A: Datasheet

Algorithm: clearviewai_002

Developer: Clearview AI Inc

Submission Date: 2024_06_18

Template size: 2048 bytes

Template time (2.5 percentile): 771 msec

Template time (median): 787 msec

Template time (97.5 percentile): 795 msec

Investigation:

Frontal mugshot ranking 54 (out of 503) –– FNIR(1600000, 0, 1) = 0.0011 vs. lowest 0.0008 from intema_001

Mugshot webcam ranking 51 (out of 465) –– FNIR(1600000, 0, 1) = 0.0074 vs. lowest 0.0054 from sensetime_009

Mugshot profile ranking 17 (out of 434) –– FNIR(1600000, 0, 1) = 0.0550 vs. lowest 0.0510 from nec_009

Immigration visa–border ranking 28 (out of 392) –– FNIR(1600000, 0, 1) = 0.0009 vs. lowest 0.0005 from psl_001

Immigration visa–kiosk ranking 41 (out of 336) –– FNIR(1600000, 0, 1) = 0.0491 vs. lowest 0.0387 from cloudwalk_mt_002

Identification:

Frontal mugshot ranking 70 (out of 503) –– FNIR(1600000, T, L+1) = 0.0027, FPIR=0.003000 vs. lowest 0.0010 from sensetime_009
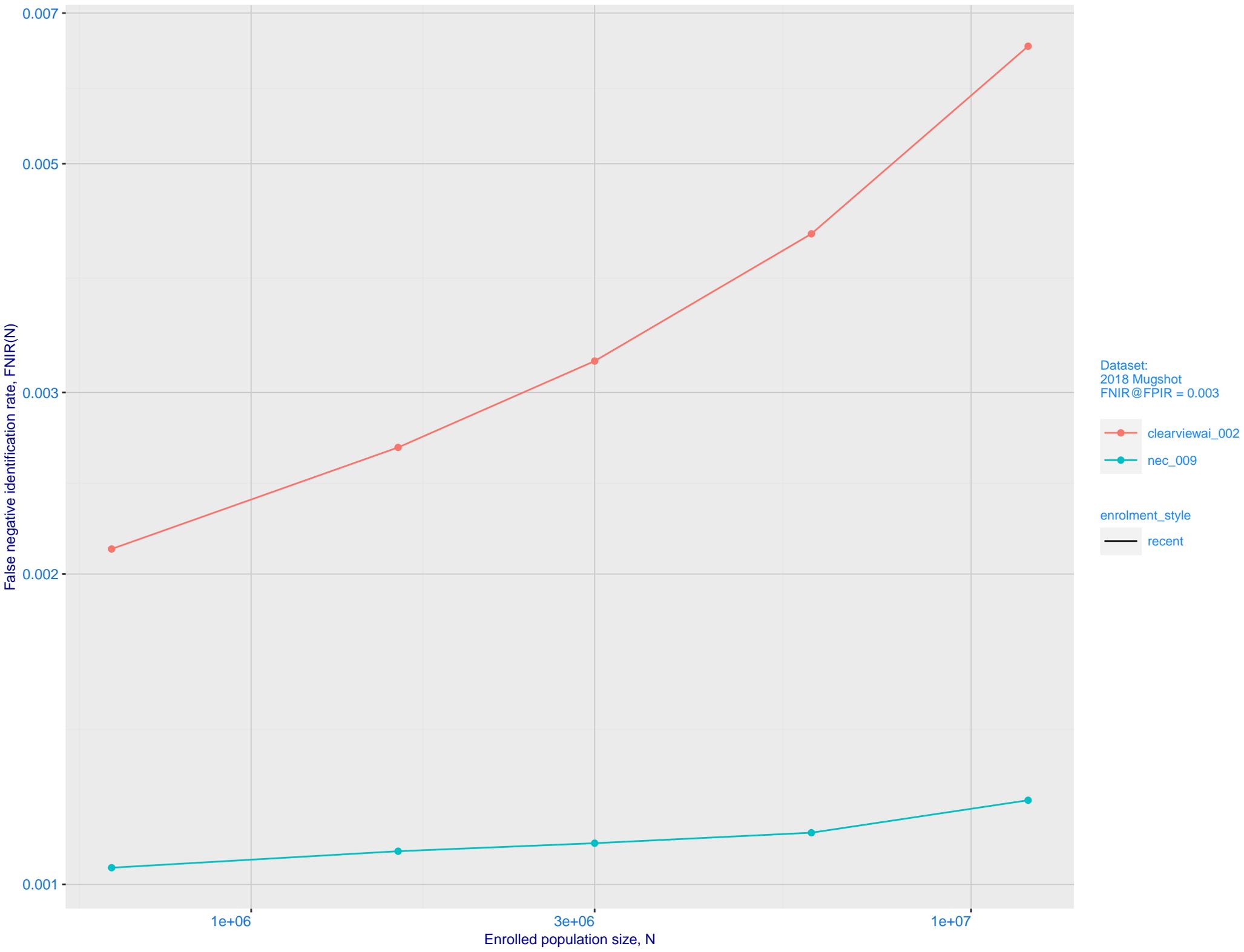
Mugshot webcam ranking 60 (out of 463) –– FNIR(1600000, T, L+1) = 0.0170, FPIR=0.003000 vs. lowest 0.0065 from sensetime_009

Mugshot profile ranking 31 (out of 433) –– FNIR(1600000, T, L+1) = 0.1387, FPIR=0.003000 vs. lowest 0.0591 from cloudwalk_mt_002
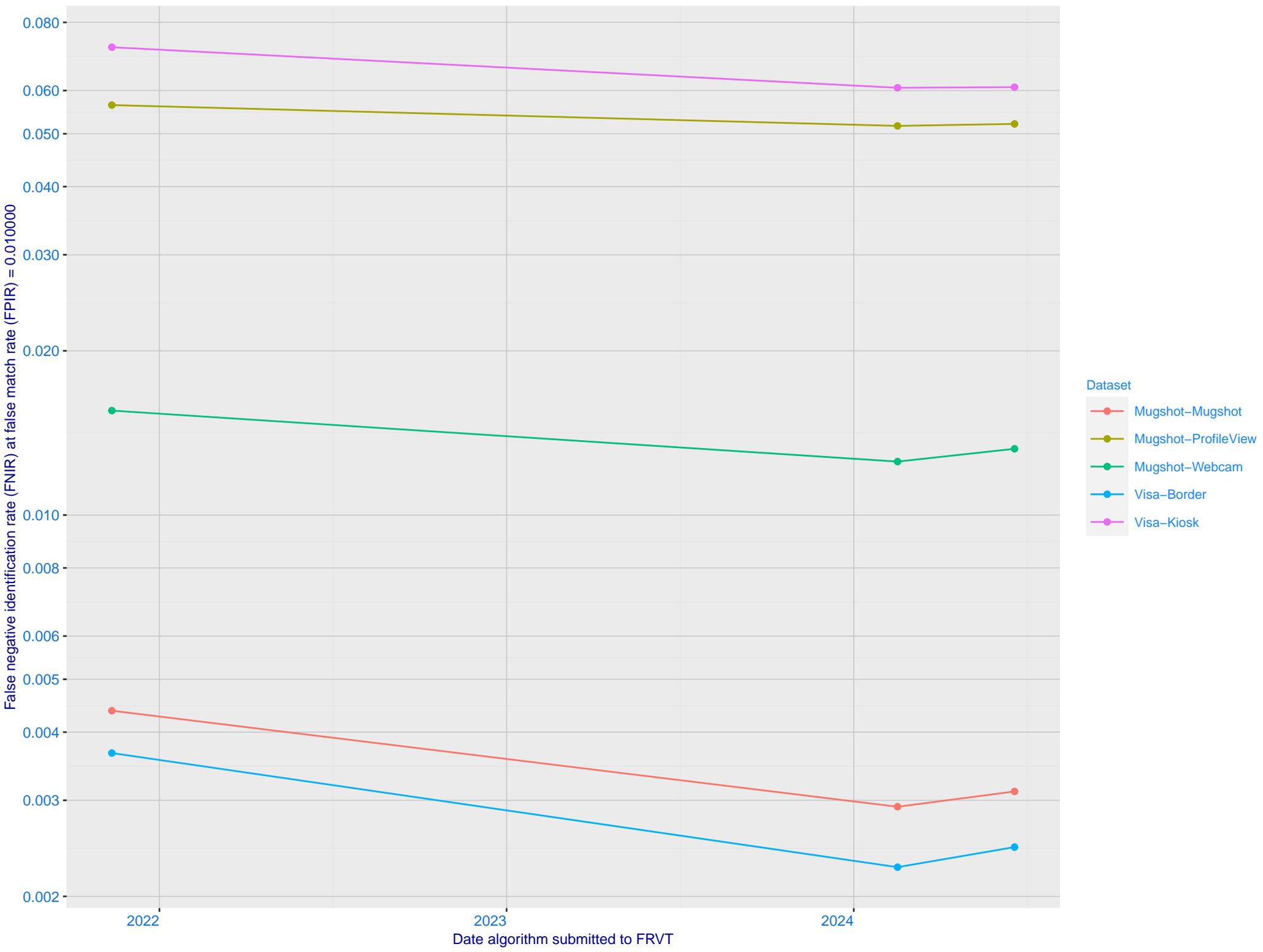
Immigration visa–border ranking 43 (out of 391) –– FNIR(1600000, T, L+1) = 0.0037, FPIR=0.003000 vs. lowest 0.0009 from cloudwalk_mt_002

