A: Datasheet

Algorithm: nec_3

Developer: NEC

Submission Date: 2018_10_30

Template size: 1712 bytes

Template time (2.5 percentile): 660 msec

Template time (median): 665 msec

Template time (97.5 percentile): 1015 msec

Investigation:

Frontal mugshot ranking 11 (out of 271) –– FNIR(1600000, 0, 1) = 0.0014 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 19 (out of 232) –– FNIR(1600000, 0, 1) = 0.0099 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 35 (out of 201) –– FNIR(1600000, 0, 1) = 0.3523 vs. lowest 0.0591 from sensetime_005

Immigration visa–border ranking 24 (out of 160) –– FNIR(1600000, 0, 1) = 0.0037 vs. lowest 0.0013 from visionlabs_010

Immigration visa–kiosk ranking 47 (out of 157) –– FNIR(1600000, 0, 1) = 0.1204 vs. lowest 0.0568 from hr_000

Identification:

Frontal mugshot ranking 6 (out of 271) –– FNIR(1600000, T, L+1) = 0.0024, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004
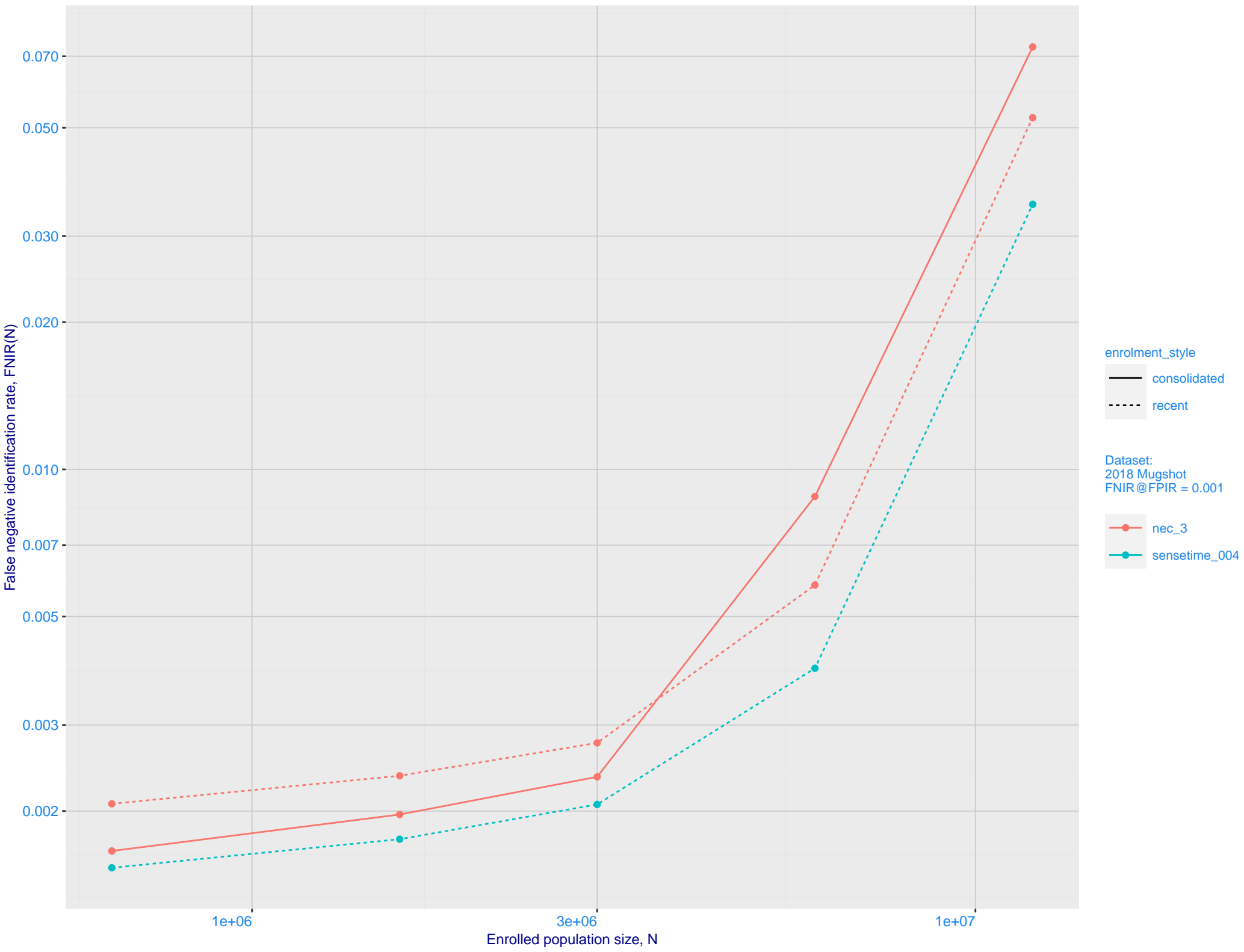
Mugshot webcam ranking 7 (out of 230) –– FNIR(1600000, T, L+1) = 0.0171, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 23 (out of 200) –– FNIR(1600000, T, L+1) = 0.8242, FPIR=0.001000 vs. lowest 0.1331 from hr_000
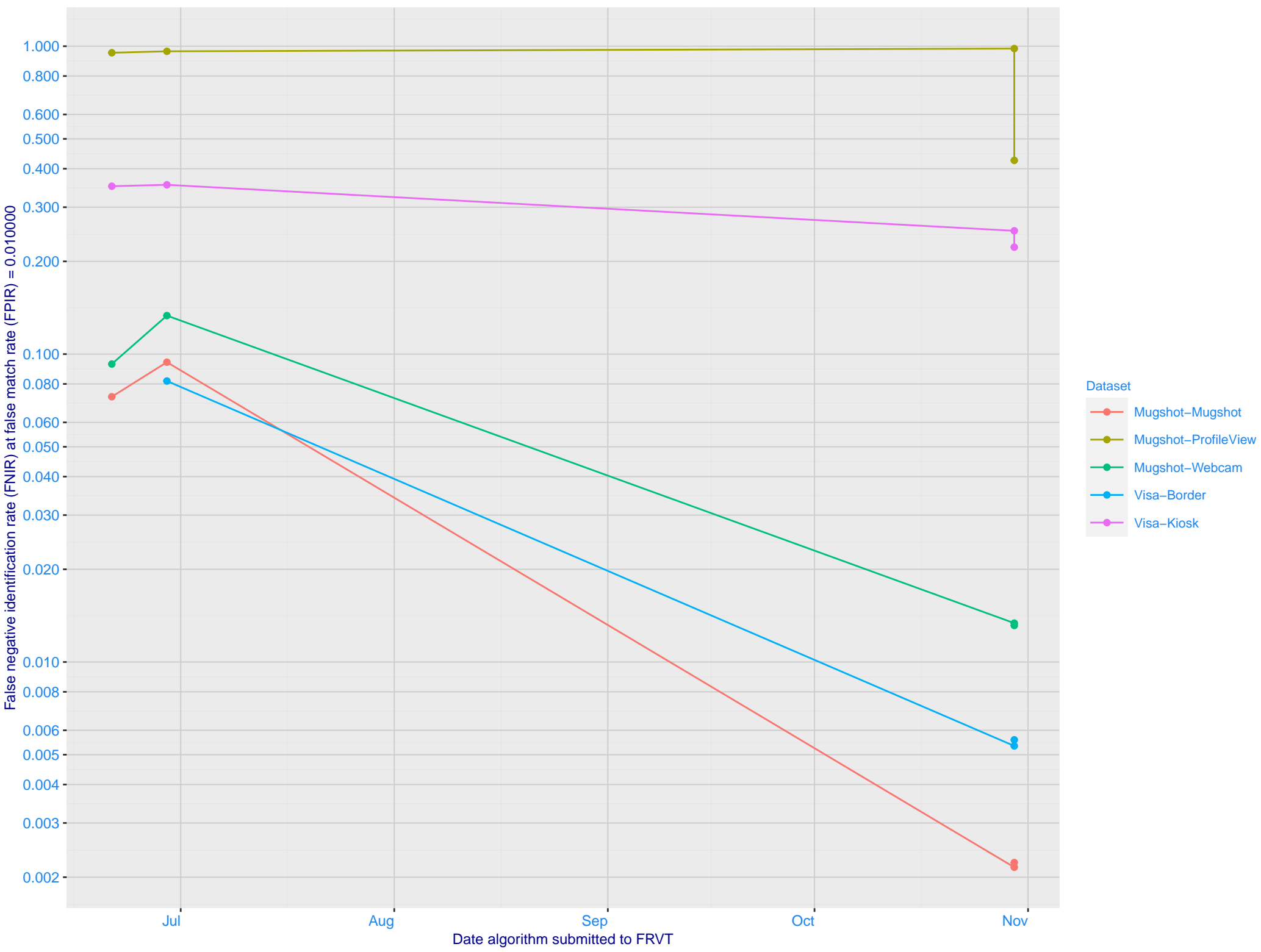
Immigration visa–border ranking 10 (out of 159) –– FNIR(1600000, T, L+1) = 0.0081, FPIR=0.001000 vs. lowest 0.0047 from idemia_008

