

18th Annual FALL 2001 Meeting Program

An Analysis of the Efficacy of a Commercial Aviation Safety Program

Kathleen L. McFadden

(co-authored with Bala Hosmane)

Northern Illinois University, De Kalb, IL

This empirical study evaluates a commercial aviation safety program that sanctions pilots with alcohol-related motor vehicle convictions. We compare a 5-year period prior to the implementation of the safety program against a 5-year period after implementation, using data on over 160,000 commercial pilots. We conclude that the Federal Aviation Administration's handling of pilots with motor vehicle convictions has had a negligible effect on airline safety. These results have operational as well as public policy implications.

Kathleen L. McFadden is an Associate Professor of Operations Management at Northern Illinois University. Her specialty is applied mathematical modeling on issues of policy importance. She received multiple grants from the Federal Aviation administration, and her work in aviation safety was presented to top officials at both the National Transportation Safety Board and the Federal Aviation Administration. McFadden's research papers about aviation safety have been published in numerous academic journals as well as summarized in local newspapers, including the Chicago Sun Times.

This year McFadden was awarded the Outstanding Achievement Award from the Decision Sciences Institute for the *Best Application Paper* presented at the national conference. She received her Ph.D. in Business from the University of Texas at Arlington in 1993. She resides in St. Charles with her two daughters and her husband Tracey, an airline captain.

Challenges in the Application of Statistics to Genetics

Daniel Holder

Merck Research Laboratories, West Point, PA

Armed with a rough draft of the human genome and remarkable advances in biotechnology, many researchers feel that they are well positioned to understand human diseases at a molecular level. Such understanding could have a profound impact on medical practice in general, and on the discovery and development of safe and effective pharmaceuticals in particular. We will briefly discuss two areas of current interest, namely pharmacogenomics and measurement of gene expression using high density oligonucleotide arrays. Discussion of the former will focus on defining terms and concepts. The microarray example will highlight an area where progress can be made by applying well-known data analytic techniques.

Dan Holder earned a BA in Mathematics from Swarthmore College in 1984 and a MS in Statistics from the University of Wisconsin-Madison in 1988. He earned a Ph.D. in Statistics from Temple University in 1993. Dr. Holder has worked at Merck Research Laboratories as a biostatistician since 1988, first in the clinical area, and more recently in the preclinical area. His interests in the clinical area are centered on pharmacokinetic studies, particularly bioequivalence. In the preclinical area he has been interested in HIV resistance testing and most recently, applications of statistics to genetics.

Dr Holder's work has been published in premier statistical and medical journals including *Journal of the American Statistical Association*, *Biometrika*, *New England Journal of Medicine*, and *Journal of the American Medical Association*.

He is also an avid *Phillies* fan and soccer enthusiast.

An Overview of Pharmacokinetic/Pharmacodynamic (PK/PD) Models

Matt Hutmacher

Pharmacia, Skokie, IL

An overview of pharmacokinetic/pharmacodynamic (PK/PD) models with industry examples will be presented. Formulation of PK/PD models can be complex. Such complexities include time delays in effect (hysteresis) due to drug distribution to the site of action or receptor mediated mechanisms. These models are used to optimize dosing strategies and increase PK/PD understanding throughout drug development. Successful strategies attempt to maximize efficacy while minimizing the dose or the exposure of the drug to the patient. Pharmacokinetic (what the body does to the drug) and pharmacodynamic (what the drug does to the body) models aid in the formulation of these dosing strategies by quantifying the drug's key features. The PK profile is modeled to determine how quickly/slowly the drug is absorbed, distributed, eliminated, or metabolized into the active moiety. Often a surrogate marker, an easily measured quantity hypothesized to reflect efficacy, is used to quantify the drug's PD effect. A PK/PD model is used to correlate the PD effect to the plasma concentration and generate dose-concentration-response profiles. These profiles, with patient factors (covariates) that influence them, are used to assess competing dosing strategies.

Matt Hutmacher is a consulting statistician for the Global Statistics Department of Pharmacia (formerly G.D. Searle and Co.). Matt began his career at Searle in 1994 in pre-clinical statistics and for the past 5 years has focused on pharmacokinetic and pharmacodynamic modeling applications in drug development. Matt received a B.S. in Mathematics from the University of Illinois in Champaign-Urbana in 1991 and received his M.S. in Statistics in 1994 from Northwestern in Evanston. He is active in applied research with interests in the design of pharmacokinetic studies via simulation and efficient model selection methods. Matt recently published papers with Ken Kowalski in *Statistics in Medicine* and *JPP*.

~ Domenic Reda

Fall Meeting

The Fall meeting will be held on Thursday, October 4, 2001, from 12:30 pm to 4:30 pm, at the Doubletree Guest Suites, 1400 Milwaukee Ave, Glenview, IL. (Telephone: 847.803.9800.) Luncheon will be served at 11:30 am. The menu will be finalized after the newsletter is published. If you have special needs, please contact Renee Alpern at (708.202.4897) or email: alpern@research.hines.med.va.gov.

~Renee Alpern

Program Committee

As we bring another year to a successful close, I want to thank the Program Committee for all their help. I especially want to thank Donna Kowalski, Art Roth, Dorothy Dunlop, Phil Pichotta and Linda Odom. They were instrumental in obtaining the speakers. Thanks also to the other committee members: Robert Anderson, Carole Bernett, Joseph Chmiel, Theodora Cohen, Kwan Hur, Brabara Krasnicka, Peggy Olson, Anita Ross and Peter Yu.

