Parameters

* timestep = 10 ms
* stateStep = .01
* simCutoff = 20000
* simCount = 8
* seed = 4

Progress: When did the best fitting estimates match the true parameter?

What index was the best fitting estimates? How many at that index?

* + 36 mins
  + Gain
    - 1st: 5
    - 2nd: 3
    - Other: 0
  + Loss
    - 1st: 5
    - 2nd: 1
    - Other: 10 (d theta off by 1 unit), 4 (theta off by 2 units)
  + 52 mins
  + Gain
    - 1st: 4
    - 2nd: 2
    - Other: 3 (bias off by 1 unit), 13 (theta off by 3 units)
  + Loss
    - 1st: 6
    - 2nd: 1
    - Other: 44 (sigma theta off by 1 unit)
  + 45 mins
  + Gain
    - 1st: 3
    - 2nd: 2
    - Other: 19 (eta sigma off 1 unit), 5 (eta sigma off 1 unit), 5 (d eta off 1 unit)
  + Loss
    - 1st: 4
    - 2nd: 1
    - Other: 7 (eta sigma off 1 unit), 12 (eta sigma off 1 unit), 3 (eta off 1 unit)
  + 198 mins
  + Gain
    - 1st: 1
    - 2nd: 3
    - Other: 10 (bias off 1 unit), 4 (eta off 1 unit), 12 (bias eta off 1 unit), 8 (bias off 1 unit; eta off 2 units)
  + Loss
    - 1st: 5
    - 2nd: 0
    - Other: 9 (sigma off 1 unit), 5 (eta sigma off 1 unit), 9 (eta sigma off 1 unit)
  + 401 mins
  + Gain
    - 1st: 0
    - 2nd: 2
    - Other: 32, 447, 3, 58, 42, 3
  + Loss
    - 1st: 0
    - 2nd: 0
    - Other: 604, 237, 92, 31, 59, 26, 97, 15
  + We should not be combining the additive and multiplicative model.
  + 38 mins
  + Gain
    - 1st: 5
    - 2nd: 0
    - Other: 3 (theta off 1 unit), 3 (minValue wrong; theta off 1 unit), 3 (theta off 1 unit)
  + Loss
    - 1st: 3
    - 2nd: 0
    - Other: 3 (minValue wrong; theta off 1 unit), 4 (minValue wrong; theta off 1 unit), 3 (theta off 1 unit), 3 (theta off 1 unit), 3 (theta off 1 unit)
  + In losses, minValue is typically wrong when there is close to no attentional bias and drift rate is small.
  + 78 mins
  + Gain
    - 1st: 4
    - 2nd: 1
    - Other: 3 (minValue wrong), 6 (minValue wrong; theta off 1 unit), 6 (minValue wrong; theta off 1 unit)
  + Loss
    - 1st: 3
    - 2nd: 0
    - Other: 3 (minValue wrong; theta off 1 unit), 4 (theta off 1 unit), 3 (theta off 1 unit), 3 (theta off 1 unit), 3 (theta off 1 unit)
* GEN: ; FIT:
  + 52 mins
  + Gain
    - 8/8 Best fitting model was always dstm
    - 1st: 5
    - 2nd: 0
    - Other: 3 (theta off 1 unit), 3 (minValue wrong; theta off 1 unit), 4 (theta off 1 unit)
  + Loss
    - 8/8 Best fitting model was always dstm
    - 1st: 3
    - 2nd: 0
    - Other: 4 (minValue wrong; theta off 1 unit), 5 (minValue; theta off 1 unit), 3 (theta off 1 unit), 5 (theta off 1 unit), 3 (theta off 1 unit)
* GEN: ; FIT:
  + 52 mins
  + Gain
    - 7/8 Best fitting model was dse, 1/8 dse was second best
    - 1st: 2
    - 2nd: 3
    - Other: 19 (eta sigma off 1 unit), 5 (eta sigma off 1 unit), 5 (d eta off 1 unit)
  + Loss
    - 7/8 Best fitting model was dse, 1/8 dse was third best
