A: Datasheet

Algorithm: imagus_005

Developer: Imagus Technology Pty Ltd

Submission Date: 2021_01_15

Template size: 2048 bytes

Template time (2.5 percentile): 782 msec

Template time (median): 787 msec

Template time (97.5 percentile): 796 msec

Investigation:

Frontal mugshot ranking 29 (out of 271) –– FNIR(1600000, 0, 1) = 0.0019 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 27 (out of 232) –– FNIR(1600000, 0, 1) = 0.0119 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 28 (out of 201) –– FNIR(1600000, 0, 1) = 0.3189 vs. lowest 0.0591 from sensetime_005

Immigration visa–border ranking 43 (out of 160) –– FNIR(1600000, 0, 1) = 0.0059 vs. lowest 0.0013 from visionlabs_010

Immigration visa–kiosk ranking 55 (out of 157) –– FNIR(1600000, 0, 1) = 0.1317 vs. lowest 0.0568 from hr_000

Identification:

Frontal mugshot ranking 37 (out of 271) –– FNIR(1600000, T, L+1) = 0.0185, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 38 (out of 230) –– FNIR(1600000, T, L+1) = 0.0656, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 26 (out of 200) –– FNIR(1600000, T, L+1) = 0.8378, FPIR=0.001000 vs. lowest 0.1331 from hr_000

Immigration visa–border ranking 26 (out of 159) –– FNIR(1600000, T, L+1) = 0.0286, FPIR=0.001000 vs. lowest 0.0047 from idemia_008

