For favour of posting

DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Seminar

Professor David STANFORD

Department of Statistical & Actuarial Sciences
The University of Western Ontario
London, Ontario
Canada

will give a talk

entitled

KEY PERFORMANCE INDICATORS AND THEIR OPTIMAL PERFORMANCE

Abstract

Health care systems often have to deal with diverse populations of patients with differing needs, acuities, and urgencies. Key Performance Indicators (KPIs) have been a popular tool for sorting out the question of urgency, by setting the standards for time to initiation of treatment for these various populations. KPI standards typically comprise a waiting time limit for treatment to begin, along with a compliance probability stating the minimum acceptable fraction of the patient class to commence treatment by the time limit. The time limits increase as the patient acuity decreases, and in many cases the compliance probability decreases as well.

KPI standards are sometimes set due to perceived clinical need, sometimes due to a desired standard for waiting time performance, and sometimes as a mix of both. The five-category Australasian Triage Scale (ATS) and Canadian Triage and Acuity Scale (CTAS) are both examples of the last category: the needs of the highest category of patients (Resuscitation) are purely clinical, but as one works through the remaining four categories, the clinical need diminishes, replaced by the performance goal.

The common missing element for KPI systems is the fact that KPI standards represent a system of constraints, and do not indicate what the consequences of non-compliance are. A KPI system that meets its compliance could, in theory, totally ignore patients who miss their targets, in order to deploy health resources to reduce the chance of more recent arrivals missing theirs. This absurd situation is due to the fact that KPIs lack a goal to be optimized. What is needed to complete the picture is an objective which reflects the increased urgency of patients whose wait times exceed their time limit.

This talk states what seem to us to be an appropriate set of objective functions for optimal performance of a KPI system, which relate to minimizing the amount of excess waiting that occurs. We then move on to demonstrate that the Accumulating Priority queueing discipline is a well-suited discipline to aid compliance of diverse patient populations served by a common facility. The remainder of the presentation addresses what we have learned about the various objectives, and their relationship to each other, and their optimal performance. We are particularly interested in the performance of a simple Rule of Thumb which assigns priority to customers in each KPI class in inverse proportion to that class's waiting time limit.

The results to be presented are the result of a number of research projects with graduate students Na Li and Azaz Sharif, and research colleagues Peter Taylor (Melbourne), Ilze Ziedins (Auckland), and Richard Caron (Windsor). I am also deeply grateful for discussions with Martin Utley and Christina Pagel of University College London on the secondary nature of the compliance targets, and our ongoing work in that area.

on

Friday, February 19, 2016

(Refreshments will be served from 11:15 a.m. outside Room 301 Run Run Shaw Building)

11:30 a.m. – 12:30 p.m.

at

Room 301, Run Run Shaw Building

Visitors Please Note that the University has limited parking space. If you are driving please call the Department at 3917 2466 for parking arrangement.

All interested are welcome