

Introduction

Declining patient volumes in an outpatient clinic affect the financial solvency of the clinic, provider satisfaction, and impact a residency program's ability to meet ACGME requirements. After scheduling changes were made in July, 2018, our clinic noted a decline in patient volumes. The reduced number of patient visits was hypothesized to be due to increased no-shows.

Background/Disclosures

Med ECG is an extracurricular group at the University of Michigan Medical School led by students with industry experience in consulting. It's aim is to teach medical students consulting skills that can be used to solve problems in health care and apply it to real-world projects. The group provides pro-bono services to local non-profit healthcare groups. Our clinic partner is a mid-Michigan Federally Qualified Health Center (FQHC) that is affiliated with a Family Medicine residency program. Per an agreement with their staff, both the clinic and the residency program will remain anonymous. The authors have no financial disclosures.

Project Objectives

- Our work aims to:
1. Determine the primary drivers of decreased patient volumes in clinic.
 2. Create a predictive model to ensure appropriate resident scheduling to meet both clinic needs and residency program goals.



Figure 1: Four stage approach to address declining patient volumes

Approach

The project was planned in 4 stages (Figure 1):

1. **Set project scope:** Clarification objectives and timeline with client
2. **Quantitative analysis:** A two year period of de-identified clinic data from 2017-2018 was analyzed. Data from January, 2017 – June, 2018 was compared to data from July 2018-December, 2018 during which time a drop in patient volume was noted. The no show rate was calculated for each quarter by comparing the number of scheduled visits to the number of completed visits (Figure 2). Number of visits per provider per clinic session was averaged for each quarter (Figure 3a). Number of clinic sessions per provider per month was calculated and averaged for each quarter (Figure 3b).
3. **Qualitative analysis:** Interviews with clinic stakeholders including front desk staff, patients, medical assistants, faculty preceptors, and residents to assess clinic work flow and patient/provider satisfaction.
4. **Client presentation:** Submit results of analysis and predictive model for scheduling patients and residents.

