A: Datasheet

Algorithm: trueface_000

Developer: Trueface.ai

Submission Date: 2021_01_27

Template size: 2000 bytes

Template time (2.5 percentile): 363 msec

Template time (median): 364 msec

Template time (97.5 percentile): 379 msec

Investigation:

Frontal mugshot ranking 105 (out of 329) –– FNIR(1600000, 0, 1) = 0.0033 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 73 (out of 291) –– FNIR(1600000, 0, 1) = 0.0136 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 52 (out of 260) –– FNIR(1600000, 0, 1) = 0.2299 vs. lowest 0.0550 from sensetime_006

Immigration visa–border ranking 97 (out of 218) –– FNIR(1600000, 0, 1) = 0.0069 vs. lowest 0.0009 from sensetime_006

Immigration visa–kiosk ranking 49 (out of 215) –– FNIR(1600000, 0, 1) = 0.0924 vs. lowest 0.0487 from cubox_000

Identification:

Frontal mugshot ranking 69 (out of 329) –– FNIR(1600000, T, L+1) = 0.0182, FPIR=0.001000 vs. lowest 0.0017 from nec_005

Mugshot webcam ranking 71 (out of 289) –– FNIR(1600000, T, L+1) = 0.0617, FPIR=0.001000 vs. lowest 0.0120 from nec_005

Mugshot profile ranking 48 (out of 259) –– FNIR(1600000, T, L+1) = 0.8827, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

Immigration visa–border ranking 63 (out of 217) –– FNIR(1600000, T, L+1) = 0.0298, FPIR=0.001000 vs. lowest 0.0032 from paravision_009

