factors

**\*On plots of effects simply draw a box (lasso) around the ones you want selected for your model:** This is much easier than clicking each one with your mouse.

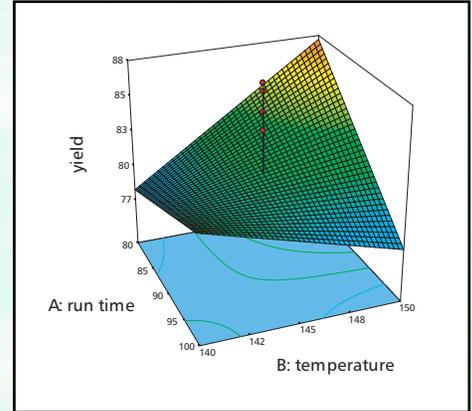
**\*Crosshairs window:** Predict your response at any place in the response surface plot.

**\*Data Points on 3D graphs:** See “lollipops” protruding from surfaces where actual responses were collected.

**\*Row(s) in the design layout are highlighted when point(s) are selected on diagnostics:** This feature makes identification of problematic data much easier.

**\*Numerical optimization solutions are now carried over to graphical optimization and point prediction:** Explore the results of the numerical optimization on other screens.

**\*Right-click on any response cell and "ignore" it:** This allows you to keep other responses in the row that may have good data.



See data points protruding from surfaces on 3D graphs

For more information and to see a complete list of the new features in Design-Ease, Version 7, please visit <http://www.stateease.com>. To place an order, fill out the form on page 4 and mail it to us or fax it (1.612.378.2152) for faster service. You may also order online. Give DE7 a try!

## Free Update for DX7 Users

Current users of Design-Expert software should download the free update to DX 7.0.2 from the webpage: [http://www.stateease.com/soft\\_ftp.html](http://www.stateease.com/soft_ftp.html).

This download fixes some recently-discovered bugs and adds a few more minor features such as:

**\*The augment design feature** now allows users to specify the number of replicates

**\*DX7 files can be saved in DX6 format**

**\*The user can sort the design layout by row status (normal, highlight, ignore) by right-clicking in the upper left corner of the design layout**

**\*More graphs can be exported to enhanced metafile format (previously implemented only for Model graphs)**

## Introducing Wayne Adams!



Stat-Ease is proud to introduce Wayne Adams, our new master’s statistician and consultant. Wayne is from the Kalamazoo area in Michigan where he spent his free time hunting, raising Brittany bird dogs, chopping wood, even catching fish with his bare hands a time or two!

Prior to coming to Stat-Ease, Wayne did actuarial forecasting for a small life insurance plan. He also applied statistical techniques while working as a finance specialist for the Army Finance Corp. As a graduate student at Western Michigan University Wayne taught business statistics, earning himself the highest student rating of all instructors. Wayne is now putting his statistical skills and cheerful personality to use teaching workshops and providing technical expertise to Stat-Ease clients.

Wayne’s interests include a passion for high school football, making his new house a home, and conducting fun experiments, such as with catapults or the pecking order of chickens (that one required his involvement as the alpha chicken—and yes pecking order can be influenced!). We are very pleased to have Wayne on board.

# A Wonderful Day for a Boy and his Dog

Hello, my name is Jon Kraber. My Mom (Shari Kraber) and I are writing this story together. Her comments will be in blue. I ran a science experiment that did make it a wonderful day for my dog. My science experiment was to test which dog treat my dog, Jasper, likes best, Pup-peroni<sup>®</sup>, Beggin' Strips<sup>®</sup>, or Scooby Snacks<sup>®</sup>. Why did I decide to make this a whole big project when everyone else in my class did a simple little project on a small piece of tagboard? Well first, because I wanted an A+ instead of a B or C. Another reason is how much I love dogs. (Jon's teacher asked for a simple comparison test, but I encouraged him to try a three-factor designed experiment!)

Here's how I did it. First, I made a plan with 3 kinds of treats. My plan included placing covers on or off of the treats, switching the treats around, or just leaving them as they were. Second, I put Jasper in my room, set out the treats following the plan, and let Jasper out of my room. Jasper started choosing treats. Third, whatever Jasper ate 1st, 2nd, 3rd, or didn't eat, I recorded on a sheet of paper.