Immigration visa–kiosk ranking 84 (out of 154) –– FNIR(1600000, T, L+1) = 0.6749, FPIR=0.001000 vs. lowest 0.0996 from hr_000
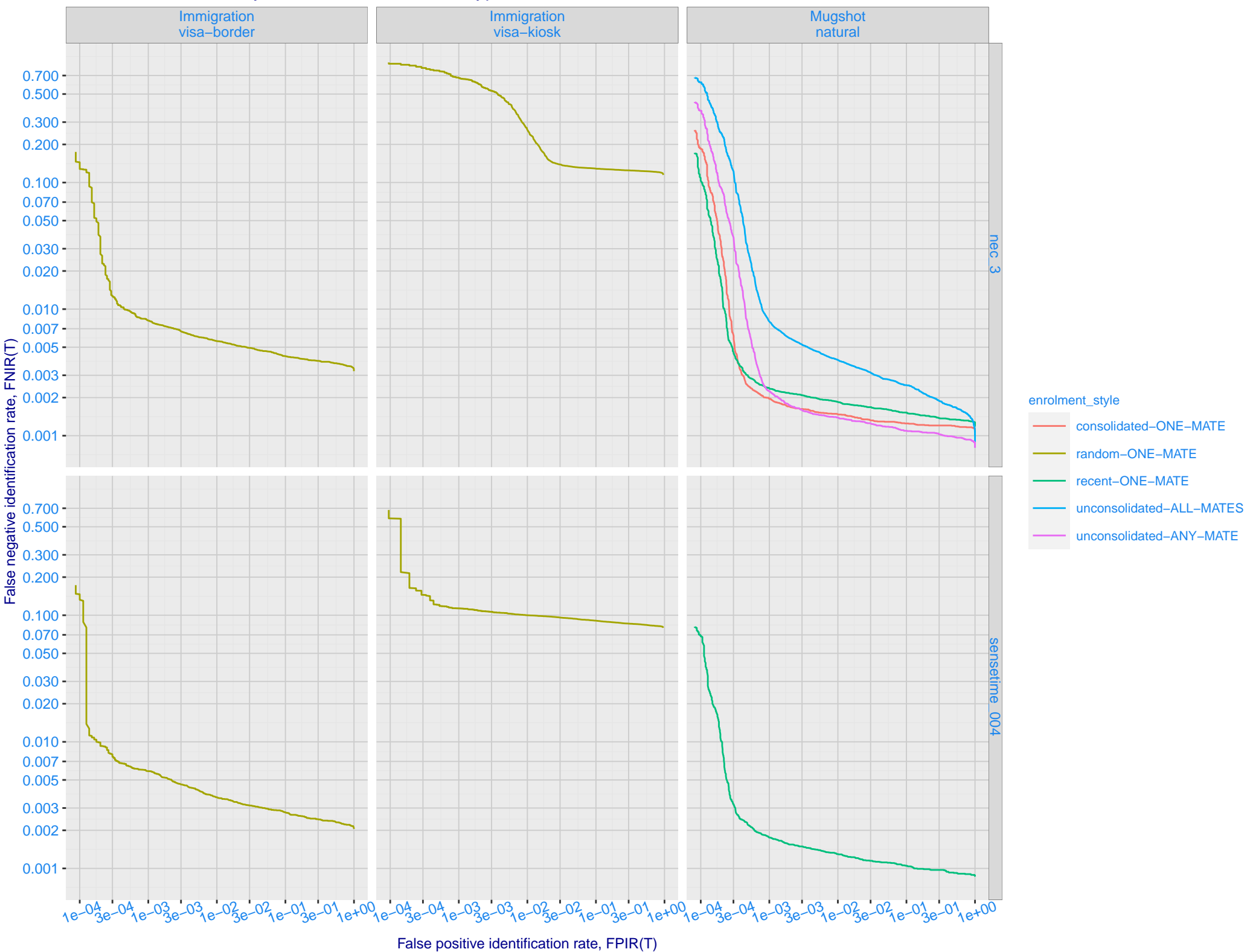
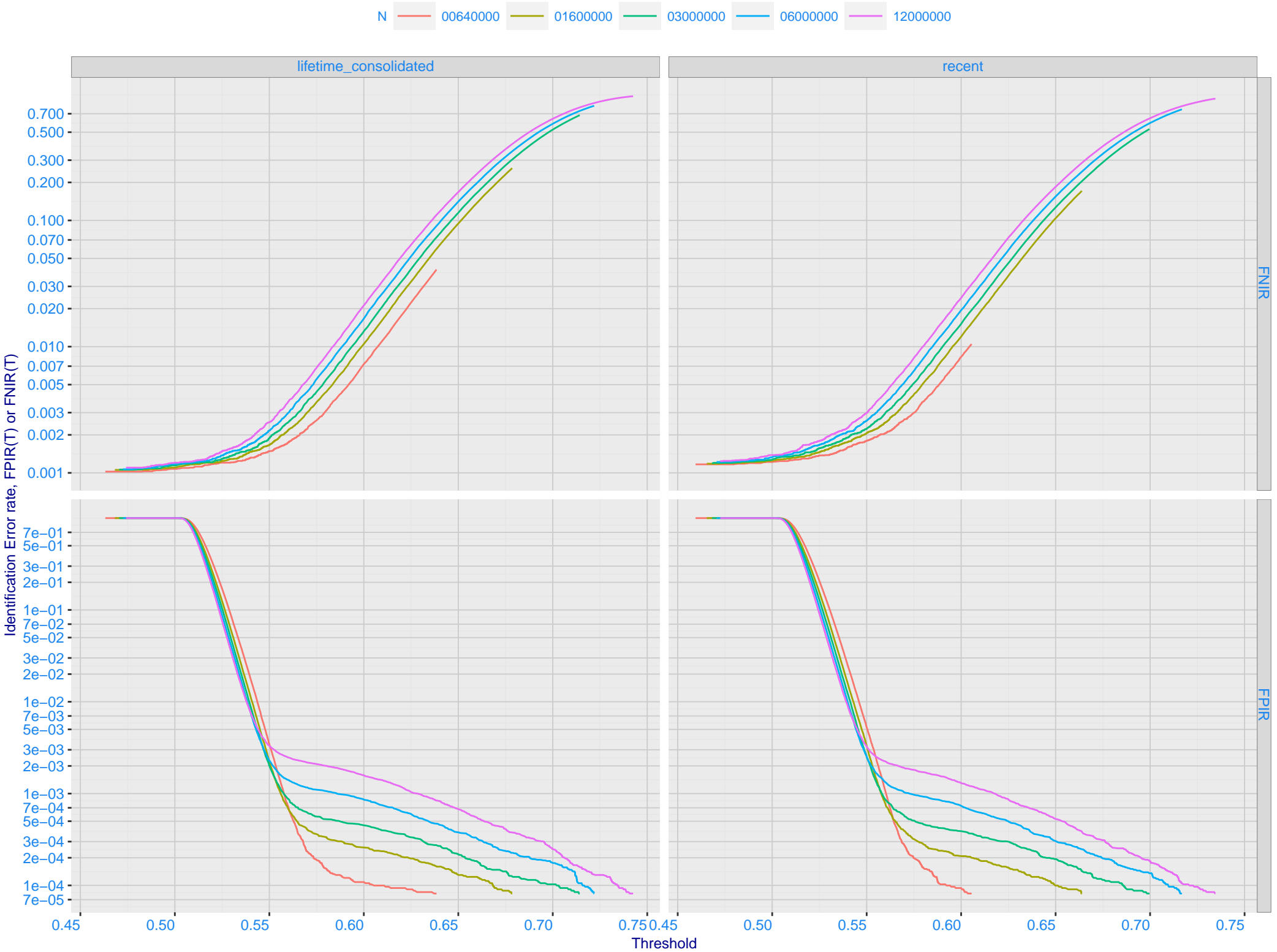B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (sensetime_004)