    - 1st: 3
    - 2nd: 1
    - Other: 7 (eta sigma off 1 unit), 12 (eta sigma off 1 unit), 3 (wrong model; d off by 1 unit, eta and theta wrong… though true eta=.004 theta=1, est eta=0 theta=.5), 3 (eta off 1 unit)
* GEN: ; FIT:
  + 52 mins
  + Gain
    - 8/8 Best fitting model was dstmr
    - 1st: 3
    - 2nd: 1
    - Other: 3 (minValue wrong), 6 (minValue wrong; theta off 1 unit), 3 (range wrong; drift off 2 units; data generating model was 3rd best), 7 (minValue wrong; theta off by 1)
  + Loss
    - 8/8 Best fitting model was dstmr
    - 1st: 1
    - 2nd: 2
    - Other: 6 (minValue range wrong; drift off by 5 units, theta off by 1 unit), 8 (), 6 (), 8 (), 6()
  + dse was never the best fitting model, which is a good sign. But dstmr has problems when there is little or a lot of attentional bias.
  + When theta is close to 1, the model has a hard time telling the minimum value since it matters less (i.e. the value difference ends up being the same regardless of how we transform values). This is true for dstm too.
  + When theta is close to 1 or 0, range and drift can trade off. Writing the model with d=d and r=5r is the same as writing it with d=1/5d and r=r.
* GEN: ; FIT:
  + 52 mins
  + Gain
    - 7/8 Best fitting model was dse
    - 1st: 2
    - 2nd: 2
    - Other: 19, 3, 5, 5
  + Loss
    - 7/8 Best fitting model was dste
    - 1st: 3
    - 2nd: 1
    - Other: 7, 12, 5, 3
* GEN: dst; FIT: dstm + dst
  + Gain
    - 7/8 Best fitting model was dst
    - 1st: 4
    - 2nd: 1
    - Other: 5 (t off 1 unit), 4 (t off 1 unit), 5 (s off 1 unit)
  + Loss
    - 8/8 Best fitting model was dst
    - 1st: 5
    - 2nd: 1
    - Other: 10 (d t off 1 unit), 4 (t off 1 unit)
* GEN: dstm; FIT: dstm + dst
  + Gain
    - /8 Best fitting model was dstm
    - 1st:
    - 2nd:
    - Other:
  + Loss
    - /8 Best fitting model was dstm
    - 1st:
    - 2nd:
    - Other:
* GEN: dstmr; FIT: dstmr + dst
  + Gain
    - 8/8 Best fitting model was dstmr
    - 1st: 3
    - 2nd: 1
    - Other: 4, 8, 3, 7
  + Loss
    - 6/8 Best fitting model was dstmr
    - 1st: 1
    - 2nd: 2
    - Other: 7, 9, 6, 7, 6
  + dstmr struggles to differentiate from dst when theta close to 1. Drift is way off in these cases.
  + Same NLL for different ranges if we adjust drift.
* GEN: dst; FIT: dstmr + dst
  + Gain
    - 3/8 Best fitting model was dst
    - 1st:
    - 2nd:
    - Other:
  + Loss
    - /8 Best fitting model was dst
    - 1st:
    - 2nd:
    - Other:
* GEN: dstmr; FIT: dstmr + dstm
  + Gain
    - /8 Best fitting model was dstmr
    - 1st:
    - 2nd:
    - Other:
  + Loss
    - /8 Best fitting model was dstmr
    - 1st:
    - 2nd:
    - Other:
* GEN: dstm; FIT: dstmr + dstm
  + Gain
    - /8 Best fitting model was dstm
    - 1st:
    - 2nd:
    - Other:
  + Loss
    - /8 Best fitting model was dstm
    - 1st:
    - 2nd:
    - Other: