A: Datasheet

Algorithm: veridas_002

Developer: Veridas Digital Authentication Solutions S.L.

Submission Date: 2021_07_06

Template size: 2048 bytes

Template time (2.5 percentile): 864 msec

Template time (median): 877 msec

Template time (97.5 percentile): 903 msec

Investigation:

Frontal mugshot ranking 65 (out of 288) –– FNIR(1600000, 0, 1) = 0.0028 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 52 (out of 250) –– FNIR(1600000, 0, 1) = 0.0140 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 74 (out of 219) –– FNIR(1600000, 0, 1) = 0.5499 vs. lowest 0.0550 from sensetime_006

Immigration visa–border ranking 60 (out of 177) –– FNIR(1600000, 0, 1) = 0.0062 vs. lowest 0.0009 from sensetime_006

Immigration visa–kiosk ranking 66 (out of 174) –– FNIR(1600000, 0, 1) = 0.1309 vs. lowest 0.0568 from cloudwalk_hr_000

Identification:

Frontal mugshot ranking 78 (out of 288) –– FNIR(1600000, T, L+1) = 0.0372, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 64 (out of 248) –– FNIR(1600000, T, L+1) = 0.0823, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 82 (out of 218) –– FNIR(1600000, T, L+1) = 0.9874, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

Immigration visa–border ranking 54 (out of 176) –– FNIR(1600000, T, L+1) = 0.0441, FPIR=0.001000 vs. lowest 0.0039 from sensetime_006