Immigration visa–kiosk ranking 45 (out of 212) –– FNIR(1600000, T, L+1) = 0.1879, FPIR=0.001000 vs. lowest 0.0728 from paravision_009
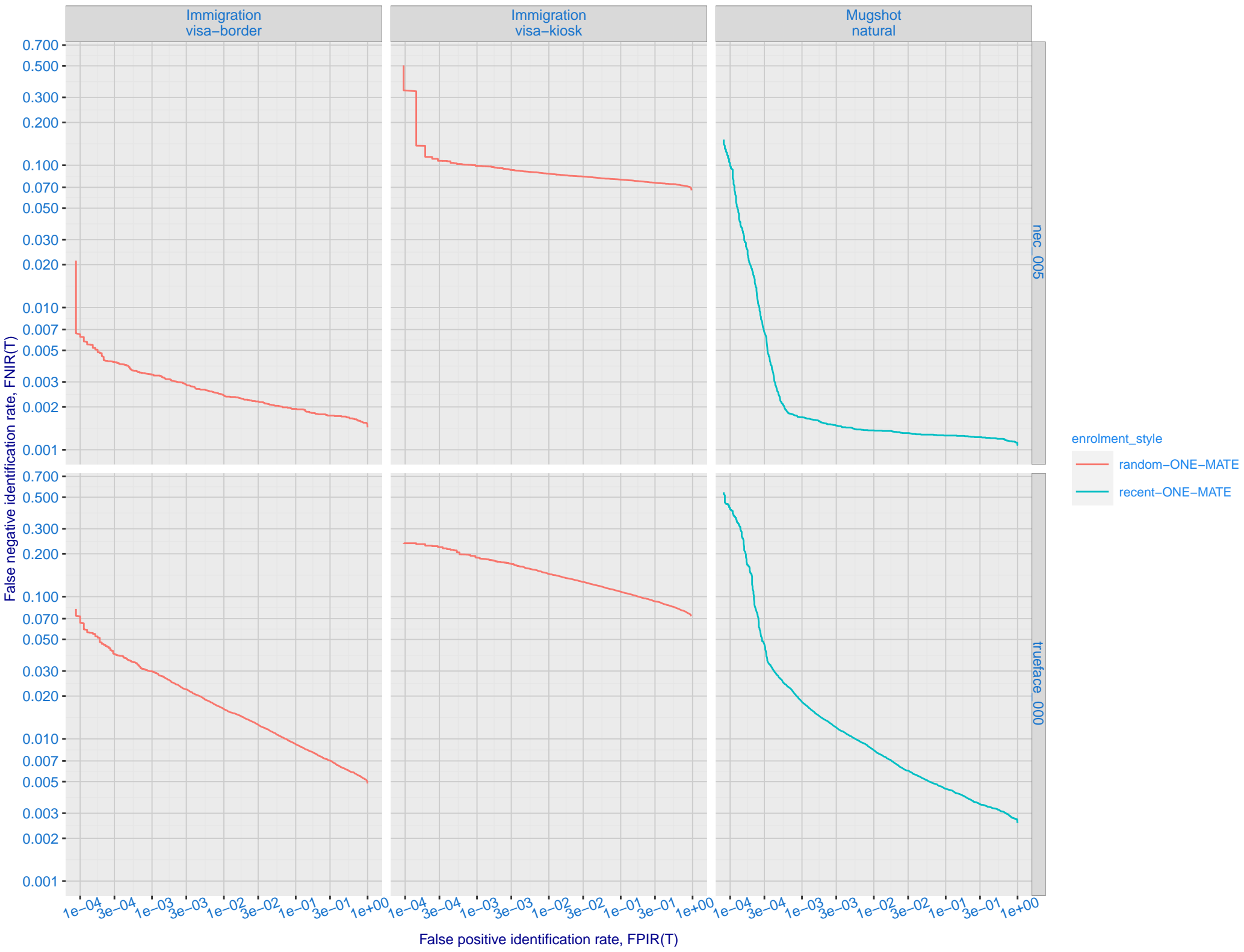
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (nec_005)
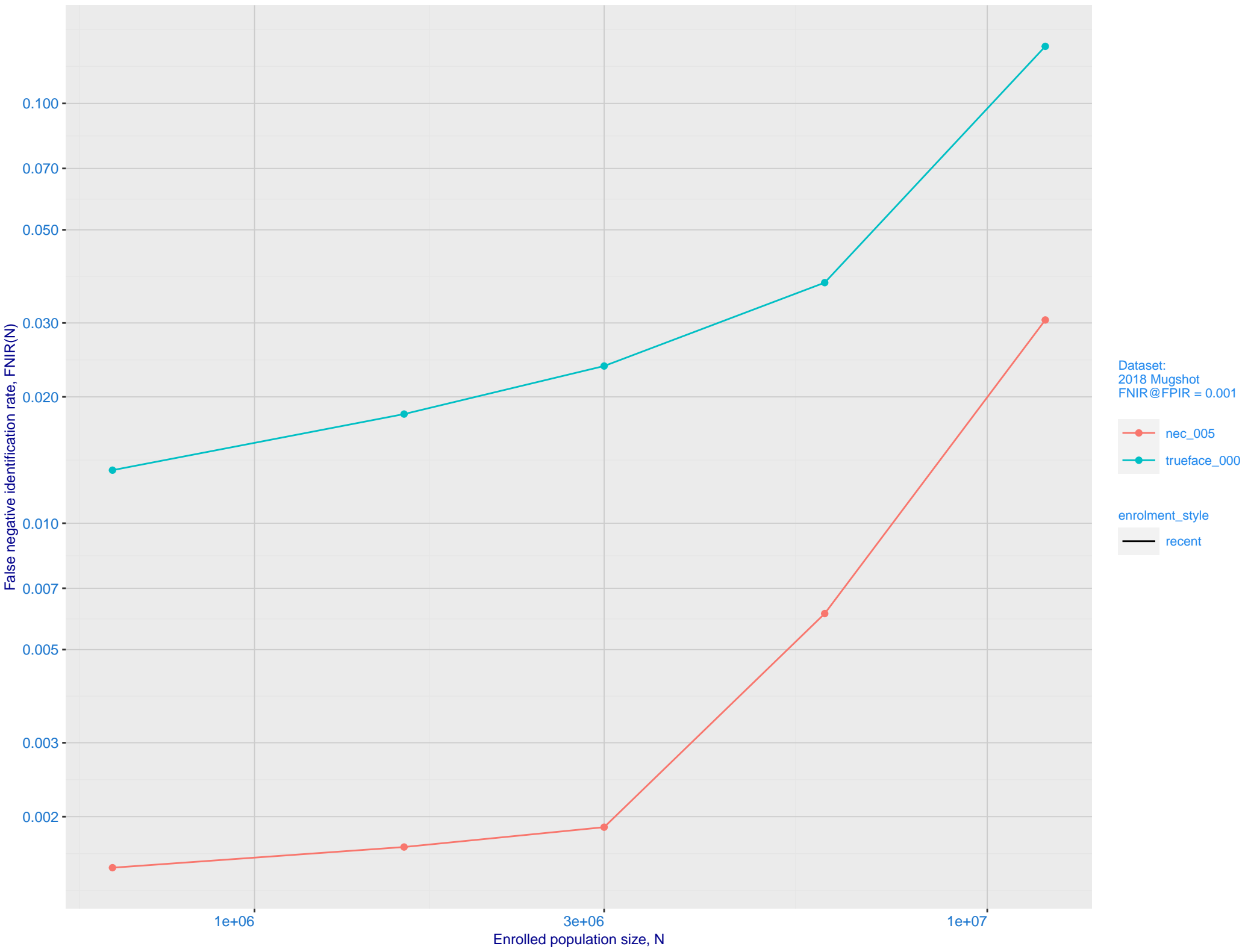
