

OR SUPPLY AND DEMAND MANAGEMENT

Christopher M. Ziebell, MD, FACEP
Emergency Department Medical Director
University Medical Center Brackenridge

For Review

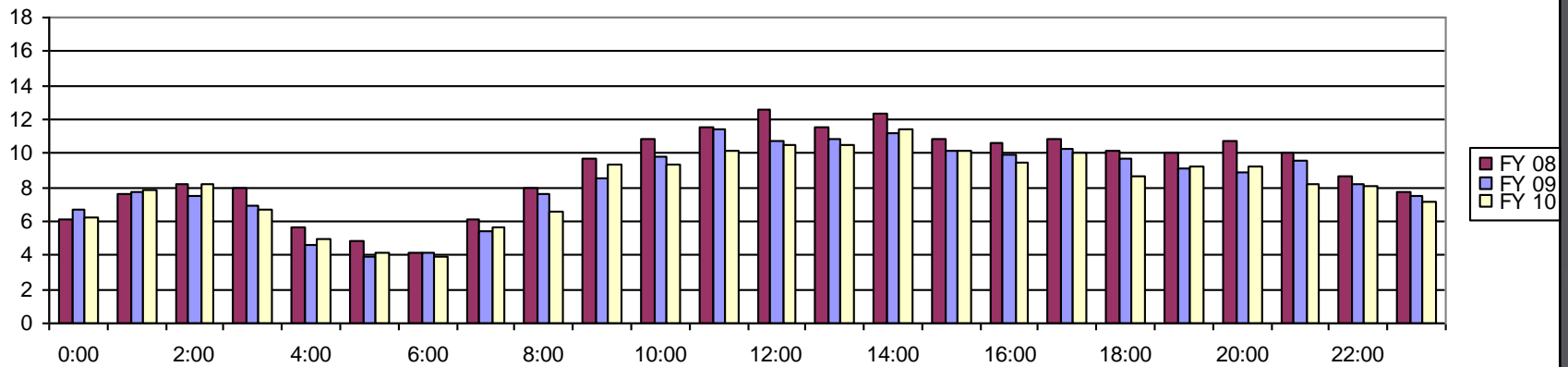
- ▣ ED Crowding
 - Input
 - Throughput
 - Output
- ▣ Variability
 - Natural (Uncontrollable)
 - Artificial (Potentially Controllable)
 - ▣ Scheduling of elective procedures
 - ▣ Scheduling of discharges

Eugene Litvak

- ▣ Program for Management of Variability in Health Care Delivery
- ▣ Boston University Health Policy Institute

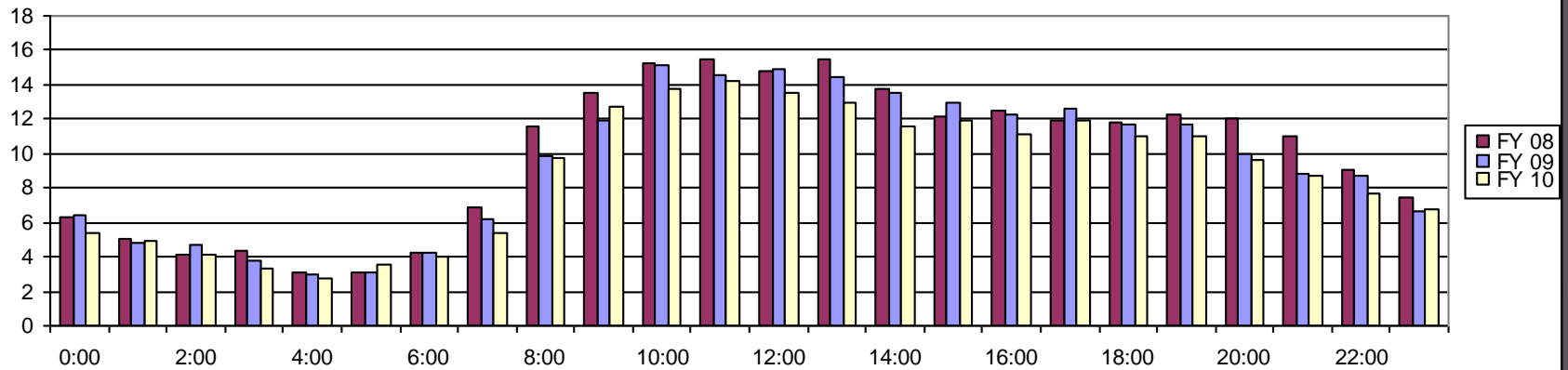
INPUT

UMCB ED Average Registrations by Hour, Sunday



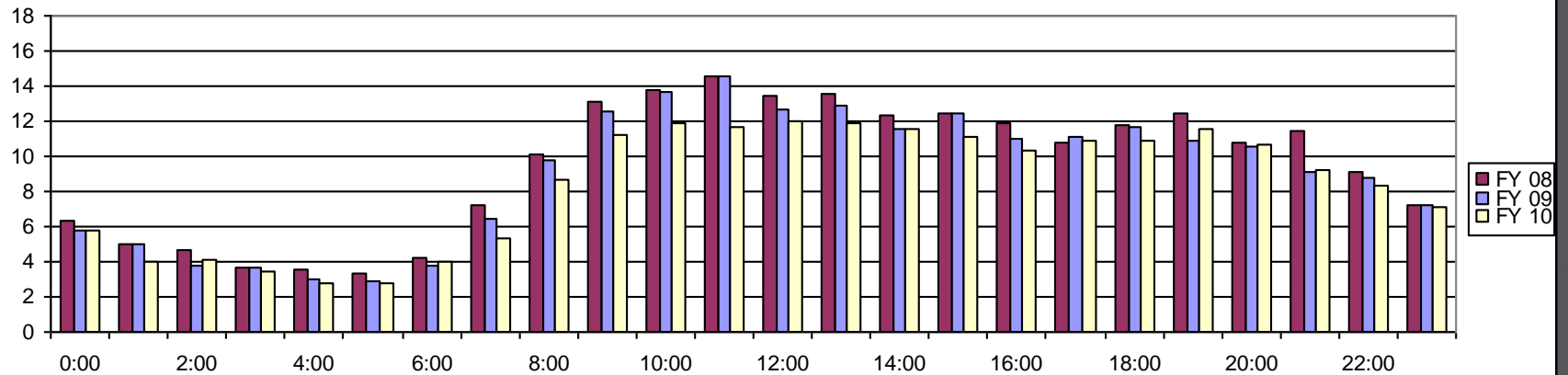
INPUT

UMCB ED Average Registrations by Hour, Monday



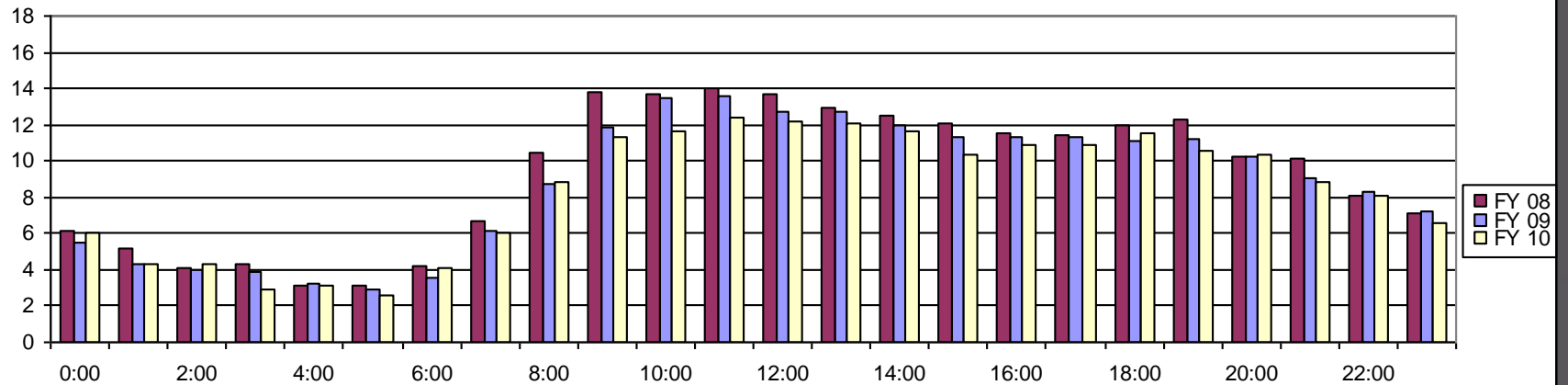
INPUT

UMCB ED Average Registrations by Hour, Tuesday



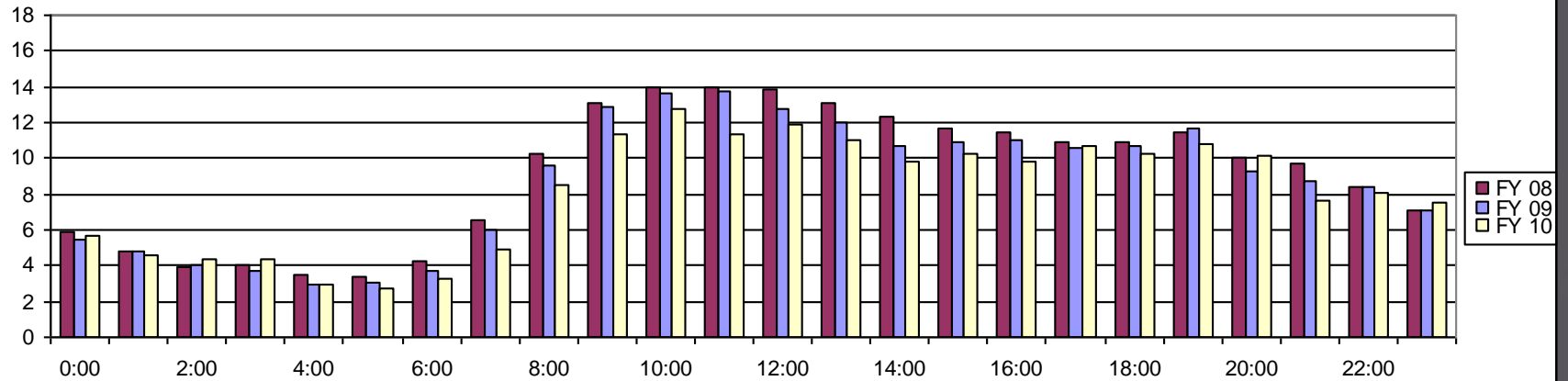
INPUT

UMCB ED Average Registrations by Hour, Wednesday



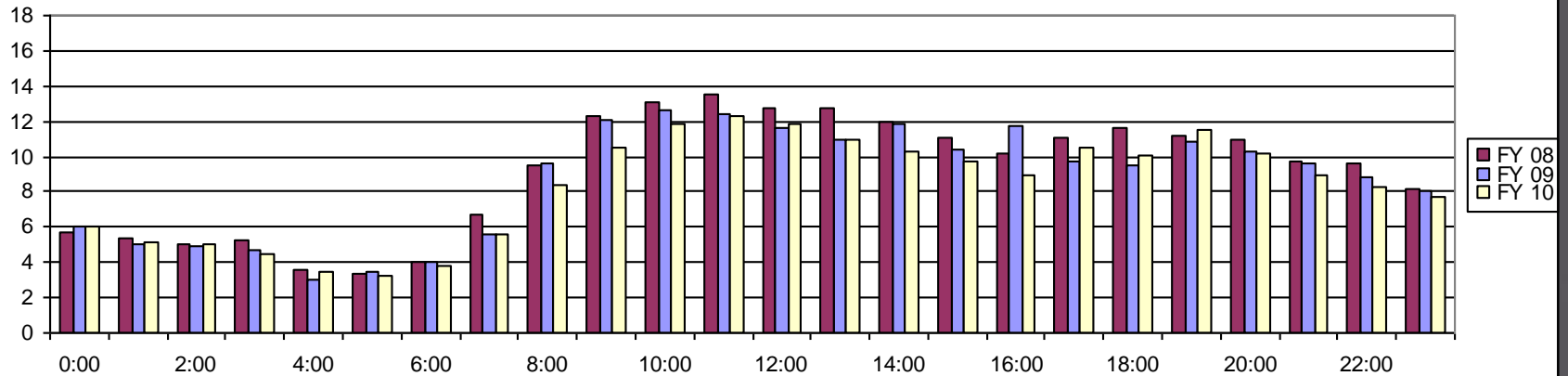
INPUT

UMCB ED Average Registrations by Hour, Thursday

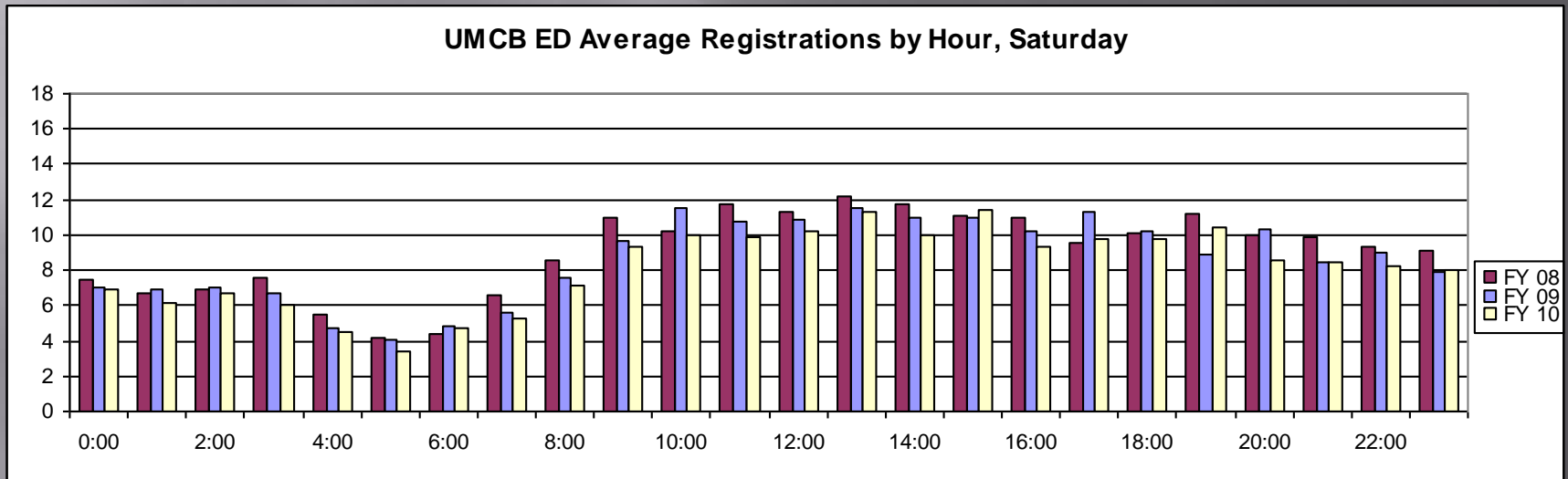


INPUT

UMCB ED Average Registrations by Hour, Friday



INPUT



THROUGHPUT

- ▣ A Function of
 - Lab
 - X-ray
 - Nursing efficiency
 - Physician Efficiency
 - Real Estate

OUTPUT

- ▣ ED Discharge
- ▣ ED Observation
- ▣ Movement to Inpatient areas

Variability

- ▣ Natural (Uncontrollable)

Strategy for Variability

- ▣ Staff to peak volumes
 - Expensive
- ▣ Staff to average volumes
 - Increases error rate at peak times
 - Burns out staff
 - Increases wait times for our patients
- ▣ Staff to averages with a dynamic pool for peak times
 - Not always practical
 - Maintaining a dynamic pool can be expensive

