DATASET DETECTIVE BAYES

- TASK 1, STEP 2 : 1 ROW = 1 TRIAL (N ROUNDS)
  - PARTICIPANT ID (PROGRESSIVE)
  - TREATMENT (0 = GUILTY / 1 = INNOCENT)
  - PART (1)
  - TRIAL ID (PROGRESSIVE)
  - ROUNDS (1 - 9)
  - PRIOR (0.1 - 0.9) PR (RED GUILTY)
  - TRUE GUILTY SUSPECT (0 = RED, 1 = BLUE)
  - ACCUSED SUSPECT (0 = RED, 1 = BLUE)

9 COL — INVESTIGATIONS (0 = RED, 1 = BLUE)

9 COL — OUTCOMES (1 = EVIDENCE, 0 = NO EVIDENCE)

- ROUND EVIDENCE OBSERVED (0 IF NOT OBSERVED)
- CORRECT SUSPECT ACCUSED (1 IF ACCUSED = TRUE GUILTY, 0 O/W)

11 COL — TIMING CHOICES

- TASK 1, STEP 3 : SAME AS STEP 2, BUT HALF TREATMENTS GUILTY / INNOCENT COMPARABLE

  * ONLY FOR THE 9 "INVESTIGATION" COLUMNS, SWITCH EVERY 0 WITH A 1 AND VICEVERSA [EQUIVALENT PROBLEM]

- TASK 1, STEP 4 : 1 ROW = 1 ROUND (SINGLE ACTION)

  √ — PARTICIPANT ID (PROGRESSIVE)
  √ — TREATMENT (0 = GUILTY / 1 = INNOCENT)
  √ — PART (1)
  √ — TRIAL ID (PROGRESSIVE)
  √ — ROUNDS (1 - 9)
  √ — PRIOR (0.1 - 0.9) PR (RED GUILTY)
  + CURRENT ROUND (PROGRESSIVE)

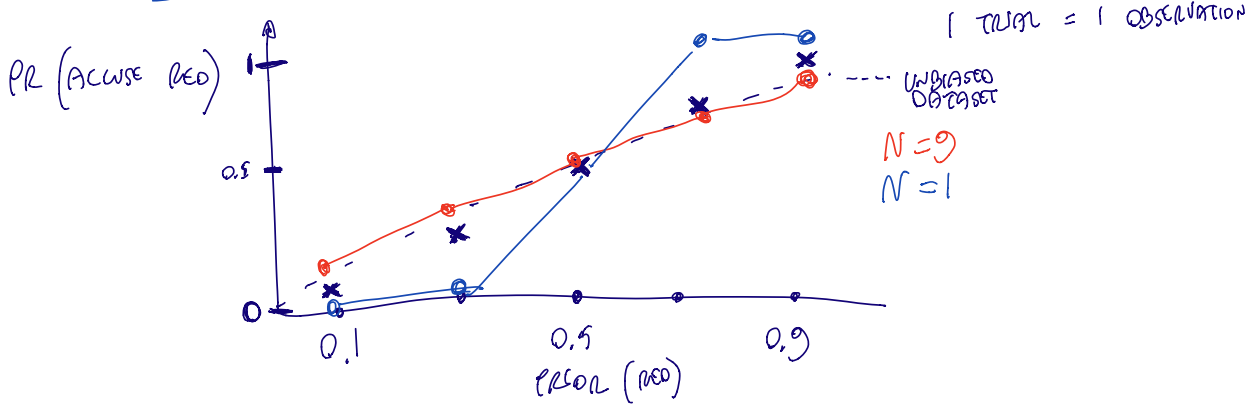
+ ACTION TYPE (0 = INVESTIGATES, 1 = ACCUSE)
+ SUSPECT (0 = RED, 1 = BLUE) → BOTH FOR "INVESTIGATE" AND "ACCUSE"
+ COUNT_RED_SAMPLES (HOW MANY PAST OBSERVED SAMPLES)
+ COUNT_BLUE_SAMPLES (")
+ EVIDENCE_FOUND (0 IF NOT FOUND, 1 IF FOUND)
+ EVIDENCE_SUSPECT (-1 INITIALLY, 0 IF RED, 1 IF BLUE)
- TRUE GUILTY SUSPECT (0 = RED, 1 = BLUE) • KEEP
- ACCUSED SUSPECT (0 = RED, 1 = BLUE) • KEEP
~~9 COL — INVESTIGATIONS (0 = RED, 1 = BLUE)~~
~~9 COL — OUTCOMES (1 = EVIDENCE, 0 = NO EVIDENCE)~~
• ROUND EVIDENCE OBSERVED (0 IF NOT OBSERVED) • KEEP
• CORRECT SUSPECT ACCUSED (1 IF ACCUSED = TRUE GUILTY, 0 O/W) • KEEP
~~11 COL~~ — TIMING CHOICES → 1 COLUMN ONLY
• POSTERIOR PROBABILITY (0/1 IF EVIDENCE IS FOUND, O/W
P (BAYES RULE) FROM PRIOR, COUNT RED, COUNT BLUE)