C: Evolution of accuracy for TRUEFACE algorithms on three datasets 2018 – present
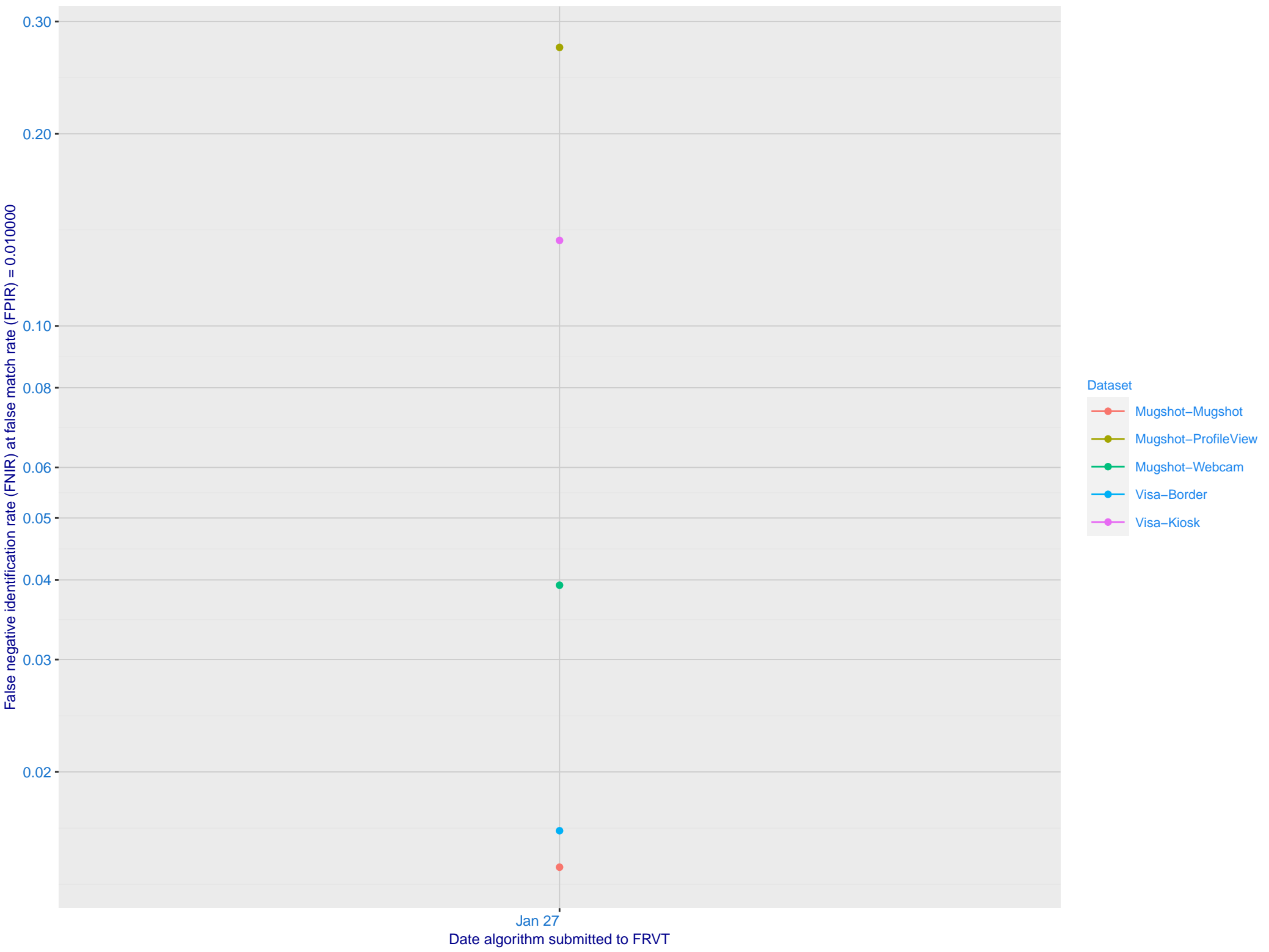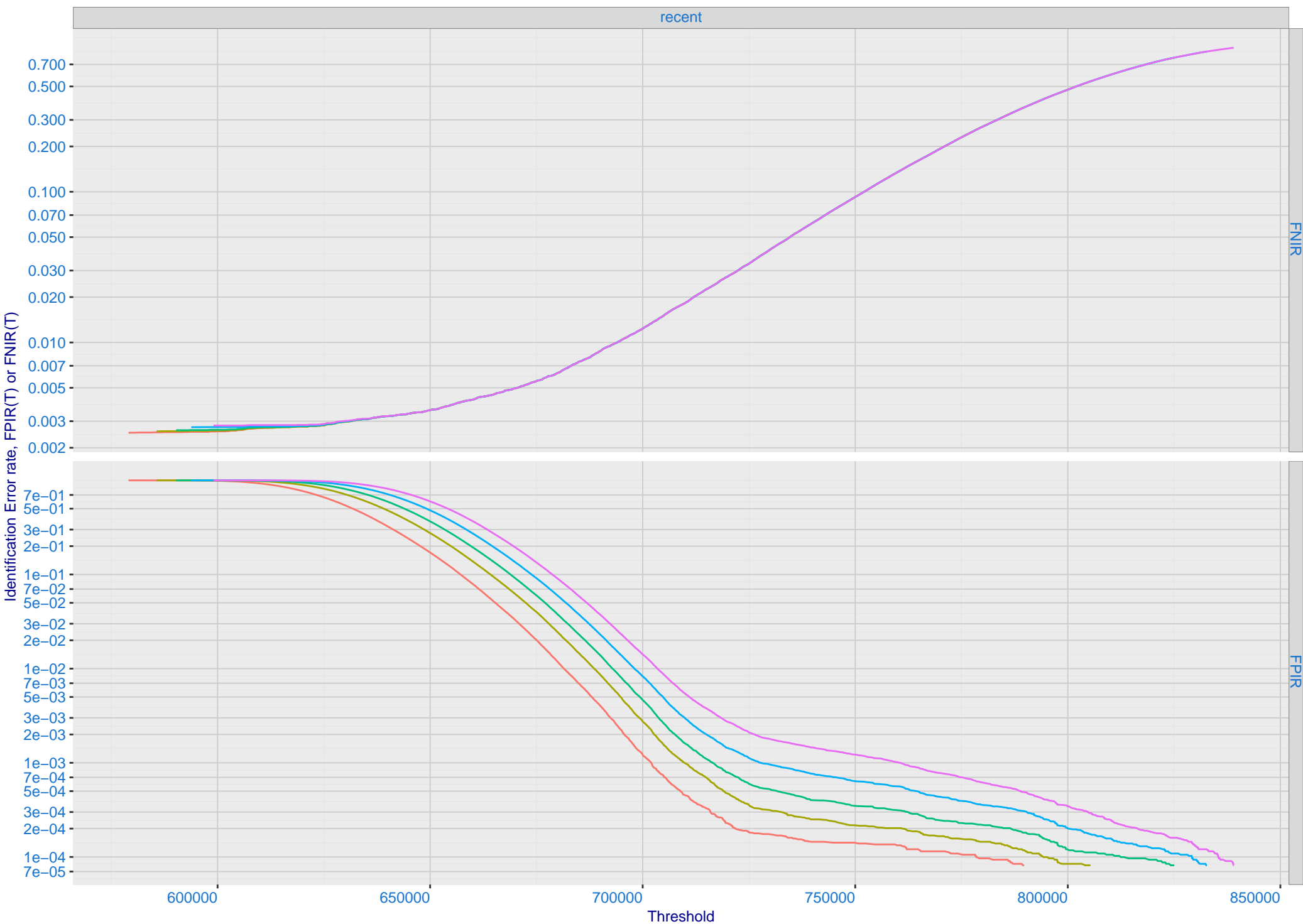
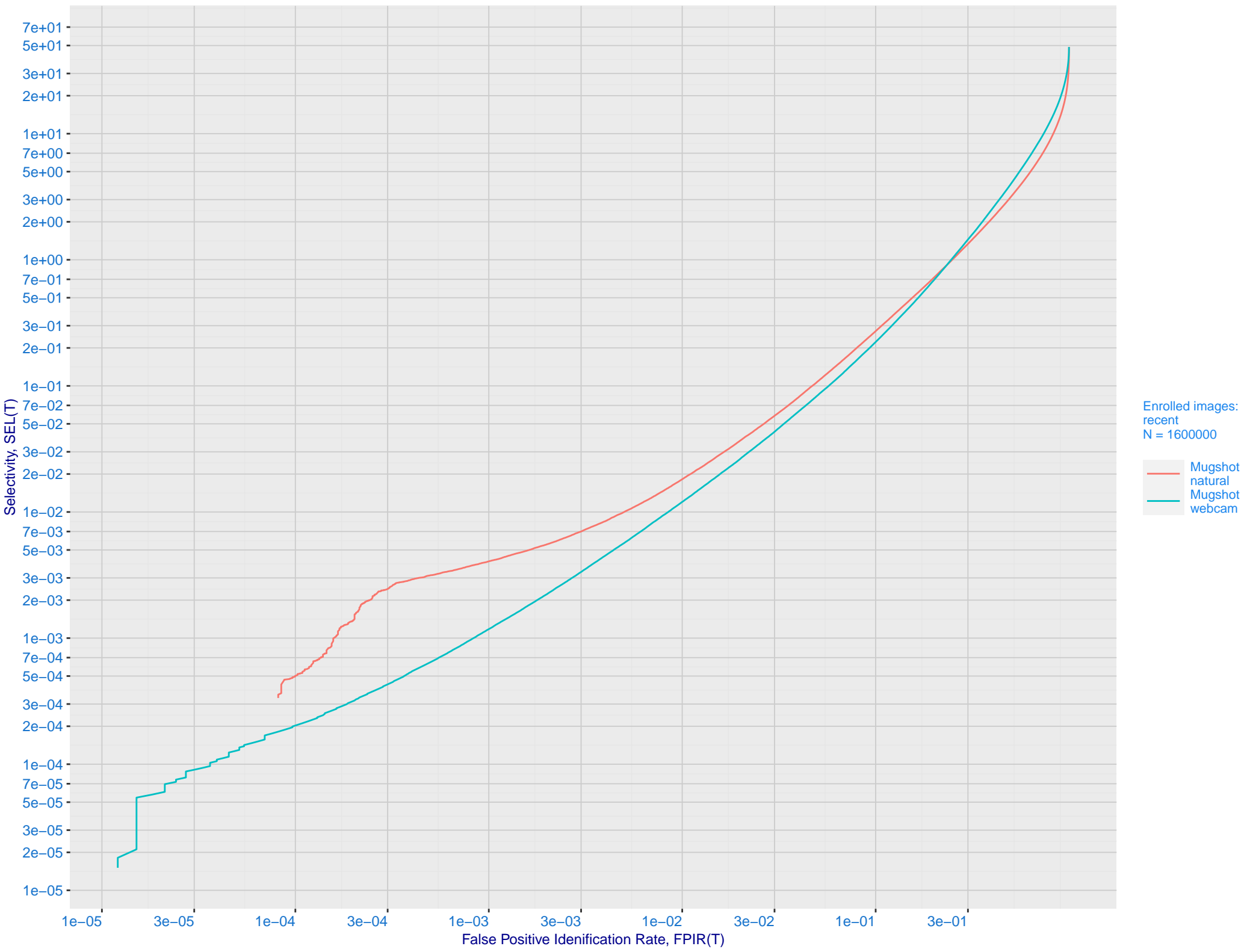D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals

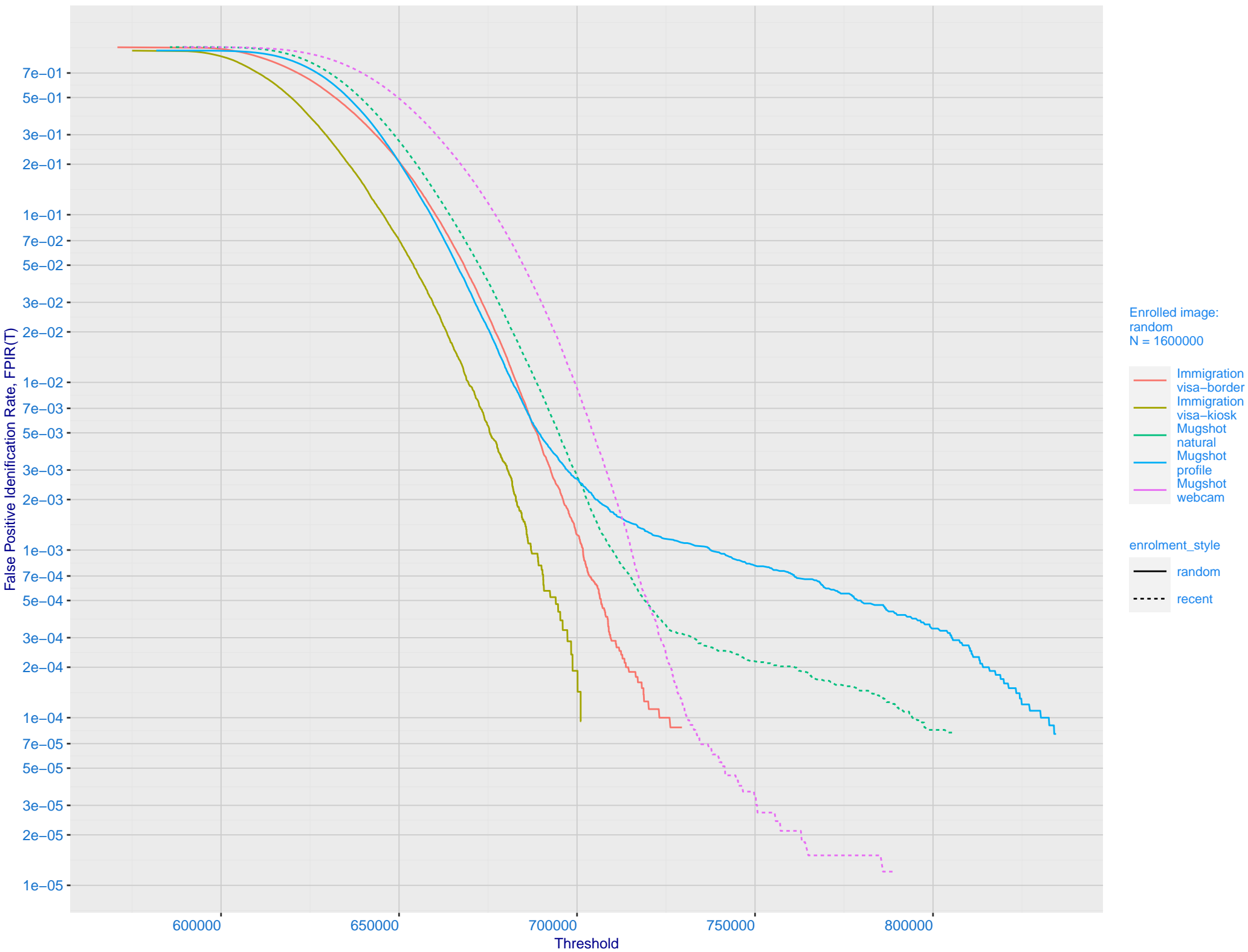E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images

