ED Patient Arrival By Hour (Stratified By ESI Level) - January - May 2016

1. Takt time: At peak 12 hour flow (7A-7P) an ED patient arrives every 6.7 min.

Rooms (operators) needed = LOS/takt time
(Mean LOS = 311 min)

2. Number of ED rooms needed = mean LOS/takt time = 47 rooms. Total new ED capacity = 59 beds = 80% of capacity; old ED = 56 beds.
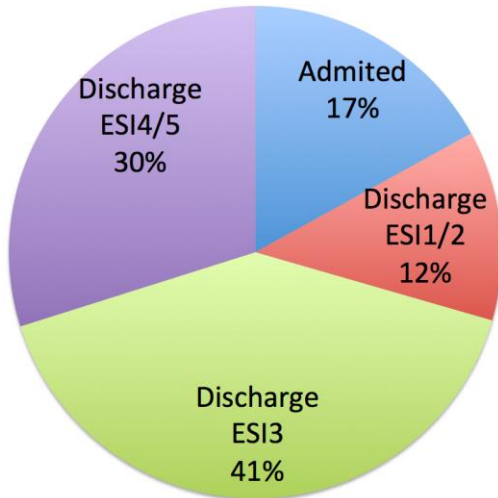
3. Only three ways to achieve flow: 1) reduce demand; 2) reduce LOS; 3) increase (staffed) bed capacity.