• TASK 2, STEP 2 : 1 ROW = 1 TRIAL (N ROUNDS)
- PARTICIPANT ID (PROGRESSING)
- TREATMENT (0 = GUILTY / 1 = INNOCENT)
- PART (~~1~~) 2
- TRIAL ID (PROGRESSING)
~~- ROUNDS (1 - 9)~~
- PRIOR (0.1 - 0.9) PR (RED GUILTY)
- COST_RED (5 - 80) } IDENTICAL IN PART 2, DIFFERENT IN PART 3
- COST_BLUE (5 - 80) }
- TRUE GUILTY SUSPECT (0 = RED, 1 = BLUE)
- ACCUSED SUSPECT (0 = RED, 1 = BLUE)
60 ~~9~~ COL — INVESTIGATIONS (0 = RED, 1 = BLUE)
60 ~~9~~ COL — OUTCOMES (1 = EVIDENCE, 0 = NO EVIDENCE)
• ROUND EVIDENCE OBSERVED (0 IF NOT OBSERVED)
• CORRECT SUSPECT ACCUSED (1 IF ACCUSED = TRUE GUILTY, 0 O/W)
62 ~~11~~ COL — TIMING CHOICES

PLOTS PART 1

- FROM STEP 3

FIGURE 1

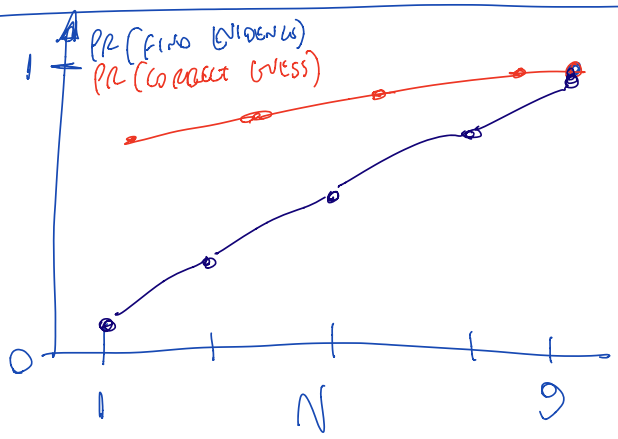


X = PRIOR PROBABILITY

Y = PROBABILITY ACCUSE → ALL DATA X

N = 1/3/5/7/9 (FOCUS ON 1 VS 9)

FIGURE 2



X = NUMBER OF ROUNDS AVAILABLE

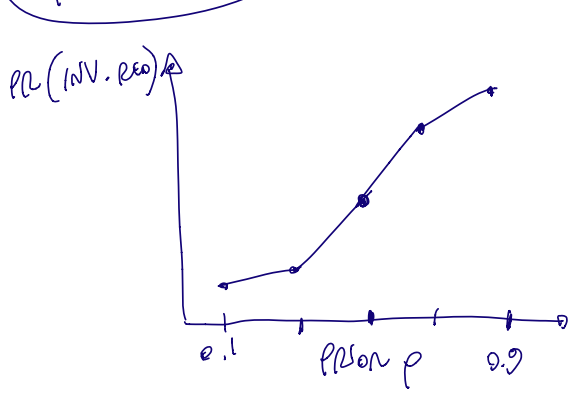
Y = PR (CORRECT ACCUSE) AND PR (FIND EVIDENCE)

NOTE: POOL OVER THE PRIOR PROBABILITY AND OVER TREATMENTS

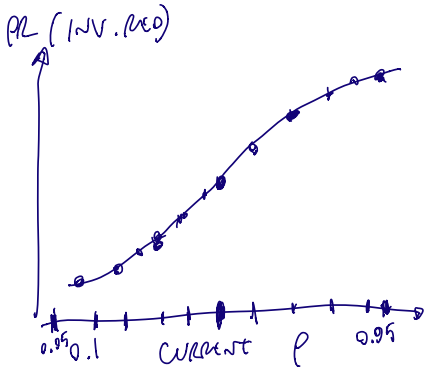
LATER, IT WILL BE INTERESTING TO SEE IF THIS DIFFERS IN THE TWO TREATMENTS) BUT WE NEED MORE DATA

- FROM STEP 4, AFTER REMOVING THE ROUNDS IN WHICH ONE EVIDENCE IS ALREADY OBSERVED (SO NOTHING HAPPENS)

FIGURE 3

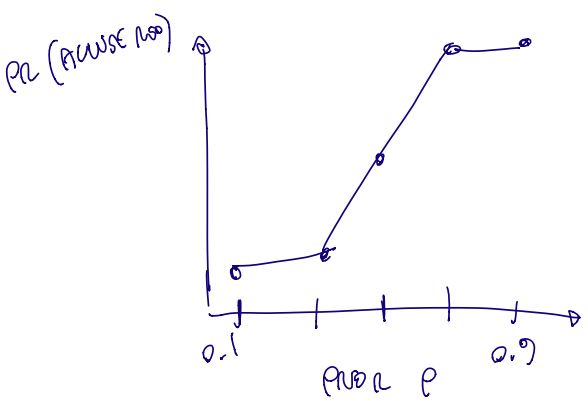


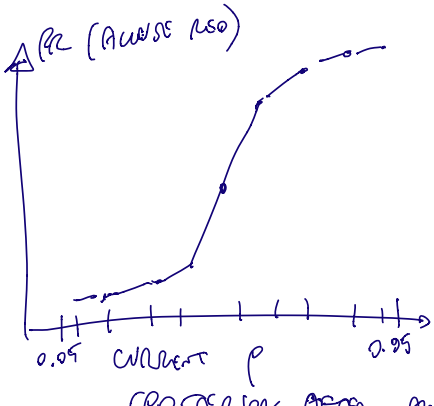
BIN OVER PRIOR ONLY
(POOL DIFFERENT N. ROUNDS)



BIN OVER CURRENT ρ
(TRICKY, TO DISCUSS IN PERSON)
(POOL DIFFERENT N. ROUNDS)

FIGURE 4 USE ONLY TRIALS WHERE THE FINAL EVIDENCE WAS NOT FOUND (NOT MANY SO FAR, WE WILL HAVE MORE ...)





(POSTERIOR AFTER 8m SAMPLES)