Immigration visa–kiosk ranking 23 (out of 336) –– FNIR(1600000, T, L+1) = 0.0661, FPIR=0.003000 vs. lowest 0.0460 from nec_009
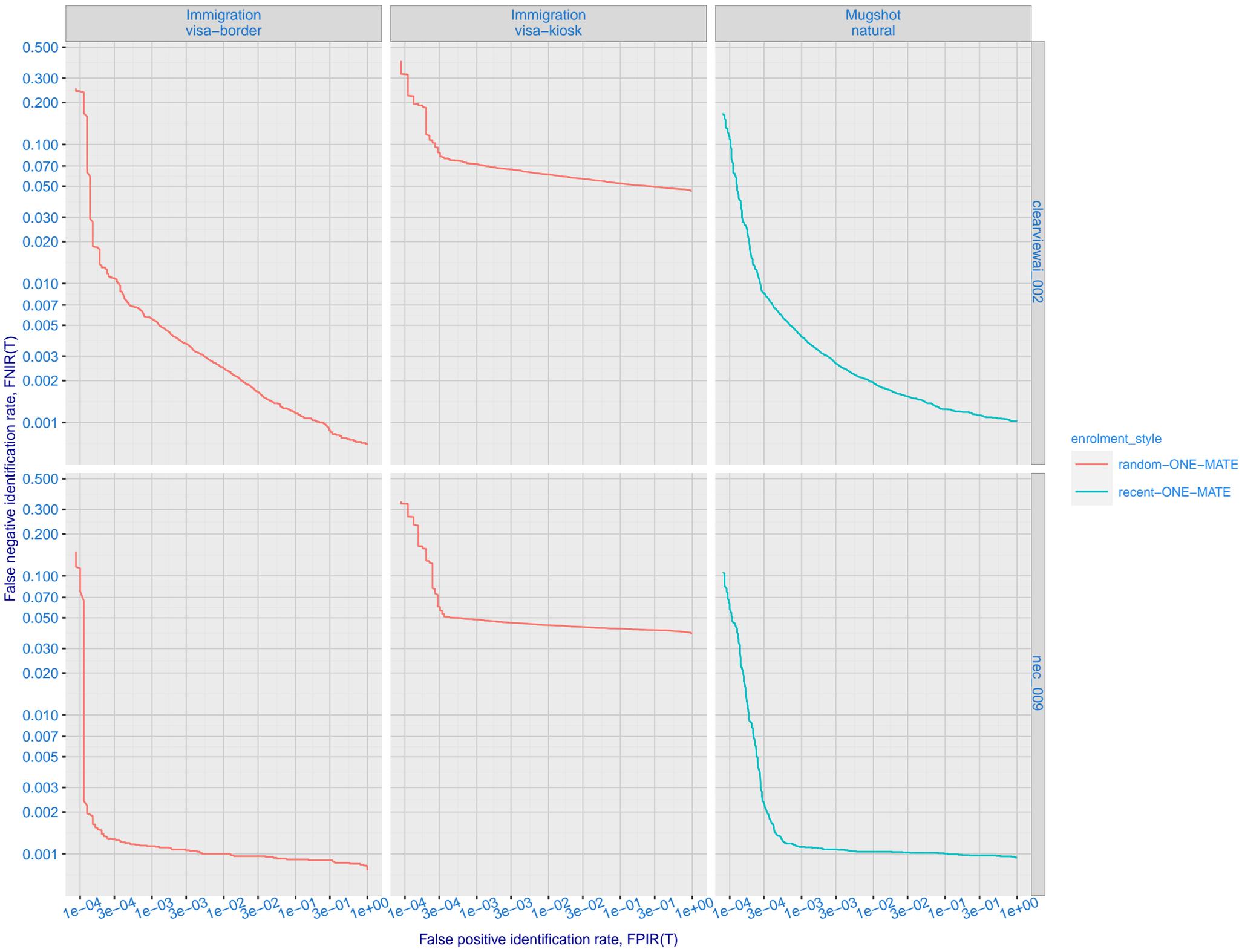
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (nec_009)

Enrolled population size, N

False negative identification rate, FNIR(N)

Dataset:
2018 Mugshot
FNIR @ FPIR = 0.003

clearviewai_002
nec_009

enrolment_style

recent

C: Evolution of accuracy for CLEARVIEWAI algorithms on three datasets 2018 – present

Dataset

- Mugshot–Mugshot
- Mugshot–ProfileView
- Mugshot–Webcam
- Visa–Border
- Visa–Kiosk