Immigration visa–kiosk ranking 44 (out of 171) –– FNIR(1600000, T, L+1) = 0.2657, FPIR=0.001000 vs. lowest 0.0925 from sensetime_006
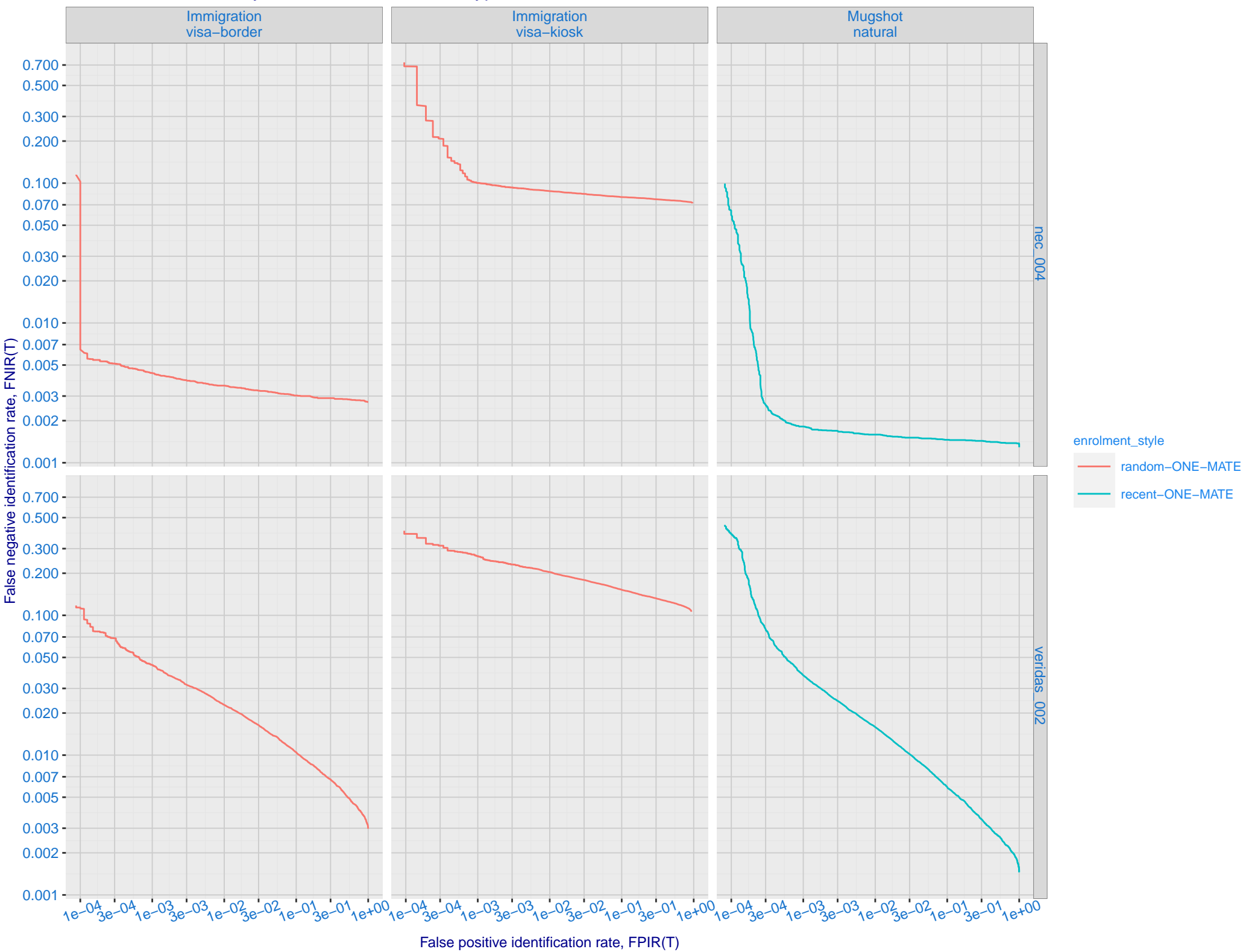
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (nec_004)
