A: Datasheet

Algorithm: fincore_000

Developer: Fincore Ltd

Submission Date: 2021_08_18

Template size: 2048 bytes

Template time (2.5 percentile): 472 msec

Template time (median): 476 msec

Template time (97.5 percentile): 494 msec

Investigation:

Frontal mugshot ranking 163 (out of 298) –– FNIR(1600000, 0, 1) = 0.0108 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 149 (out of 260) –– FNIR(1600000, 0, 1) = 0.0344 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 117 (out of 229) –– FNIR(1600000, 0, 1) = 0.7668 vs. lowest 0.0550 from sensetime_006

Immigration visa–border ranking 118 (out of 187) –– FNIR(1600000, 0, 1) = 0.0316 vs. lowest 0.0009 from sensetime_006

Immigration visa–kiosk ranking 108 (out of 184) –– FNIR(1600000, 0, 1) = 0.1910 vs. lowest 0.0487 from cubox_000

Identification:

Frontal mugshot ranking 184 (out of 298) –– FNIR(1600000, T, L+1) = 0.1336, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 159 (out of 258) –– FNIR(1600000, T, L+1) = 0.2173, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 180 (out of 228) –– FNIR(1600000, T, L+1) = 0.9997, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

Immigration visa–border ranking 115 (out of 185) –– FNIR(1600000, T, L+1) = 0.1871, FPIR=0.001000 vs. lowest 0.0039 from sensetime_006