False negative identification rate (FNIR) at false match rate (FPIR) = 0.010000

Date algorithm submitted to FRVT

D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals

E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images
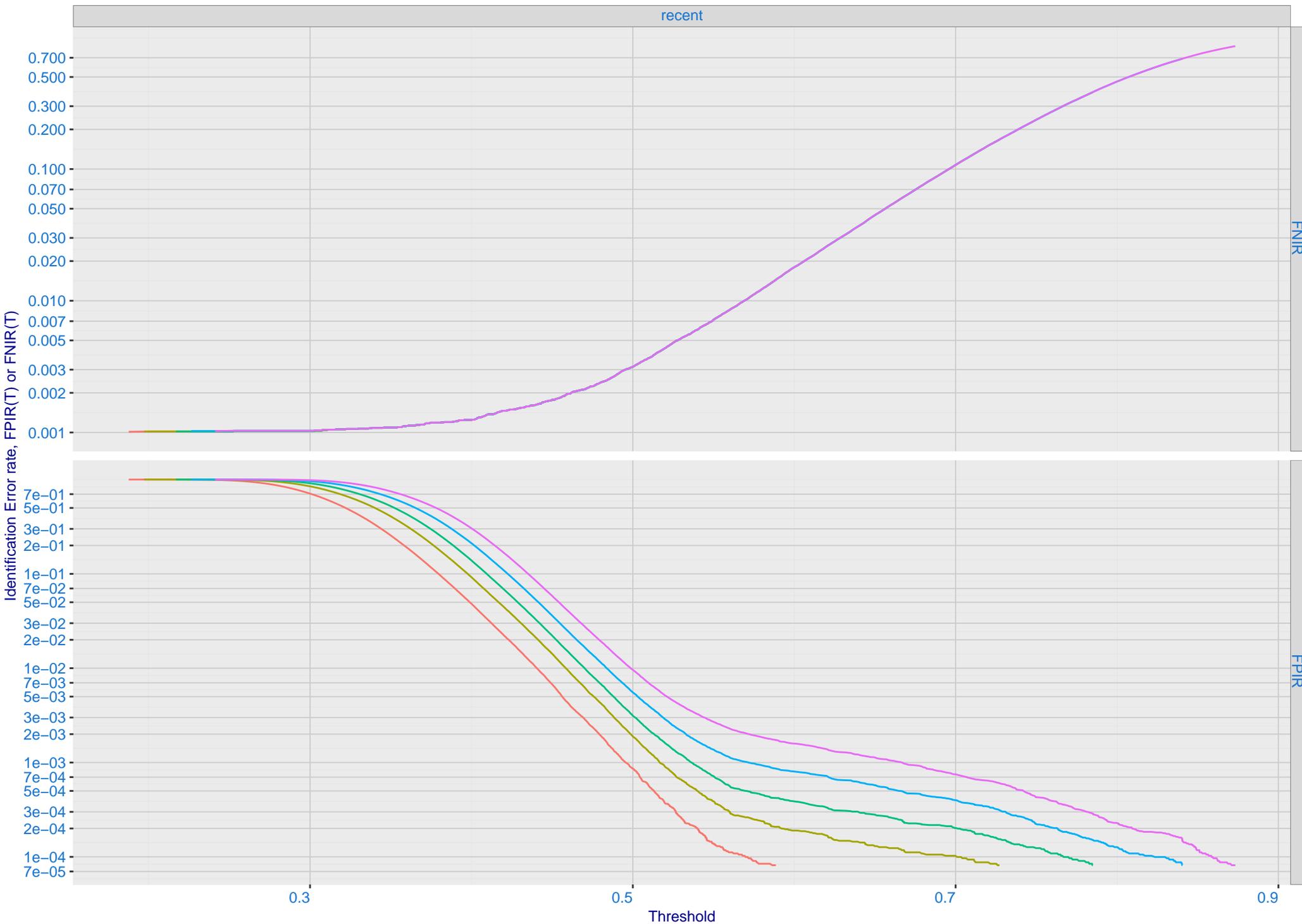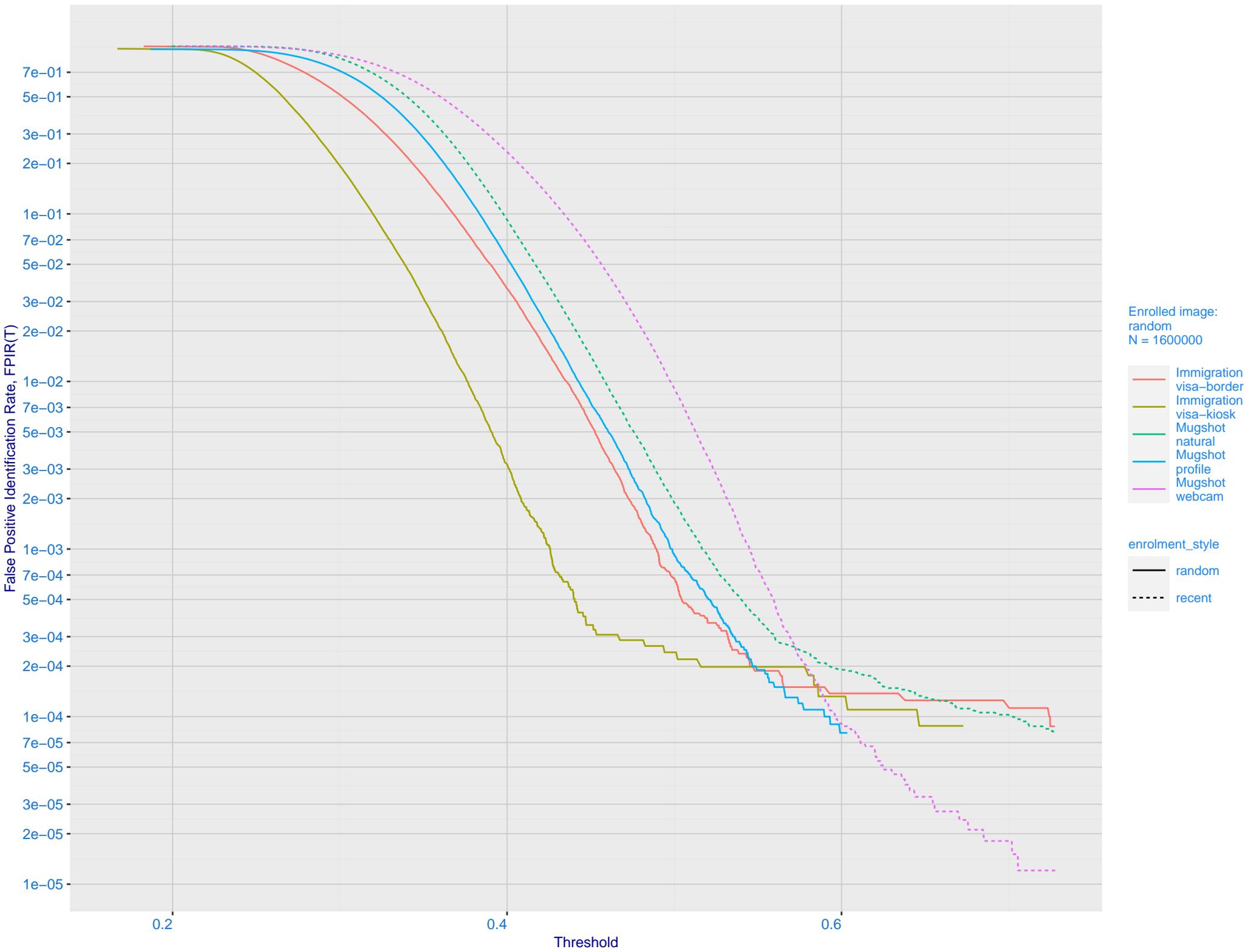
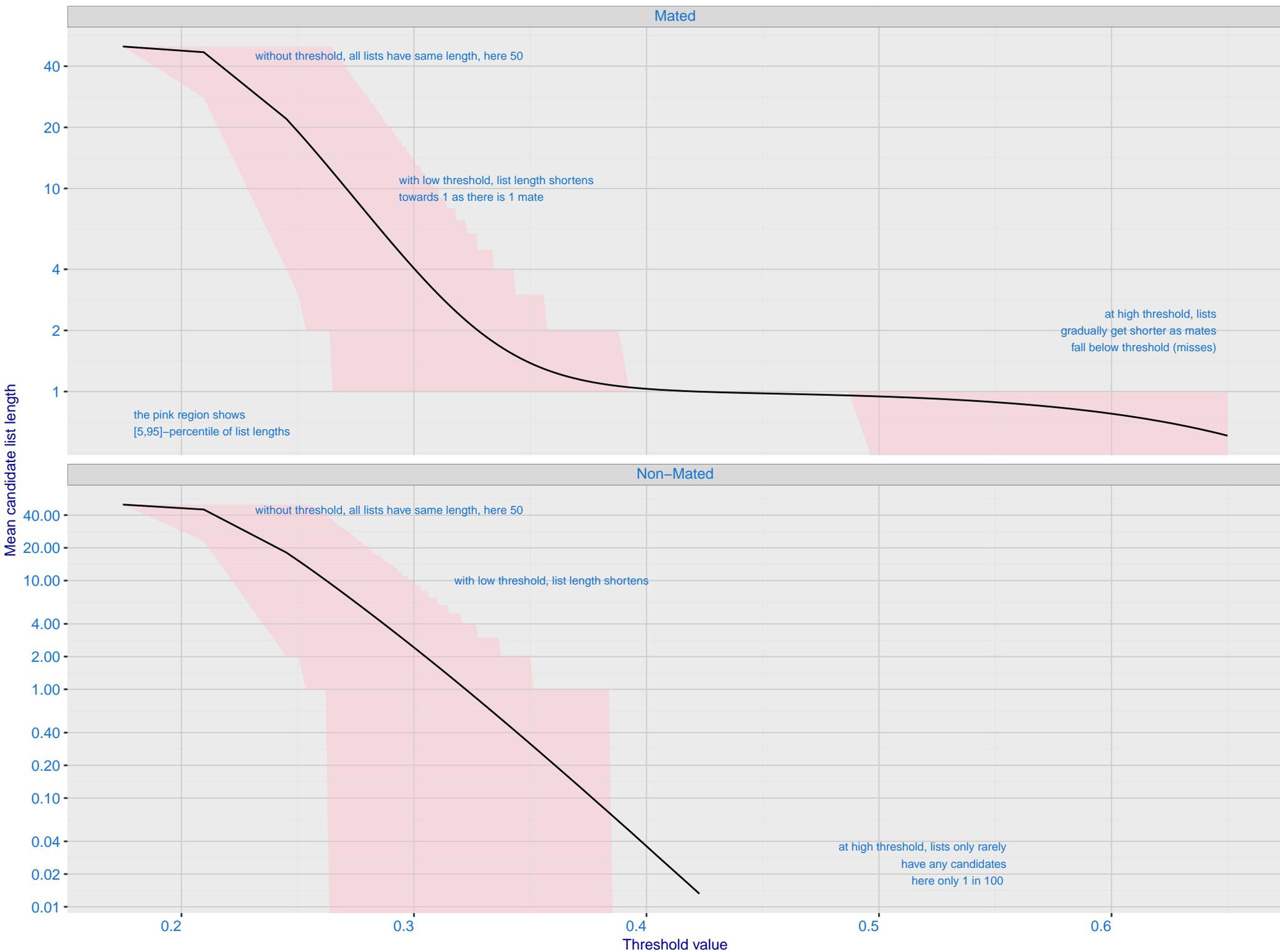F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate
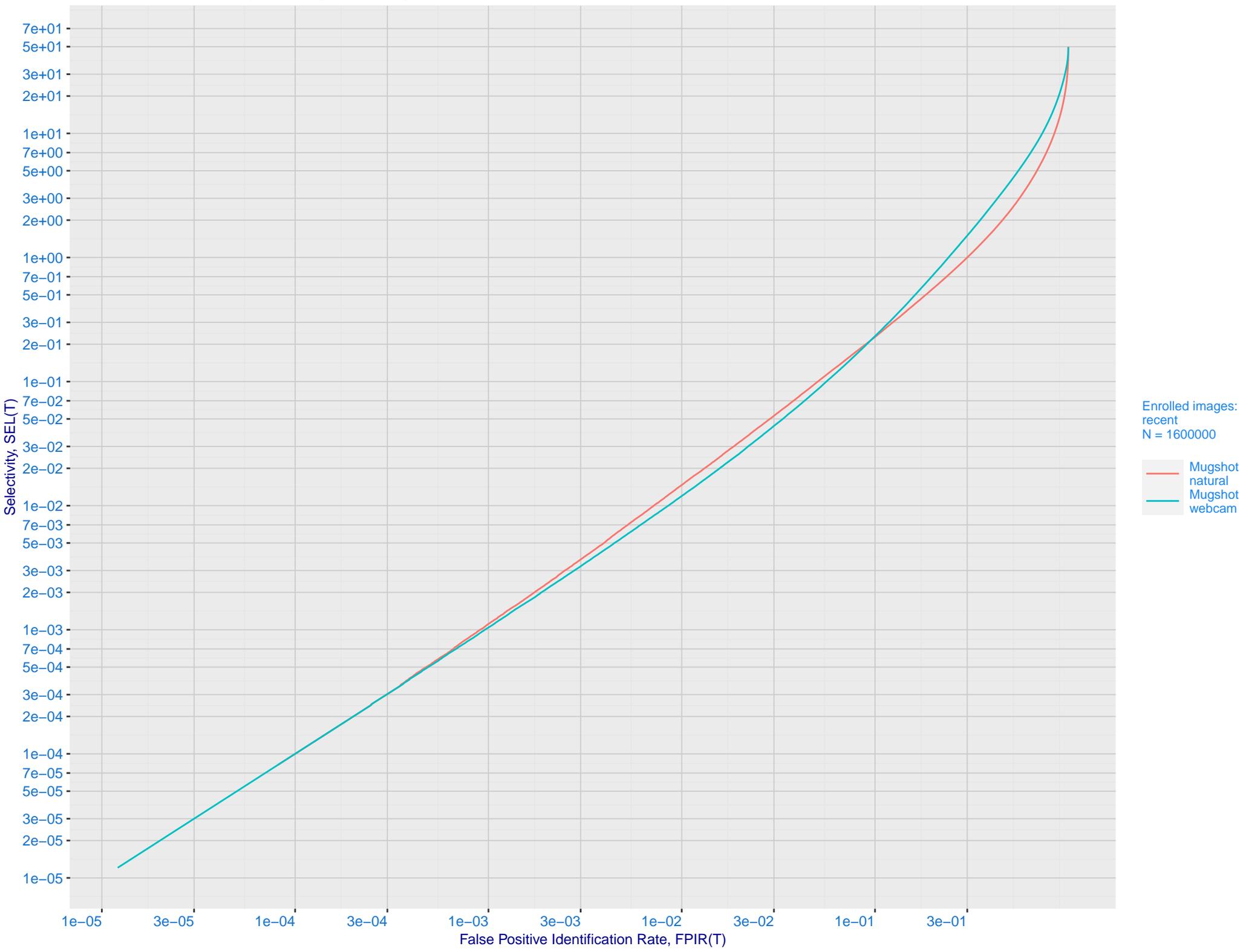
G: FPIR dependence on T by probe type for N = 1600000 subjects