Immigration visa–kiosk ranking 26 (out of 154) –– FNIR(1600000, T, L+1) = 0.2313, FPIR=0.001000 vs. lowest 0.0996 from hr_000
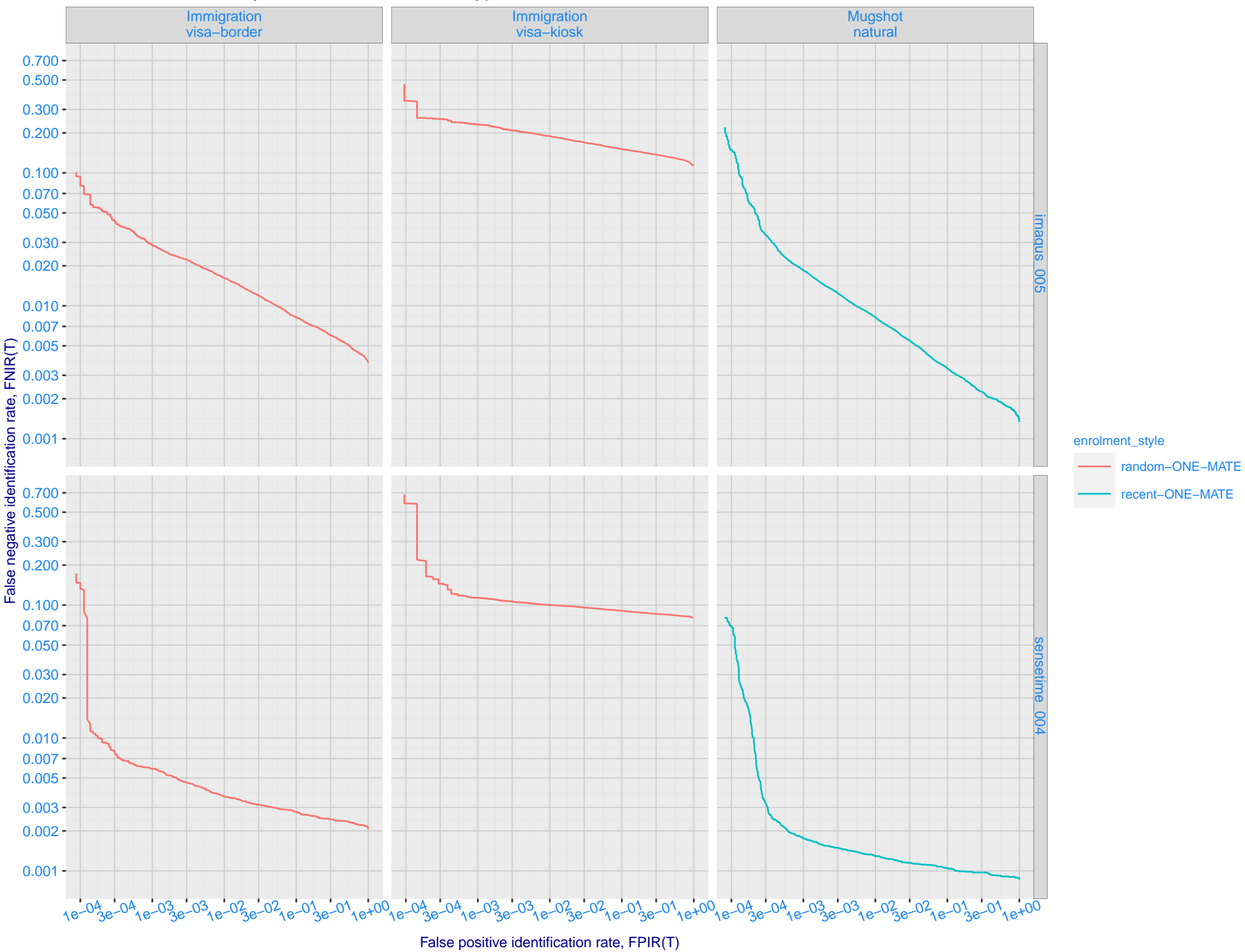
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (sensetime_004)
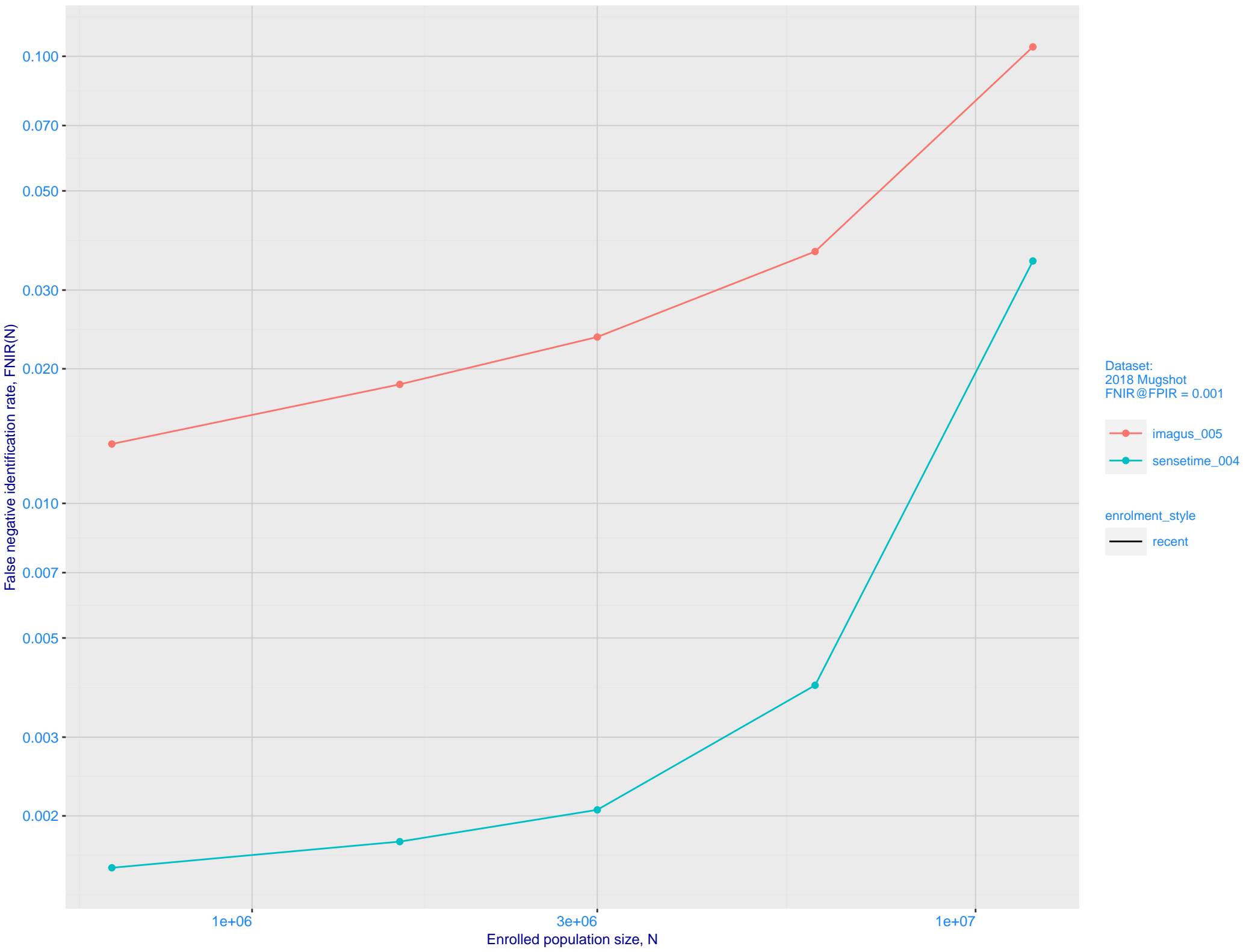