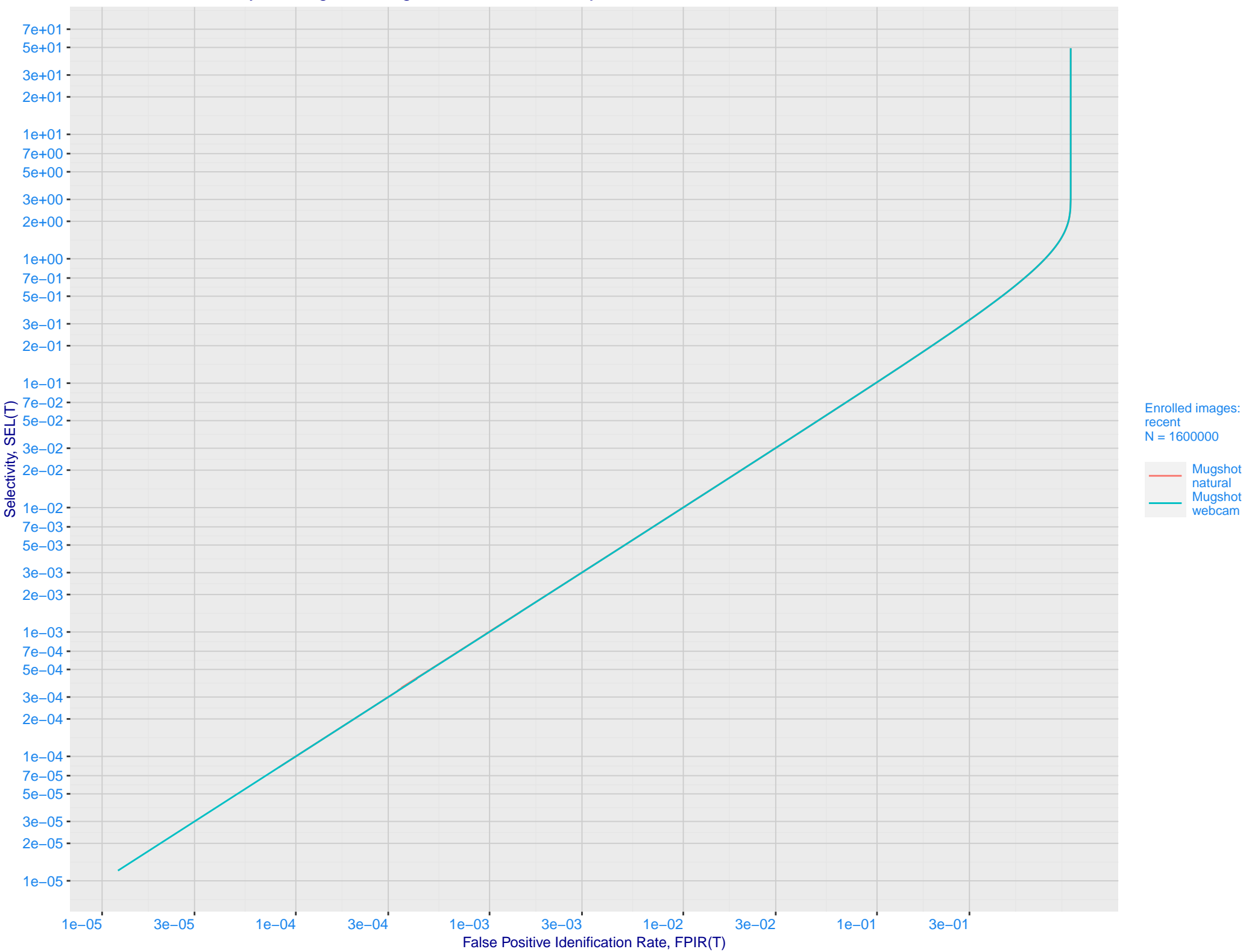**C: Evolution of accuracy for NEC algorithms on three datasets 2018 – present**

Date algorithm submitted to FRVT (x-axis)