Immigration visa–kiosk ranking 81 (out of 180) –– FNIR(1600000, T, L+1) = 0.4638, FPIR=0.001000 vs. lowest 0.0925 from sensetime_006
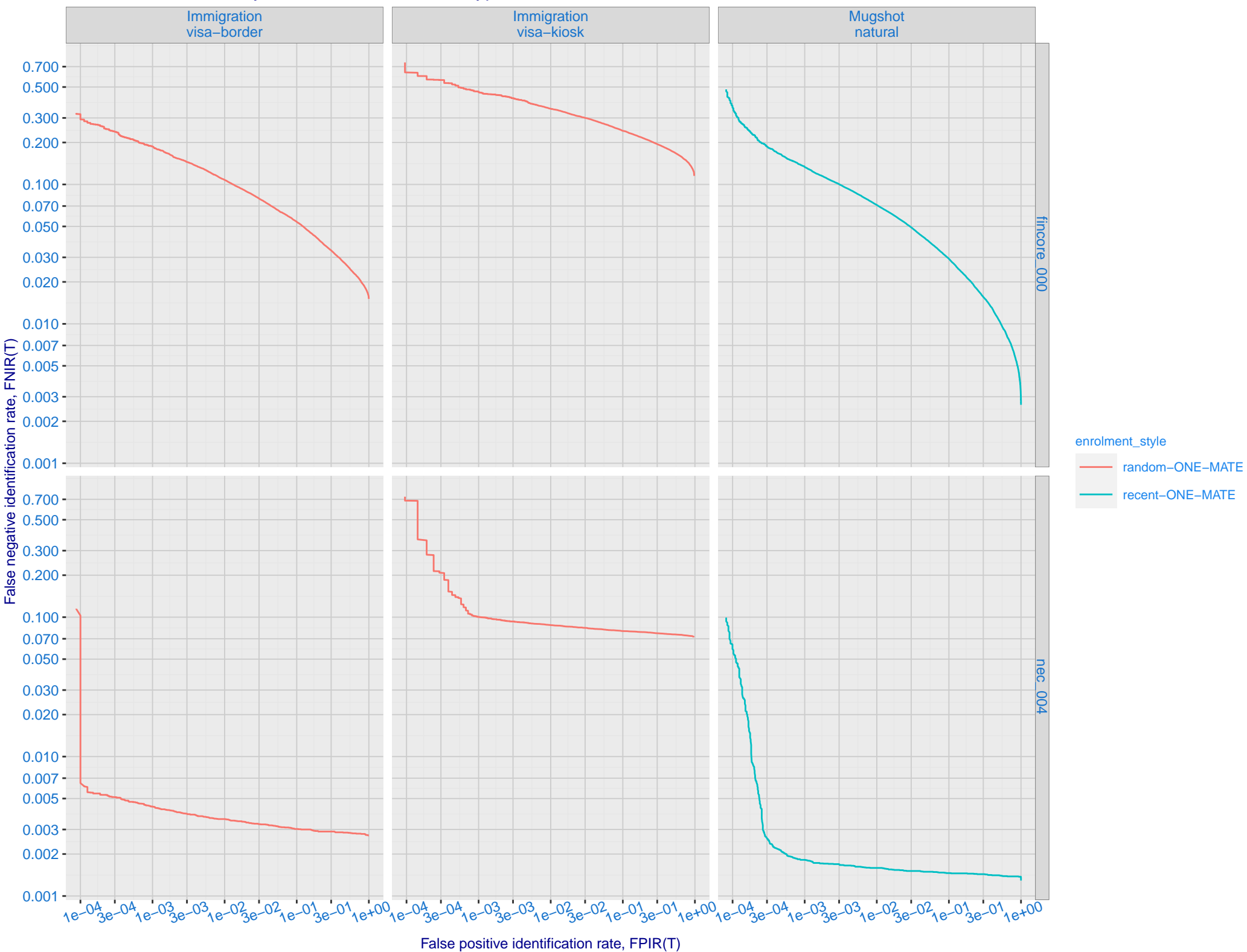