I am sure next year's program committee will be happy to receive suggestions on topics/speakers. Of course, Chapter members are always welcome to suggest a topic they would like to present. If you have any suggestions, you can send them to me by e mail: reda@research.hines.med.va.gov. I look forward to serving as your Chapter's president in the coming year.

~ Domenic Reda

Community Activities

Carole Bernett is working with the Chicago ASA Chapter in planning a Career Day, organized by the Chicago Chapter and co-sponsored by our NIC/ASA Chapter. The theme will be "Evolving Careers for Decision Sciences." A half-day (noon to 4:30 pm) meeting is projected to occur in late October to early November.

A workshop for AP Statistics teachers organized by NIC/ASA is scheduled for September 15 at Northwestern University. Dr. Bruce Spencer, Chairman of Statistics, will lead the workshop on the topic of survey sampling. In addition to \$200 for workshop costs, the Chapter will also pay the postage for a mailing announcing the workshop.

~ Dorothy Dunlop

Treasurer's Report

BALANCE 1/1/2001	\$5,256.94
INCOME	
Chapter Meetings and Memberships	
2001 Spring Meeting	\$2,842.00
2001 Summer Workshop	\$5,473.00
Investments	
Bank Interest (Through 7/31/01)	\$75.65
Total Income	
	\$8,390.65
EXPENSES	
Chapter Meetings and Memberships	
2001 Spring Meeting	(\$2,291.94)
2001 Summer Workshop ¹	(\$7,136.35)
Chapter Program Expenses	
Text Book Give-Aways	(\$96.15)
State Science Fair Projects	(\$350.00)
Other Expenses	
Mailing Labels	(\$48.82)
Total Expenses	
	(\$9923.26)
BALANCE 8/20/2001	\$3,724.33

¹(Hotel: \$4,846.76; Dinner: \$128.40; Presenter: \$2,161.19)

2001 Membership: 134 (127 regular, 7 students)

~ Harold Frush

Nominees for 2002 Chapter Officers

At the business portion of the October 4, 2001 Chapter meeting, we will elect officers for the 2002 calendar year (January 1 - December 31, 2002). The slate of officers is as follows:

President-Elect

Richard A. Rode, Ph.D., is an Associate Research Fellow in Global Pharmaceutical Research & Development at Abbott Laboratories. He received a Ph.D. in Biostatistics from Virginia Commonwealth University (1986), and a B.S. in Statistics and Mathematics from the State University College of New York at Oneonta (1982). He joined Abbott Laboratories as a member of the Nonclinical

(Preclinical) Statistics department in 1986, and subsequently transferred to the Clinical Statistics department in 1996, where he currently supports antiviral research. He is a member of the American Statistical Association, Biometric Society (ENAR), and Drug Information Association. He has coauthored manuscripts in several journals, including *The American Statistician*, *Antimicrobial Agents and Chemotherapy*, *Antiviral Therapy*, *AIDS*, *European Journal of Clinical Microbiology and Infectious Diseases*, *Fertility and Sterility*, *Journal of Aquatic Animal Health*, *Journal of Clinical Microbiology*, and *Lancet*.

Secretary

Theodora Cohen, Ph.D., is Senior Director of Biostatistics at NeoPharm, Inc. She received a Ph.D. in Statistics from Northwestern University (1990), and a B.S. in Statistics from the Hebrew University in Jerusalem, Israel (1985). Prior to joining NeoPharm in July, Theodora held positions at Searle, the College of American Pathologists, and IBAH/Omnicare Clinical Research.

Treasurer

Harold Frush is a Senior Biostatistician in the Diagnostic Division of Abbott Laboratories. His current responsibilities include project and product support of new technologies, instrument systems, and blood bank systems. He has participated in the development of diagnostic products for the last 25 years. During the six plus years prior to that he supported R/D and clinical efforts in the Pharmaceutical Division of Abbott Laboratories and International Medical. His pet project is the use of the scientific and statistical methods in problem solving. His most interesting project thus far has been a search for the disease that was associated with a particular virus. Harold received his B.S. in Pre-Medicine and M.S. in statistics from West Virginia University.

~ Dorothy Dunlop

Awards and Recognition

From the next issue of the NIC Newsletter I would like to include a new feature: a brief profile of an NIC Chapter member who has impacted our Chapter in a positive and substantial way. The profile will be

prepared following a one-to-one interview. I need your help in suggesting names of people who could be profiled. Please send me your suggestions via email (hedayat@uic.edu). I would appreciate it very much if you include a brief justification for your nomination(s).

~Sam Hedayat

Chapter Webpage

Don't forget to visit our Chapter web page at <http://homepage.interaccess.com/~mlcarn/nic.htm>. The page can also be accessed by following links found on the main ASA webpage (www.amstat.org.) Select *ASA Directories*, then *Chapter Links*, and then click on *Northeastern Illinois*.

The Chapter webpage has lots of information about our Chapter including events, program information, a membership directory, and contact information for Chapter officers and committee members. You can also peruse PDF versions of current and past Chapter newsletters.

We have a new Webmaster. He is Paul Cernohous. Many thanks to Paul, and to our previous Webmasters, Phil Pichotta and Mike Carniello, for maintaining and updating our Chapter web page!

Officers and Committee Chairs

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The Chapter's purpose, as stated in its Constitution, is "to foster statistics and its applications and promote the interests of the statistical profession...". Accordingly, diverse views are presented. They do not necessarily reflect the opinions of the officers or the policies of the Chapter.