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

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

D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals
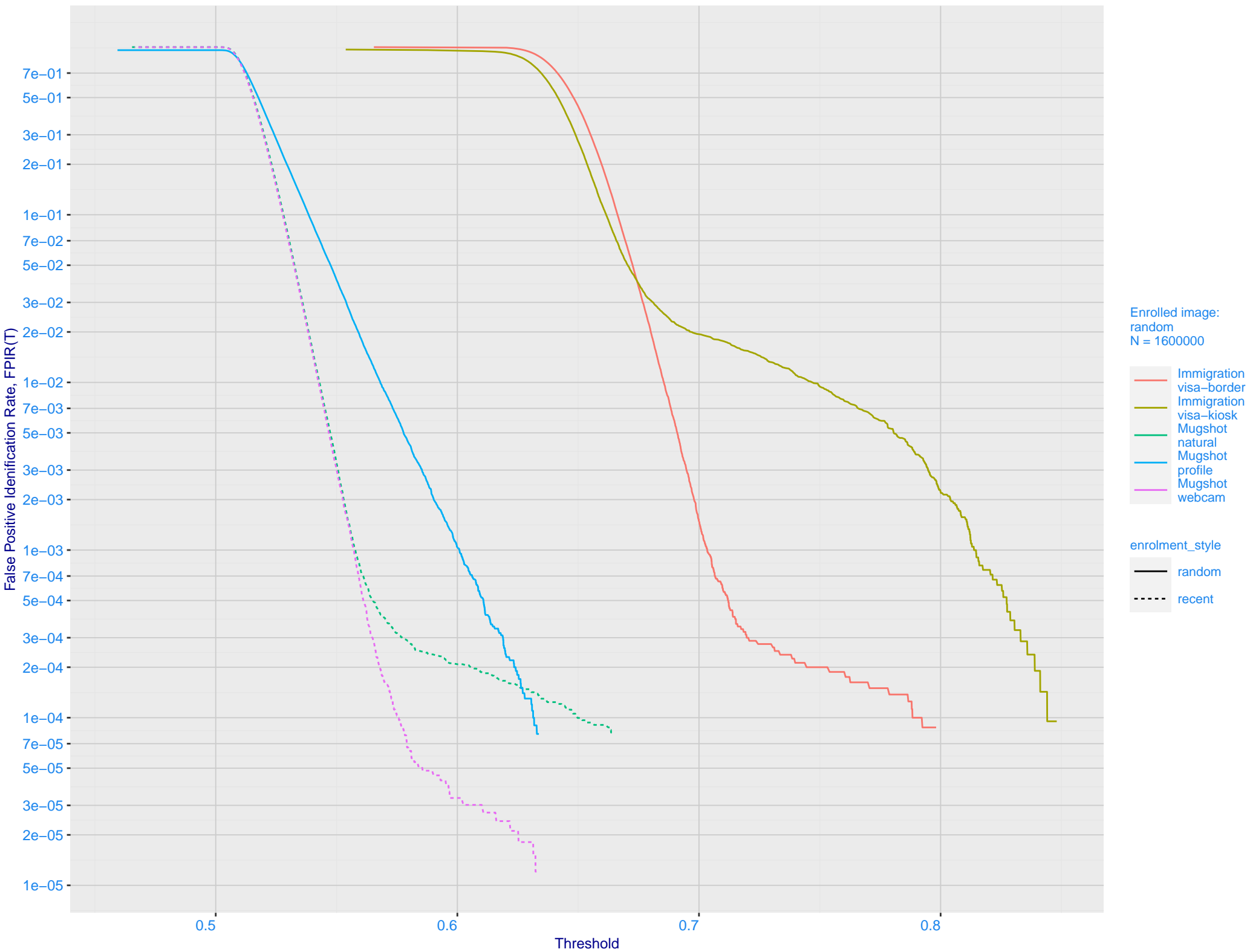
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images
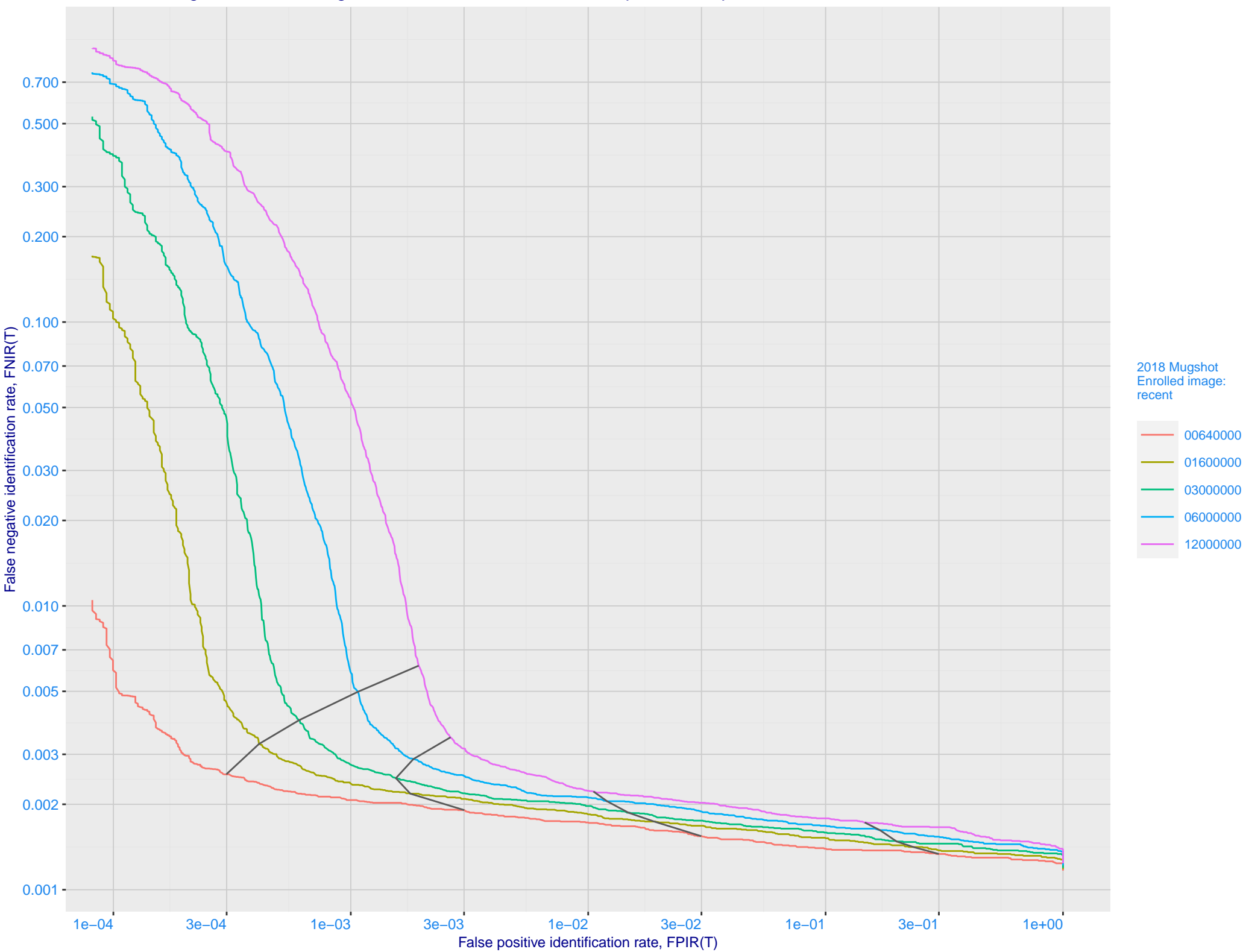
F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate