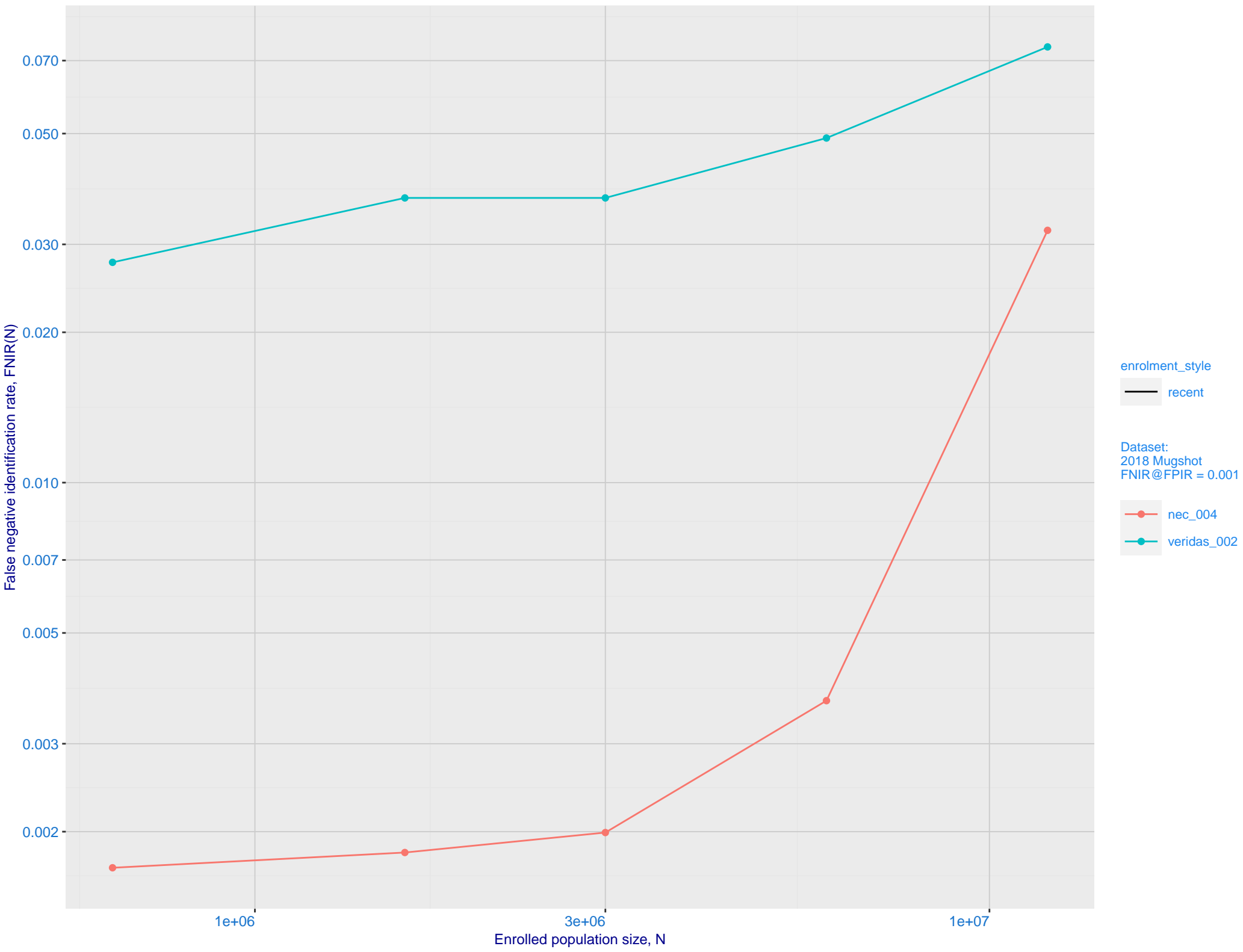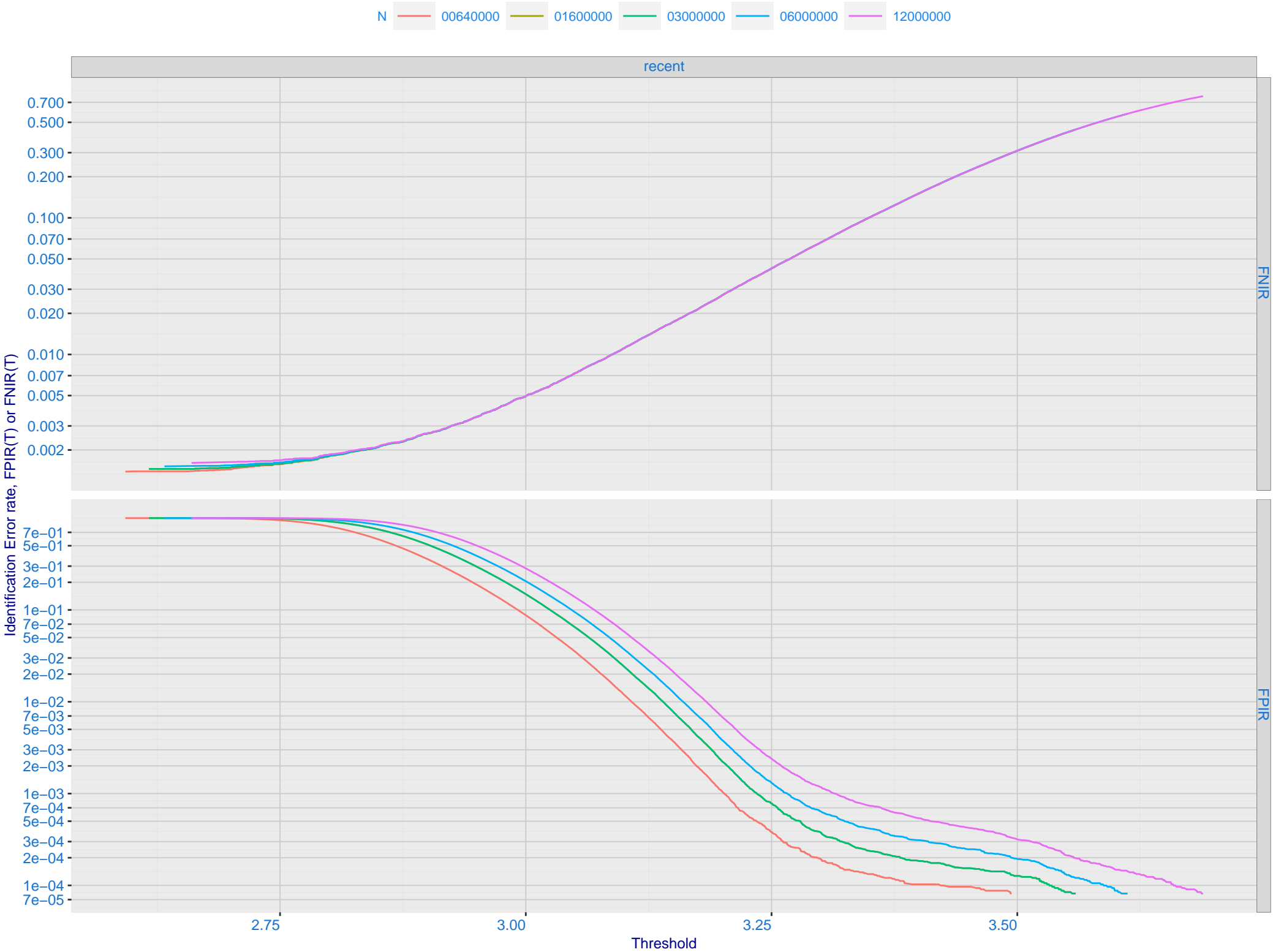
C: Evolution of accuracy for VERIDAS algorithms on three datasets 2018 – present
