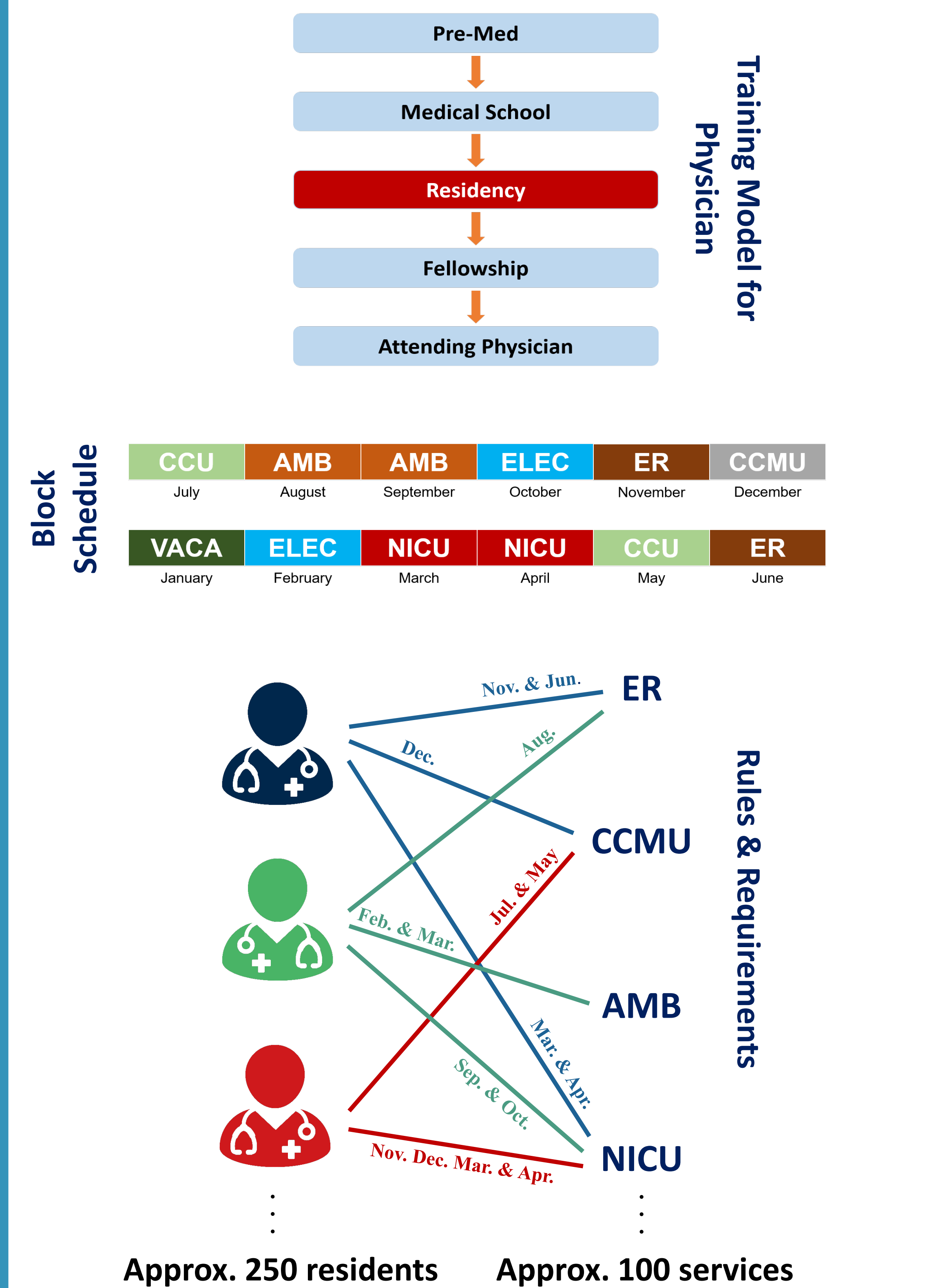


What's the Problem?



You can't always get what you want...

Especially if you don't know what that is.

Lessons in Building Annual Residency Block Schedules

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Residents have a life too!



Fancy Math!