Overall ED LOS by Mean Daily LOS, FY 15/16

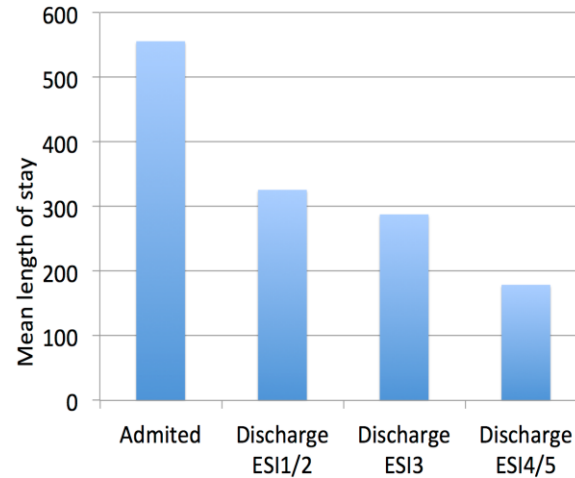Mean ED LOS = 311 min ± 40 min

LOS (Minutes)
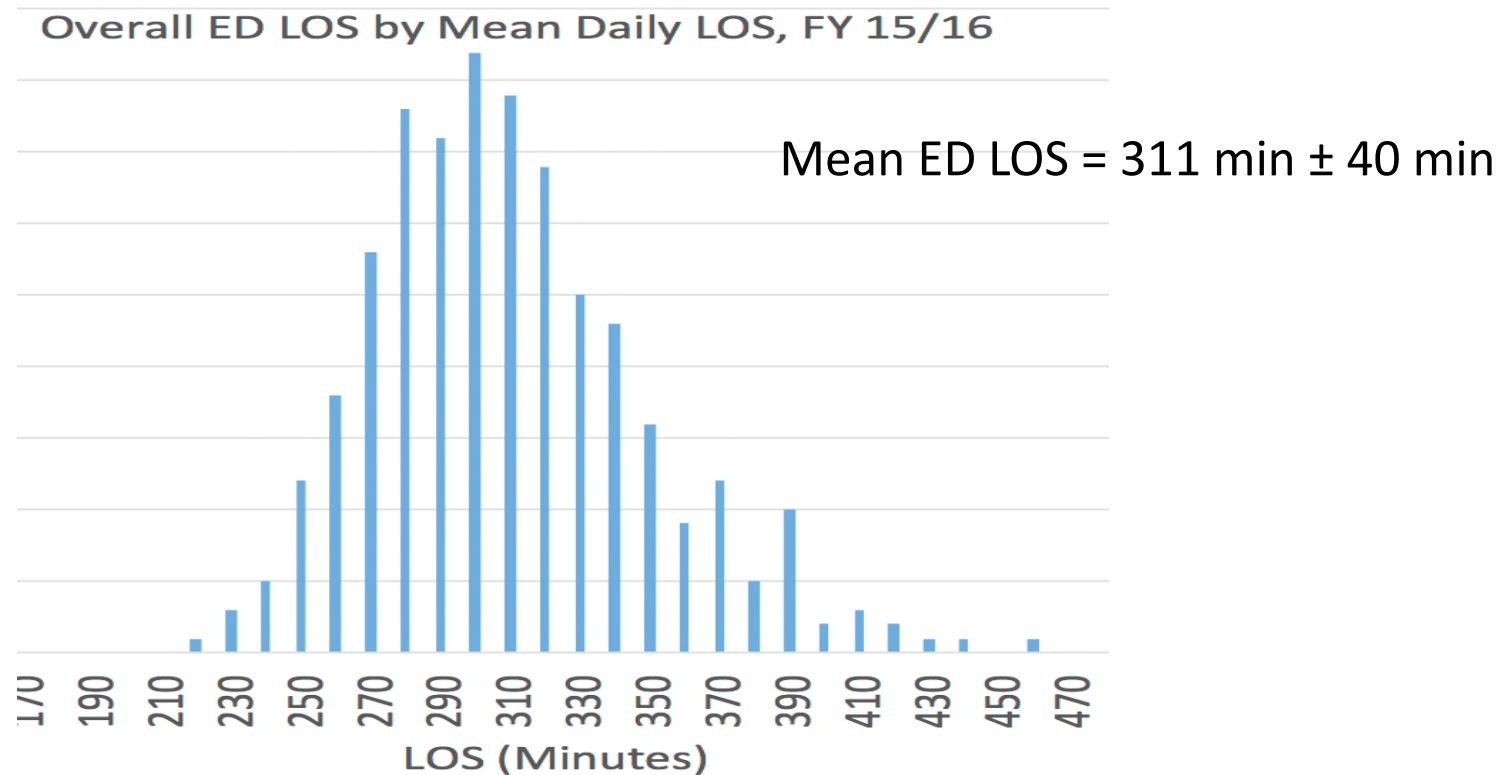
1. Current staffing and 'operationalization' of new ED results in 80% or less capacity utilization. Demand exceeds capacity more than half of the time

2. For capacity to exceed demand must: 1) improve staffing and 'operations' ; 2) reduce LOS; 3) if possible, reduce demand (esp. at peak)

Stratifcation of ED volume by ESI and LOS identifies where to focus to reduce LOS
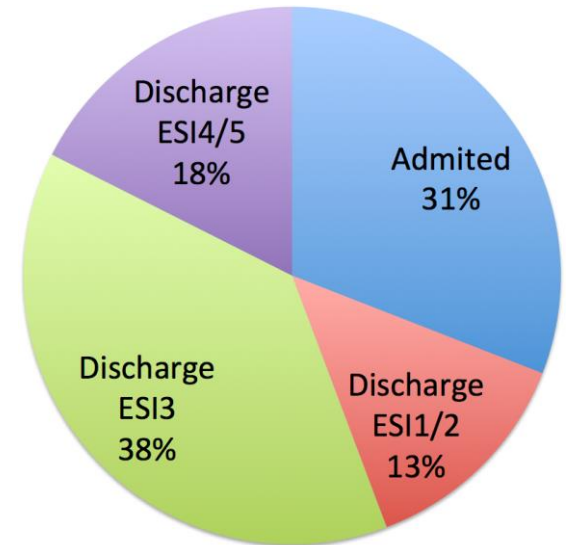
Volume stratification