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (nec_004)
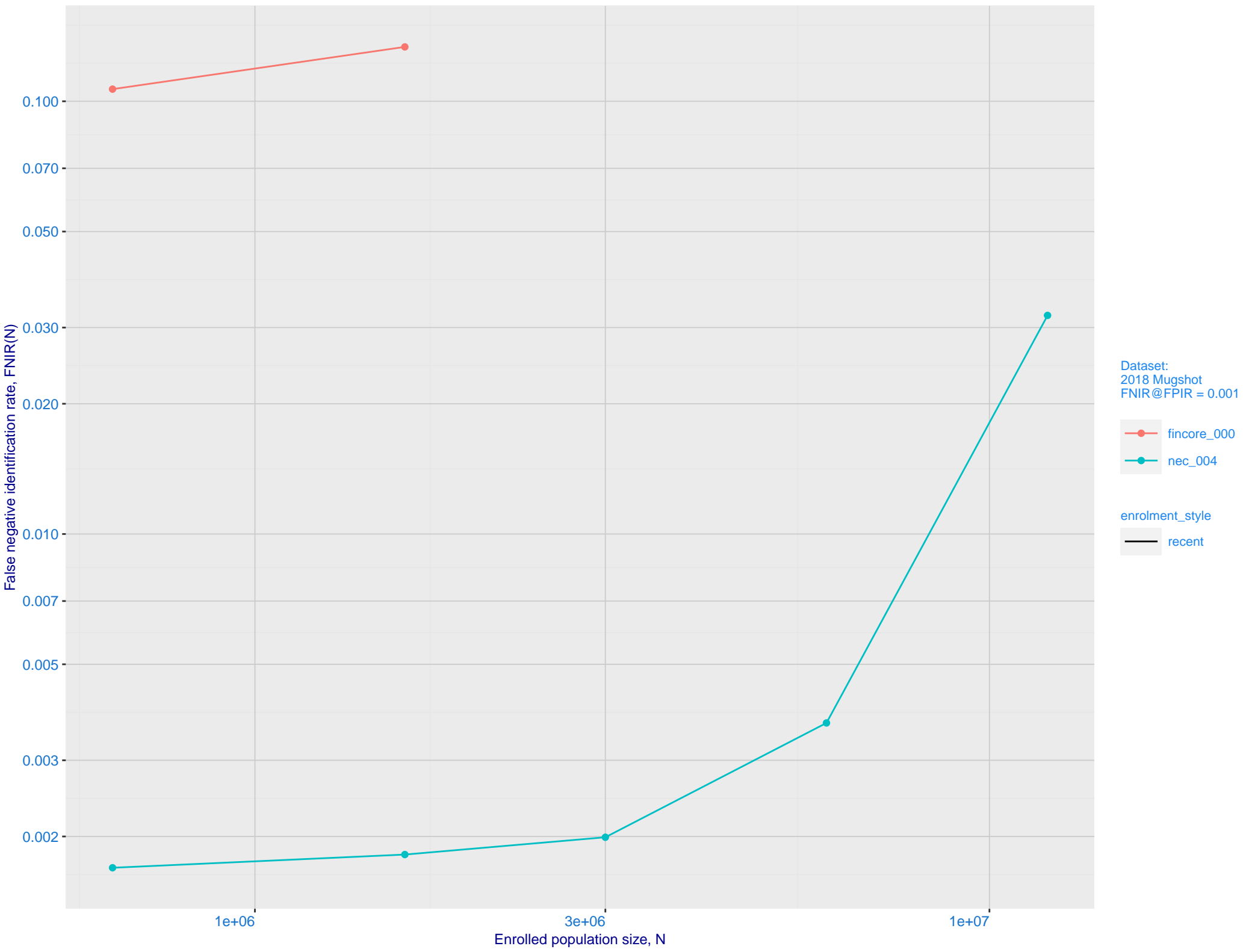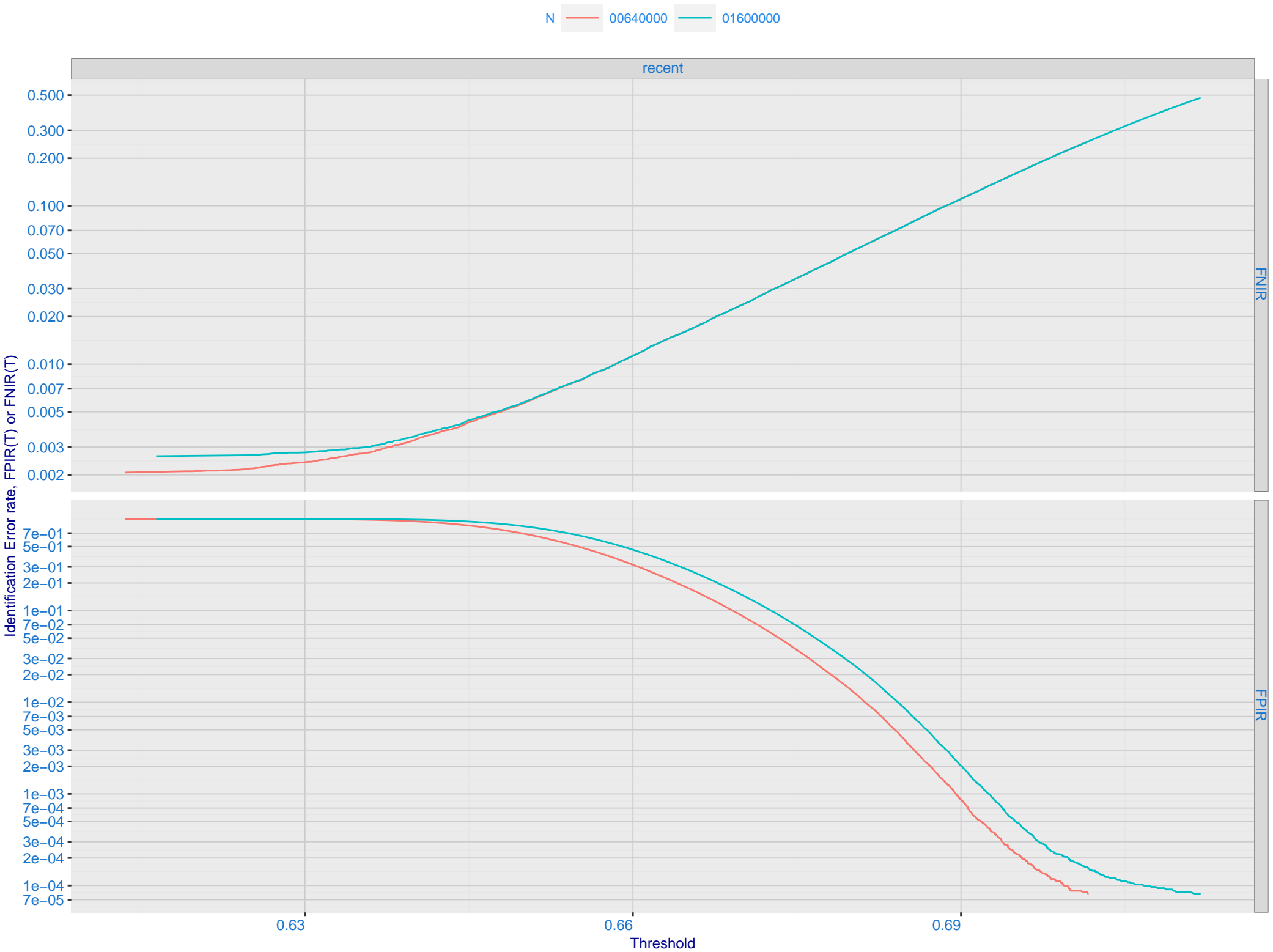
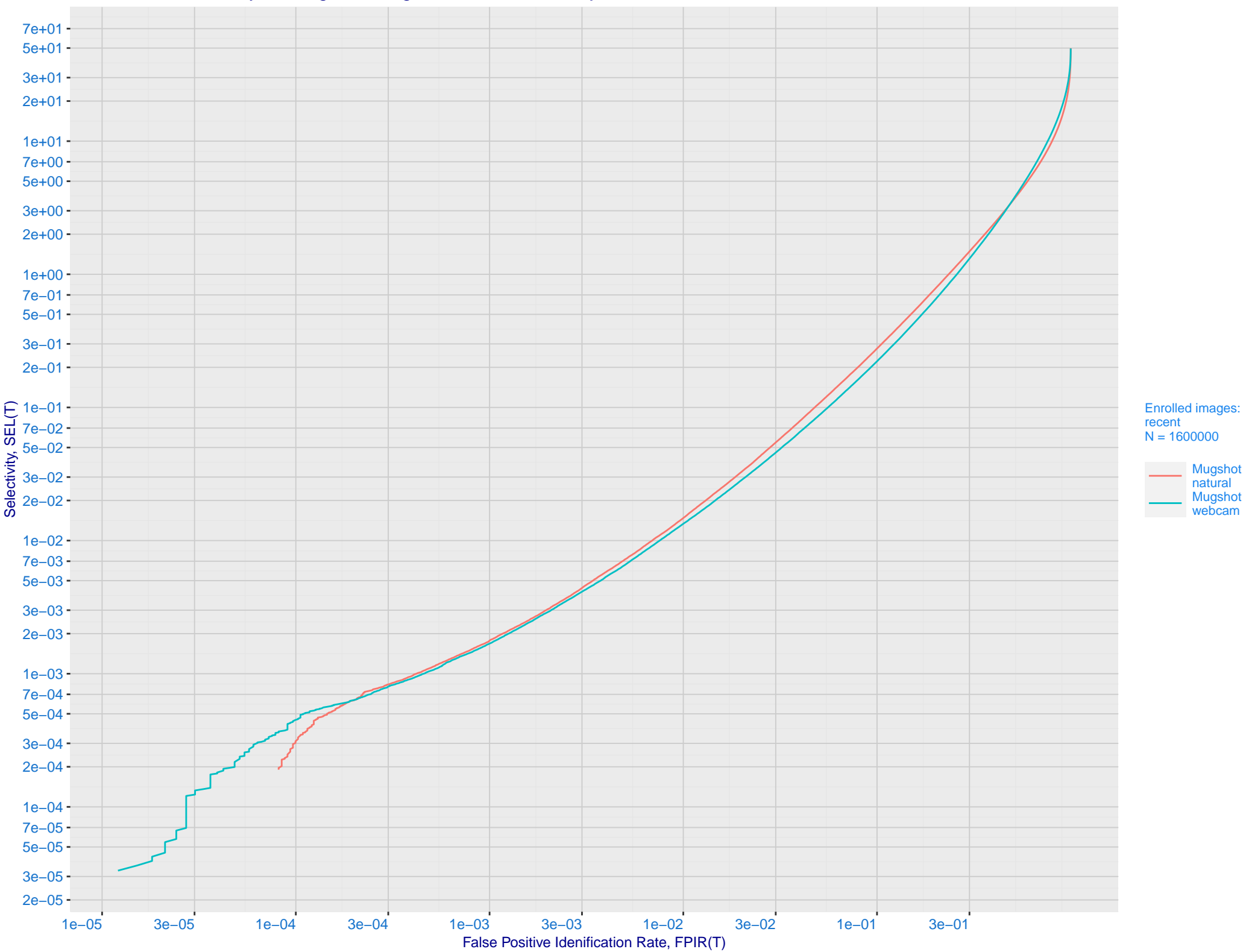C: Evolution of accuracy for