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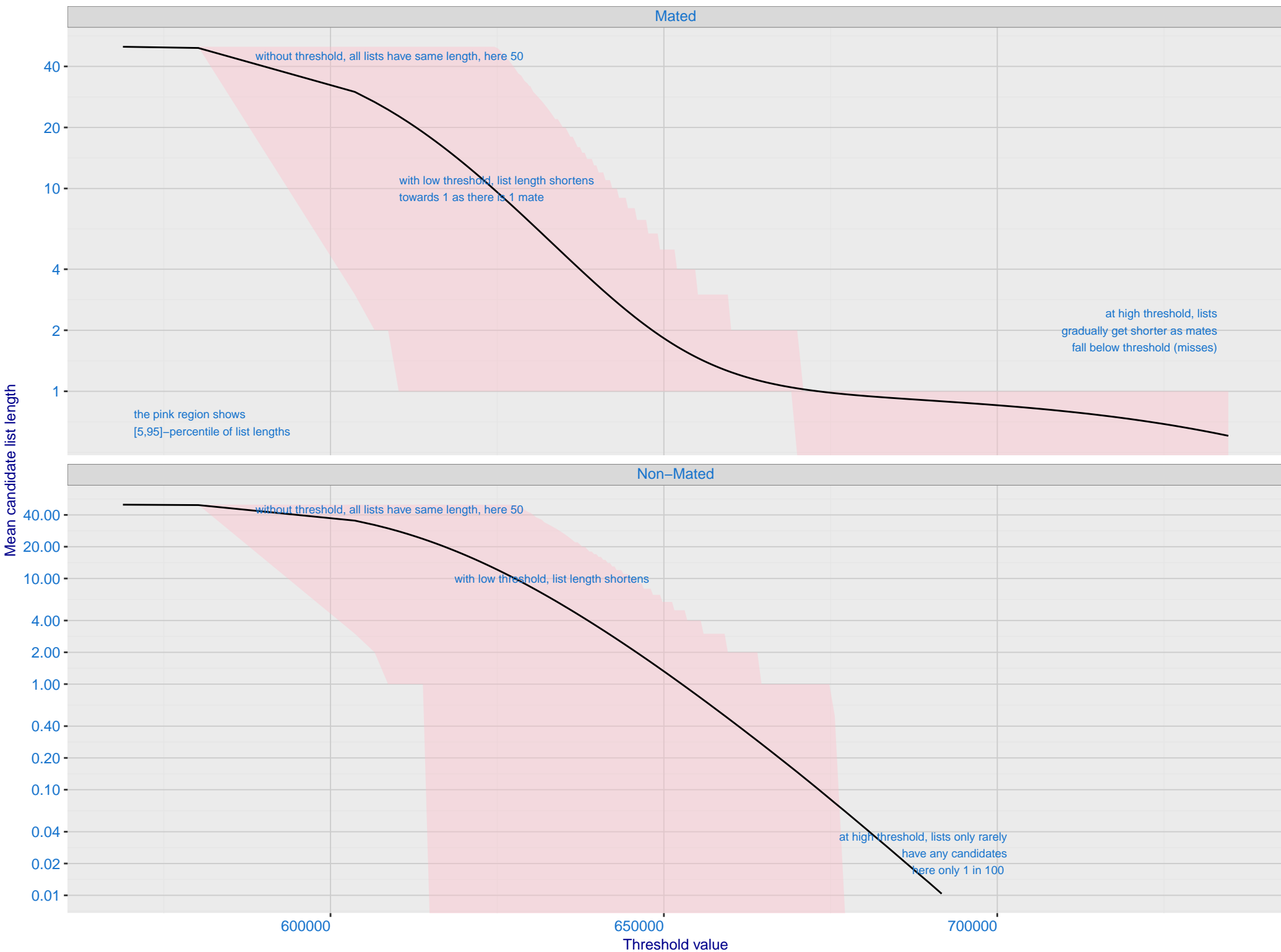
G: FPIR dependence on T by probe type for N = 1600000 subjects