H: Reduced length candidate lists for human review
Dataset is border–border with time–lapse [10,15] YRS with N = 1600000. Probes are 10–15 years later than enrollment image

Mated

without threshold, all lists have same length, here 50

with low threshold, list length shortens
towards 1 as there is 1 mate

at high threshold, lists
gradually get shorter as mates
fall below threshold (misses)

the pink region shows
[5,95]–percentile of list lengths

Non–Mated

without threshold, all lists have same length, here 50

with low threshold, list length shortens

at high threshold, lists only rarely
have any candidates
here only 1 in 100

Mean candidate list length

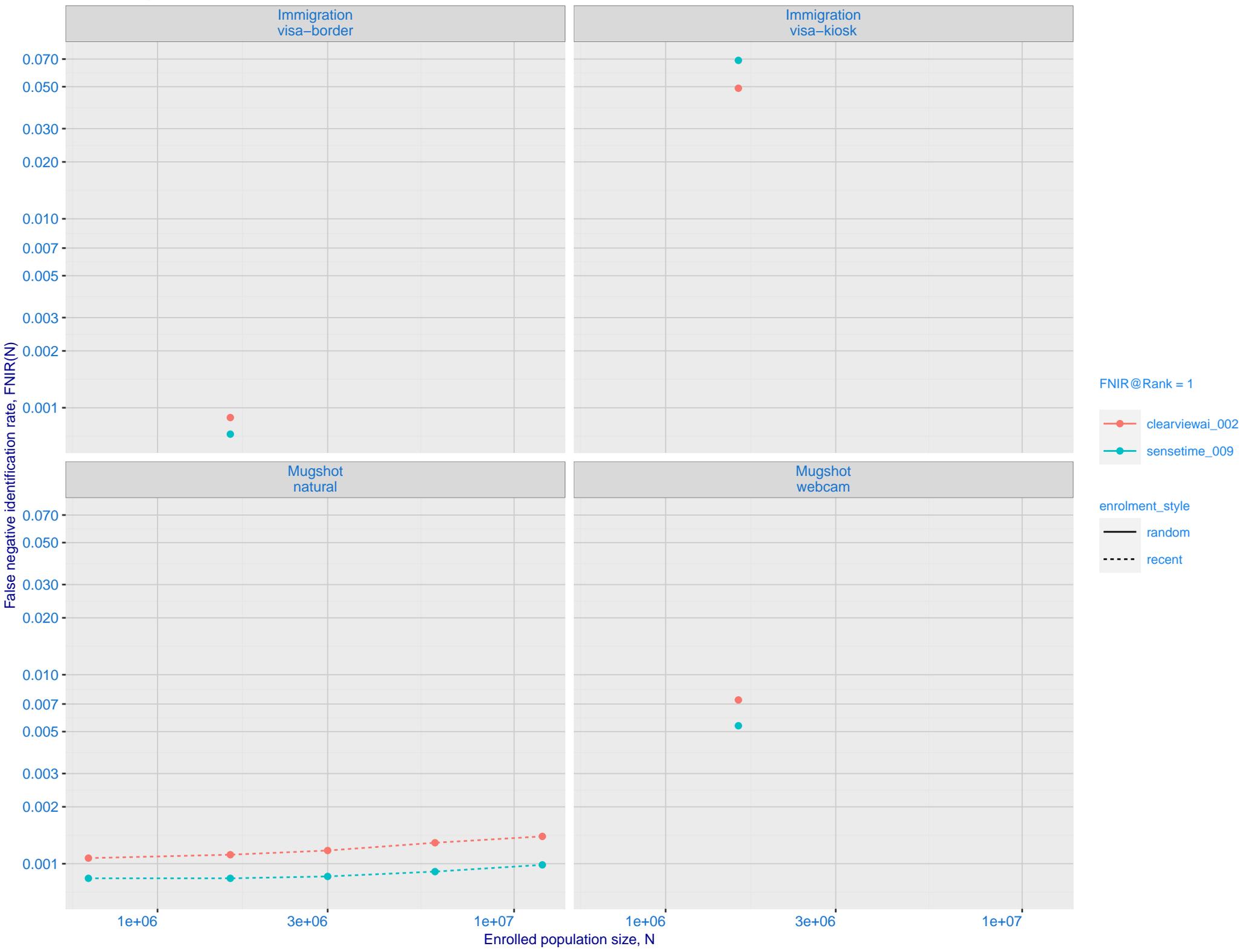Threshold value

I: FNIR and FPIR dependence on threshold
Dataset is border–border with time–lapse [10,15] YRS with N = 1600000. Probes are 10–15 years later than enrollment image
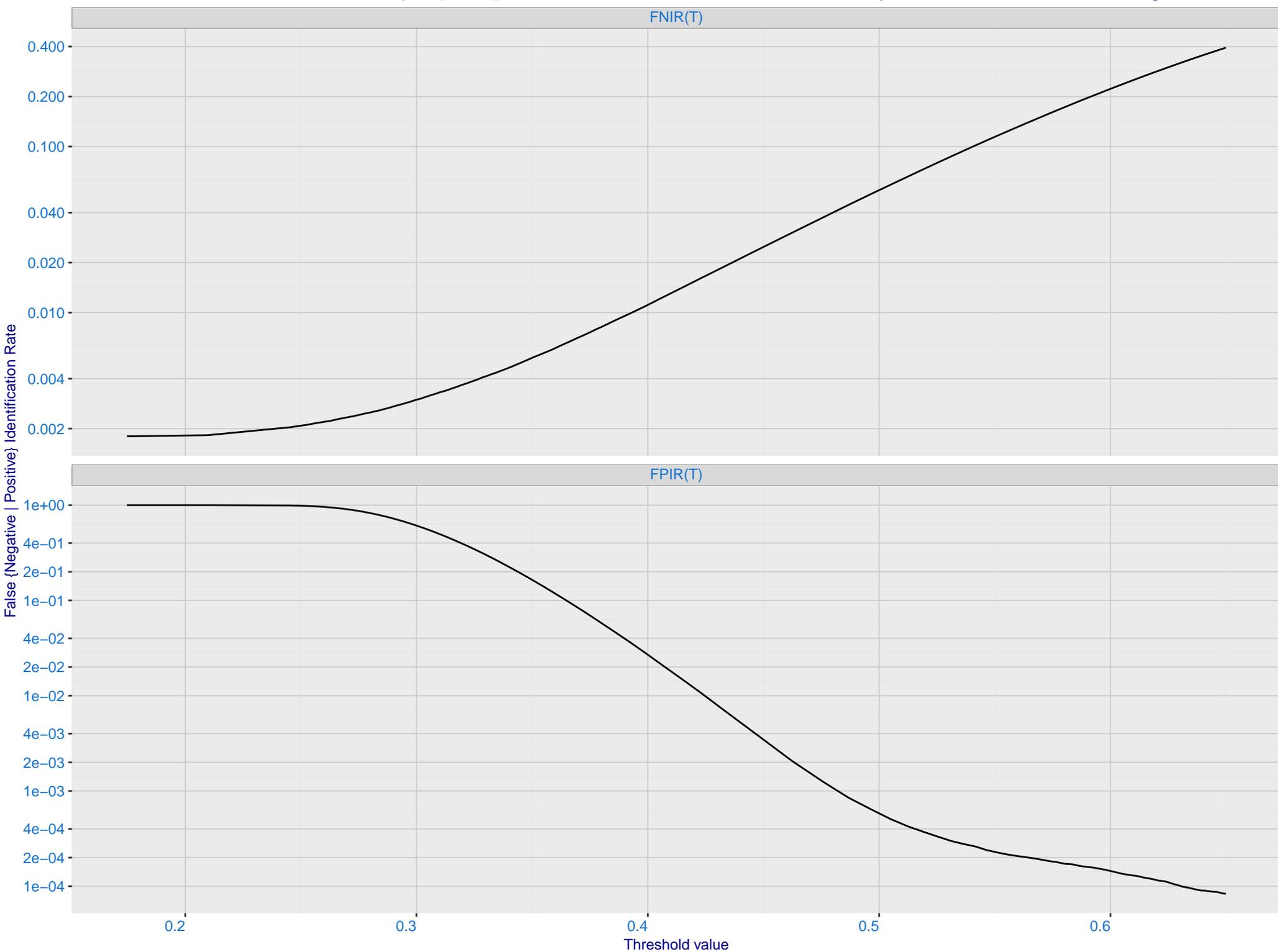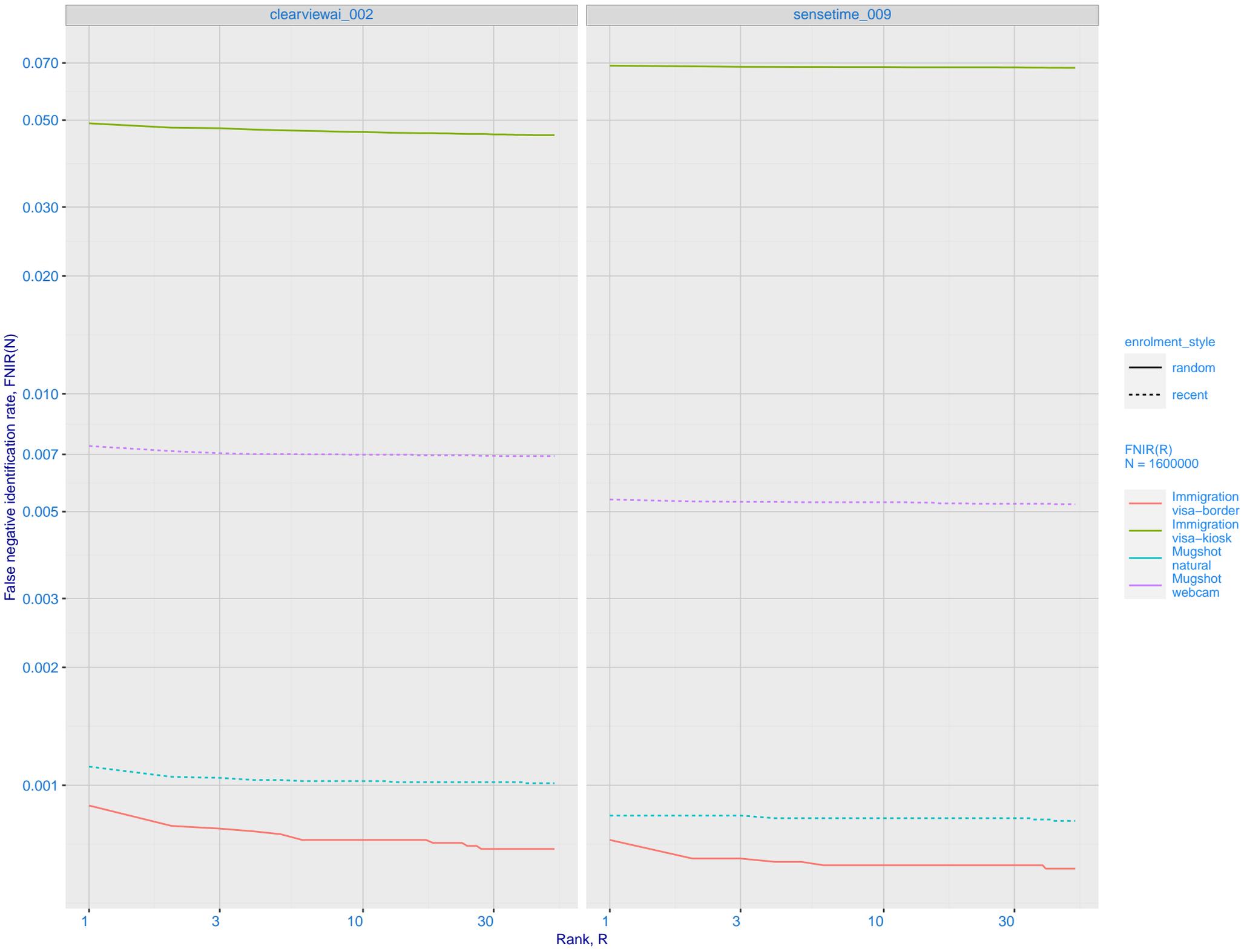
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.
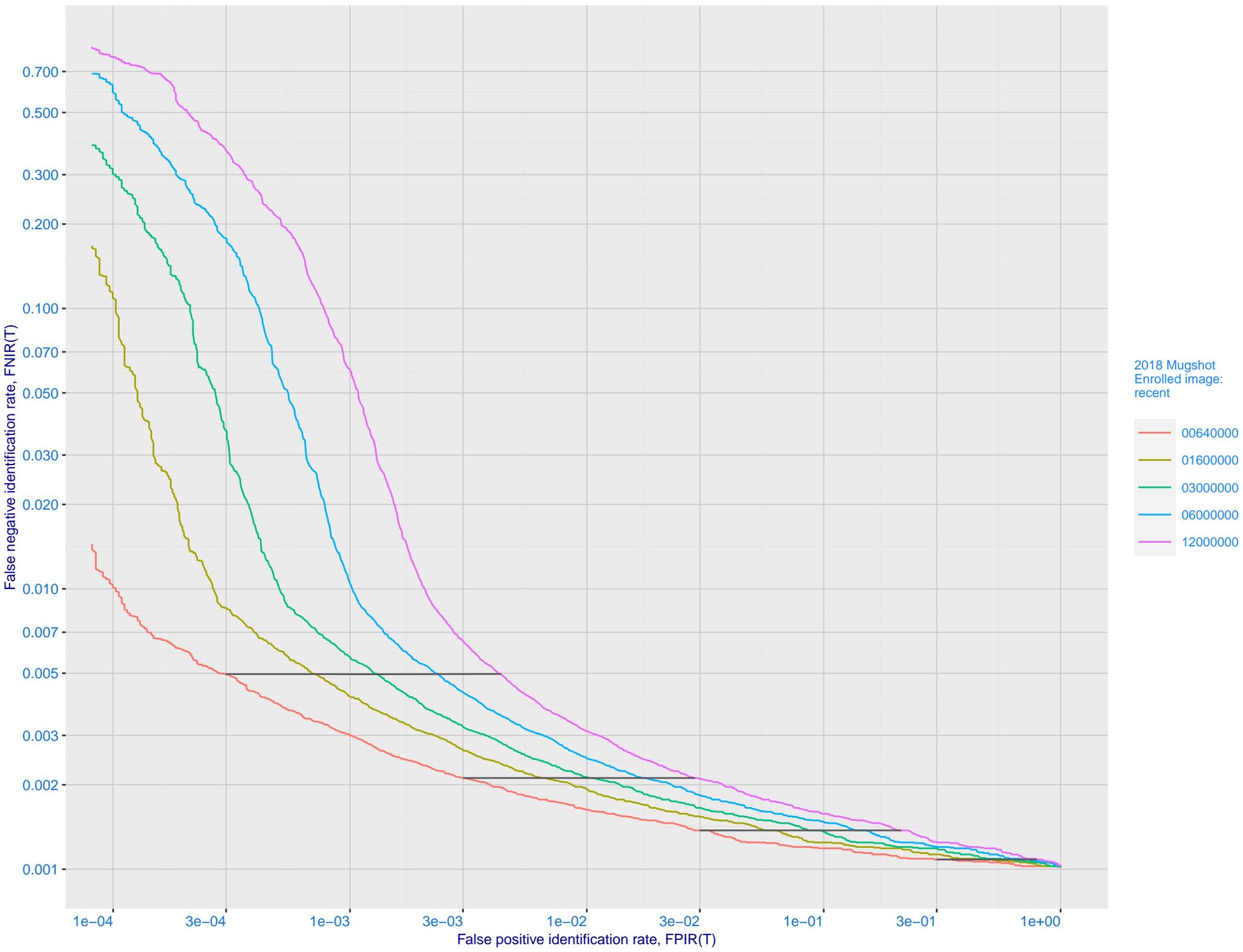
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_009)