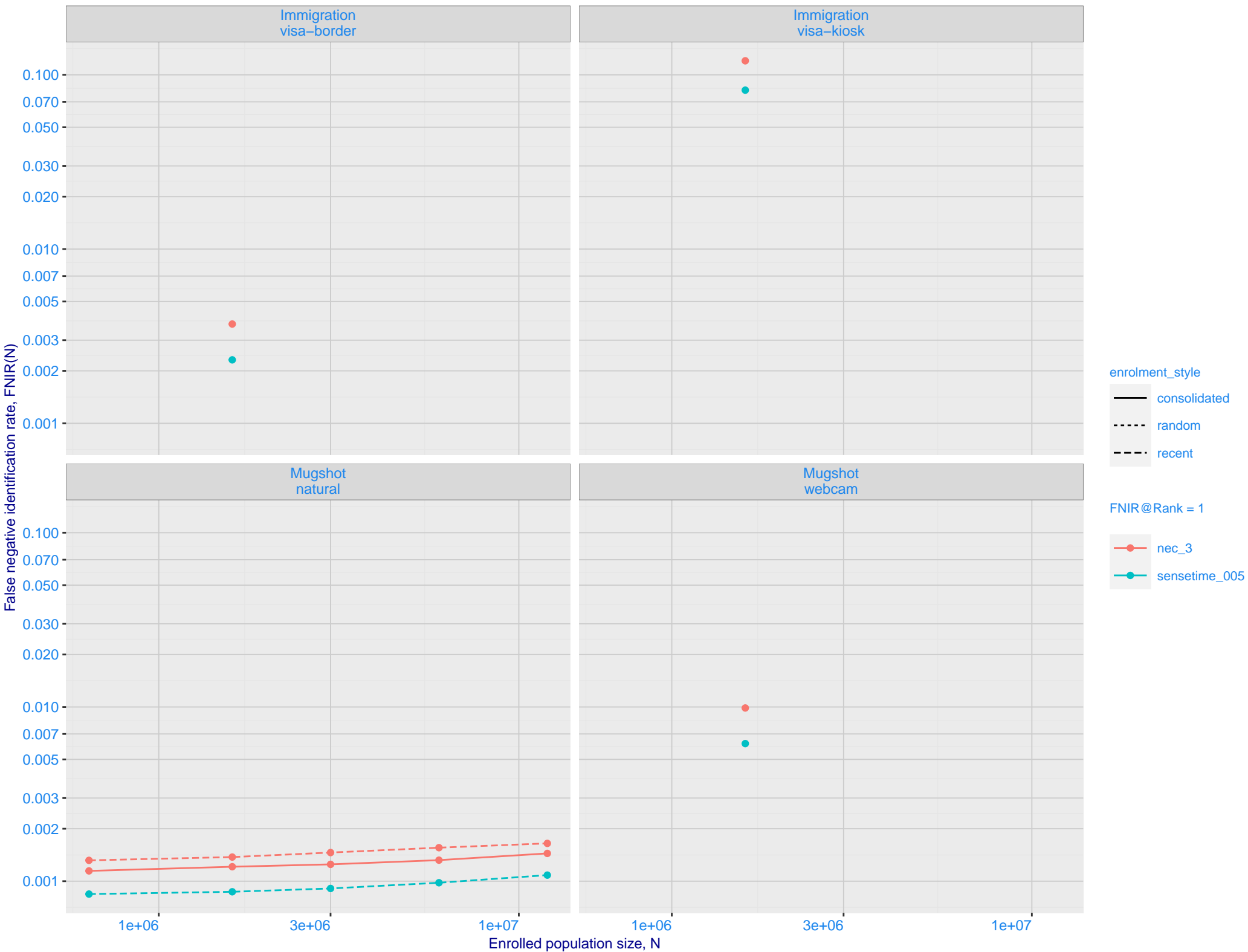G: FPIR dependence on T by probe type for N = 1600000 subjects