Admited 17%
Discharge ESI1/2 12%
Discharge ESI3 41%
Discharge ESI4/5 30%

LOS stratification

Mean length of stay

Admited | Discharge ESI1/2 | Discharge ESI3 | Discharge ESI4/5

Stratification by LOS & volume

Discharge ESI4/5 18%
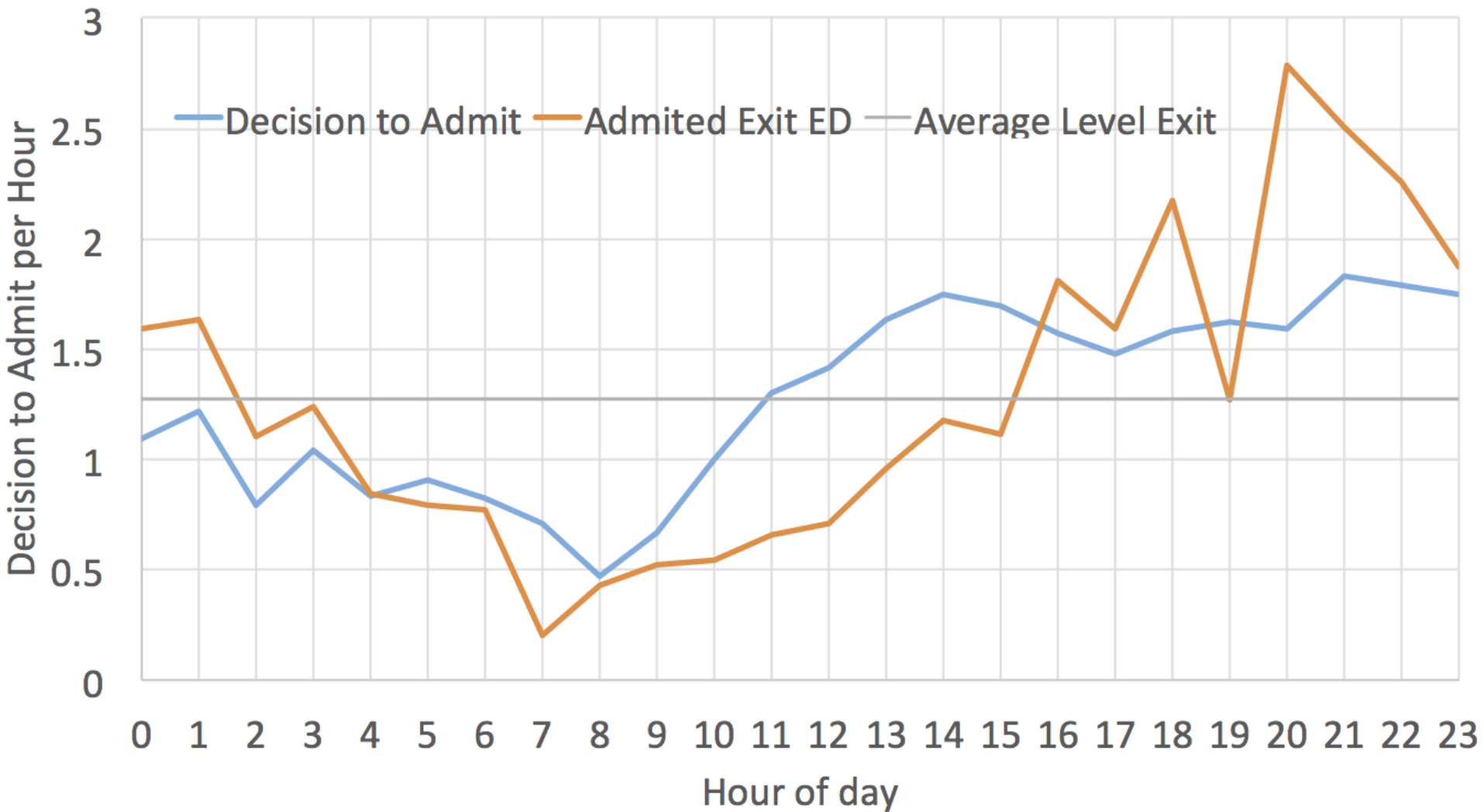Admited 31%
Discharge ESI3 38%
Discharge ESI1/2 13%

1. The three largest 'buckets' of LOS are: 1) discharged ESI3 patients (38%), admitted patients (31%), discharged ESI4/5 patients (18%).

