STATISTICS SEMINAR

Date and time: Thursday, September 23, 2010

Time and place: 3:30 PM,, MTH 1313

Speaker: Abram Kagan

Title: **On estimating the multinomial parameter**

Abstract

If a random vector $\mathbf{X} = (X_1, \ldots, X_m)$ has a multinomial distribution with parameters $(n; \theta = (\theta_1, \ldots, \theta_m))$, the matrix of Fisher information on θ in $\mathbf{X}$ does not exist due to the constraint $\theta_1 + \ldots + \theta_m = 1$ (the definition of the information matrix requires that the parameter set be an open subset of $\mathbb{R}^m$). However, we show that the inverse of the information matrix is well defined and the standard estimator $(X_1/n, \ldots, X_m/n)$ of θ is not only UMVUE but also Cramér-Rao efficient, a stronger property. Cases when the components of θ are subject to extra constraints are also considered.