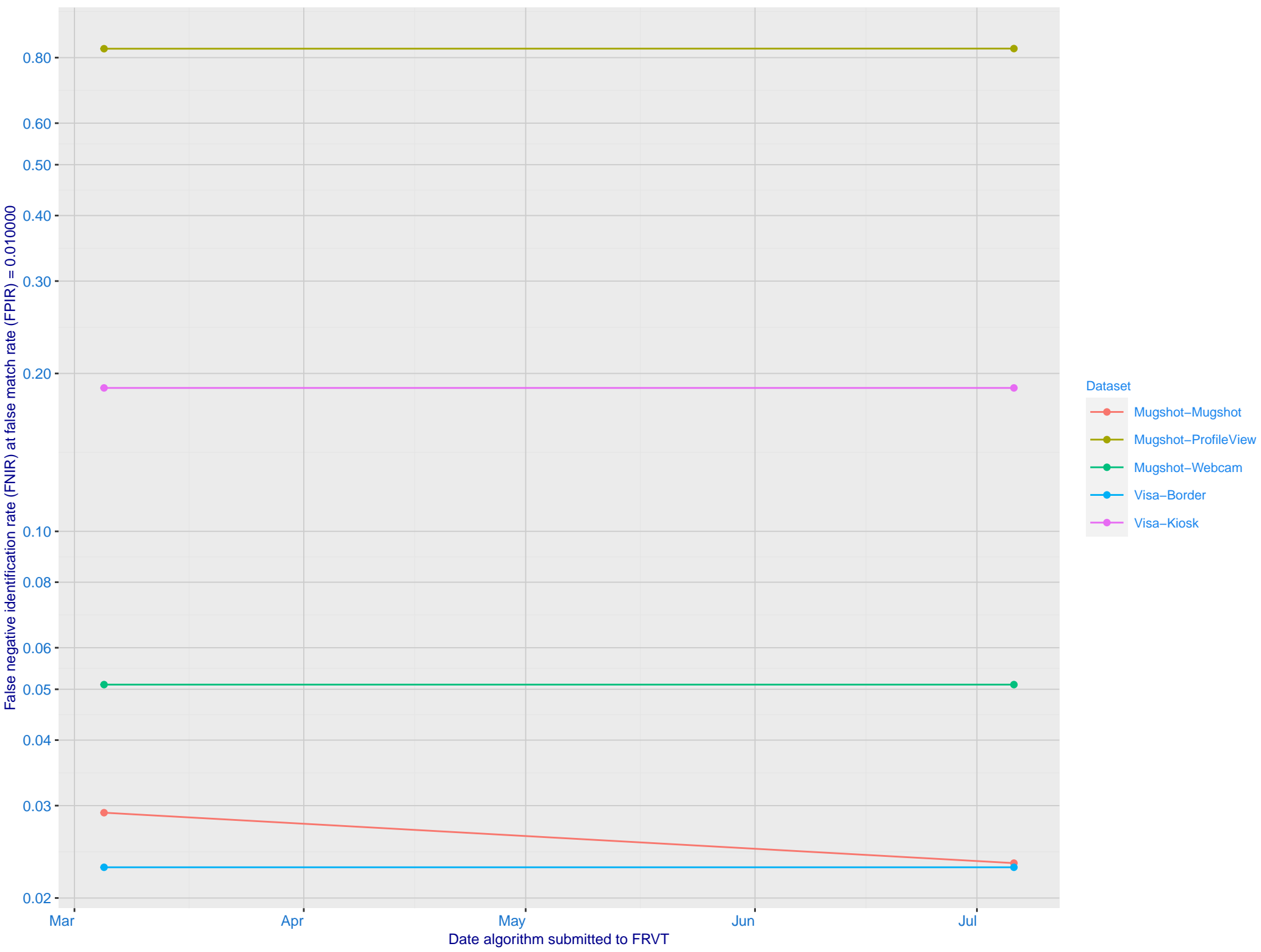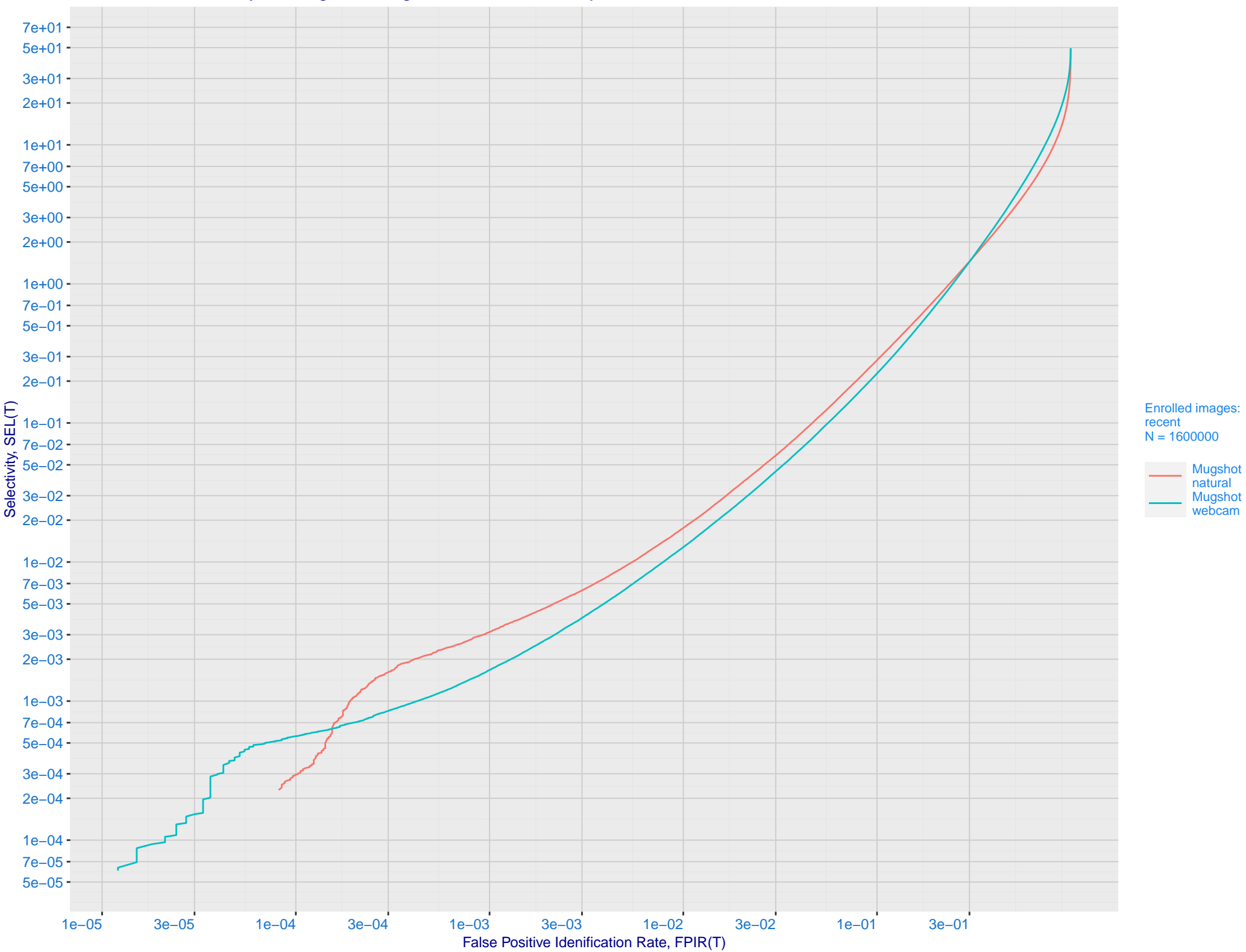
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals
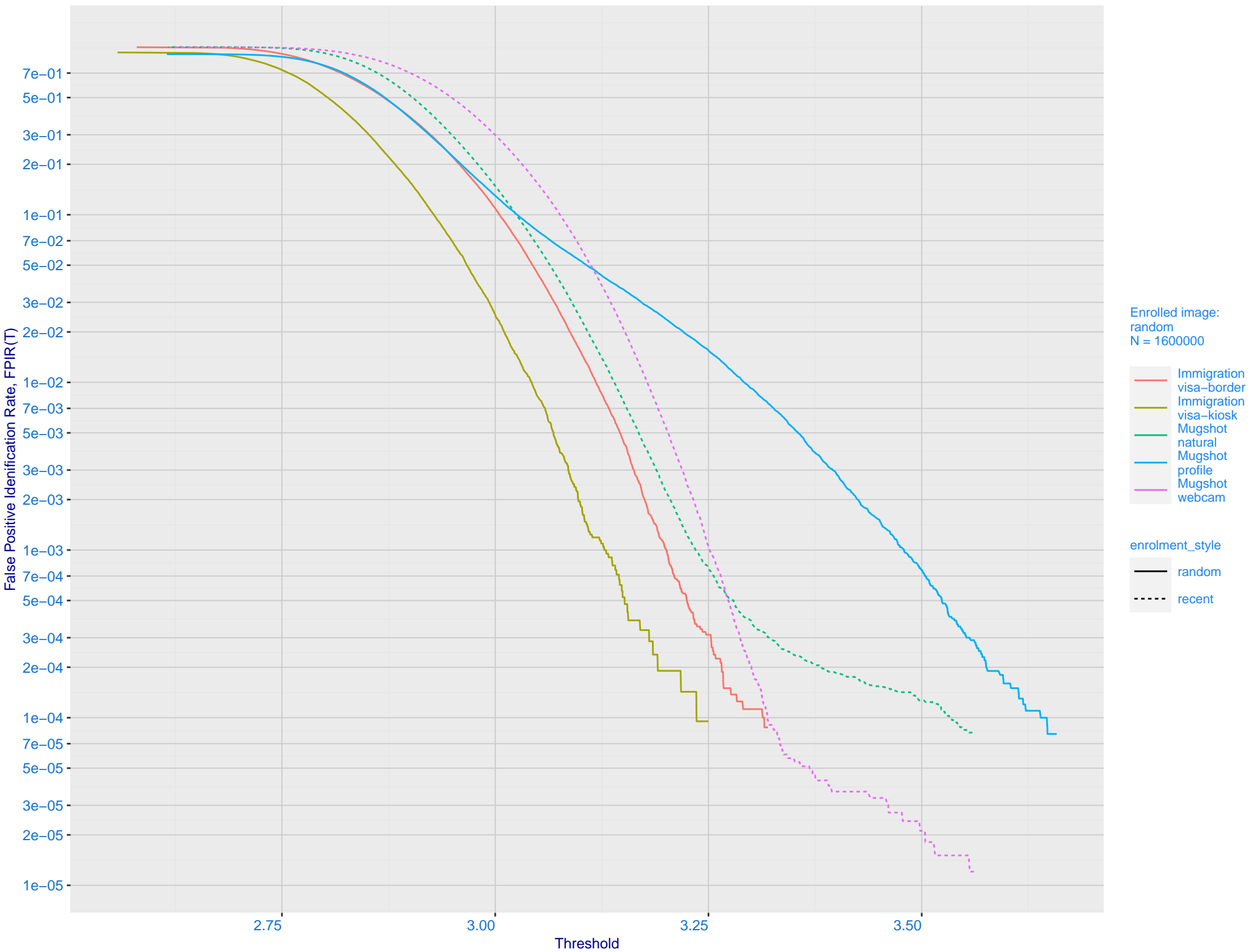
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images