FINCORE algorithms on three datasets 2018 – present
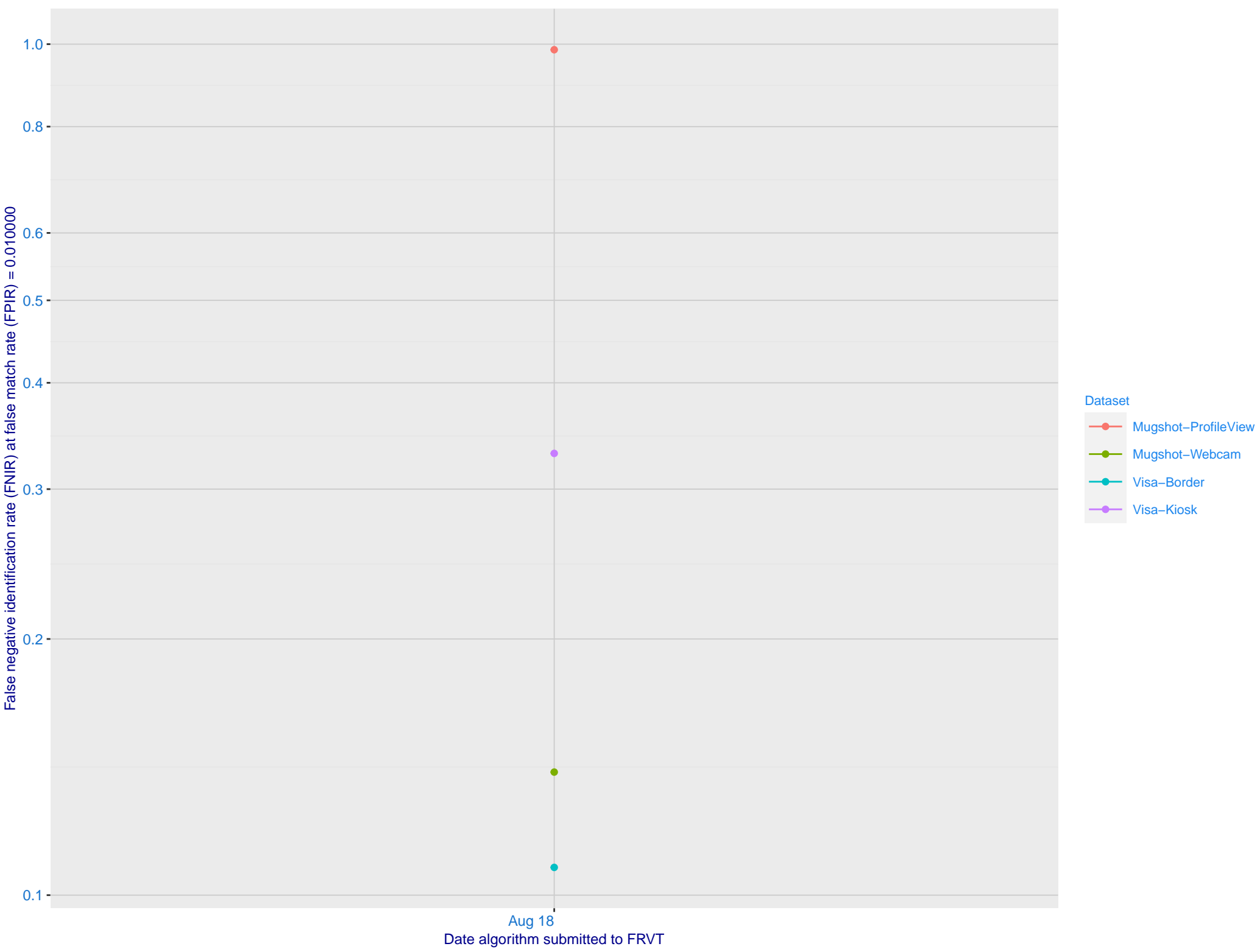
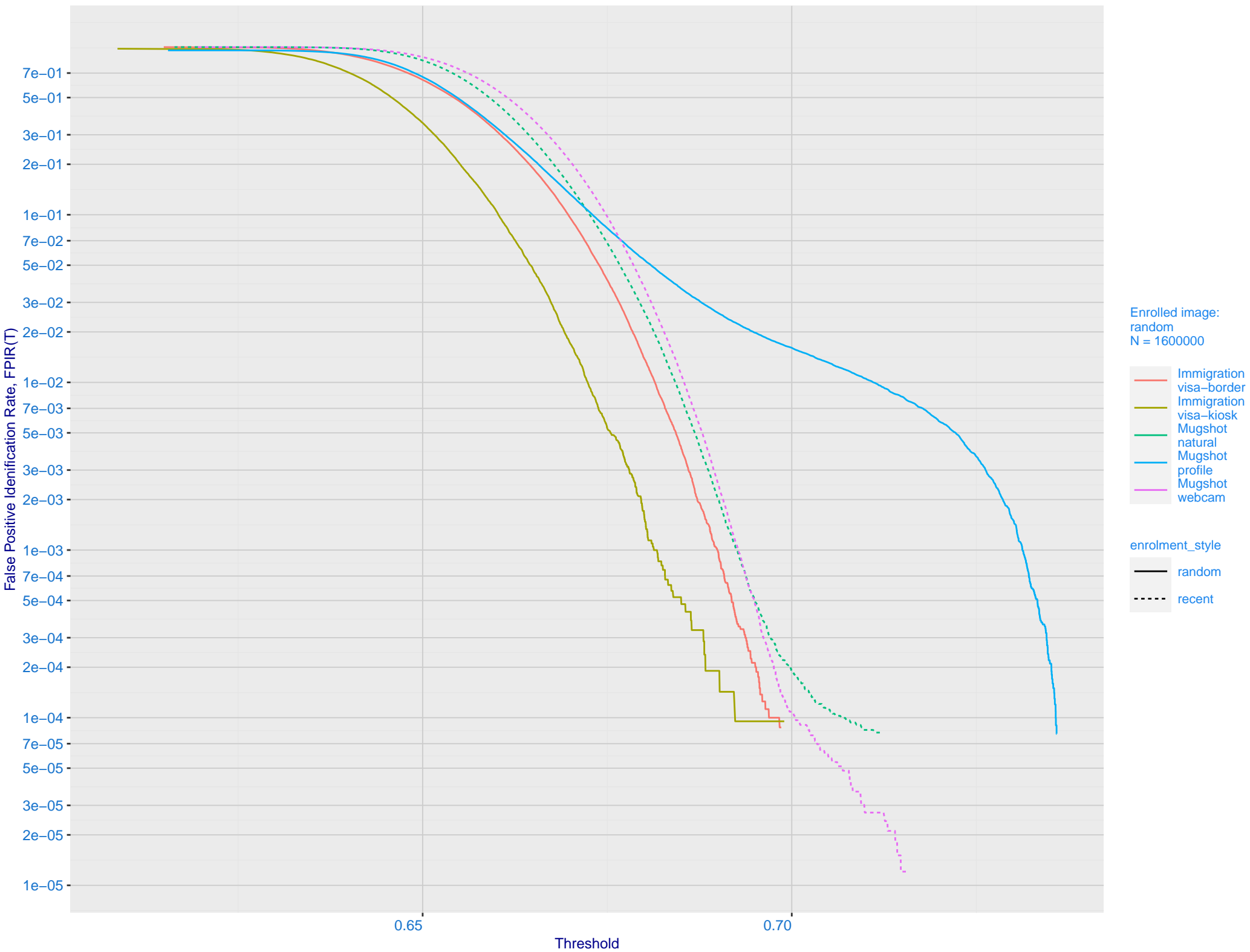D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals

