Carolinas HealthCare System

Operating Room Methodology Areas of Concern and Proposed Improvements

Greg Bass
Carolinas HealthCare System
November 10, 2016

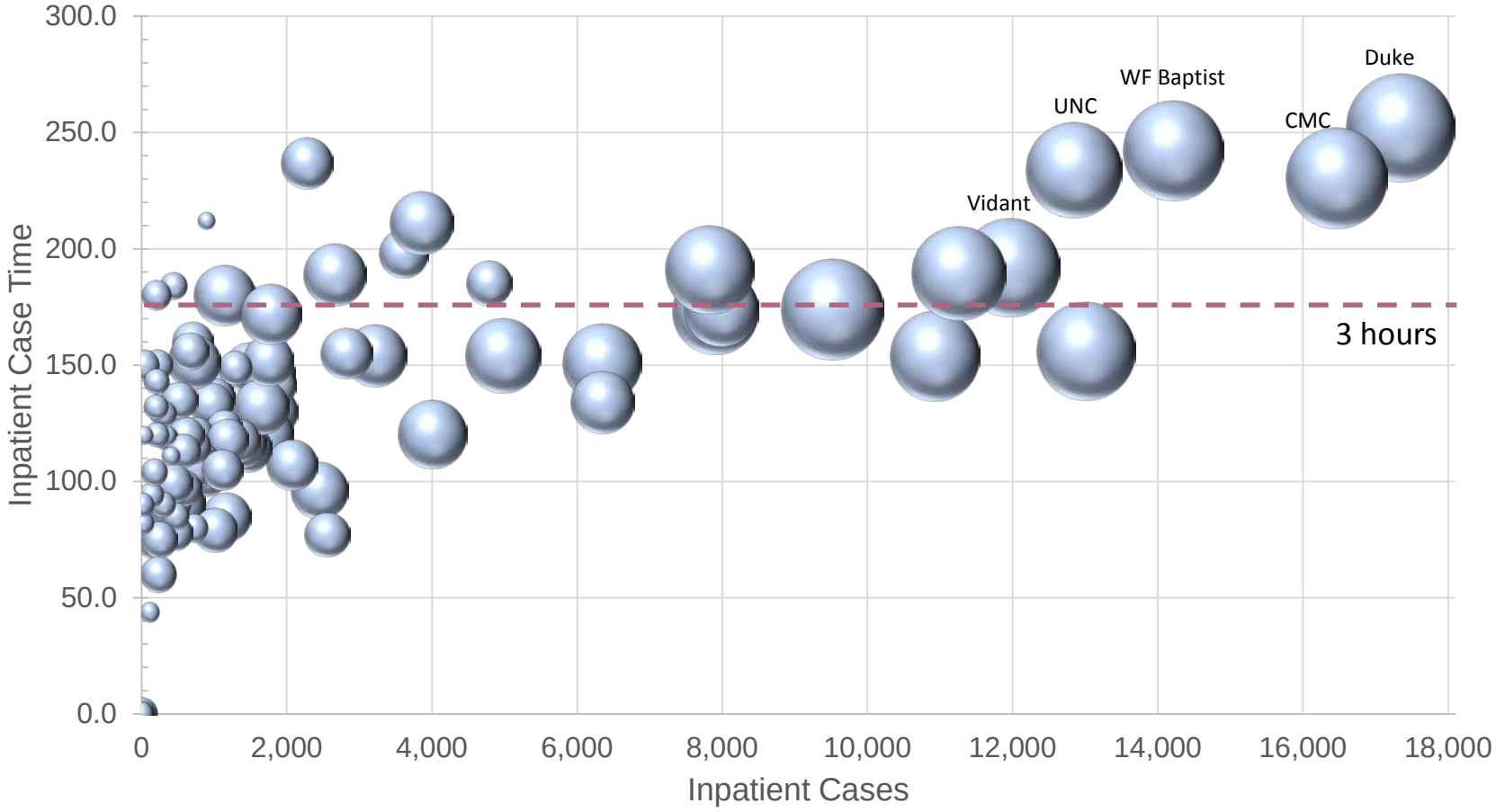
What are the key areas of concern with the current OR methodology?