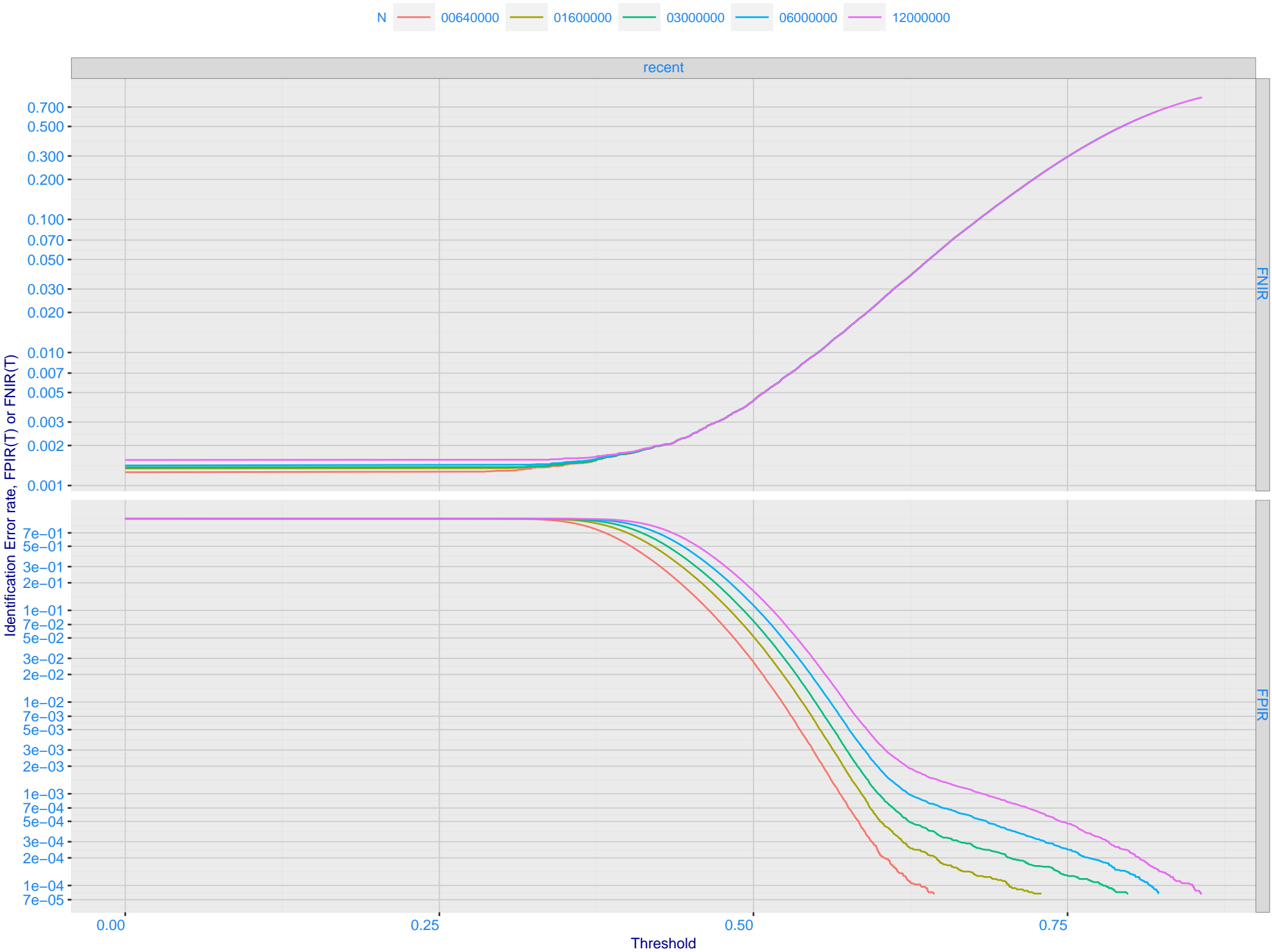
C: Evolution of accuracy for IMAGUS algorithms on three datasets 2018 – present