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
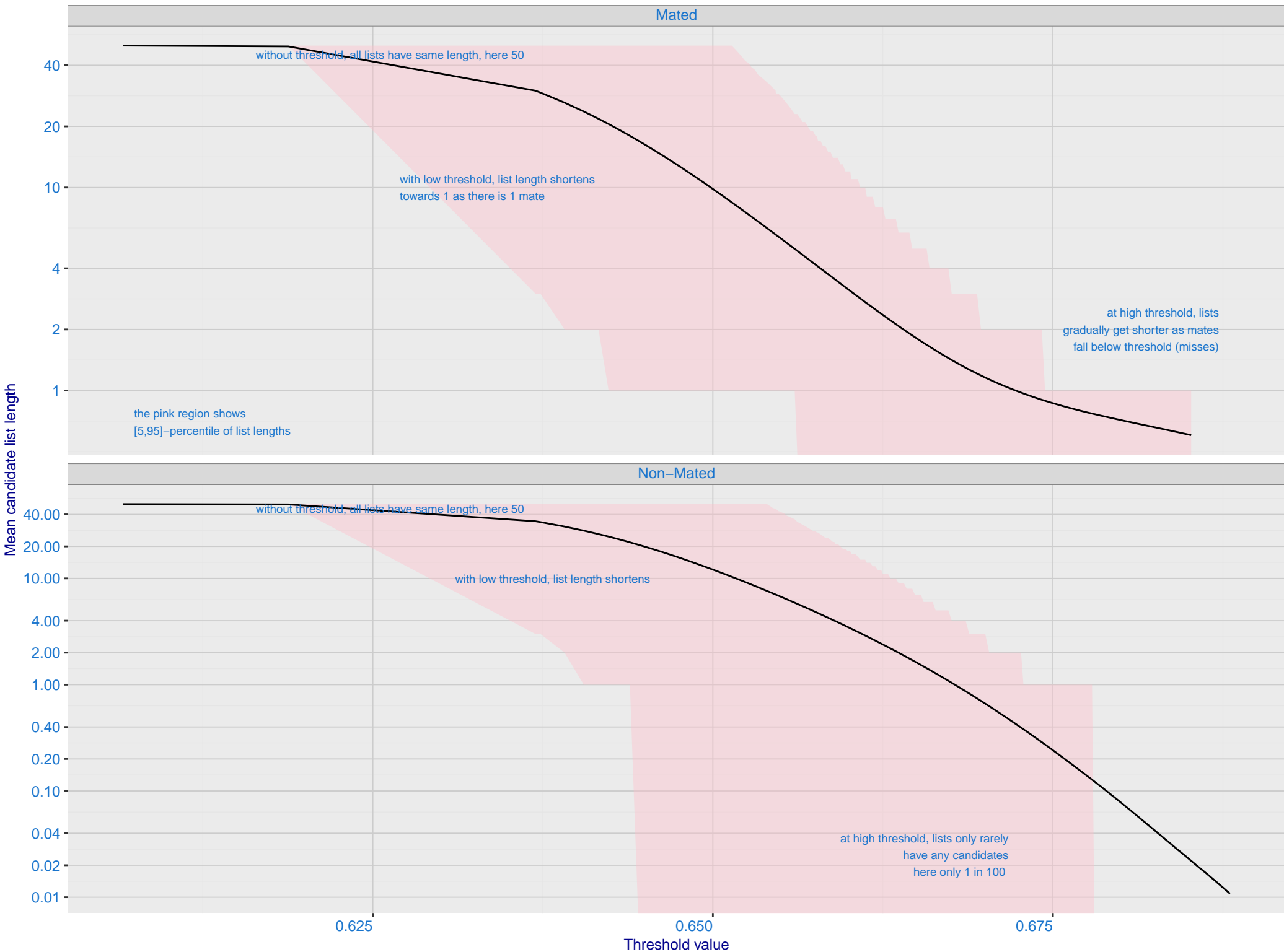
G: FPIR dependence on T by probe type for N = 1600000 subjects

