

Statistical Methods for Product Life Analysis and Accelerated Testing

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William Q. Meeker, Iowa State University

Reliability improvement and reliability assurance processes in manufacturing industries require data-driven reliability information for making business, product-design, and engineering decisions. This will be a hands-on workshop where participants will use the JMP 11 software for analyzing reliability data and test planning. The course will focus on concepts, examples, models, data analysis, and interpretation. Examples and exercises will include examples using product field (maintenance or warranty) data, accelerated life tests, and accelerated degradation tests. After completing this course, participants will be able to recognize and properly deal with different kinds of reliability data and properly interpret important reliability metrics. Topics will include the use of probability plots to identify appropriate distributional models (e.g. Weibull and lognormal distributions), estimating important quantities like distribution quantiles and failure probabilities, the analysis of data with multiple failure modes, the analysis of both destructive and repeated measures degradation data, and the analysis of recurrence data from a fleet of systems or a reliability growth program.

Course Materials:

Statistical Methods for Reliability Data, William Q. Meeker and Luis A. Escobar, John Wiley & Sons, 1998. (The book is provided at no cost to participants, courtesy of SAS JMP.)

Handouts: Handouts will be provided.

Laptop: Bring your own laptop for hands-on practice of concepts. Please pre-install JMP.

Data: Course data sets through the link:

<http://www.public.iastate.edu/~wqmeeker/stat533stuff/CourseReliabilityDataSets.zip>

Software: JMP 30-day free trial copy through the link:

<http://www.jmp.com/software/try-jmp.shtml?ref=nav>

Please note you need to create a SAS profile to login. The software will also be available by DVD or memory stick at the course, with activation via the internet. Attendees without administrative rights should get the software loaded ahead of time or bring their personal laptop.

System administrators please note that JMP version 11 has received an Army Certificate of Networthiness (CoN) and is on the Air Force AFNIC approved Electronic Product List (EPL). JMP 11 is current being tested for Navy-Marine Corps Intranet (NMCI) certification.

Data: Data for course exercises can be accessed at

<http://www.public.iastate.edu/~wqmeeker/stat533stuff/CourseReliabilityDataSets.zip>