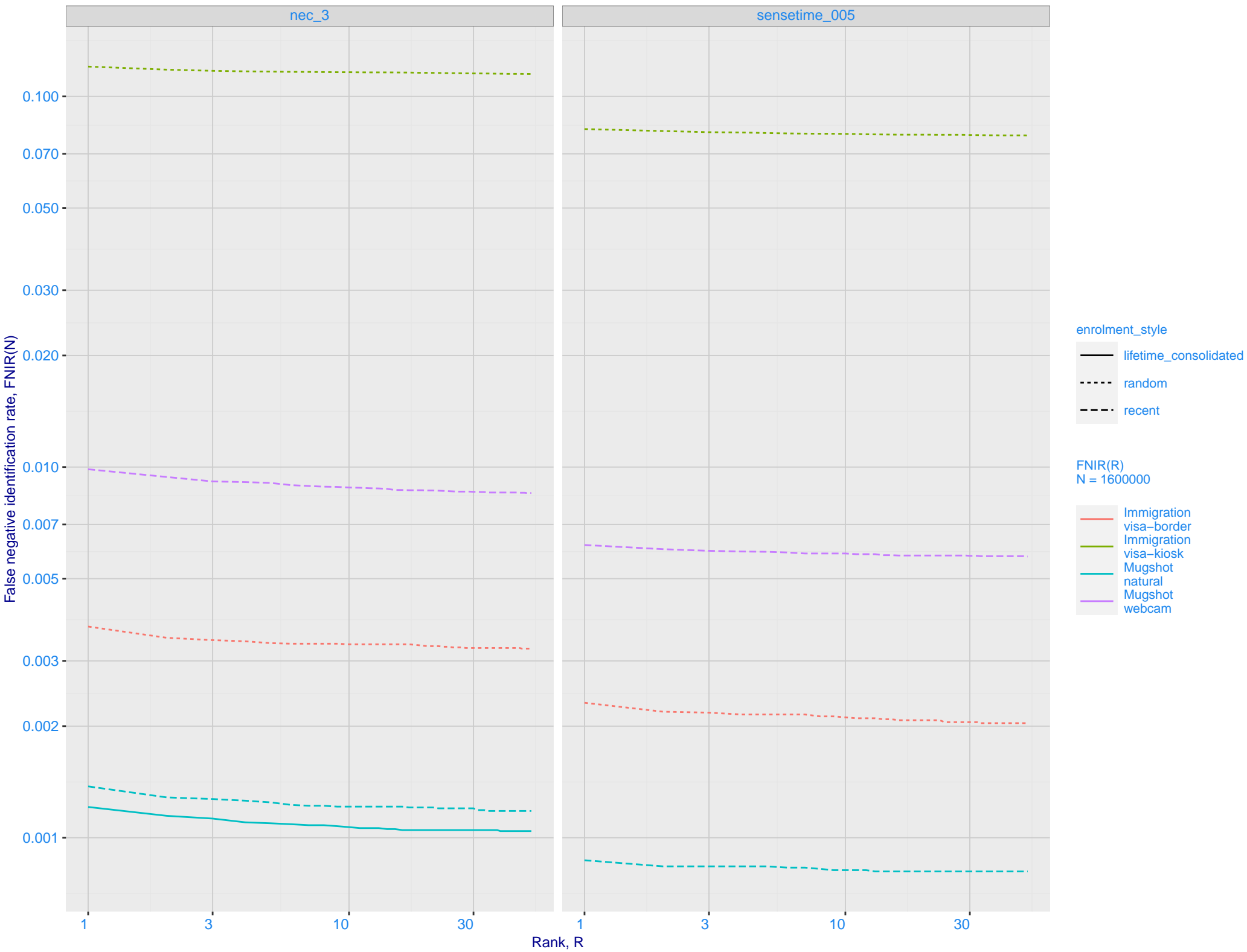H: DET for Mugshot natural images and various N. Links connect points of equal threshold.
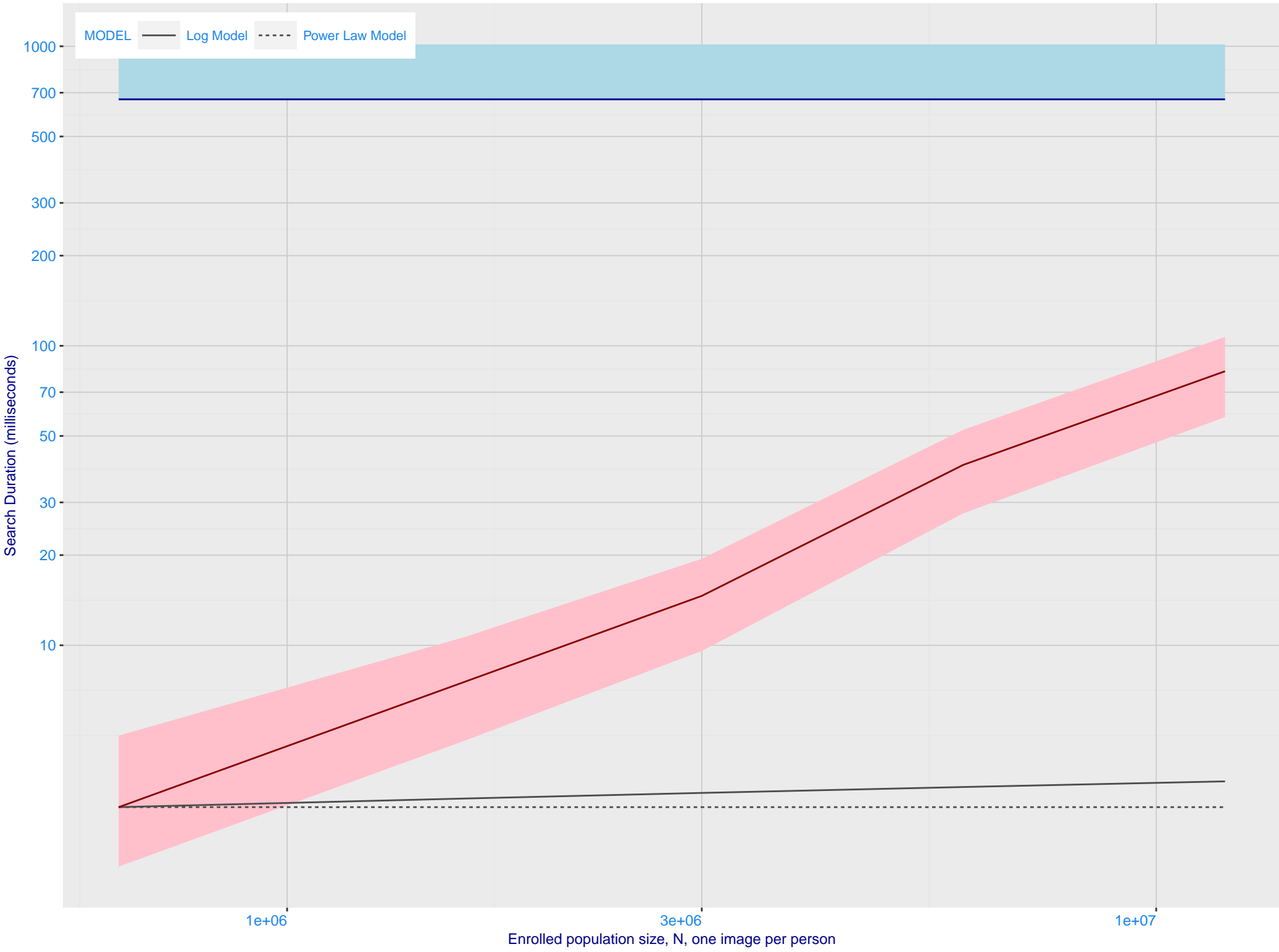
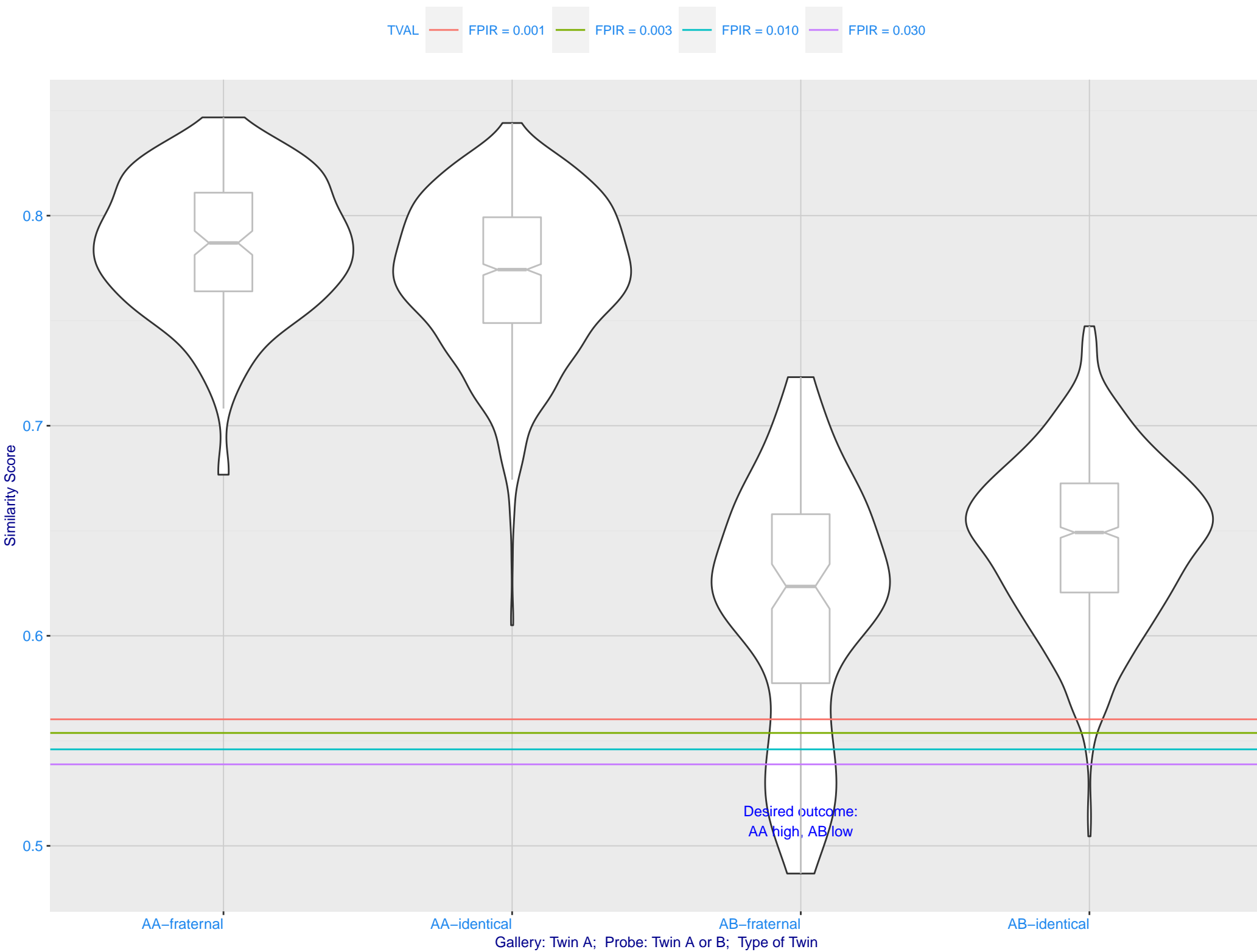I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005)