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
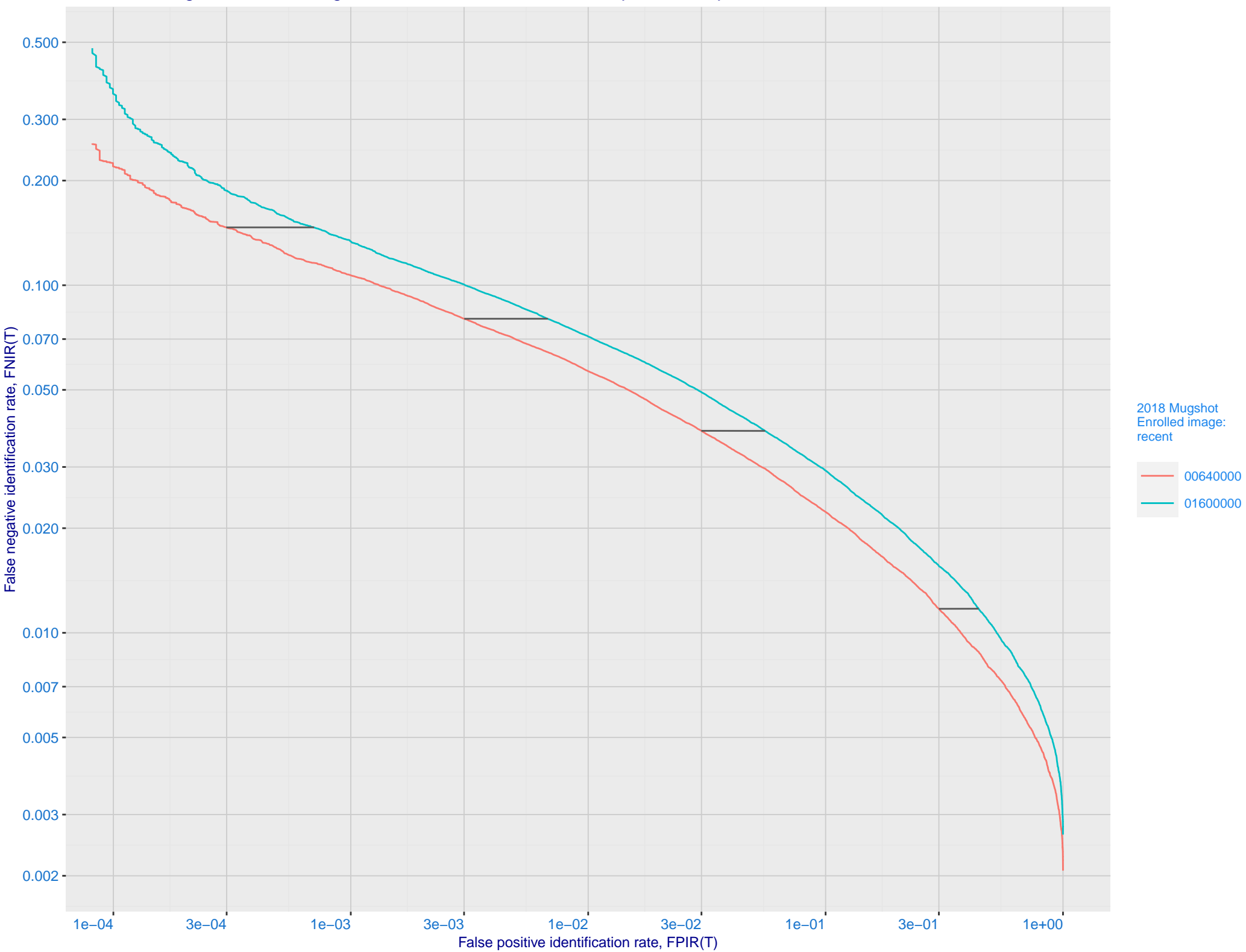here only 1 in 100