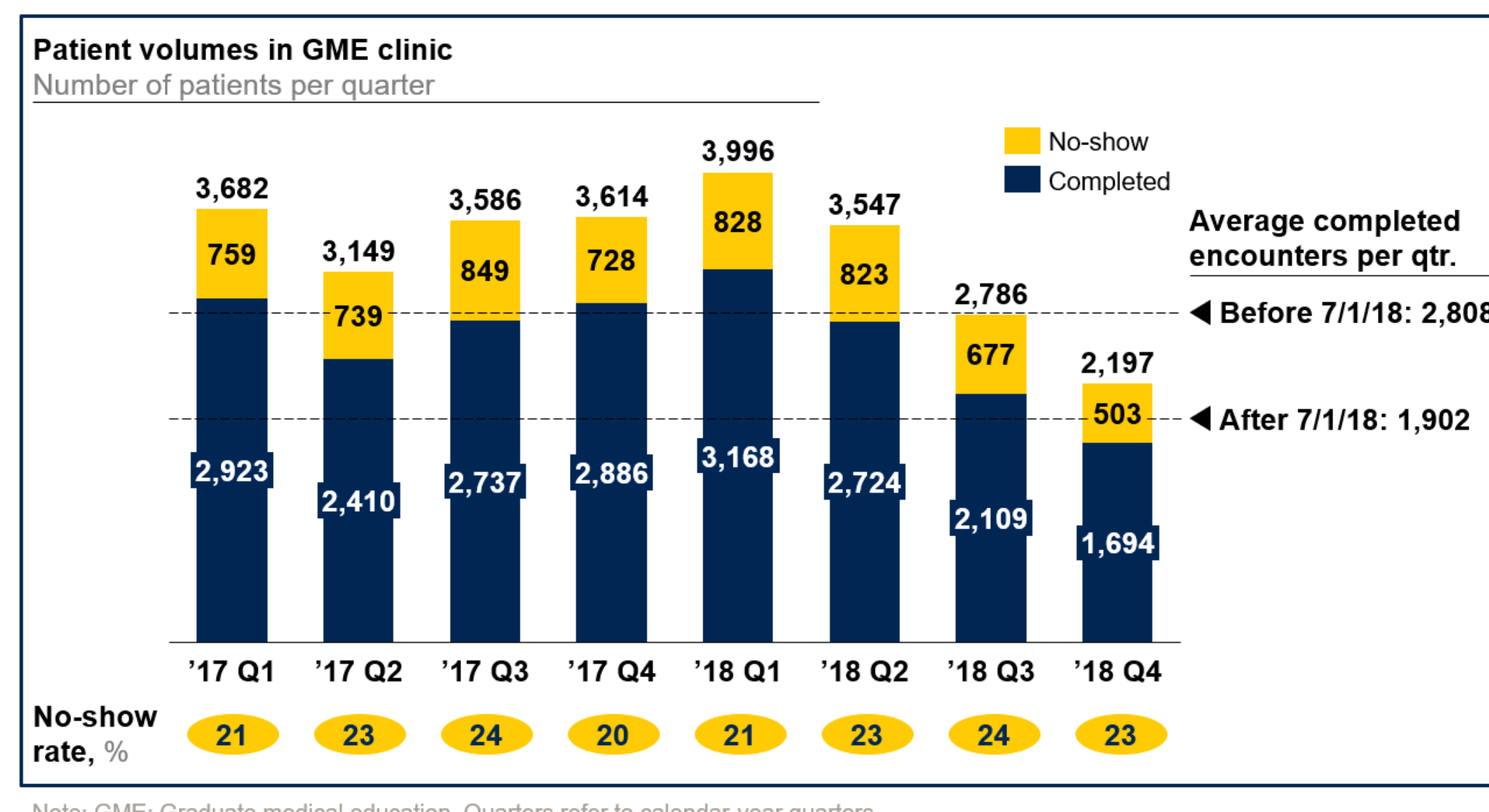


Figure 2: Patient volumes and no-show rates per quarter.

Obstacles Encountered

Clinic staff believed the primary cause of declining patient volumes was increased patient no-shows and wanted to focus on determining underlying causes of patient no shows. Our first step was to determine if the no-show rate had changed before doing further analysis.

Project Modifications

After it was determined that the no show rate hadn't changed significantly during the period of declining patient volumes (Figure 2) and that the decline in patient volumes was driven by changes in scheduling (Figure 3a and 3b), it was no longer felt that qualitative analysis (Stage 2) was necessary to achieve our project goals.

