# Calibration assumptions

* Removing 2023 diagnosis data: the trend is not in line with previous years in most cities
* Using similar likelihoods for all targets for now:
  + In some cities (e.g., Baltimore), we are missing late diagnosis data for 2000-2019 and the model has a hard time catching up with the most recent estiamtes. But this is not the case everywhere. Need to come up with a generalizable solution

# Calibration workflow:

**During the run:** if ration of accepted runs fall below 20%: the chain is not mixing. Can end the run

**After the run completes:**

1. Check the mixing statistics: Did the chain mix well?
   1. No, dismiss
   2. Yes: look at each outcome: total, stratified, ….
2. If some outcomes don’t fit well:
   1. it is moving in the right direction?
      1. Yes? It may need more time
      2. No? Moving in the bad direction
         1. Is it scoring the likelihood worse?
            1. yes: If it's moving in a bad direction and its scoring worse, then there is a conflict between different outcomes : then maybe find a manual fit
            2. no, If it's moving in a bad direction and its scoring it better, then there is an issue with the likelihood

**Questions to ask when reviewing an MCMC:**

1. Did it mix?
   1. If not, don’t spend too much time looking at the fits – need to fix mixing first
2. If it mixed, do all the outcomes fit well?
3. If a certain outcome doesn’t fit well, is it at least moving in the right direction?
4. If it’s not moving in the right direction, does the likelihood at least “know”that it’s moving in the wrong direction (i.e., is it scoring it worse)?
   1. If it’s moving in the wrong direction but scoring it better, what am I not seeing? Is it fitting a certain strata better?

                                                              i.      If all strata appear to be getting worse despite a better score, is there an error in the likelihood?

* 1. If it’s moving in the wrong direction and scoring it worse (i.e., it “knows” it’s getting worse), what tradeoff is it making? Which likelihoods are getting better at the cost of this one?

                                                              i.      If there seems to be a tradeoff between two likelihoods, am I able to manually find a fit that makes them both better?

* + - 1. If I can’t find a manual fit that makes them both better, do I need to make structural changes (i.e., add parameters) or likelihood changes (i.e., change the weights)?