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

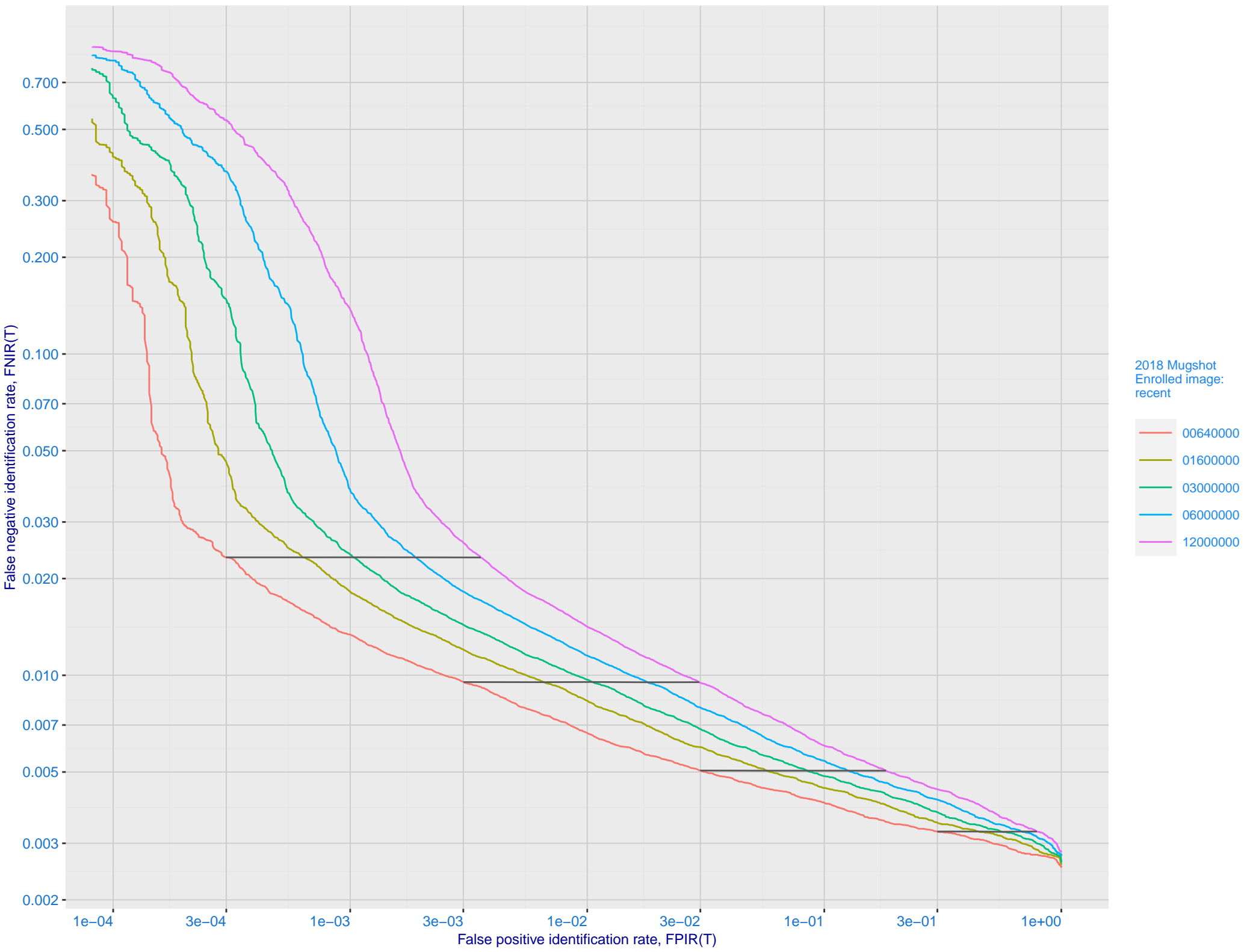Mean candidate list length

Threshold value
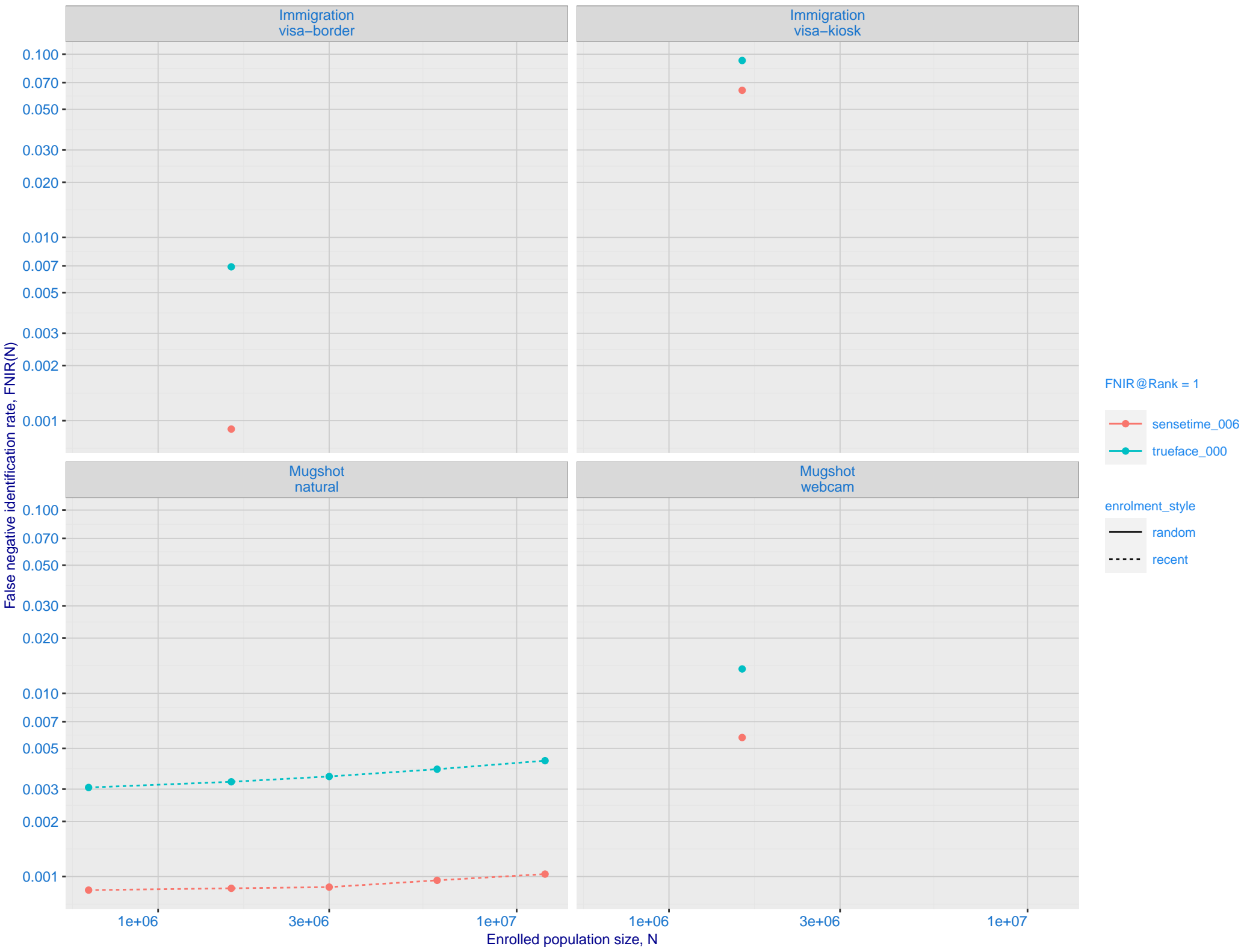
I: FNIR and FPIR dependence on threshold
Dataset is border–border with time–lapse [10,15] YRS with N = 1600000. Probes are 10–15 years later than enrollment image
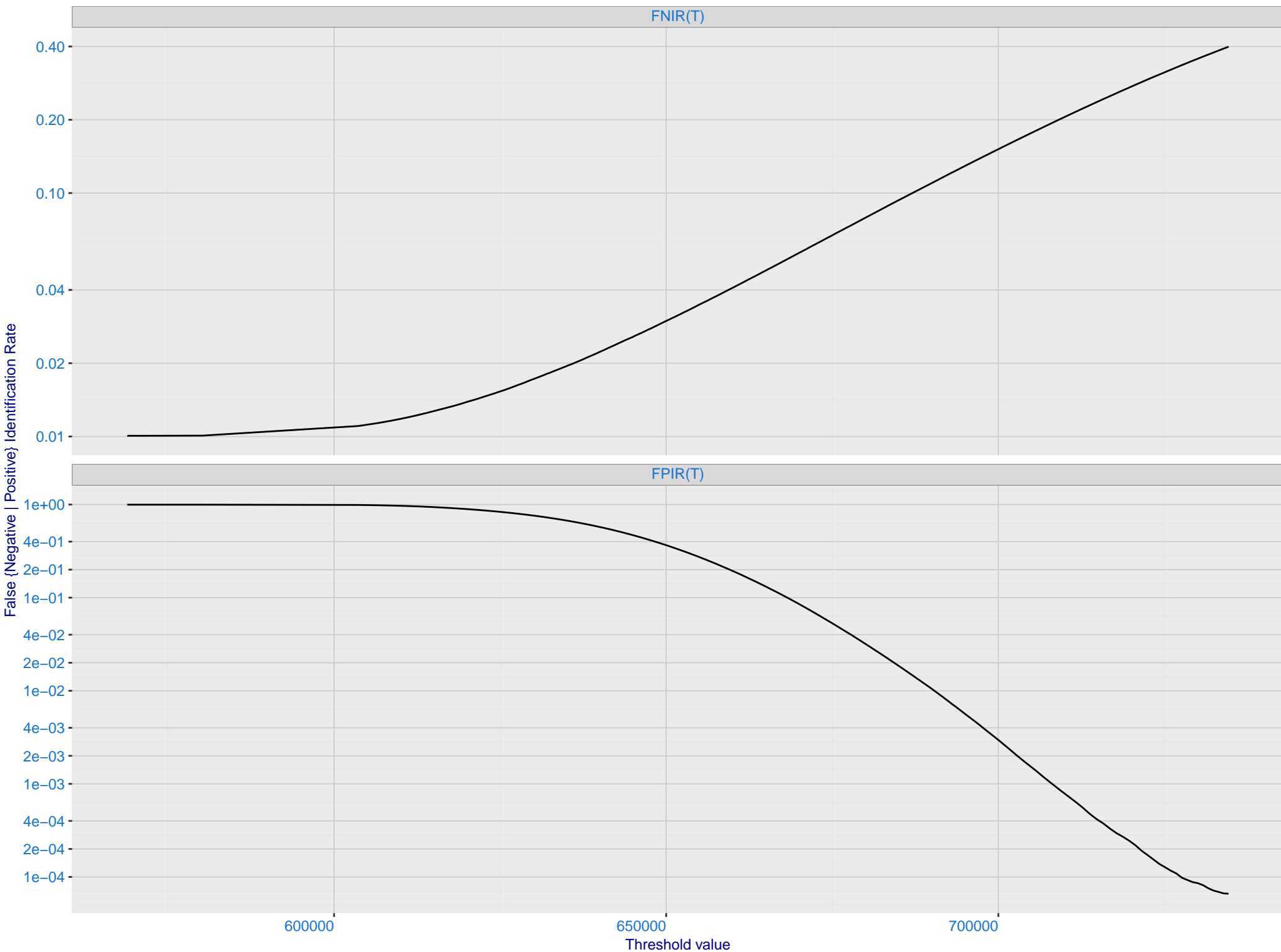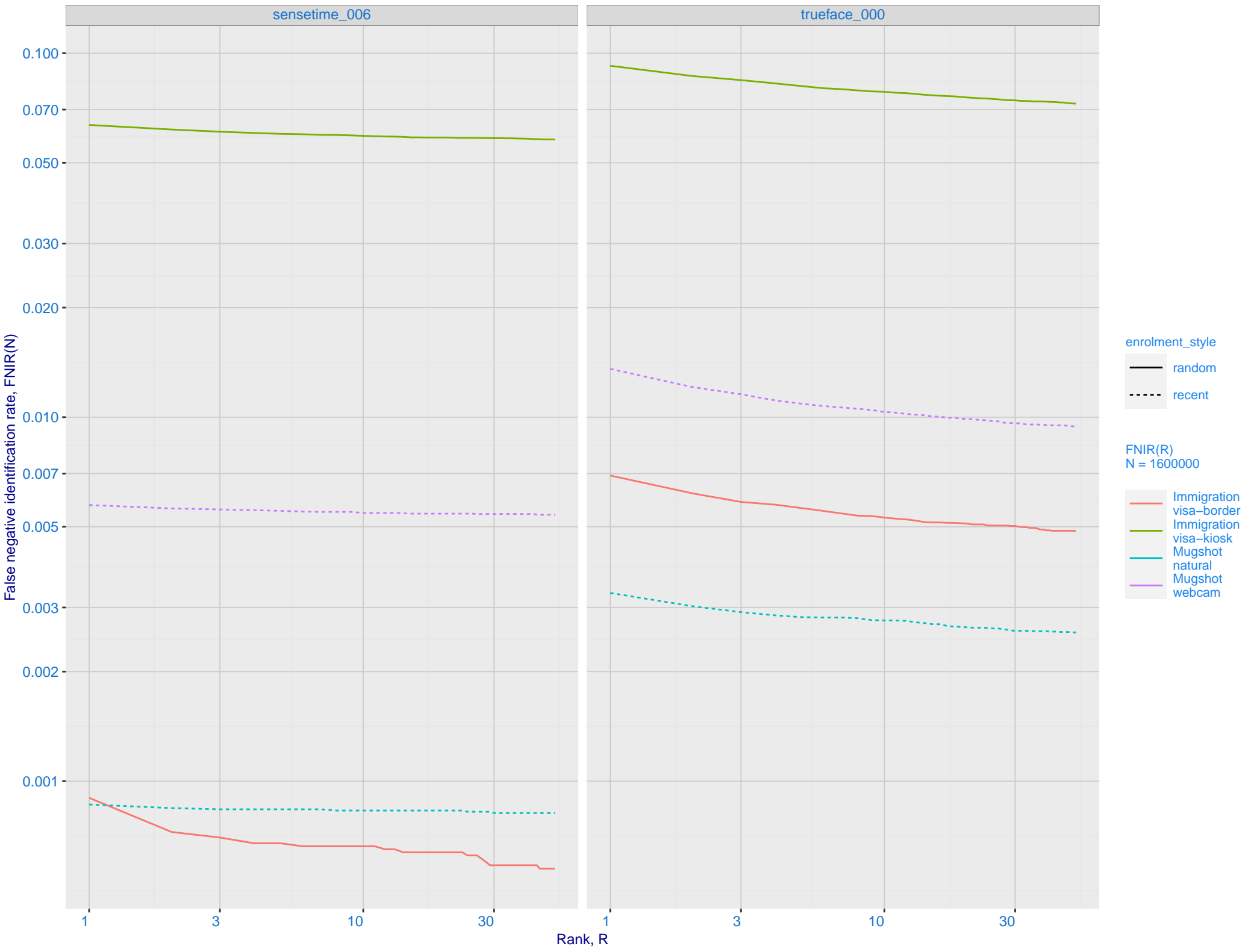
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.