Mean candidate list length

Threshold value

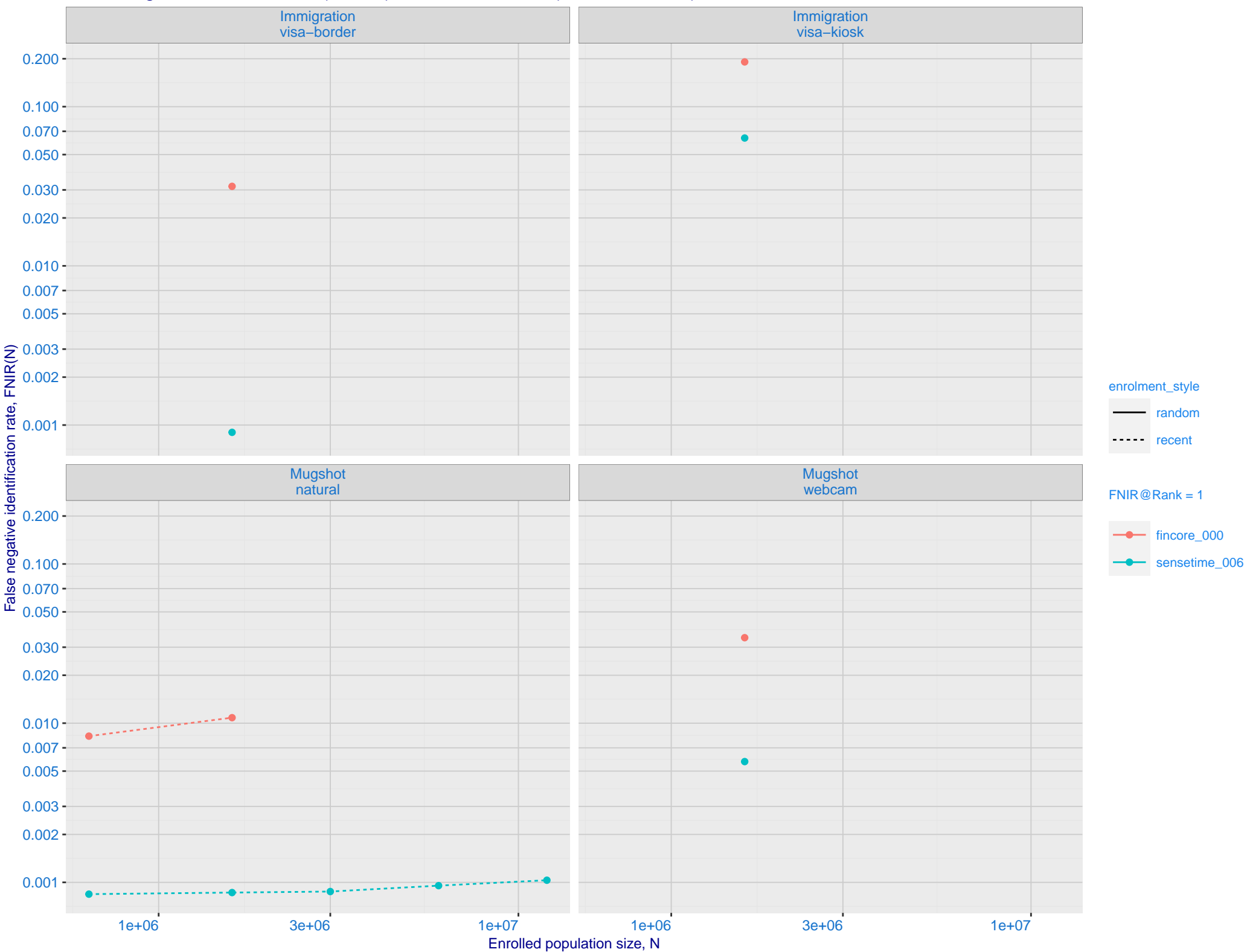I: FNIR and FPIR dependence on threshold
Dataset is border−border with time−lapse [10,15] YRS with N = 1600000. Probes are 10−15 years later than enrollment image
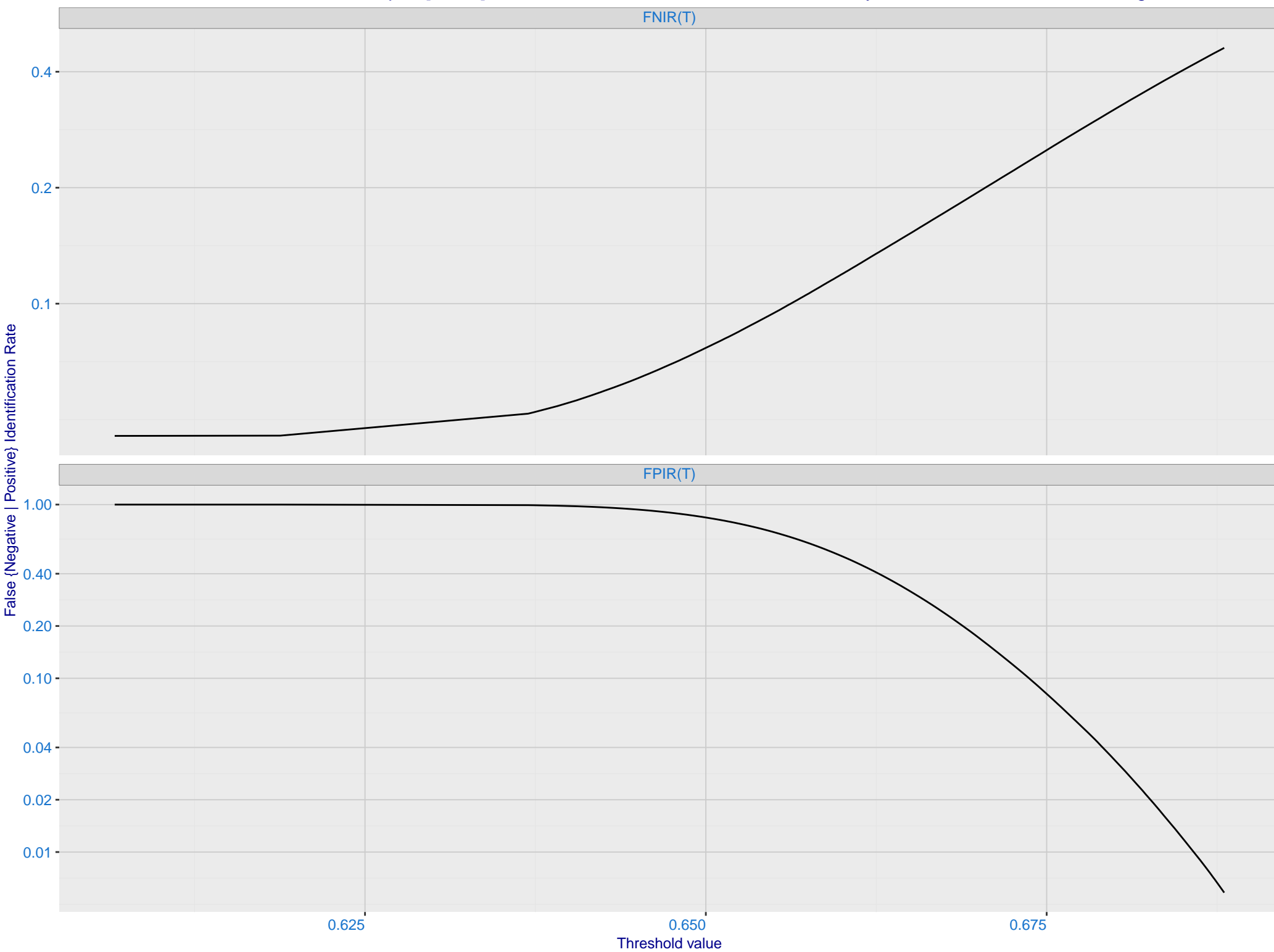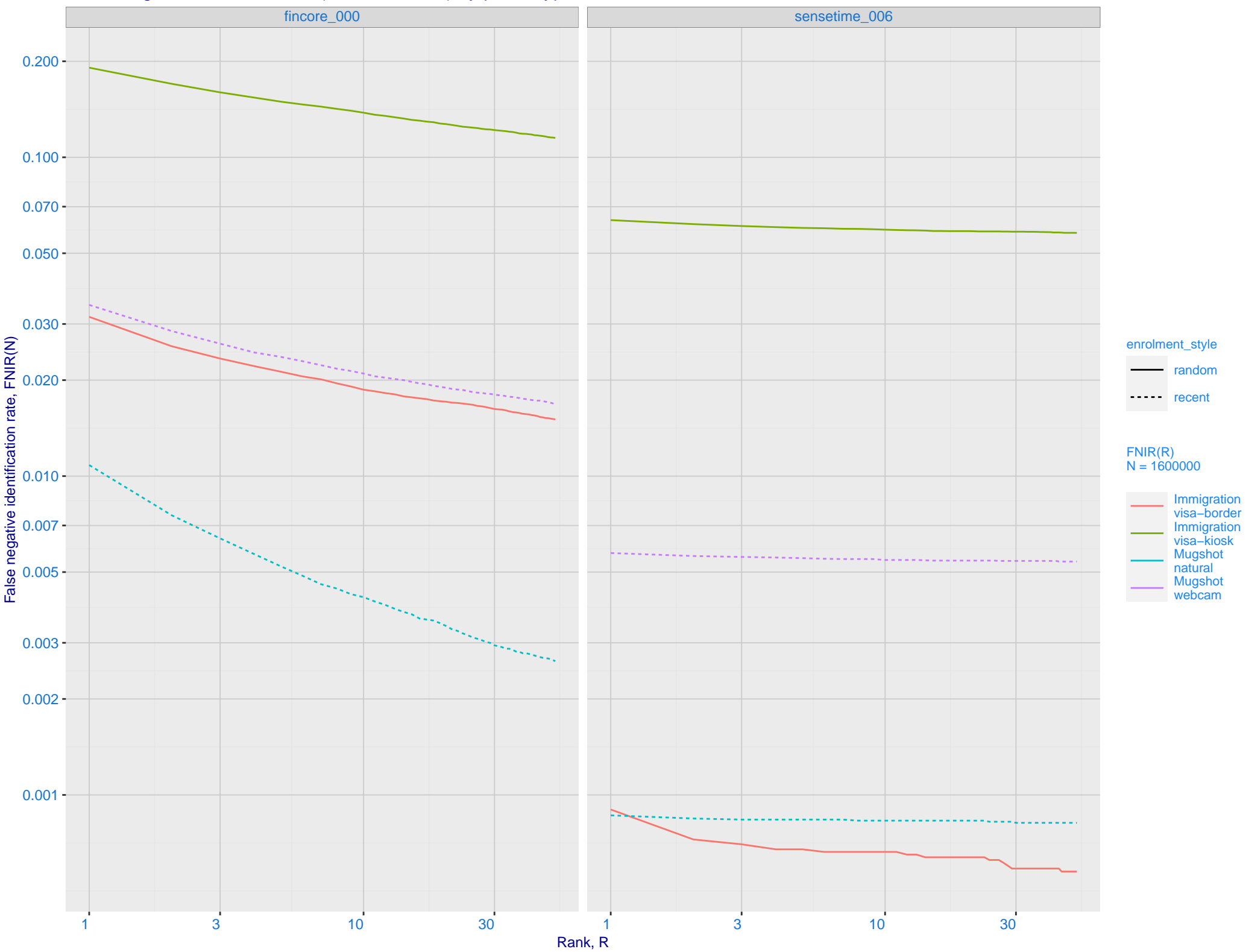
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.
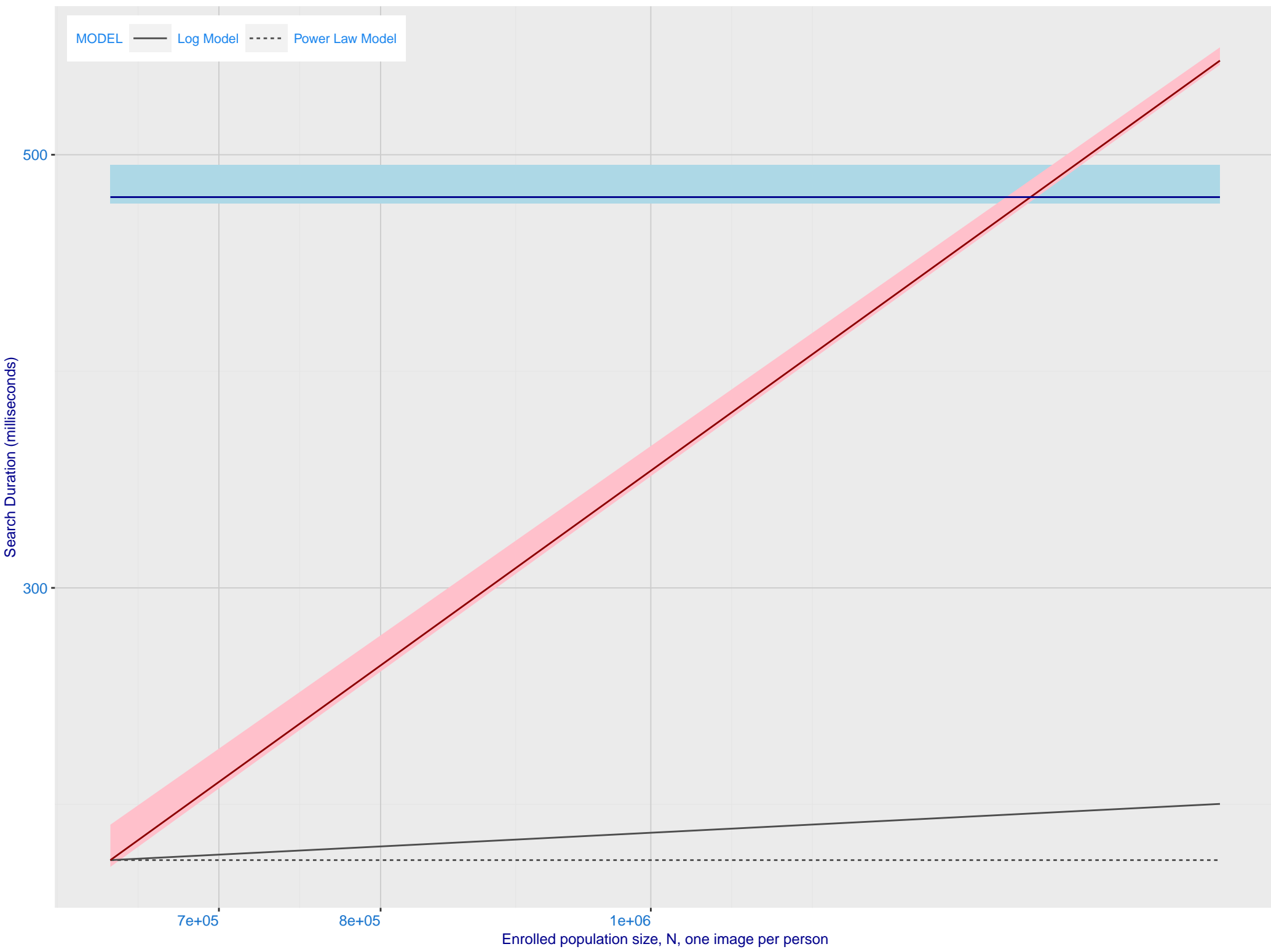
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006)

