



Design and Analysis of Experiments by Douglas Montgomery: A Supplement for Using JMP

By Heath Rushing, Andrew Karl, James Wisnowski





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With a growing number of scientists and engineers using JMP software for design of experiments, there is a need for an example-driven book that supports the most widely used textbook on the subject, Design and Analysis of Experiments by Douglas C. Montgomery. Design and Analysis of Experiments by Douglas Montgomery: A Supplement for Using JMP meets this need and demonstrates all of the examples from the Montgomery text using JMP. In addition to scientists and engineers, undergraduate and graduate students will benefit greatly from this book.

While users need to learn the theory, they also need to learn how to implement this theory efficiently on their academic projects and industry problems. In this first book of its kind using JMP software, Rushing, Karl and Wisnowski demonstrate how to design and analyze experiments for improving the quality, efficiency, and performance of working systems using JMP.

Topics include JMP software, two-sample t-test, ANOVA, regression, design of experiments, blocking, factorial designs, fractional-factorial designs, central composite designs, Box-Behnken designs, split-plot designs, optimal designs, mixture designs, and 2 k factorial designs. JMP platforms used include Custom Design, Screening Design, Response Surface Design, Mixture Design, Distribution, Fit Y by X, Matched Pairs, Fit Model, and Profiler.

With JMP software, Montgomery's textbook, and Design and Analysis of Experiments by Douglas Montgomery: A Supplement for Using JMP, users will be able to fit the design to the problem, instead of fitting the problem to the design.

This book is part of the SAS Press program.



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Editorial Review

Review

"What a powerful combination the definitive text on experimental design coupled with the most powerful statistical software package around! This extremely thorough and wonderfully easy to follow experimental design practitioner guide will be a welcome addition to the library of any practicing statistician. All the important concepts detailed by Professor Douglas Montgomery come alive with the JMP illustrations provided by the authors. This supplement is definitely needed because JMP has so much capability and flexibility that it is often not clear how to implement all its functionality. The illustrations provided make it crystal clear how best to practice design of experiments with statistical software." --Jim Simpson, JK Analytics, LLC

JMP s capabilities for the design and analysis of experiments are simply unmatched, and Doug Montgomery s textbook, *Design and Analysis of Experiments*, is the market leader in the field. It only makes sense to put these two outstanding resources together. This is exactly what has been done with the book, *Design and Analysis of Experiments by Douglas Montgomery: A Supplement for Using JMP*, by Heath Rushing, Andrew Karl, and James Wisnowski.

In the words of the authors, this supplement to *Design and Analysis of Experiments* follows the chapter topics of the textbook and provides complete instructions and useful screenshots to use JMP to solve every example problem. With each example, the authors provide easy-to-follow, step-by-step instructions for creating a design of interest or carrying out an appropriate data analysis. These instructions are accompanied by JMP screen shots that make obtaining the desired results fairly foolproof.

The authors also provide in-depth interpretation of results for each example. I heartily recommend this supplement for readers of Montgomery s *Design and Analysis of Experiments*. --Chris Nachtsheim, University of Minnesota

About the Author

Heath Rushing, Principal Consultant and co-founder of Adsurgo, LLC, an analytics consulting company that specializes in commercial and government training. Heath is a former professor from the Air Force Academy. He holds an M.S. degree in Operations Research from the Air Force Institute of Technology and has used JMP since 2001. After teaching at the Academy, Heath was a quality engineer and Six Sigma Black Belt in both biopharmaceutical manufacturing and Research and Development, where he used JMP to design and deliver training material in Six Sigma, Statistical Process Control (SPC), Design of Experiments (DOE), and Measurement Systems Analysis (MSA). In addition, Heath has been a symposium speaker at both national and international pharma and medical device conferences. Heath is an American Society of Quality (ASQ) Certified Quality Engineer and teaches JMP courses regularly, including a course he recently developed on Quality by Design (QbD) using JMP.

Andrew T. Karl is a senior management consultant for Adsurgo, LLC, developing and teaching courses on a variety of statistical topics for the U.S. Department of Defense, Fortune 500 corporations, and international clients. He received his B.A. in mathematics from the University of Notre Dame and his Ph.D. in statistics from Arizona State University.

Jim Wisnowski is co-founder and principal at Adsurgo, LLC, an analytics consulting company that

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