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

K: 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
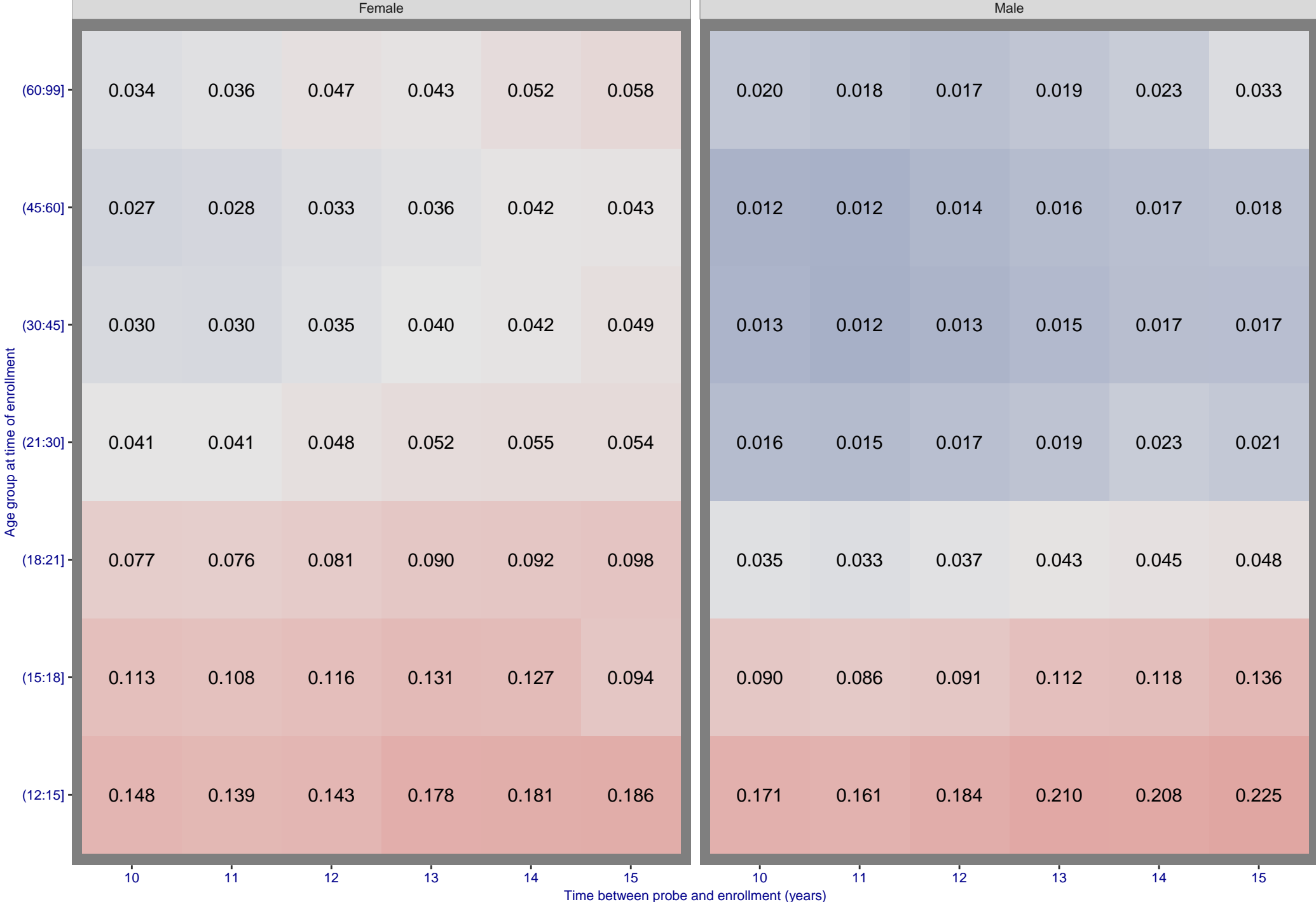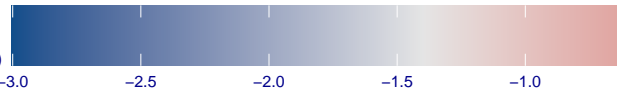
L: Solo−Twin and Twin−Twin similarity scores