2. LWBS rate correlates with fastrack LOS; reducing LOS of ESI4/5 patients via fastrack reduced the LWBS rate.

Longest (and most variable) LOS are admitted patients

ED LOS Stratified by Mean Daily LOS, FY 15/16

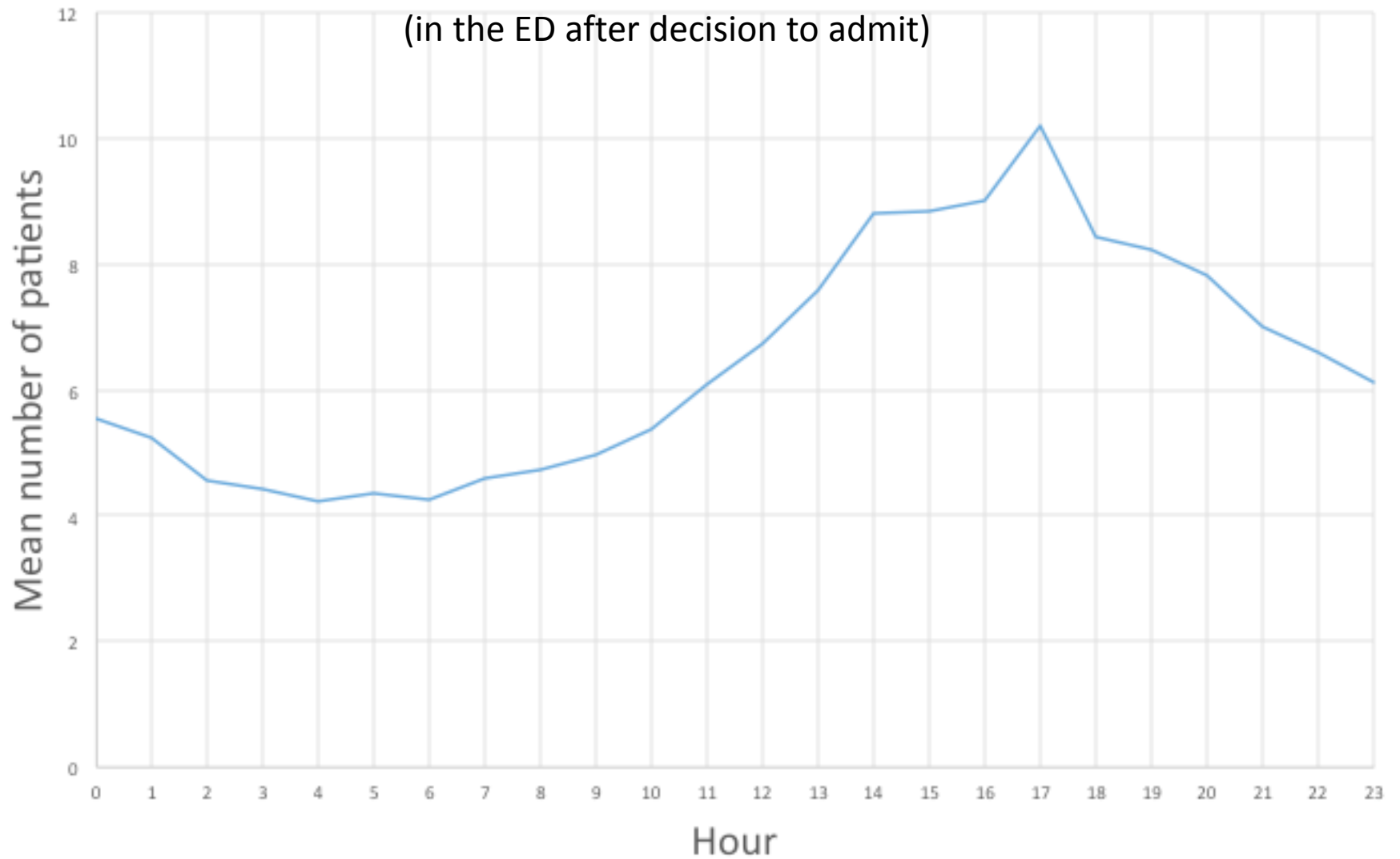ED Admitted LOS Stratified by Mean Daily LOS, FY 15/16
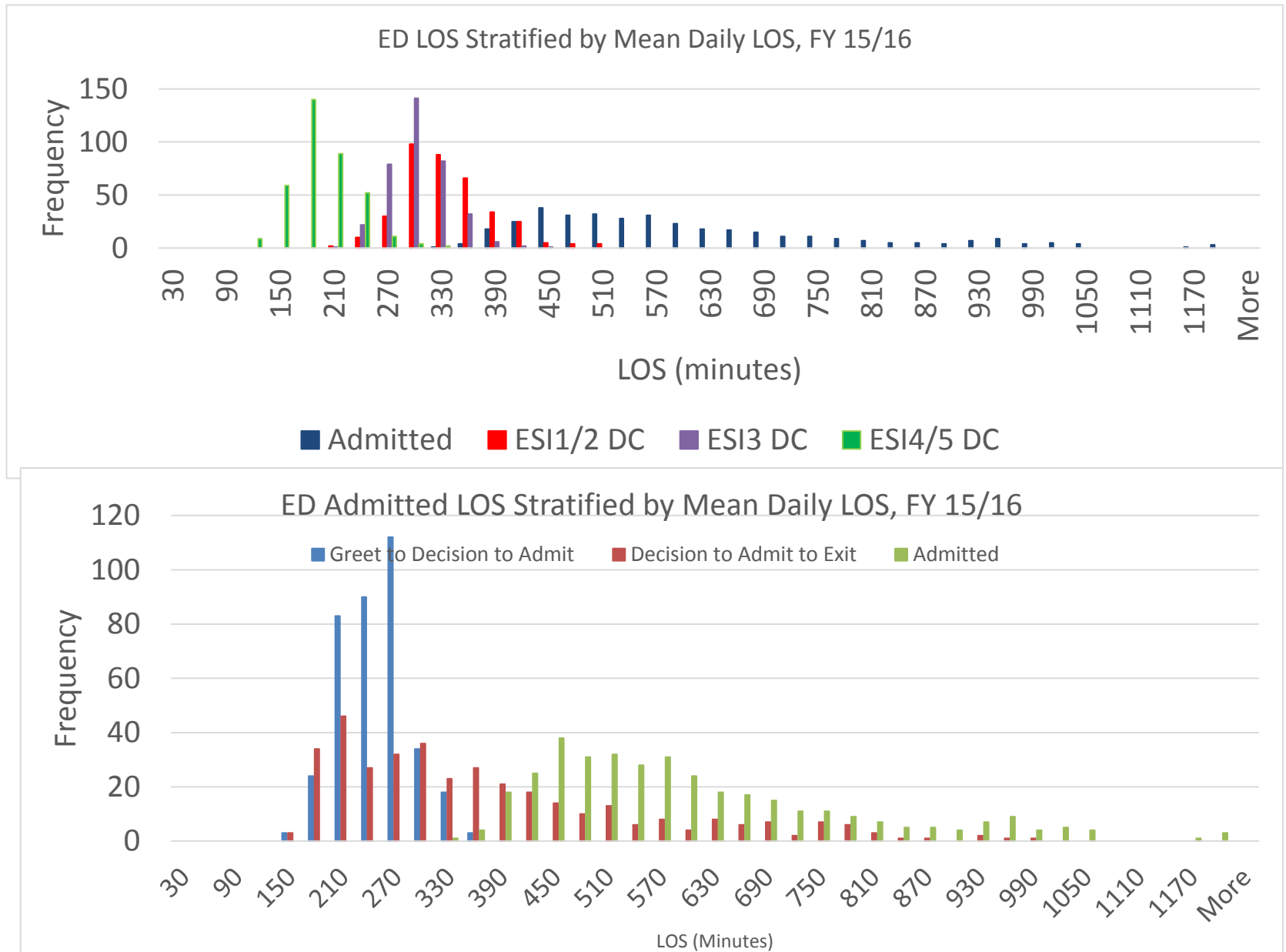
Rates of decision to admit and patients leaving the ED

Mean Number of Admitted Patients (6/1 to 8/18/16)

(in the ED after decision to admit)

What would it take to have patient flow?

- No diversion/No LWBS
- LWBS
  - Reduce time to provider/LOS for ESI4/5 patients
  - A rate of 0 = an additional 4,000 patients/year; 10/day
  - Almost certainly would require shuttling some to Urgent Care'
- Diversion
  - Reduce overall mean ED LOS
    - Need 24 hour hospital bed capacity matched to demand
  - Fully staff ED bed capacity
  - Put process around going on and off diversion and how we respond when we are on
  - Anticipate at least 8,000 additional ED patients/year; 22/day; at a 25% admission rate would require additional 22 hospital beds