F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate
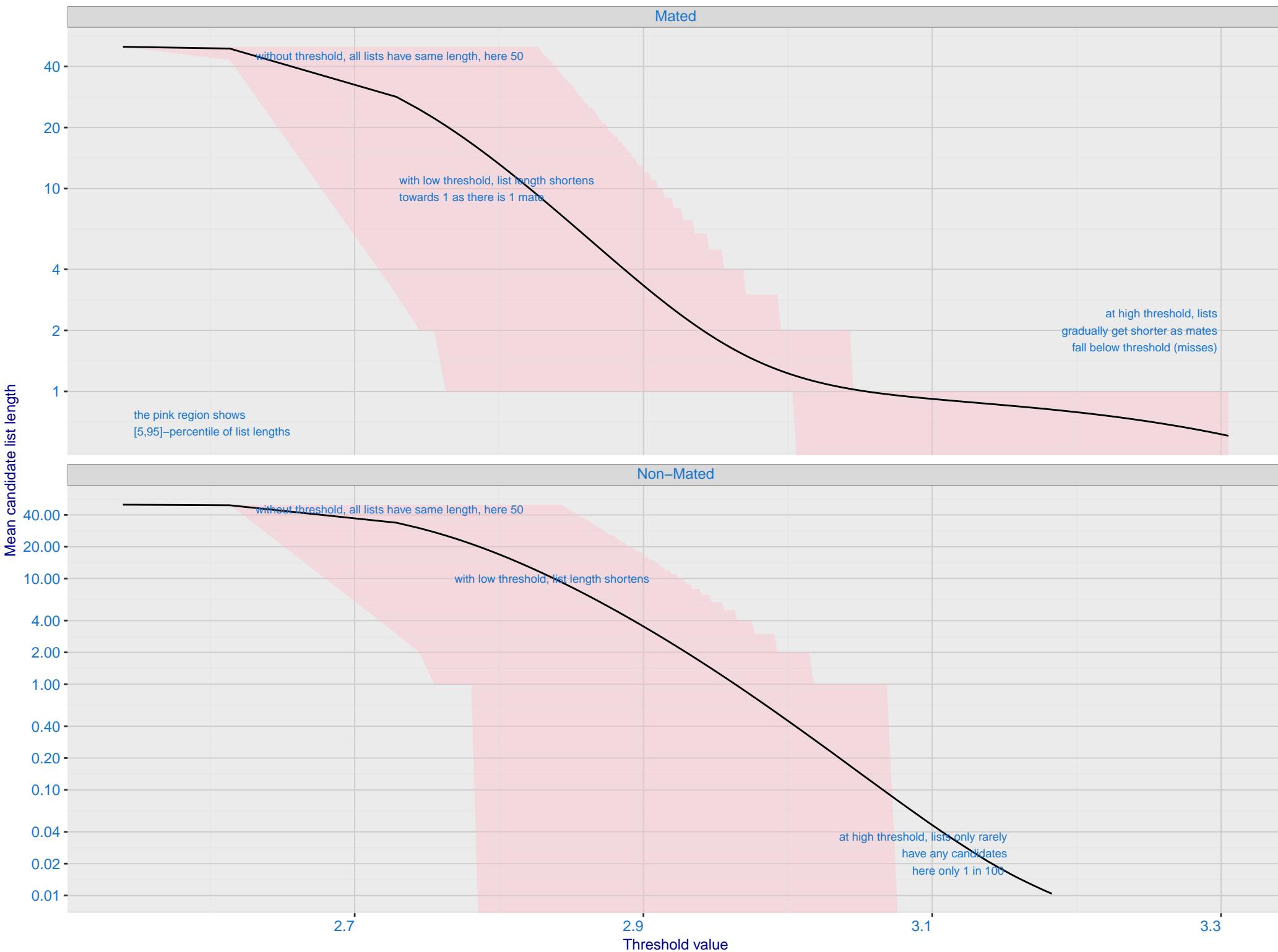
G: FPIR dependence on T by probe type for N = 1600000 subjects

