**The George Washington University**
**Department of Statistics**
**Spring 2005**

# SEMINAR ANNOUNCEMENT

**Title**: Estimating the Cumulative Risk of a False-Positive Test in a Repeated Screening Program

**Speaker**: Jian-Lun Xu, Ph.D
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EPN-3131
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**Date**: Friday, February 11, 2005

**Time**: 11:00 am - 12:00 pm

**Location**: Monroe Hall (2115 G Street NW), Room B02

**Abstract**: The goal of screening tests for chronic disease such as cancer is early detection and treatment with a consequent reduction in mortality from the disease. Screening tests, however, might produce false-positive and false-negative diagnoses. With an increasing number of screening tests, it is clear that the risk of a false-positive screen, a finding with potentially significant emotional, financial and health costs, also increases. Elmore et al. (1998), Christiansen et al. (2000) and Gelfand and Wang (2000) investigated this problem under the somewhat unrealistic assumption that the choice of making the decision to drop out at the $k$th screen does not depend upon the results of earlier $k-1$ screens. In this paper we obtain sufficient and necessary conditions for their assumption to hold and use one of them to provide a method for testing the validity of the assumption. A new model which does not depend on their assumption is introduced. The maximum likelihood estimator of the cumulative risk of receiving a false-positive screen under the new model is derived and its asymptotic normality is proved. We apply our testing method and the new model to data from the breast cancer screening trial of the Health Insurance Plan of Greater New York.

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**Directions**: Foggy Bottom-GWU Metro Stop on the Orange and Blue Lines. The campus map is at http://www.gwu.edu/~map.