L: Investigational mode: FNIR(1600000, R, 0) by probe type

M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power−law models are fit to the first two (N,T) observations
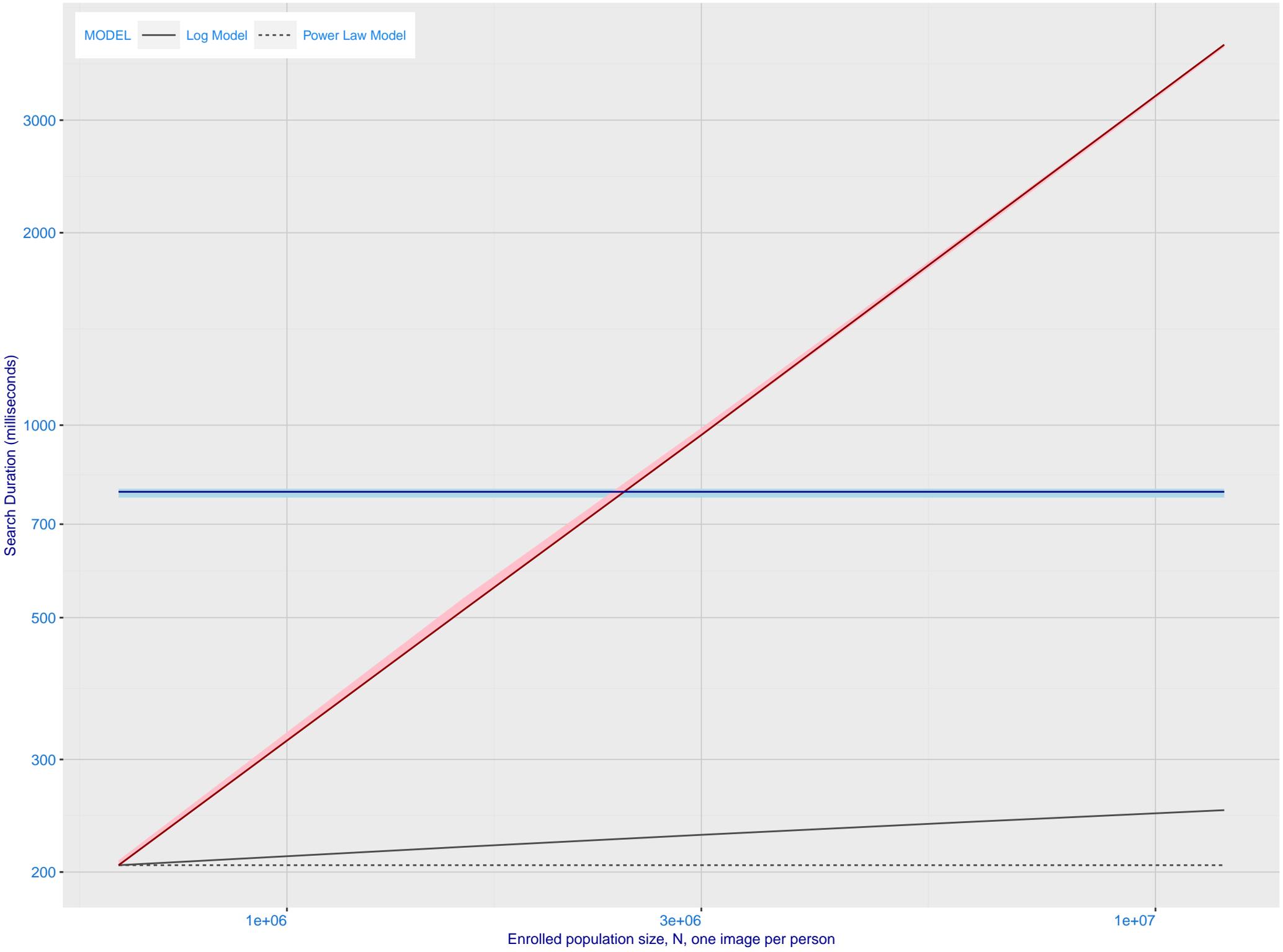
O: FNIR(T, N = 1.6 million) by sex, age and time−lapse. The top row gives investigational rank−1 miss rates. The bottom panels give high threshold for more lights−out identification with low FPIR.