Strategy for Variability

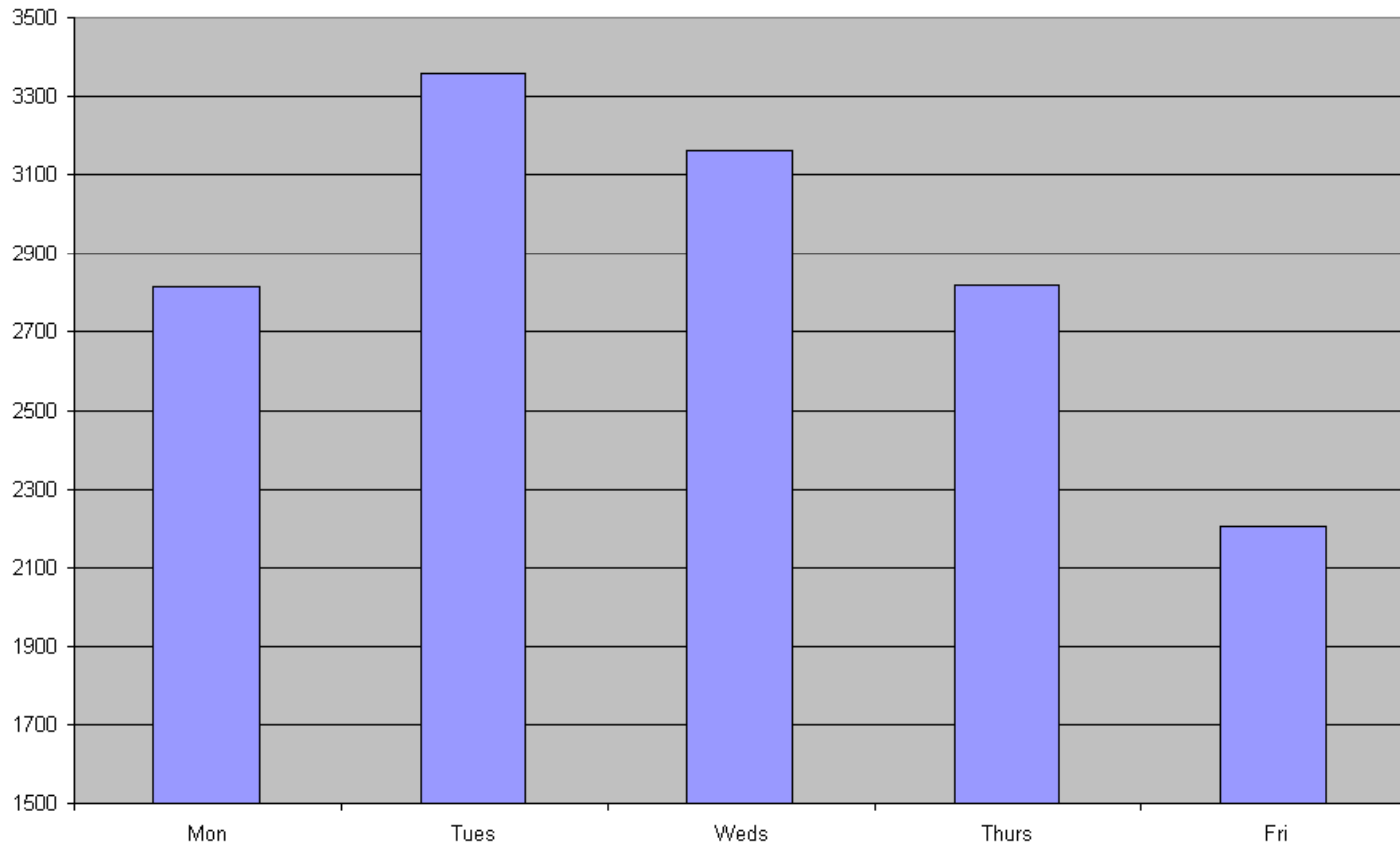
- ▣ Reduce variability
 - Natural variability is not controllable
 - Artificial Variability can be managed