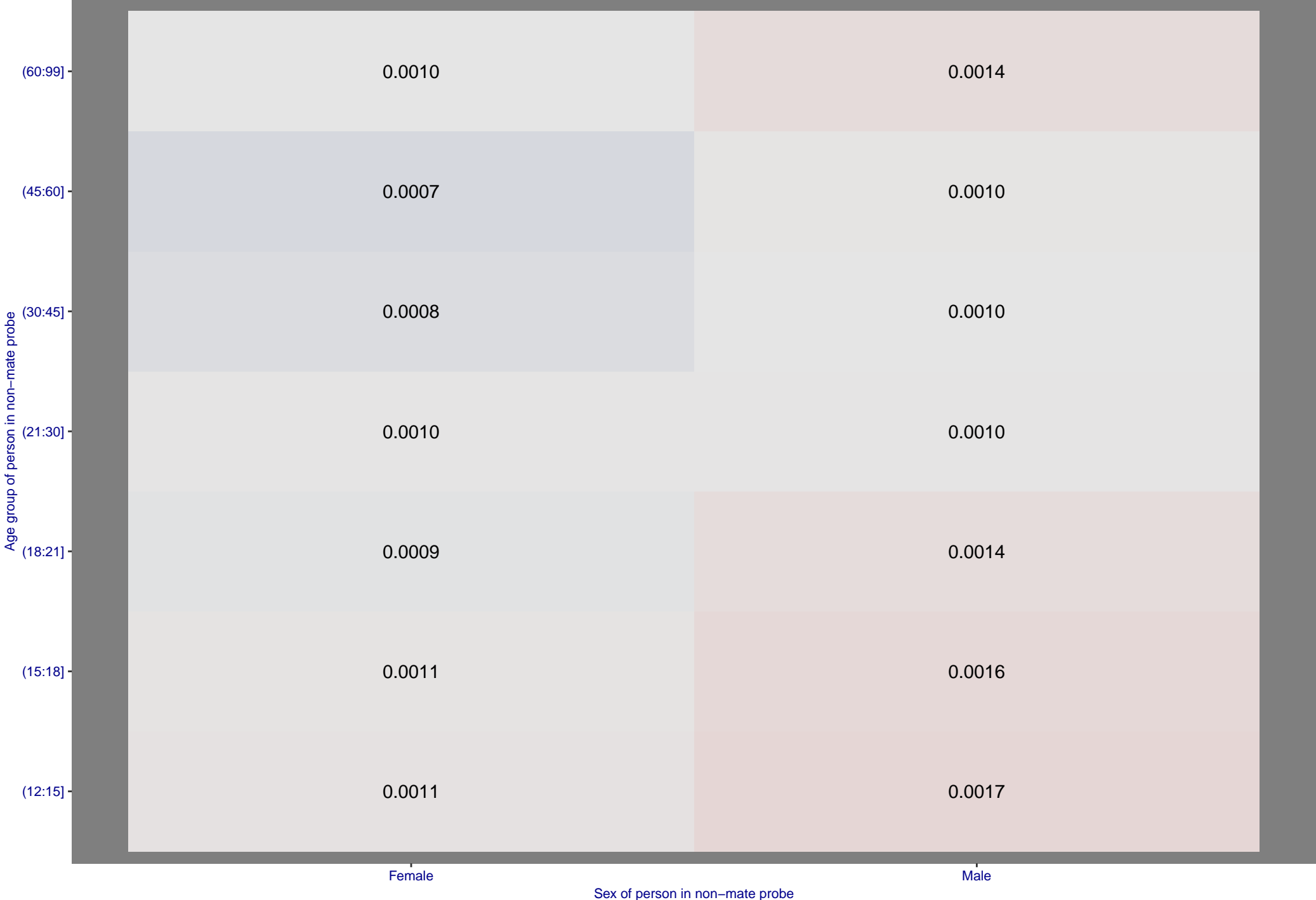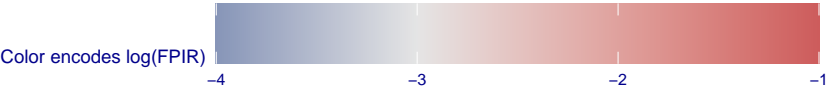# M-A: FNIR(T, N = 1.6 million) by sex, age and time-lapse

Algorithm: nec_3, Dataset: Border-Crossing Ageing
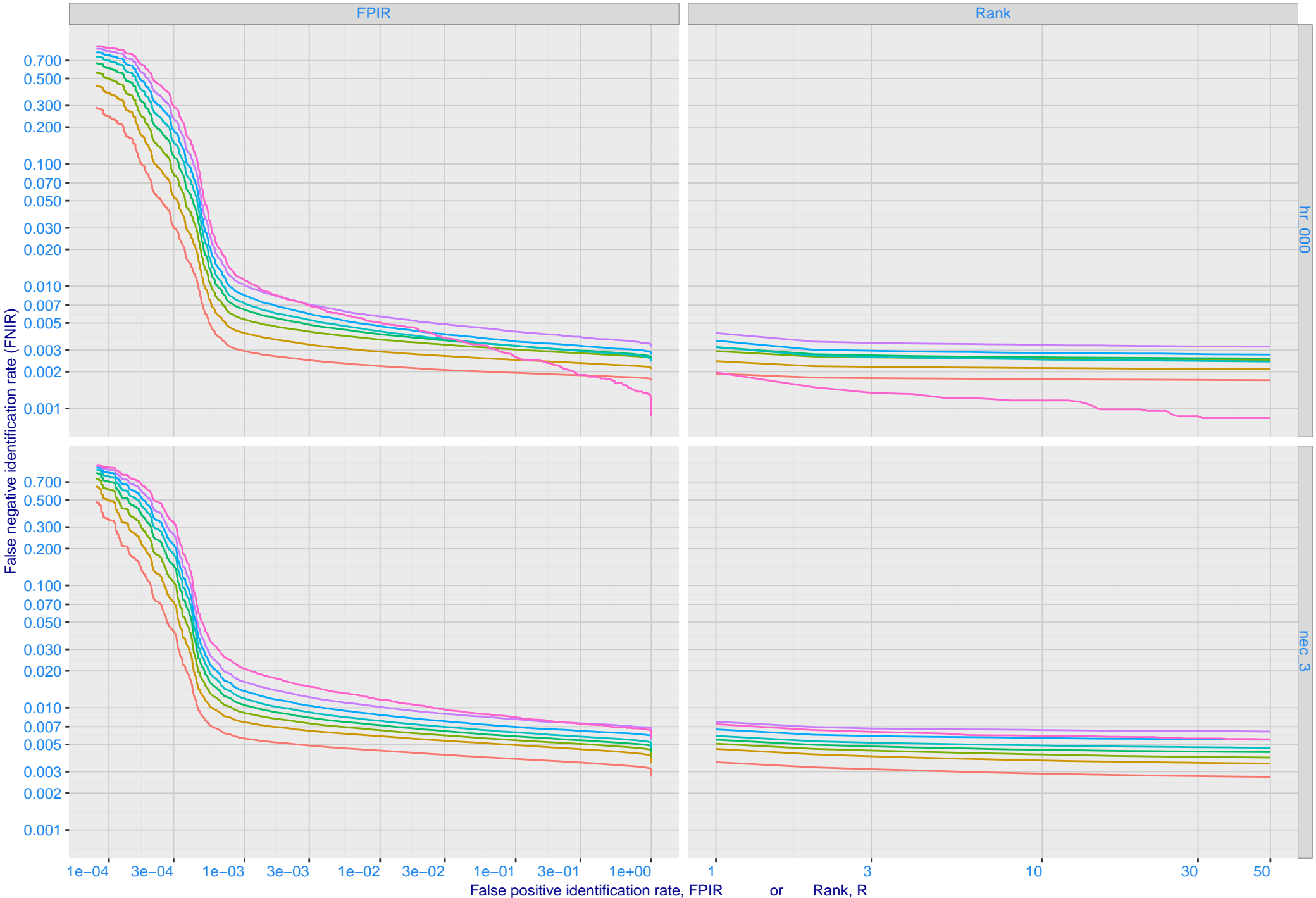Threshold: 0.558012 set to achieve FPIR(30-45, Male) = 0.001

Color encodes log(FNIR)

M–B: FPIR(T, N = 1.6 million) by sex and age

Algorithm: nec_3, Dataset: Border–Crossing Ageing
Threshold: 0.558012 set to achive FPIR(30–45, Male) = 0.001

Color encodes log(FPIR)

	Female	Male
(60:99]	0.0010	0.0014
(45:60]	0.0007	0.0010
(30:45]	0.0008	0.0010
(21:30]	0.0010	0.0010
(18:21]	0.0009	0.0014
(15:18]	0.0011	0.0016
(12:15]	0.0011	0.0017

Age group of person in non–mate probe

Sex of person in non–mate probe

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

O: Decline of genuine scores with ageing