- Key assumptions and variables used in the methodology were assigned almost ten years ago and do not accurately reflect current operations.
  - Fixed case times for inpatient and ambulatory procedures
  - Capacity definition of operating rooms
  - Growth rate for projecting future surgical hours
- The data source for the utilization statistics is self-reported on licensure renewal applications.
  - While instructions are intended to be clear there is a wide range of interpretation and accuracy in the reporting process.
  - Some providers lack sophisticated systems to provide the requested data.

Case Time Variable

- Future operating room need is based on case volume and hours per case to determine current surgical hours.
- The current fixed cases times of 3 hours per inpatient case and 1.5 hours per ambulatory case are overstating the actual case times for the vast majority of surgical providers.
  - 86.8 percent of hospitals currently report inpatient case times under 3 hours.
  - 80.0 percent of ambulatory surgery centers report ambulatory case times under 1.5 hours.
- The average case times for all hospitals are as follows:
  - Inpatient = 2.1 hours
  - Ambulatory = 1.4 hours
- The average case time for ambulatory surgery centers is 1 hour.
- The longest case times are reported by the academic medical center teaching hospitals (AMCTHs): Duke, UNC, WF Baptist, Vidant and CMC.
  - As a group the AMCTH average inpatient case time is 3.8 hours.

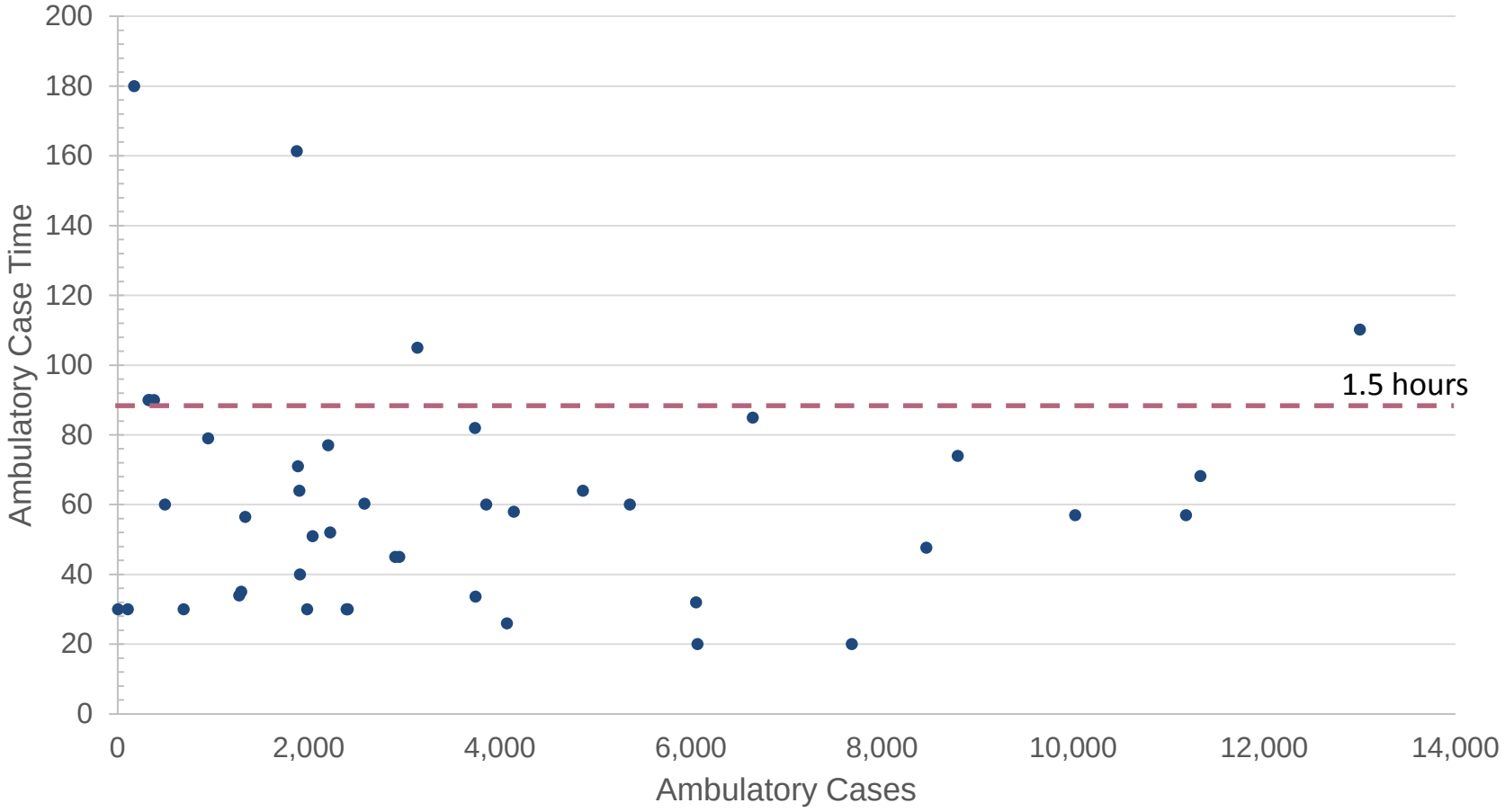
Inpatient Case Time



Note: Bubble size = acute care bed count

Source: 2016 HLRAs

ASC Ambulatory Case Times



Source: 2016 HLRAs

Capacity Variable

- The demand for future operating rooms is based on dividing the projected surgical hours by the annual hours of capacity of an operating room.
- The current methodology assumes a 9 hour day and 260 days of operation per year and an 80 percent utilization rate:
  - 9 x 260 x .80 = 1,872 hours