Artificial Variability

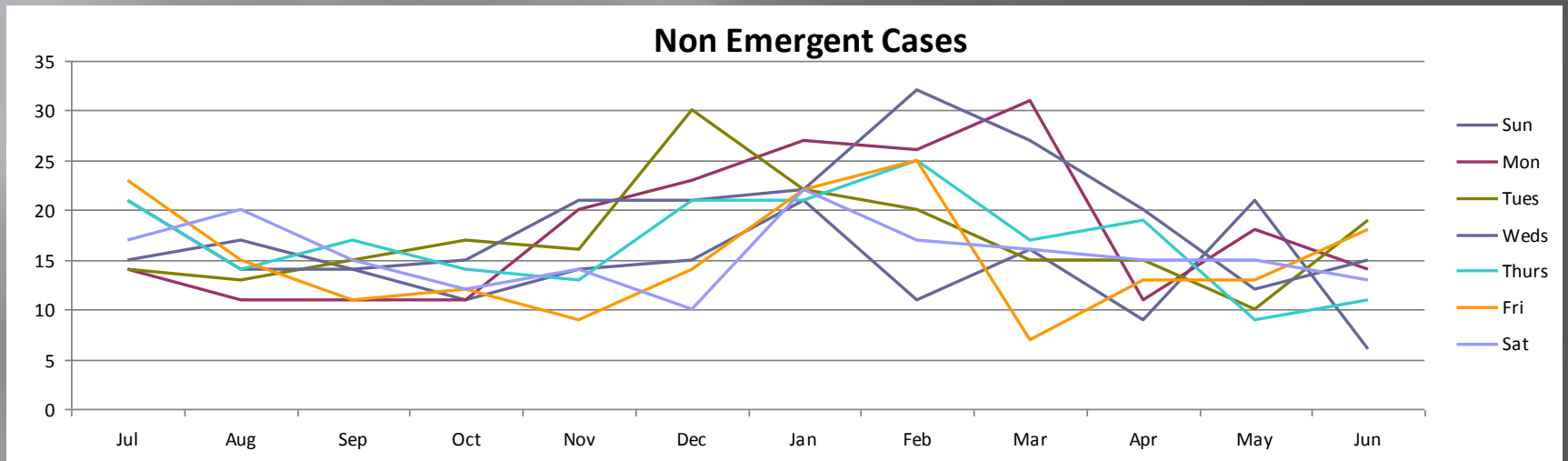
- ▣ Scheduling of elective procedures
- ▣ Scheduling of discharges

Elective Procedures

Scheduled Surgery



Elective Procedures



Bibliography

- Asplin, B. R., & Magid, D. J. (2007). If you want to fix crowding, start by fixing your hospital. *Annals of Emergency Medicine* , 49 (3), 273-4.
- Asplin, B. R., Flottemesch, T. J., & Gordon, B. D. (2006). Developing models for patient flow and daily surge capacity research. *Academic Emergency Medicine* , 13 (11), 1109-13.
- Bernstein, S. L., & Asplin, B. R. (2006). Emergency department crowding: old problem, new solutions. *Emergency Medicine Clinics of North America* , 4, 821-37.
- Litvak, E., Buerhaus, P. I., Davidoff, F., Long, M. C., McManus, M. L., & Berwick, D. M. (2005). Managing unnecessary variability in patient demand to reduce nursing stress and. *Joint Commission Journal of Quality Patient Safety* , 31 (6), 330-8.
- Litvak, E., Fuda, K. K., & Levtzion-Korach, O. (2007). Modern Healthcare. *Modern Healthcare* , 37 (45), 38, 40.
- McManus, M. L., Cooper, A., & Litvak, E. (2004). Queuing theory accurately models the need for critical care resources. *Anesthesiology* , 100 (5), 1271-6.
- Rathlev, N. K., Chessare, J., Olshaker, J., Obendorfer, D., Mehta, S. D., Rothenhaus, T., et al. (2007). Time series analysis of variables associated with daily mean emergency department. *Annals of Emergency Medicine* , 49 (3), 265-71.