## Factors:

**A: Treat: Pup-Peroni, Beggin' Strips, Scooby Snacks**

**B: Cover: On or Off?**

**C: Position: Left, Middle, Right**

**Design: Full Factorial, 3 Replicates**

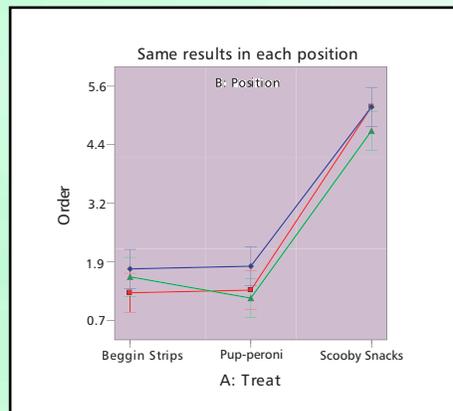
I graphed all of the data and calculated averages. I did that 18 times (3x2x3 design points). For the averages, I did it in a way that if Jasper always ate one of the treats first, the average would be 1. If he always ate a treat second, its average would be 2. If he ate it third, it would be a 3. If he didn't eat it, then a 4. **For data interpretation, a lower number is better.**

For Pup-peroni, the average was 1.44 because Jasper ate it first 11 times, second 6 times, third 1 time, but he



Jon's Experiment

always ate it. For the Beggin' Strips, the average was 1.61 because Jasper ate it first 7 times, second 11 times, he never ate it third, but he ate every one. For the Scooby Snacks, the average was 3.89 because Jasper never ate it first, ate it second once, never ate it third, and he didn't eat it 17 times. **Scooby Snacks was statistically different from the other two choices and Jasper did NOT like them. The other two choices were statistically the same.**



Position did not have a statistically significant effect

Now I'll explain more about the position they were in and the covers that were on or off. The treats were randomly mixed between left, middle, and right positions so Jasper didn't know where a certain treat was. He had

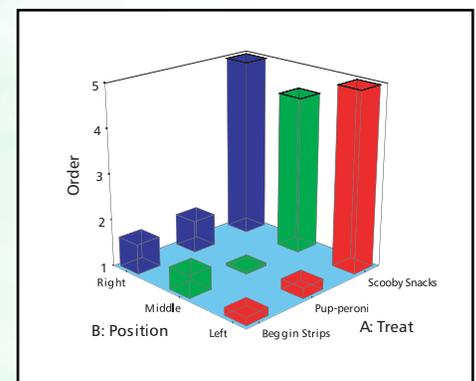
to make a new choice each time he found the treats. This was somewhat effective. **Position did not have a statistically significant effect.**

The treats were covered half the time to see if Jasper made a different choice with his eyes and with his nose. This did not change much. **I suspect that Jasper's nose is better than our covering device (small boxes) and he was likely choosing by smell each time.**

I got 98 out of 100 on this experiment.

—Jon Kraber, 6th grader

Westwood Middle School, MN



New 3D view of categorical factor effects in Design-Ease, V7

Jon got an A, Jasper probably gained a couple of pounds, and I had fun with a different take on a sensory experiment!

—Shari Kraber, [shari@statease.com](mailto:shari@statease.com)

## A question for our sensory audience:

Using the average of a 1–5 rating system caused an analysis difficulty: although Jasper choose the Pup-Peroni first more often than the Beggin' Strips, that is not reflected well in the analysis because of the averaging. Does anyone have an alternative method? Send me an e-mail!

\*Pup-peroni and Scooby Snacks are registered trademarks of Del Monte Corporation. Beggin' Strips is a registered trademark of Ralson Purina.

# Place Your Order Now for Design-Ease® 7

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Improve your product or process with Design-Ease 7.0 software (our entry-level package filled with new designs and user-friendly features—see page 1 for more details or visit our web site at <http://www.statease.com> to download a free 45-day trial). To place your order, fax this form to 1.612.378.2152 or mail it to the address below. Thank you for your business!

Qty	Item	Other Required Information	Unit Cost	Ext. Cost
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	<b>Upgrade to DE7 from any old version of DE, Old Serial # required:</b>		\$295.00	
	<b>Design-Expert 7.0 Single-User (DX7)</b> [for quantity discounts (3+ copies), call for a quote]		\$995.00	
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	<b>Upgrade to DX7 from any old version of DE, Old Serial # required:</b>		\$595.00	
	<b>Design-Ease 7.0 Annual Network</b> [3-seat annual license (includes free upgrades and updates)]		\$525.00/year	
	<b>Design-Expert 7.0 Annual Network</b> [3-seat annual license (includes free upgrades and updates)]		\$1050.00/year	
	<b>DOE Simplified Book</b> (Comes with a 180-day CD-ROM of Design-Ease 6 software)		\$39.95	
	<b>RSM Simplified Book</b> (Comes with a 180-day CD-ROM of Design-Expert 7 software)		\$50.00	
	<b>Shipping within the USA</b> —Add \$15.00 for each software package & \$5.00 for each book. All others, please call for a quote.			
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