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.

Algorithm: fincore_000, Dataset: Border–Crossing Ageing N = 1600000
Text encodes FNIR, Color encodes log(FNIR)
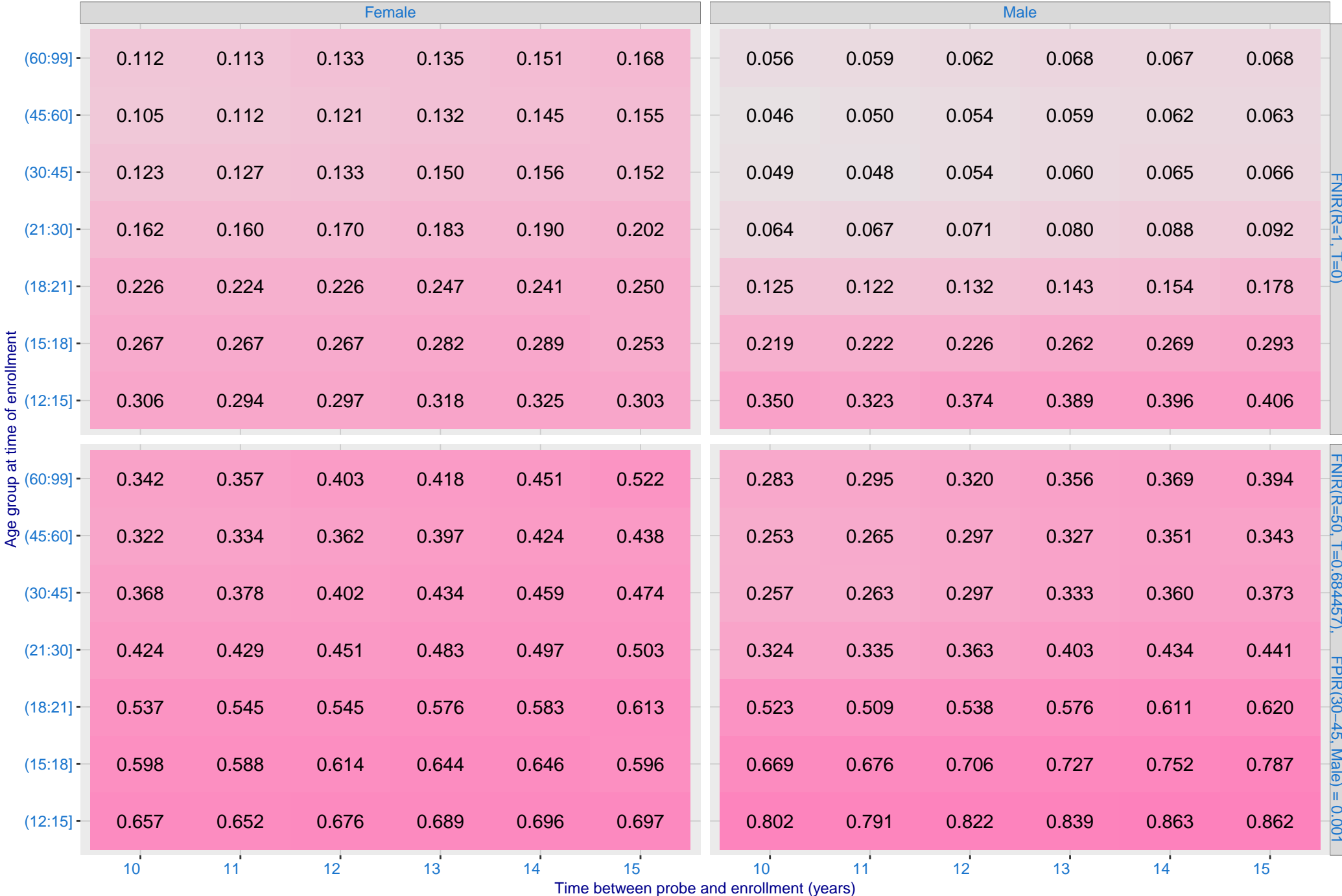
P: FPIR(N = 1.6 million) by sex and age. It is typical for false positive identification rates to be higher in women except in their teens.

Algorithm: fincore_000, Dataset: Border−Crossing Ageing
Threshold: 0.684457 set to achive FPIR(30−45, Male) = 0.001

Color encodes log(FPIR)

−4   −3   −2   −1

Age group of person in non−mate probe	Female	Male
(60:99]	0.0122	0.0008
(45:60]	0.0103	0.0005
(30:45]	0.0120	0.0010
(21:30]	0.0239	0.0025
(18:21]	0.0353	0.0054
(15:18]	0.0352	0.0068
(12:15]	0.0340	0.0089

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

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