CENTER FOR HEALTHCARE ENGINEERING & PATIENT SAFETY
UNIVERSITY OF MICHIGAN

2017 Healthcare Engineering and Patient Safety Symposium

Annual Block Scheduling for Medical Residents

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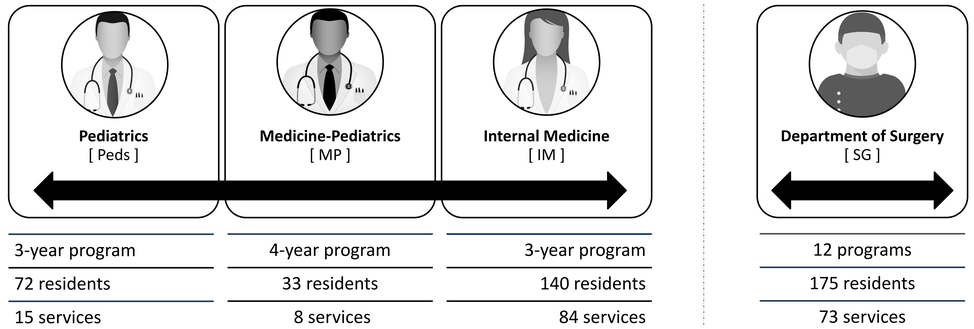
PROBLEM

- The University of Michigan Medical School offers medical residency programs across many disciplines.
- Block scheduling assigns residents to services throughout the year to meet the needs of the residents (education, preferences, etc.), services (coverage), and programs (fairness, proficiency, burn-out, etc.).
- Traditional manual construction by program leadership is time-consuming and often fails to meet stakeholder needs and preferences.



MODEL

Mixed Integer Programming

Minimize:
- Resident requests denied
- Administrative preferences denied
- Seasonal conflicts
- Burnout sequences
- Ambulatory credit variability

Subject to:

- Basic Assignment
- Rotation Duration
- Service Coverage
- Resident Education
- Prohibitions
- Pre-assignments
- Service Spacing
- Service Sequencing
- Resident Pairings

FEATURES & OUTCOMES

Generate Schedules Quickly

Iterative Construction Process

Peds	MP	IM	SG
Schedule Generation			
≈ **1** min	≈ **1** min	≈ **5 – 120** min	≈ **1** min
Use			
4 years	**2** years	**2** years	**4** years

Improve Schedule Quality

Resident Requests

Patient Care Coverage

Enabled greater specificity of resident and service needs

Improved satisfaction regarding:

- Vacation requests & elective/research offerings
- Fellowship interview & graduation conflicts
- Pacing and challenging rotation sequences

ACKNOWLEDGEMENTS

We graciously thank the Seth Bonder Foundation and University of Michigan Medical School for their support. We also express our gratitude to the program directors, incoming/outgoing chief residents, and the many CHEPS students who have contributed to this project.

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