We have designed and implemented a computerized algorithm to produce valid schedules for consideration:

Decision Variables

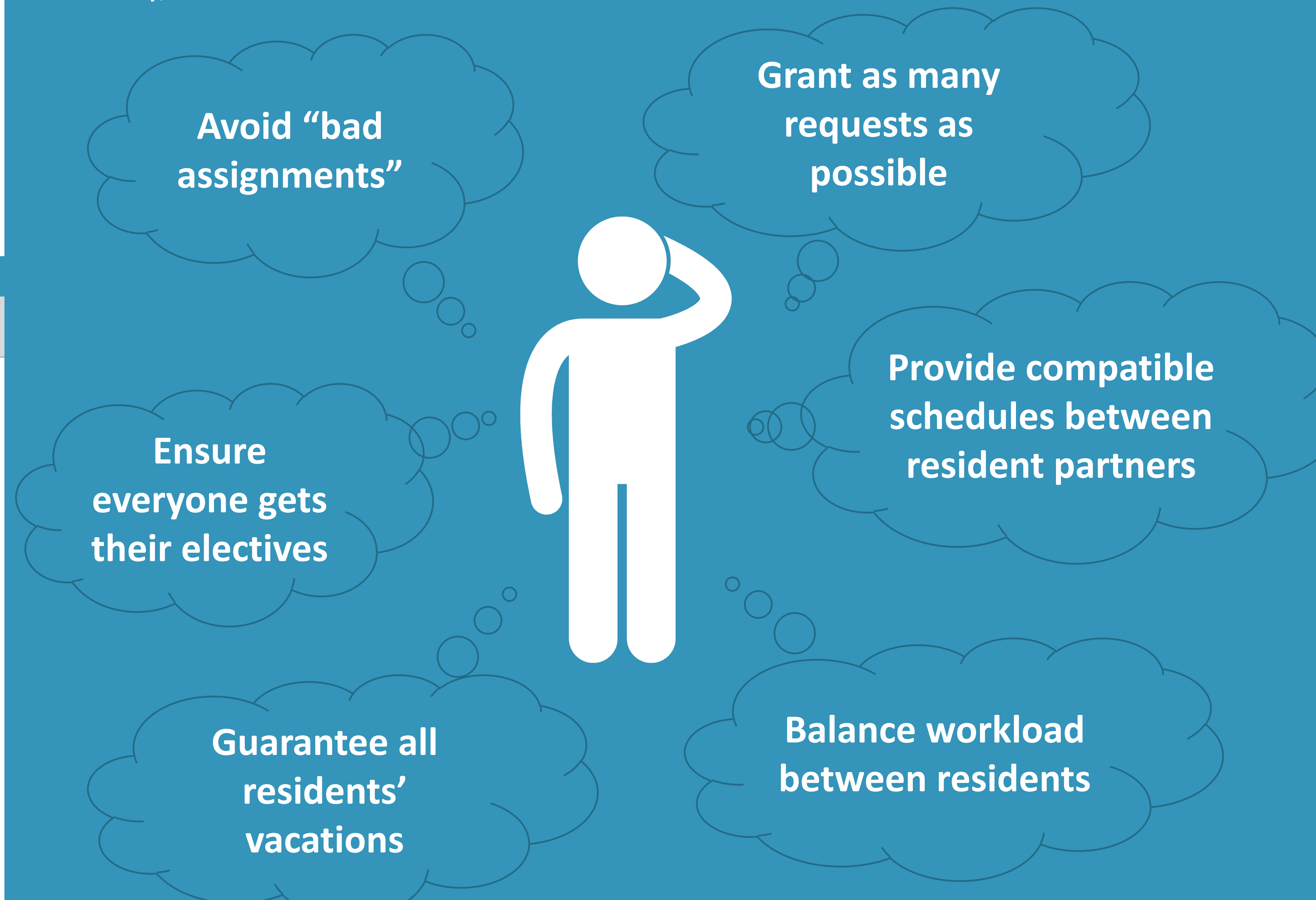
X_{rat} Whether resident r starts to do a rotation a at time period t
 Y_{rst} Whether resident r is assigned to service s during time period t

$$\sum_{s \in S} x_{rst} = 1 \quad \forall r \in R, t \in T$$

$$x_{rst} = \sum_{\substack{a \in A: \\ s(a)=s}} \sum_{\substack{p \in P \\ [\max(0, t-d_a+1), t]}} y_{rap}, \quad \forall r \in R, s \in S, t \in T$$

$$ub_c \geq \sum_{r \in R'_c} \sum_{s \in S'_c} \sum_{t \in T'_c} x_{rst} \geq lb_c, \quad \forall (R'_c, S'_c, T'_c, lb_c, ub_c)$$

$$ub_e \geq \sum_{s \in S'_e} \sum_{t \in T'_e} x_{r_e, st} \geq lb_e, \quad \forall (r_e, S'_e, T'_e, lb_e, ub_e)$$



Here's the Challenge!

