



# The American Statistical Association

## San Francisco Bay Area Chapter

Since 1928

*October, 1994*

### Joint Meeting with the Santa Clara Valley ASQC Section's Statistics Task Group

#### Regression Models for Detecting Reliability Degradation Jack Tomskey

A common problem in reliability is to study the effect of aging in a component. One possible test design is to test the same set of items over a period of time. After each test, the items are returned to storage. Another possible design having the same total number of tests is to test a new set of items for each testing period.

The question arises as to which experimental design is better. The answer is not intuitively obvious. It turns out that in some cases one is better, while in other cases the other is better. A condition is derived for determining the superiority of one design over the other. After the first retest, an estimate can be made as to whether the condition is met.

For the design in which the initial items are repeatedly tested, there are positive correlations between measurements on the same item. A complete regression analysis is obtained for this model. The ideas can be applied to other regression models with complex covariance structures.

Finally, the results are demonstrated with a numerical example.

**Date:** Wednesday, October 12, 1994

**Time:** 6:00 p.m.

**Place:** Danny's Pizzeria  
861 Leong Drive, Mountain View (across the street from Denny's)

**Directions:** From San Jose, take Moffett Blvd. west off Route 101. Turn left at the first signal and left again at the Y intersection. Call (415) 969-9429 for more detailed directions. Attendees may join in the group dinner order (divided evenly, per person cost around \$10), order separately, or not order.

**PRESIDENT**  
Rose Ray  
(415) 688-7264

**PRESIDENT-ELECT**  
Loren Schoof  
(510) 823-9020

**VICE-PRESIDENT**  
**GENERAL APPLICATIONS PROGRAMS**  
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**BIOSTATISTICAL PROGRAMS**  
Kathleen Lamborn  
(415) 476-8863

**TREASURER**  
Jim Lenihan  
(415) 393-5213

**SECRETARY**  
Michael Lock  
(408) 954-2583

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## Election of Chapter Officers

The following chapter members were elected to serve as officers of the San Francisco Bay Area chapter for the 1994-1995 year:

**President Elect:**

Loren Schoof  
Pacific Bell

**Vice President Biostatistics**

Kathleen Lamborn  
University of California, San Francisco

**Vice President General Applications**

Michael Orkin  
California State University, Hayward

**Treasurer:**

Jim Lenihan  
William M. Mercer, Inc.

**Secretary:**

Michael Lock  
Becton Dickinson Immunocytometry Systems

Rose Ray of Failure Analysis Associates will serve as chapter president for the coming year.

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## Newsletter Submissions

If you have a job opening, announcement, or other piece of information you would like to share with chapter members, send it to me to include in an upcoming newsletter. You can use either e-mail via the Internet:

[sfasa@stat.berkeley.edu](mailto:sfasa@stat.berkeley.edu)

or send your information through regular mail to

Michael Lock  
Becton Dickinson  
2350 Qume Drive  
San Jose, CA 95131-1807

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## Job Opportunities

### Biostatistician

Becton Dickinson Immunocytometry Systems, San Jose

Responsible for the application of both standard and advanced statistical methodology in expediting the development, evaluation, registration (with regulatory agencies), and manufacturing of products. Responsible for all statistical aspects of individual clinical protocols, including: protocol review, sample size, trial design, selection of statistical methodology, data analysis and summarization, preparation of final statistical report and review of final clinical report. Interact with project teams/clinical program leaders to design the appropriate clinical trial array for new products.

Qualifications: Typically requires a MS in statistics or equivalent with two years related experience. Expertise in statistical methodology, software languages and computer systems.

Contact Craig Andersen, Human Resources, Becton Dickinson, 2350 Qume Drive, San Jose, CA 95131-1807. Phone: (408) 954-2206. Fax: (408) 954-2008.

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## Join the SF Bay Area ASA Chapter

If you are not currently a member of the local chapter of the ASA and would like to join, send a note with your name and address to

Jim Lenihan  
1 Appian Way #702-2  
South San Francisco, CA 94080

Please enclose a check for one year's membership, \$9, payable to "ASA, Bay Area Chapter". Student membership dues are \$3 per year. You may also join the local chapter when paying dues to the national organization.



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**American Statistical Association**  
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