- There is wide variation among hospitals hours of operation.
  - The average daily hours of operation for all hospitals is 8.3
  - 25 percent are below 8 hours per day
- There is also variation among days of operation for hospitals and ASCs.
  - The average is 235 days, and 73.5 percent are below 260 days.

Proposed Alternatives

- Consider a change in the data source for surgical cases to Truven data
  - There are complications that will need to be addressed including:
    - Definition of surgical procedures (using revenue codes or combination of revenue codes and presence of anesthesia charges)
    - Identification of procedures done in licensed operating rooms
  - If these issues can be resolved we could continue to use the current data from license renewal applications for verification similar to what is currently being done with the acute care bed need methodology
- Consider using surgical case growth rates instead of county population growth to project future surgical hours
  - This is not currently possible due to inconsistencies on license renewal applications in recent years.
  - This could be simplified by a transition to Truven data as the source for surgical cases.

Proposed Alternatives

- Consider a methodology that determines the appropriate variables based on a tiered approach of similar providers.
- The table below shows one possible grouping that was determined by sorting on total surgical cases and looking for natural break points.
- The tiers could be reviewed each year and providers could move between tiers if their volumes change.

Tier	Provider Count	Definition	Avg Total Cases	Avg IP Time	Avg OP Time	Avg ORs	Avg Beds
1	5	AMCTHs	31,565	230.2	143.1	46.2	813.4
2	13	Large Referral Hospitals (Total Cases >= 10,000)	18,263	165.7	96.8	28.0	478.2
3	23	Community Hospitals (Total Cases between 9,999 and 5,000)	6,841	144.8	88.9	11.0	183.2
4	69	Small Hospitals (Total Cases < 5,000)	2,162	101.2	73.2	4.5	86.0
5	45	Ambulatory Surgical Centers	3,711	N/A	60.9	3.8	N/A