Title:

Do patients arrive to the ED according to sine waves?*

Abstract:

Like many customer arrival processes, patient arrivals to the psychiatric ward or the emergency department (ED) exhibit strong cyclic behaviour. In this talk we investigate whether real world arrival patterns can be approximated by a simple sum of sinusoids. Such models can potentially bridge the gap between analytic modelling and high resolution simulations: They are simple enough to be tractable, but are also accurate enough to use for prescriptive capacity planning.

We first discuss some surprising pitfalls that can arise when estimating the periodicities in arrivals data, and these have unexpected connections to D-Day. We then propose a pictorial method that has surprisingly good performance guarantees. To aid capacity planning, we apply the procedure to patient arrivals data from an academic ED.

*Joint work with Ningyuan Chen (HKUST) and Sahand Negahban (Yale).

Donald Lee, PhD
Associate Professor
School of Management, Yale University
(203) 436 8864

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