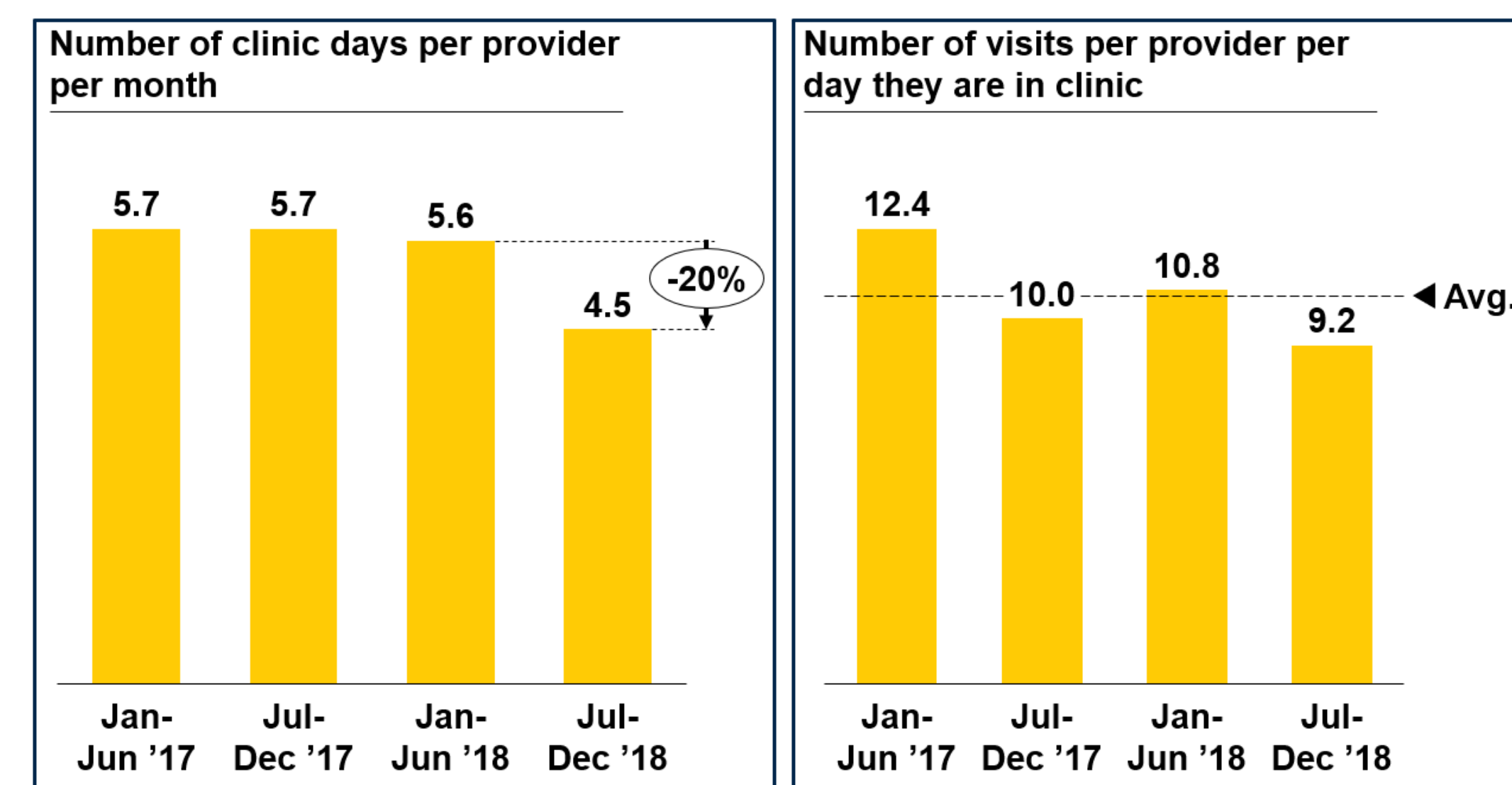


Figure 3a: Clinic days per provider per month and visits per provider per clinic session.

