# Managing Appointment-based Services in the Presence of Walk-in Customers

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**Abstract**

Despite the prevalence and significance of walk-ins in healthcare, we know relatively little about how to plan and manage the daily operations of a healthcare facility that accepts both scheduled and walk-in patients. We take a data analytics approach and develop the first optimization model to determine the optimal appointment schedule in the presence of potential walk-ins. Our model is the first known approach that can jointly handle general walk-in processes and heterogeneous, time-dependent no-show behaviors. We demonstrate that, with walk-ins, the optimal schedules are fundamentally different from those without.

Our numerical study reveals that walk-ins introduce a new source of uncertainties to the system and cannot be viewed as a simple solution to compensate for patient no-shows. Scheduling, however, is an effective way to counter some of the negative impact from uncertain patient behaviors. Using data from practice, we predict a significant cost reduction (42%-73% on average) if the providers were to switch from current practice (which tends to overlook walk-ins in planning) to our proposed schedules. Though our work is motivated by healthcare, our models and insights can also be applied to general appointment-based services with walk-ins.

**Bio of the Speaker**

Guohua Wan joined Antai College of Economics and Management, Shanghai Jiao Tong University in 2007, where he is currently a distinguished professor of Management Science and an associate dean. He received his Ph.D. degree from Hong Kong University of Science and Technology. He was a visiting scholar in Stern School of Business, New York University during 2006-2007, and had been on the faculty of University of Macau as an assistant professor (2000) and an associate professor (2005) during 2000-2006. His research interests include operations planning and scheduling, supply chain management, and management of information technology. He has published in such journals as Operations Research, Management Science, Mathematics of Operations Research, and INFORMS Journal on Computing. He currently serves as a Senior Editor of “Production and Operations Management”.