The University of Michigan Medical School (UMMS) offers postgraduate medical training programs across many disciplines. Ensuring adequate resident education and proper service coverage requires many training programs to integrate schedules. Coordinating the long-term block schedule – assigning every trainee to services over the year – is a complex challenge.

Traditionally, program leadership (chief residents and program directors) constructs the block schedule by hand. The construction process is resource-intensive yet often fails to satisfy the individual & collective needs of stakeholders.

**Problem Statement**

The University of Michigan Medical School (UMMS) offers postgraduate medical training programs across many disciplines. Ensuring adequate resident education and proper service coverage requires many training programs to integrate schedules.

**Solution Approach**

1. **Formulate**
   - One model, generalized to satisfy all 3 programs’ needs.

2. **Encode**

3. **Load**
   - Inputs provided in a collection of .txt, .csv, and .xls files.

4. **Solve**
   - Software solves to optimality under input conditions.

5. **Review**
   - Schedule and metric reports generated for presentation to administrators.

**Impact/Results**

Facilitated concurrent scheduling of all 3 programs for first time.

Enabled program leadership to more precisely specify scheduling needs compared to manual construction.

Provided improved satisfaction (relative to prior year):
- vacation requests
- elective/research offerings
- fellowship interview and graduation conflicts
- schedule fairness
- pacing and challenging rotation sequences

**Strategy A** solves faster than Strategy B.

**Strategy B** produces better quality than Strategy A.

**Ongoing Work**

- Evaluating alternative formulations for impact on solve time.
- Implementing additional metrics based on leadership feedback.
- Streamlining administrative and schedule revision processes.

**Research Objective**

Develop a decision support system to enable fast construction of high-quality block schedules while improving measures of quality.