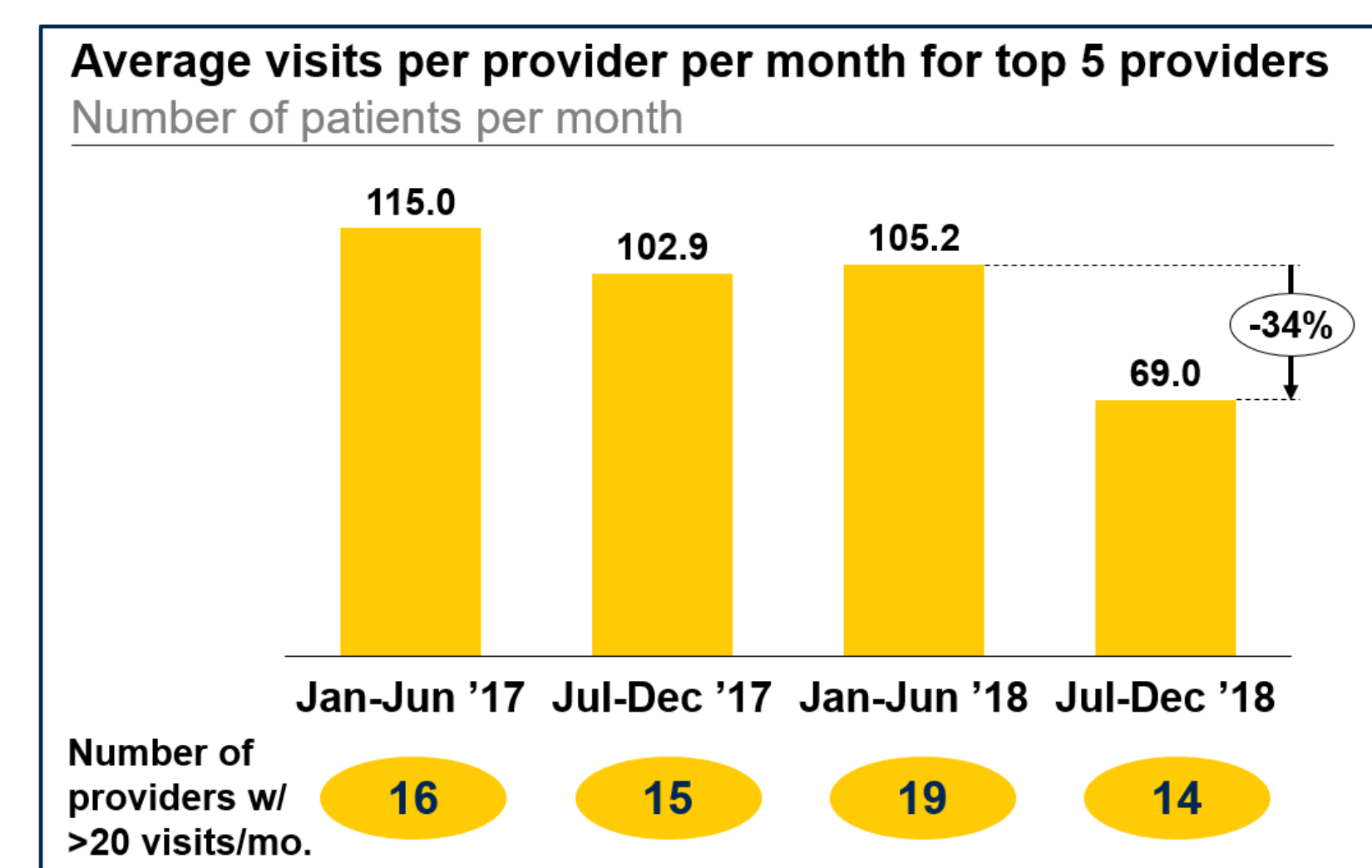


Figure 3b: Average number of visits per provider per month.

Final Product

Data Analysis: The number of patients scheduled in clinic dropped from an average of 3,600 visits per quarter to 2,500 visits per quarter after July, 2018. The no-show rate remained steady at 20-24% throughout the period of interest (Figure 2). After July, 2018, providers saw 10% fewer patients per clinic session and were scheduled in clinic 20% less per month (Figure 3a). This resulted in providers seeing 34% fewer patients each month (Figure 3b). Therefore, the decline in patient volume after July, 2018 was largely driven by a decrease in the number of visits per provider per clinic session and a decrease in the number of clinic sessions per provider each month.

Predictive model: Created using number of clinic days per resident per month, number of patient visits per session, and no-show rate to predict clinic volumes (Table 1). Cells highlighted in green indicate scheduling combinations that would result in optimal patient volumes for the clinic and residency program.

Next Steps

Based on our predictive model, the clinic would need to schedule residents for 8-12 half days per month to meet or exceed previous patient volumes. Our team offered to conduct additional analysis if needed after these changes were implemented, although there are no plans for further qualitative or quantitative analysis at this time.

Booking rate	Total GME clinic patients per year	Number of sessions per resident per month											
		4	5	6	7	8	9	10	11	12			
70%	10,575	4,113	5,141	6,169	7,197	8,225	9,253	10,282	11,310	12,338			
75%		4,406	5,508	6,610	7,711	8,813	9,914	11,016	12,118	13,219			
80%		4,700	5,875	7,050	8,225	9,400	10,575	11,750	12,925	14,100			
85%		4,994	6,242	7,491	8,739	9,988	11,236	12,485	13,733	14,982			
90%		5,288	6,610	7,932	9,253	10,575	11,897	13,219	14,541	15,863			
95%		5,581	6,977	8,372	9,768	11,163	12,558	13,954	15,349	16,744			
100%		5,875	7,344	8,813	10,282	11,750	13,219	14,688	16,157	17,626			

Note: Green shading denotes input combinations that would give volumes greater than or equal to July 2017-June 2018 volume

Table 1. Predictive model for resident scheduling

Contact

Laura Kruger
 Medical Educational Consulting Group
 Email: krulaura@umich.edu, medecgumms@gmail.com
 Website: medecg.org

References

1. Medecg.org