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
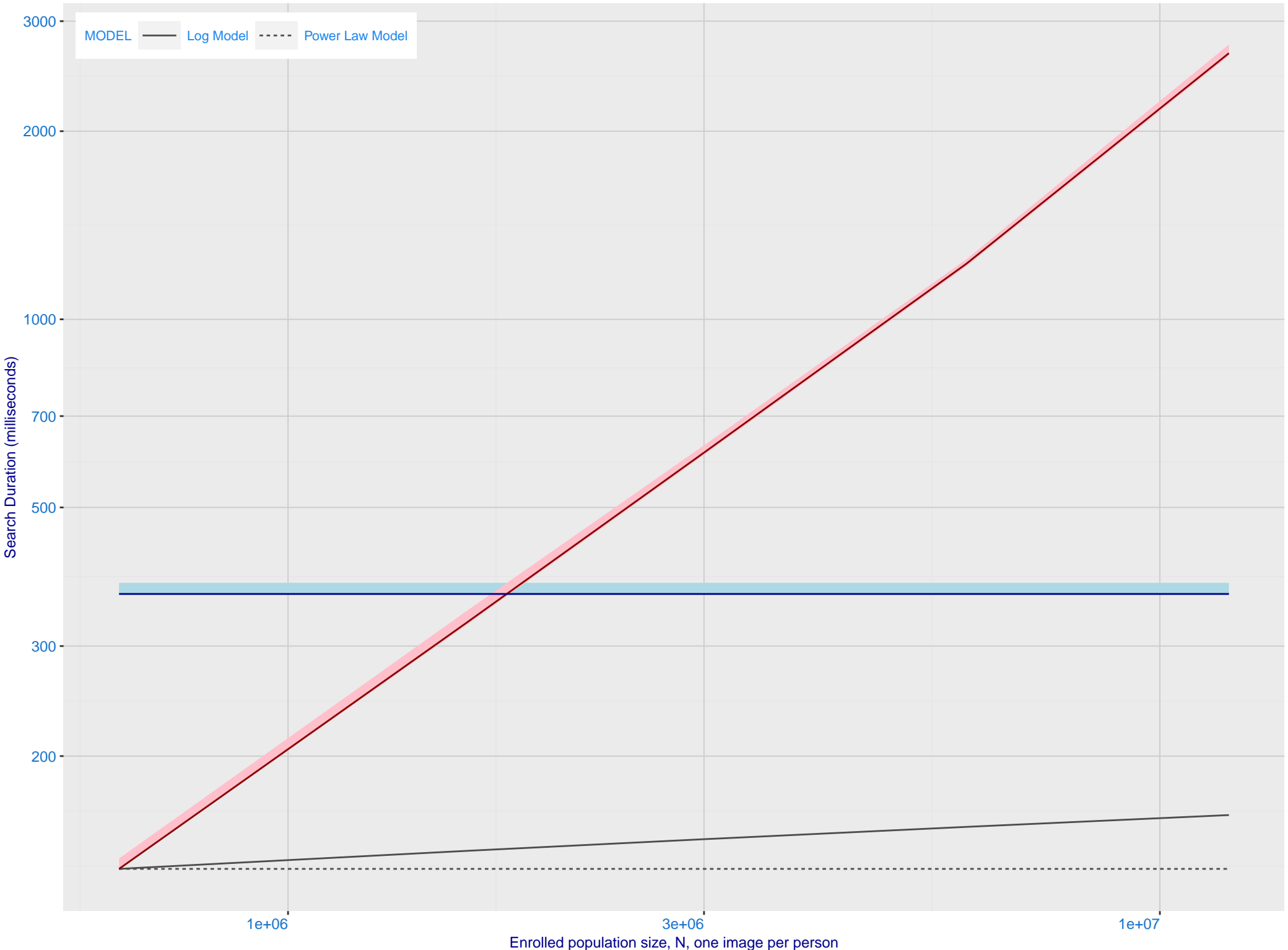
O: FNIR(T, N = 1.6 million) by sex, age and time–lapse. The top row gives investigational rank–1 miss rates. The bottom panels give high threshold for more lights–out identification with low FPIR.
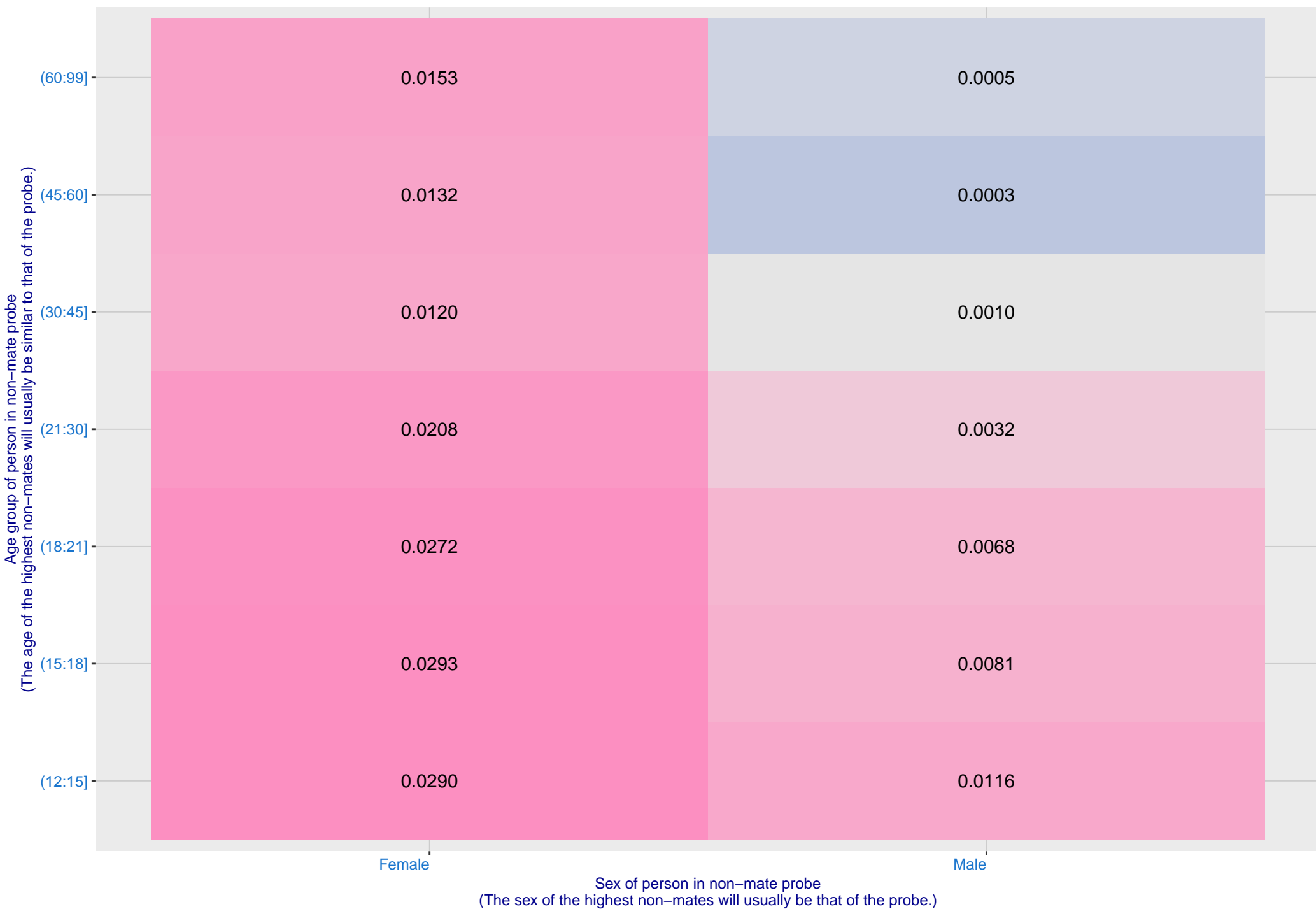
Algorithm: trueface_000, Dataset: Border–Crossing Ageing N = 1600000