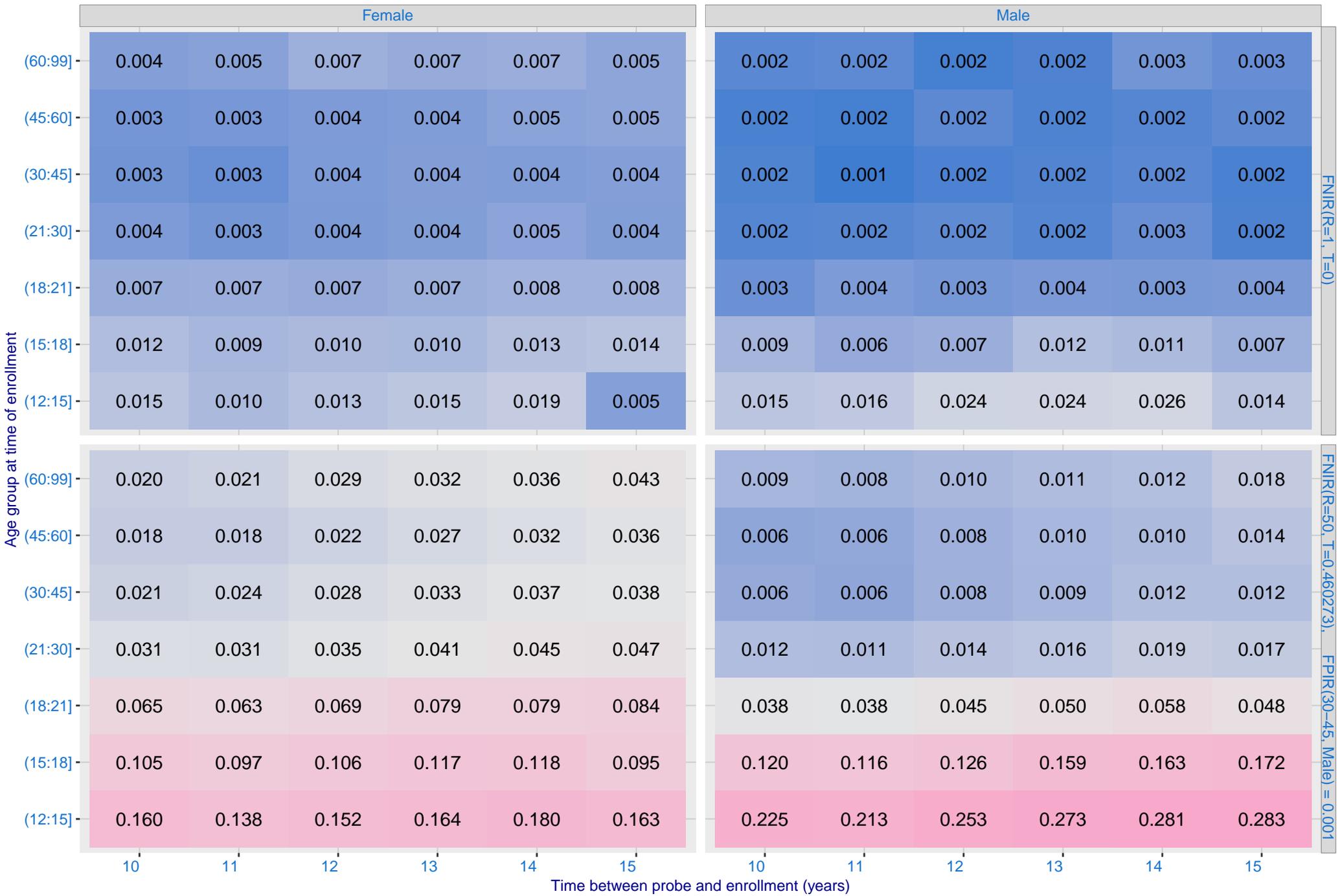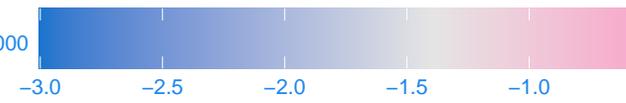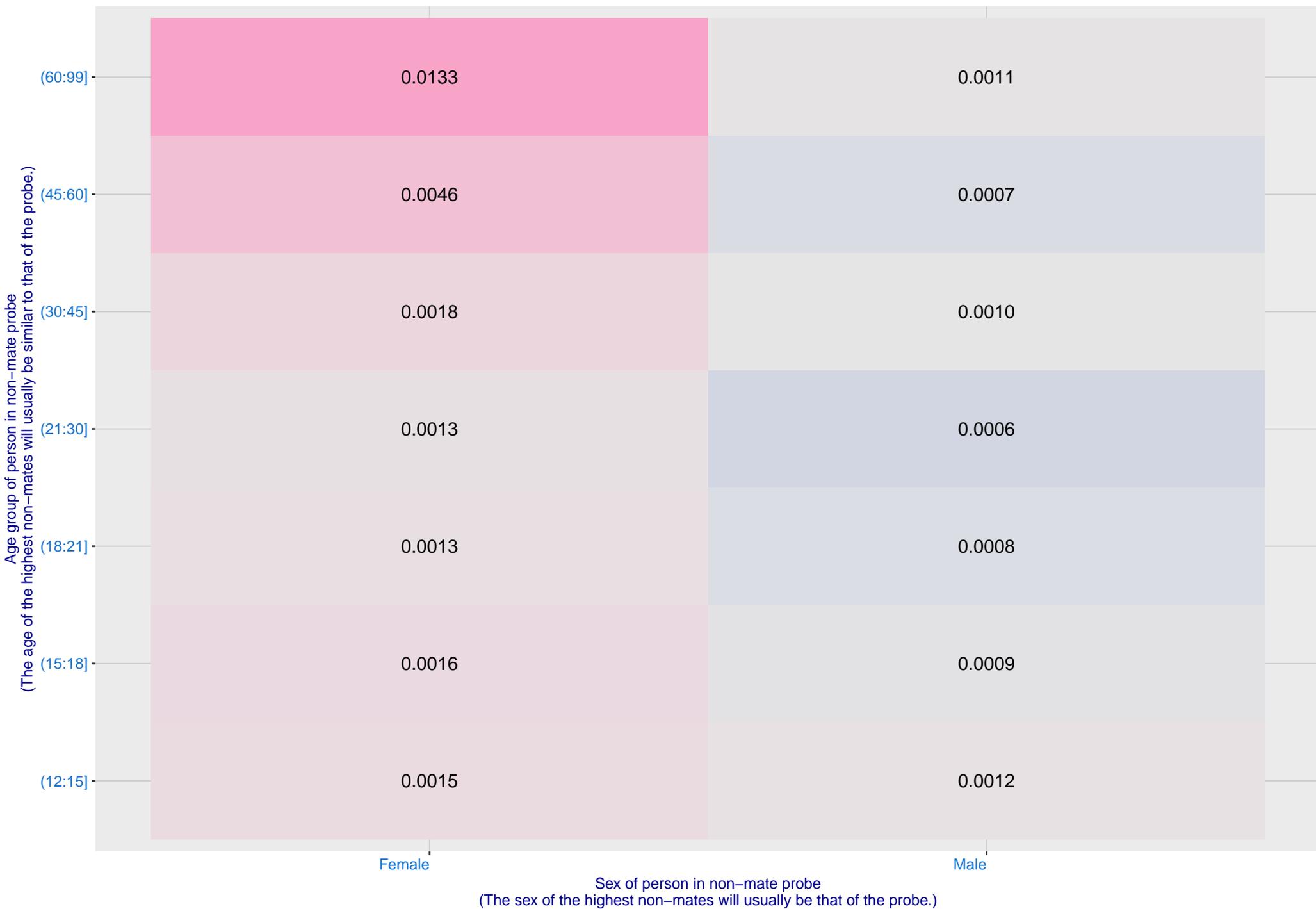
P: FPIR(N = 1.6 million) by sex and age. It is typical for false positive identification rates to be higher in women except in their teens.
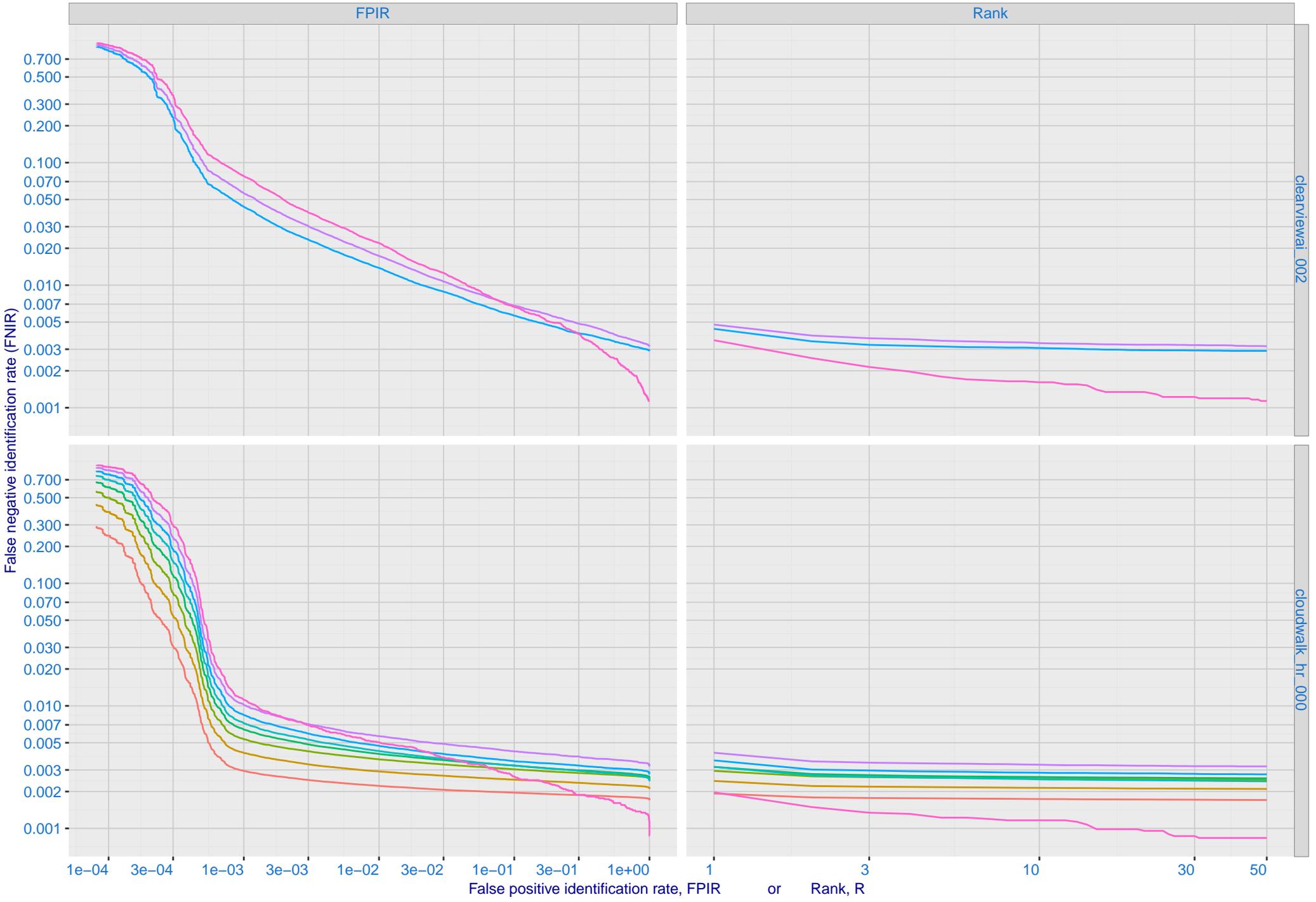
Q: Identification FNIR(N, T, L+1) and Investigational FNIR(N, 0, R) under ageing

R: Decline of genuine scores with ageing, with some eventually dropping below typical thresholds shown by the horizontal lines