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
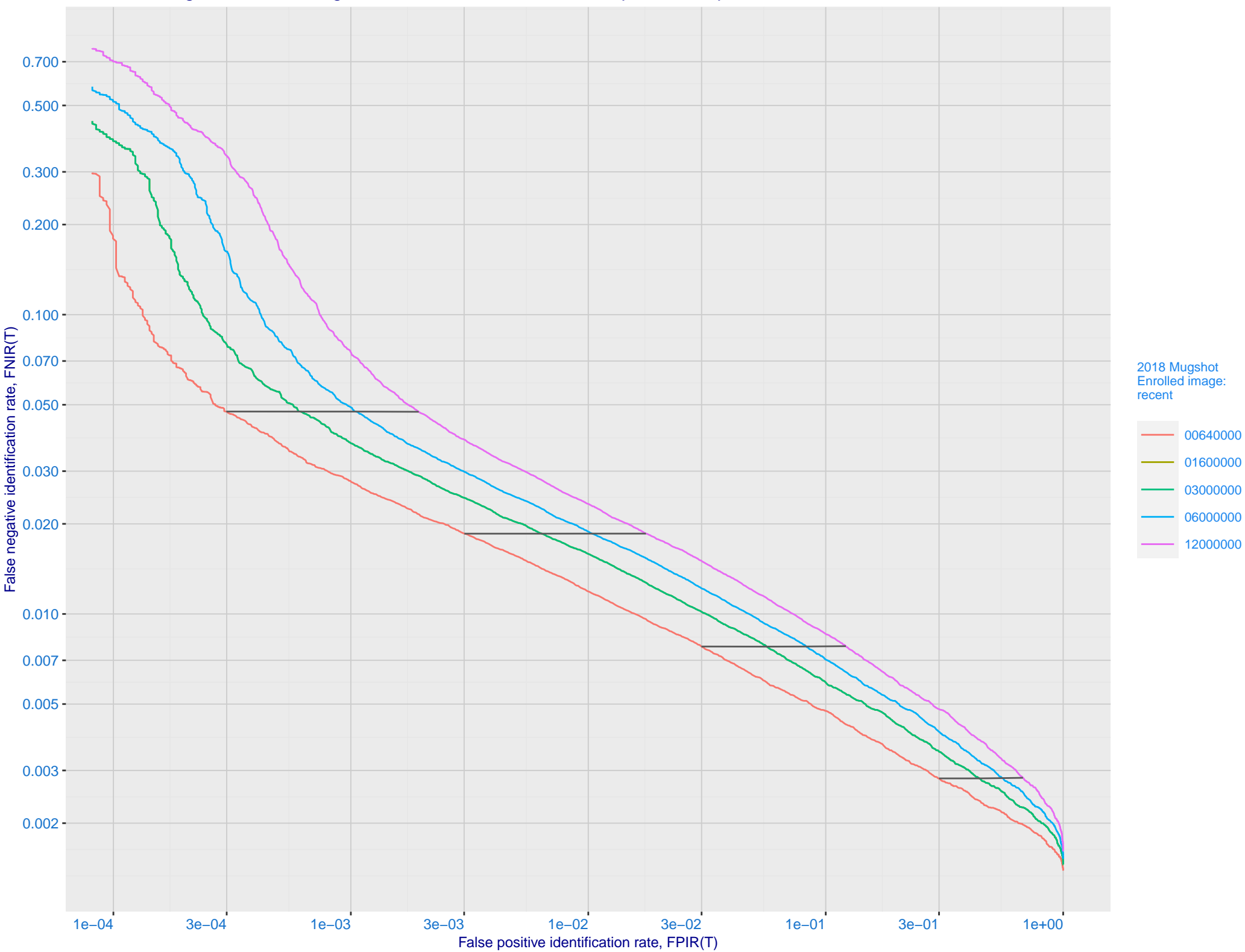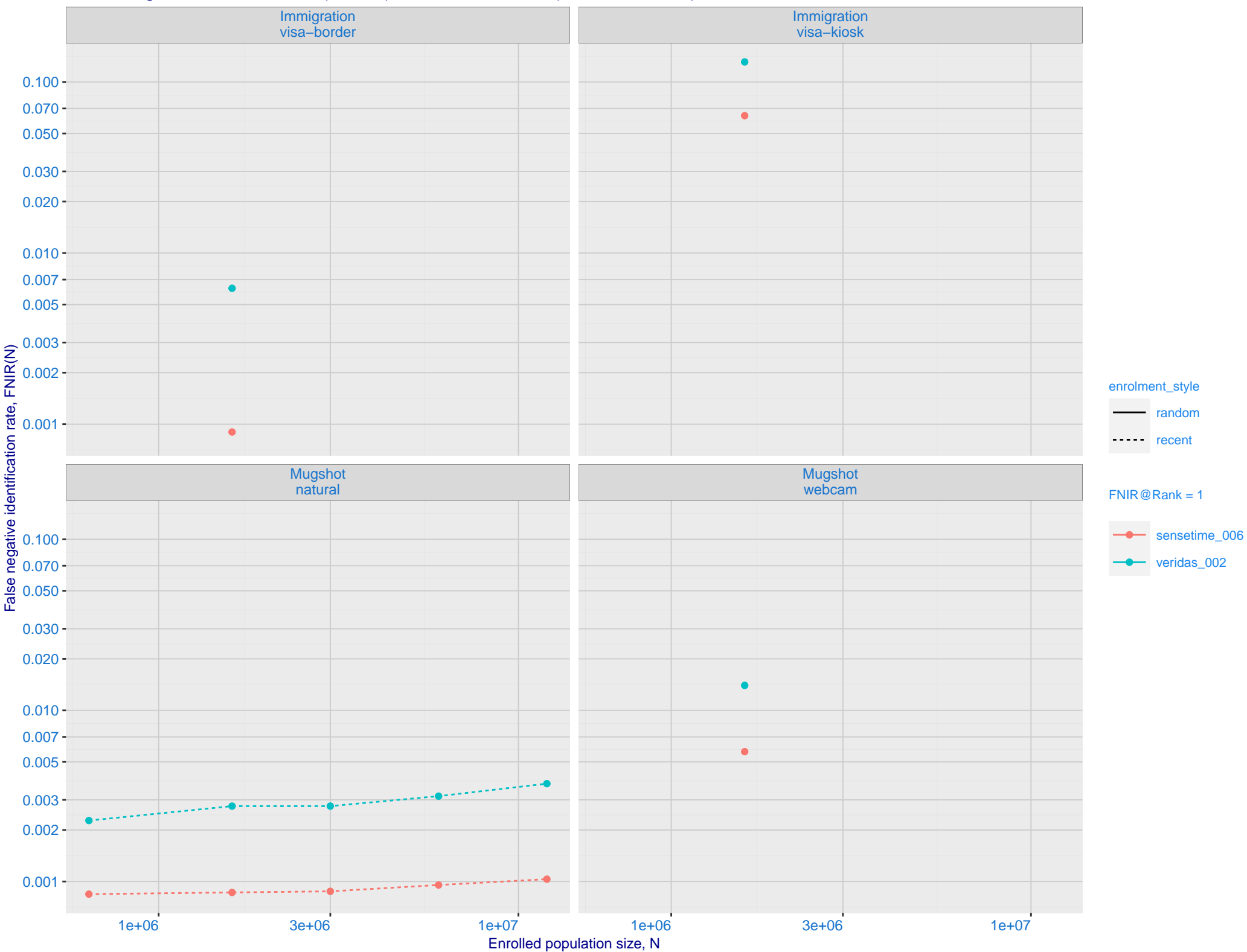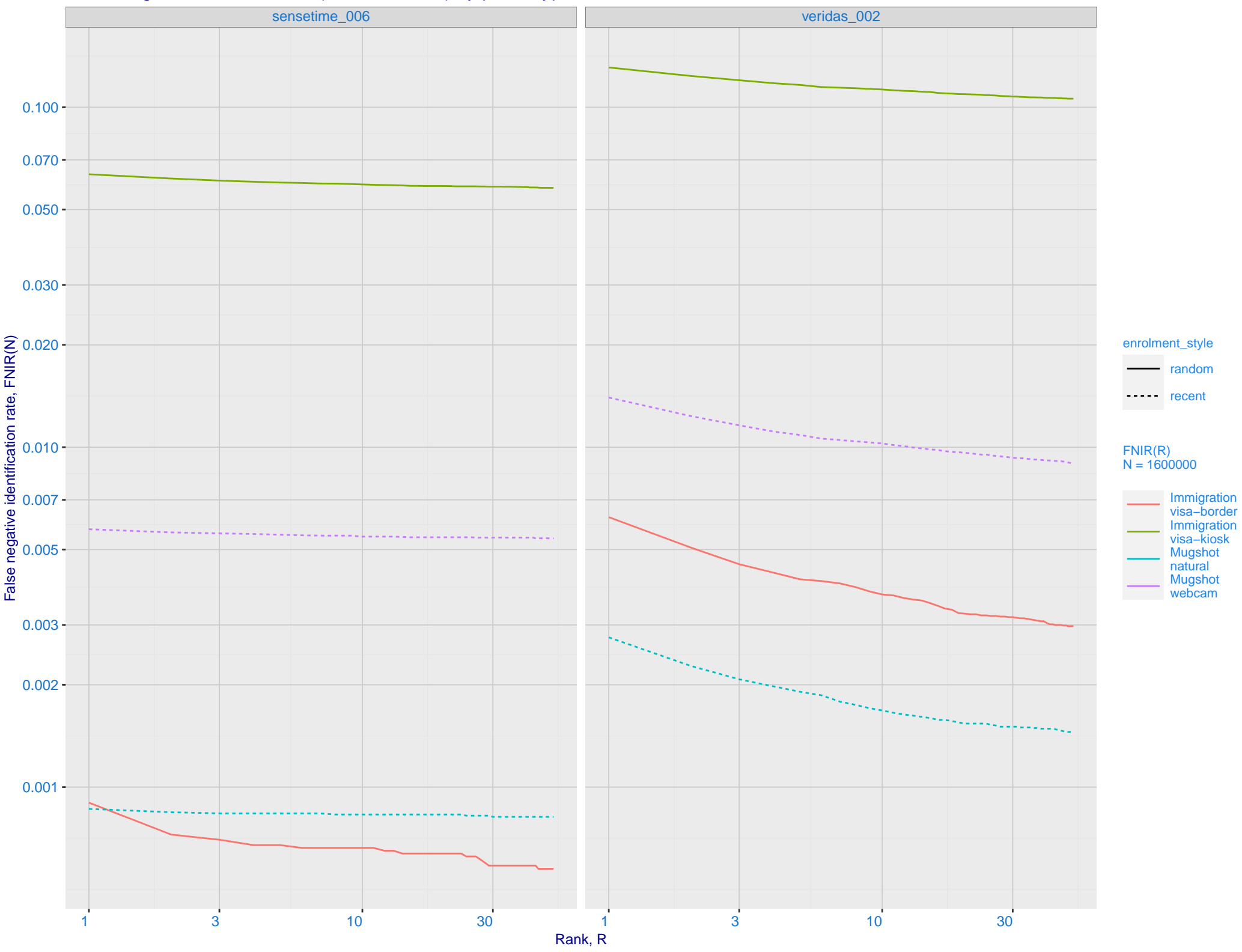