There is an exponentially large (!) number of valid schedules to choose from.

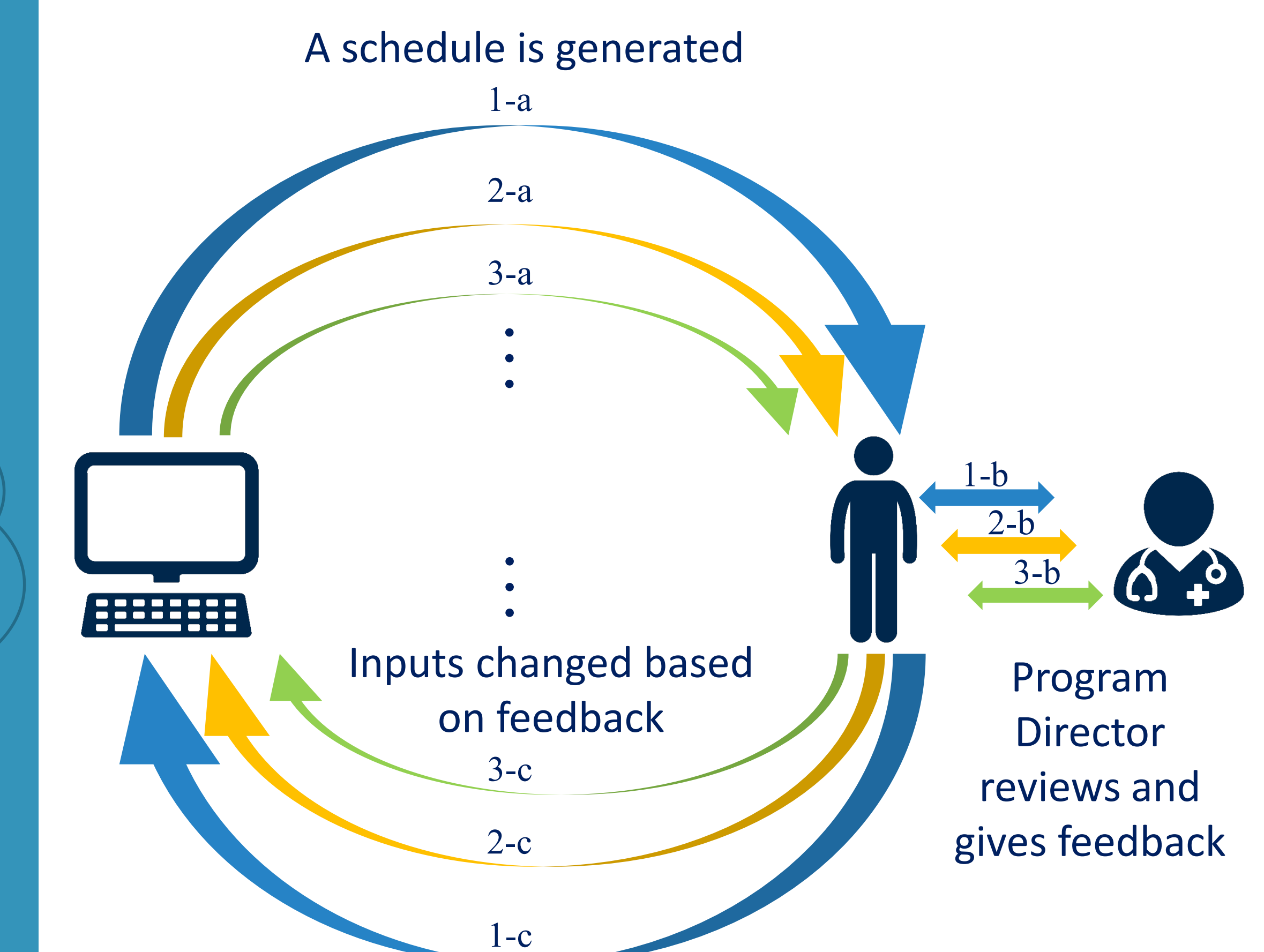
Which one is the "best"? We care about lots of different metrics – granting many requests might mean making lots of "bad assignments"; granting few "bad assignments" might mean granting fewer elective requests.

And even within one metric, what is fair and equitable?

- Deny 25 total requests, 1 each for 25 residents?
- Deny only 8 requests - but these are all for the same resident?
- Deny only 1 request, but it's for a resident's wedding?



Run Algorithm As Many Times As Needed



Acknowledgements