**BAMS 508 Project**

**Option 2. Pediatrician Scheduling**

In class, we discussed some aspects of the [case study](https://pubsonline.informs.org/doi/epdf/10.1287/ited.2021.0266cs) about shift-scheduling of pediatricians at BC Women’s Hospital. While we covered some aspects of the formulation, we did not cover all of it. This problem builds on that introduction.

1. On p. 2, second paragraph of the right column, the case states “Meg tells you that she simply wants a schedule that meets all of the hard constraints and comes as close to meeting the soft constraints as possible.” Towards that end, provide a complete formulation for the problem (i.e., one that incorporates all of the constraints of sections 2.1 and 2.2).
2. Ask ChatGPT to do the same for part a). That’s right…go ahead and copy and paste all of Section 2 into ChatGPT. Then add the sentence “Formulate (algebraically) an optimization problem to create a schedule that meets all of the hard constraints and comes as close to meeting the soft constraints as possible." Share screen shots of ChatGPT’s response and indicate up to two things that it either: 1) gets wrong, and/or 2) is logically correct about, but it could have done in a cleaner/simpler way. If you do not find two things, then put one thing. If you don’t find one thing, then say you think it got everything correct.
3. Meg provides relevant input data for the next scheduling cycle in BCWH\_Inputs.xls. Use that data in combination with Python/Gurobi to come up with a schedule for her. Discuss the solution in language you would use with a pediatrician.
4. What if pediatricians’ availability for the next cycle was such that there is no feasible solution to the schedule? Change the current “Availability” section of the inputs file so that Gurobi returns “infeasible” when you try to solve it with the updated availabilities[[1]](#footnote-1). What would you recommend that Meg do in this case? Provide a thoughtful discussion.

1. without doing something extreme like setting everyone’s availability to 0 for all 56 shifts [↑](#footnote-ref-1)