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.
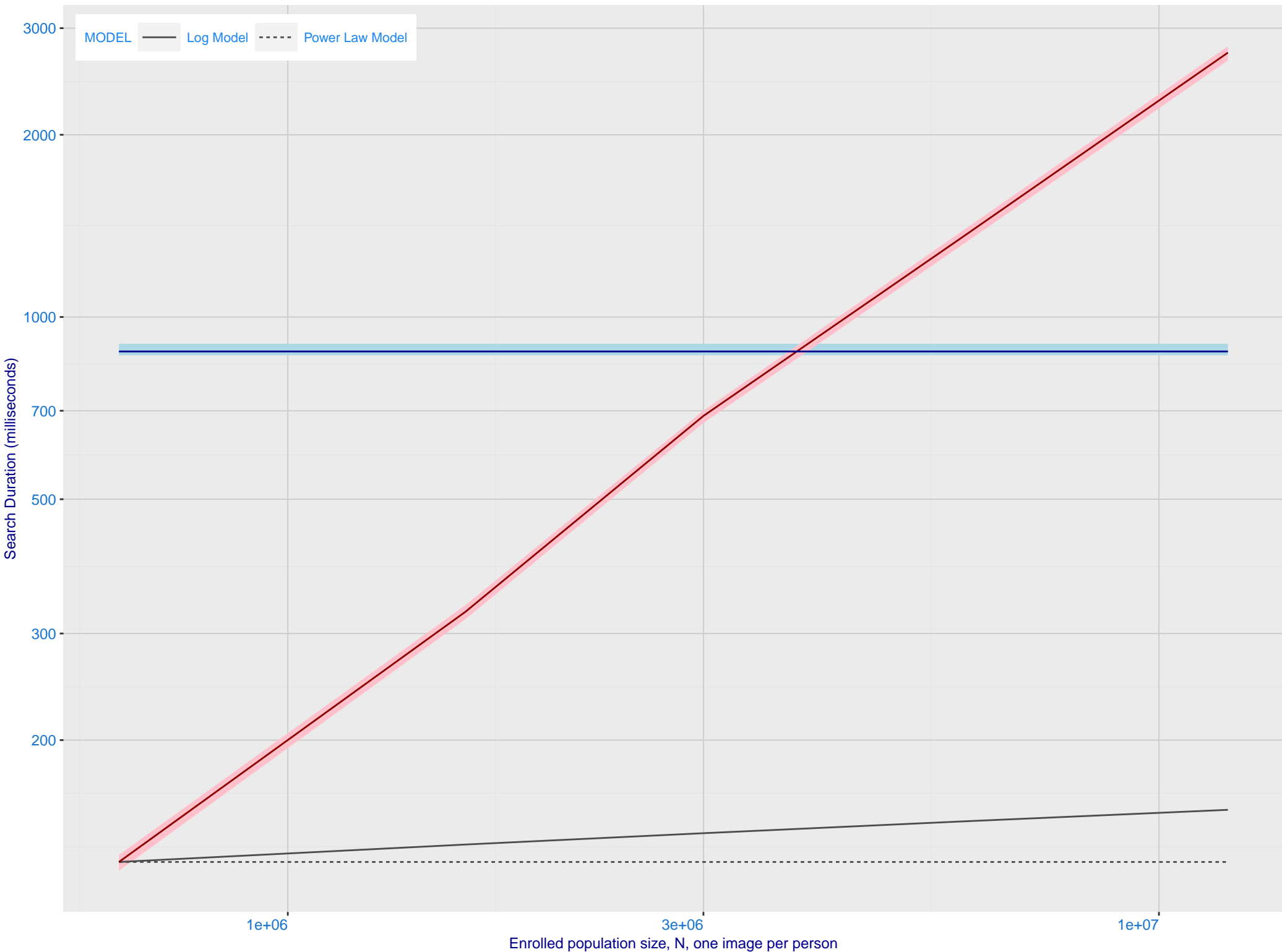
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006)