Text encodes FNIR, Color encodes log(FNIR)
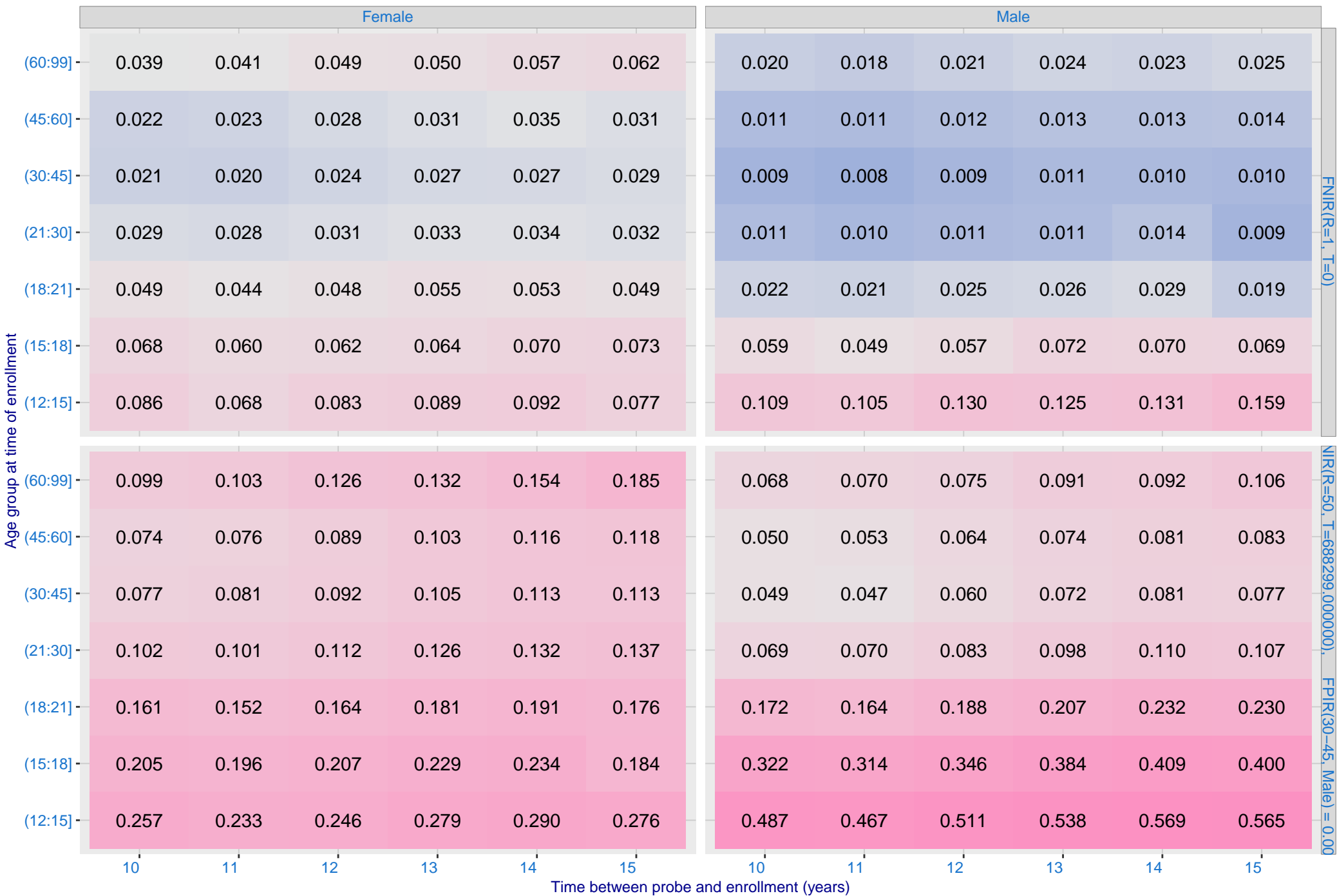
P: FPIR(N = 1.6 million) by sex and age. It is typical for false positive identification rates to be higher in women except in their teens.
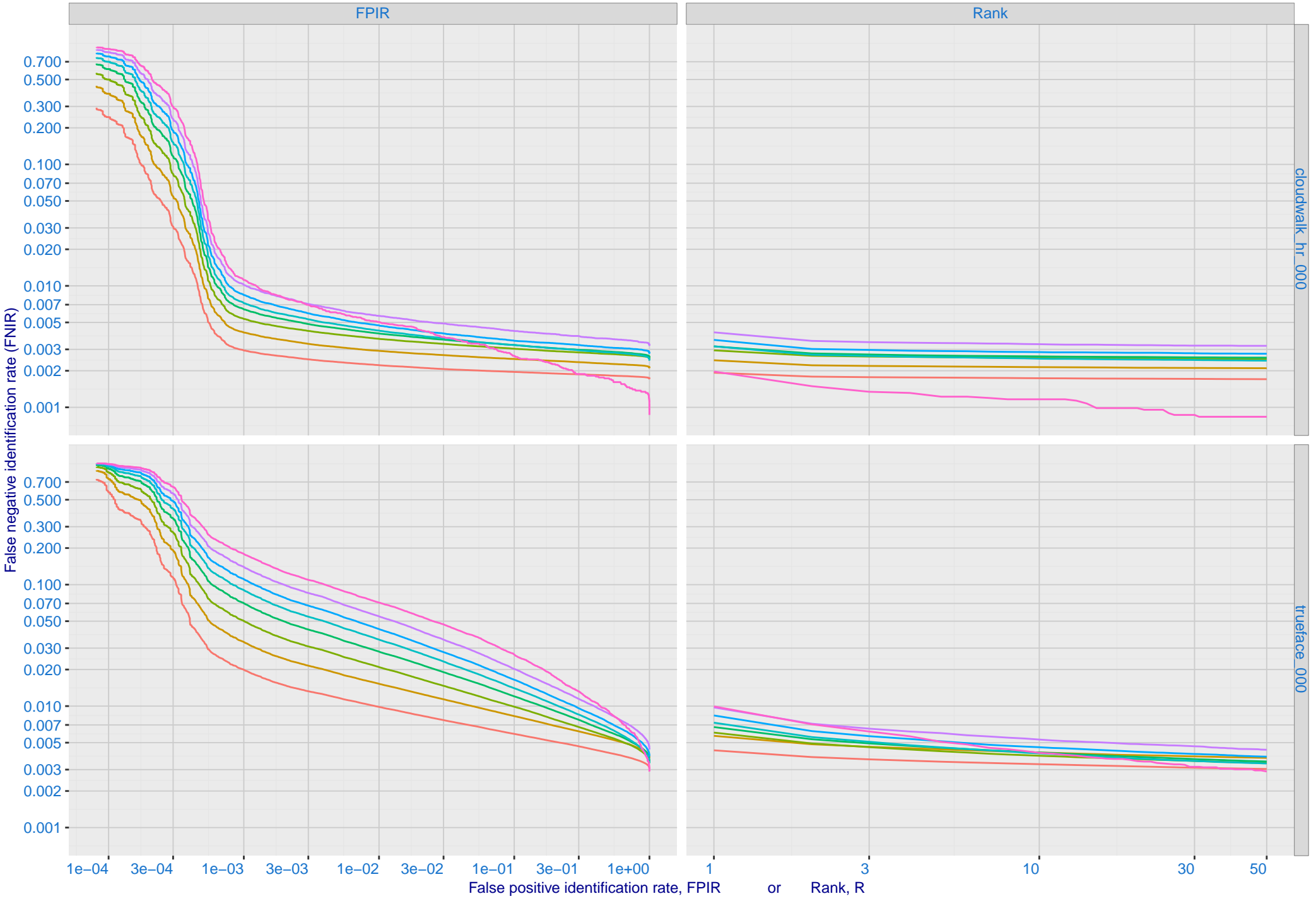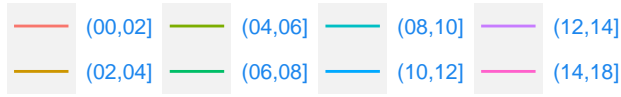
Q: Identification FNIR(N, T, L+1) and Investigational FNIR(N, 0, R) under ageing

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