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.
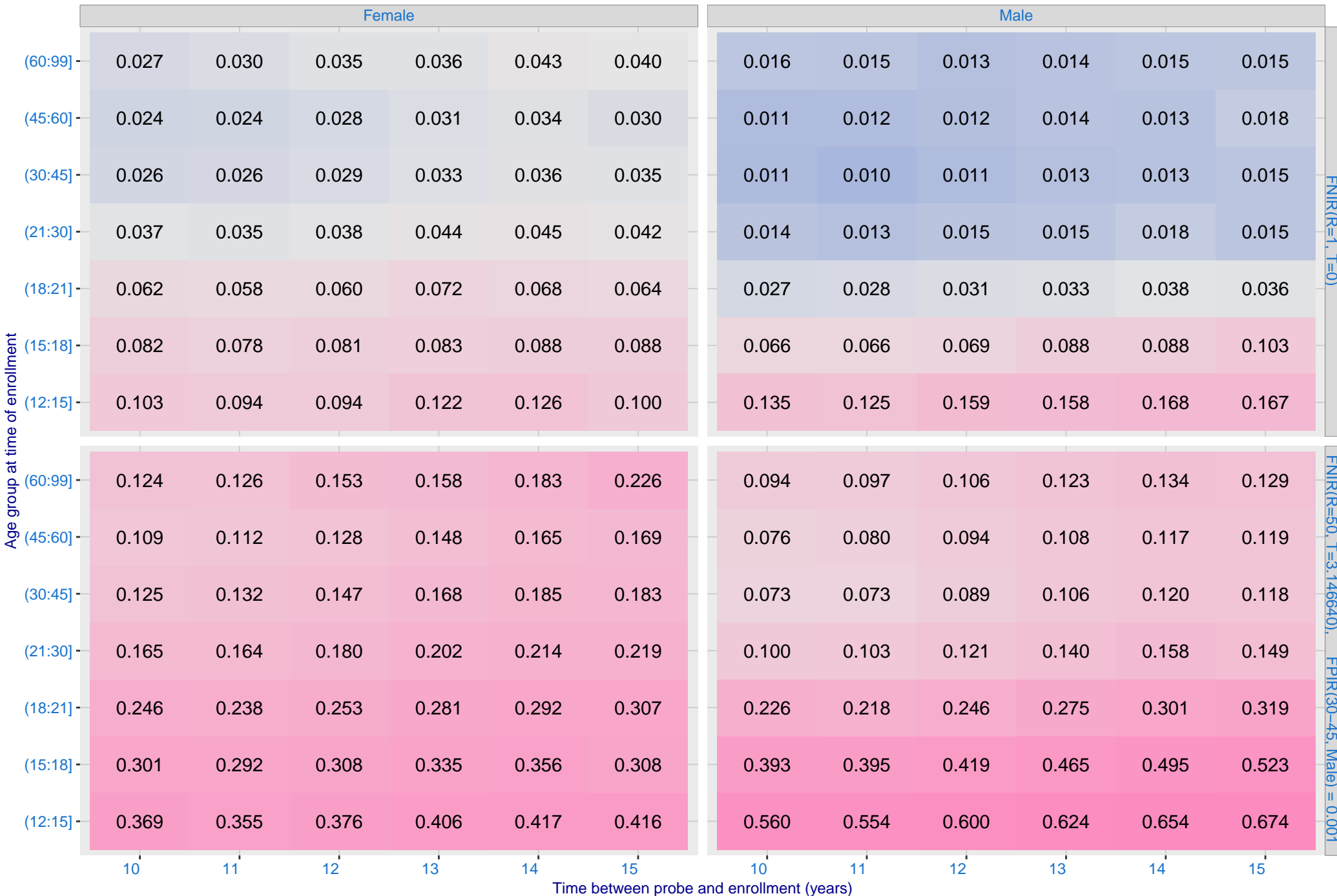
P: FPIR(N = 1.6 million) by sex and age. It is typical for false positive identification rates to be higher in women except in their teens.

Algorithm: veridas_002, Dataset: Border−Crossing Ageing
Threshold: 3.146640 set to achive FPIR(30−45, Male) = 0.001

Color encodes log(FPIR)

Age group of person in non−mate probe
(The age of the highest non−mates will usually be similar to that of the probe.)

Age group	Female	Male
(60:99]	0.0129	0.0006
(45:60]	0.0082	0.0005
(30:45]	0.0076	0.0010
(21:30]	0.0137	0.0023
(18:21]	0.0190	0.0046
(15:18]	0.0206	0.0052
(12:15]	0.0191	0.0064

Sex of person in non−mate probe
(The sex of the highest non−mates will usually be that of the probe.)

Q: Identification FNIR(N, T, L+1) and Investigational FNIR(N, 0, R) under ageing