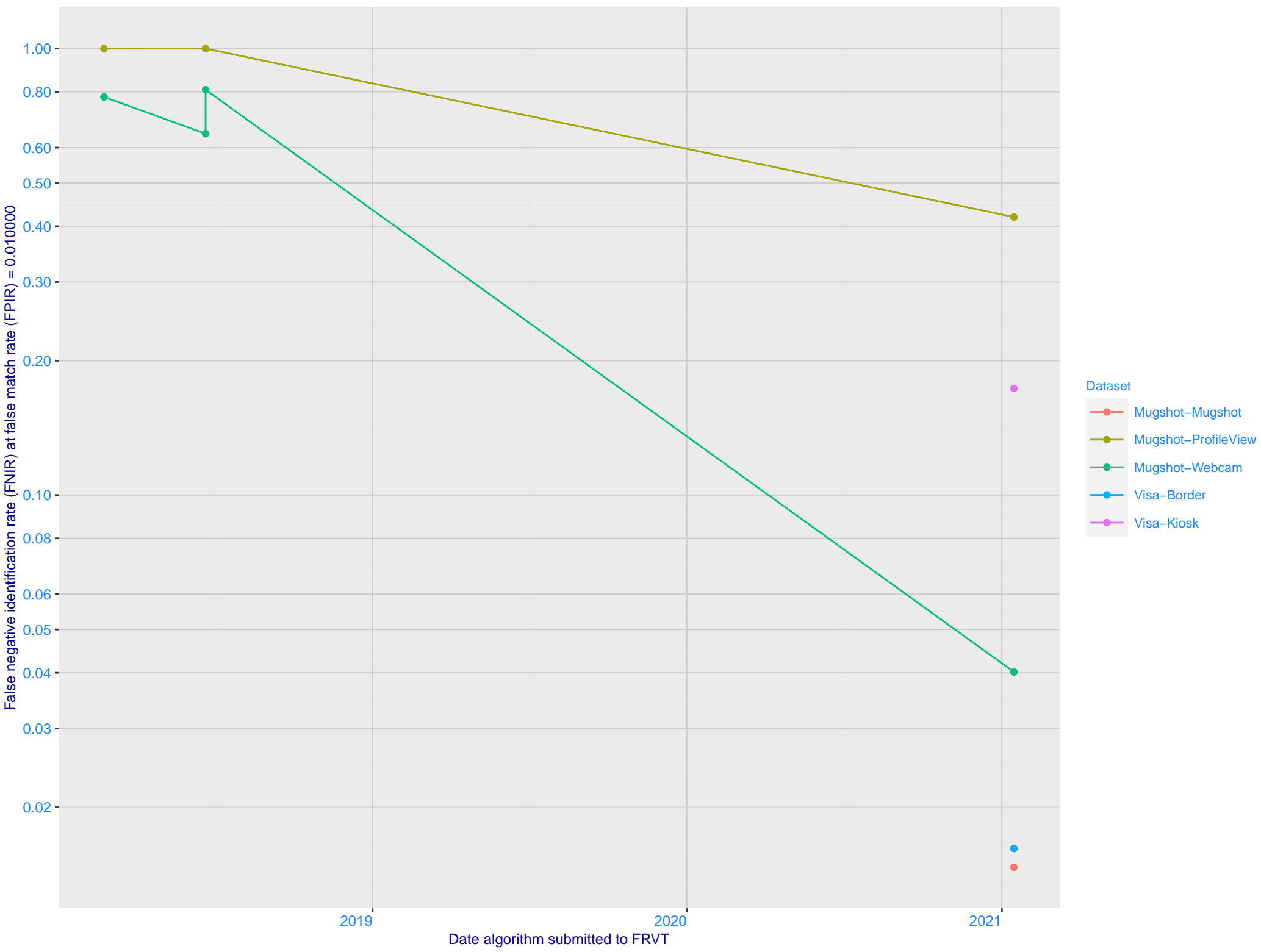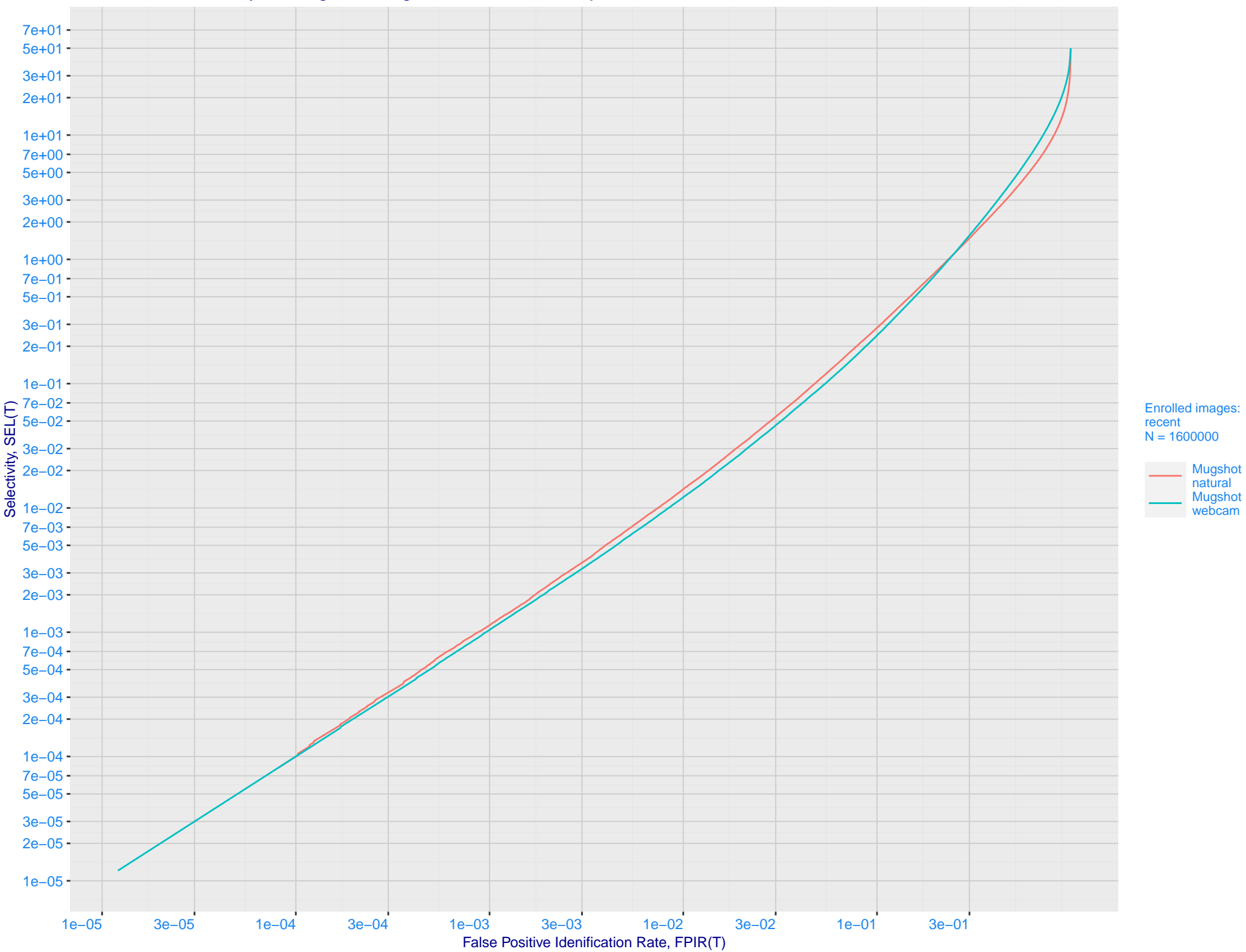
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals

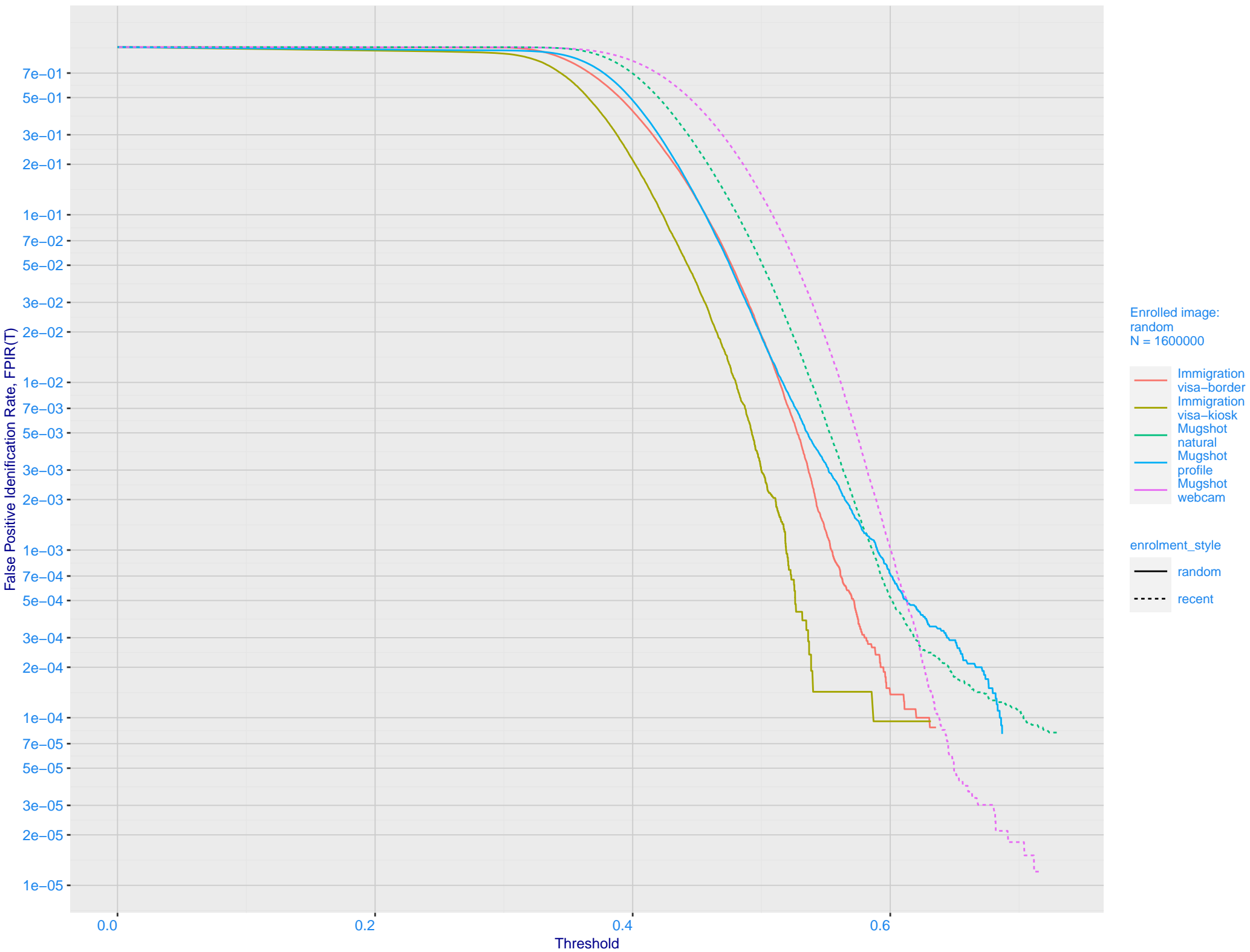E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images
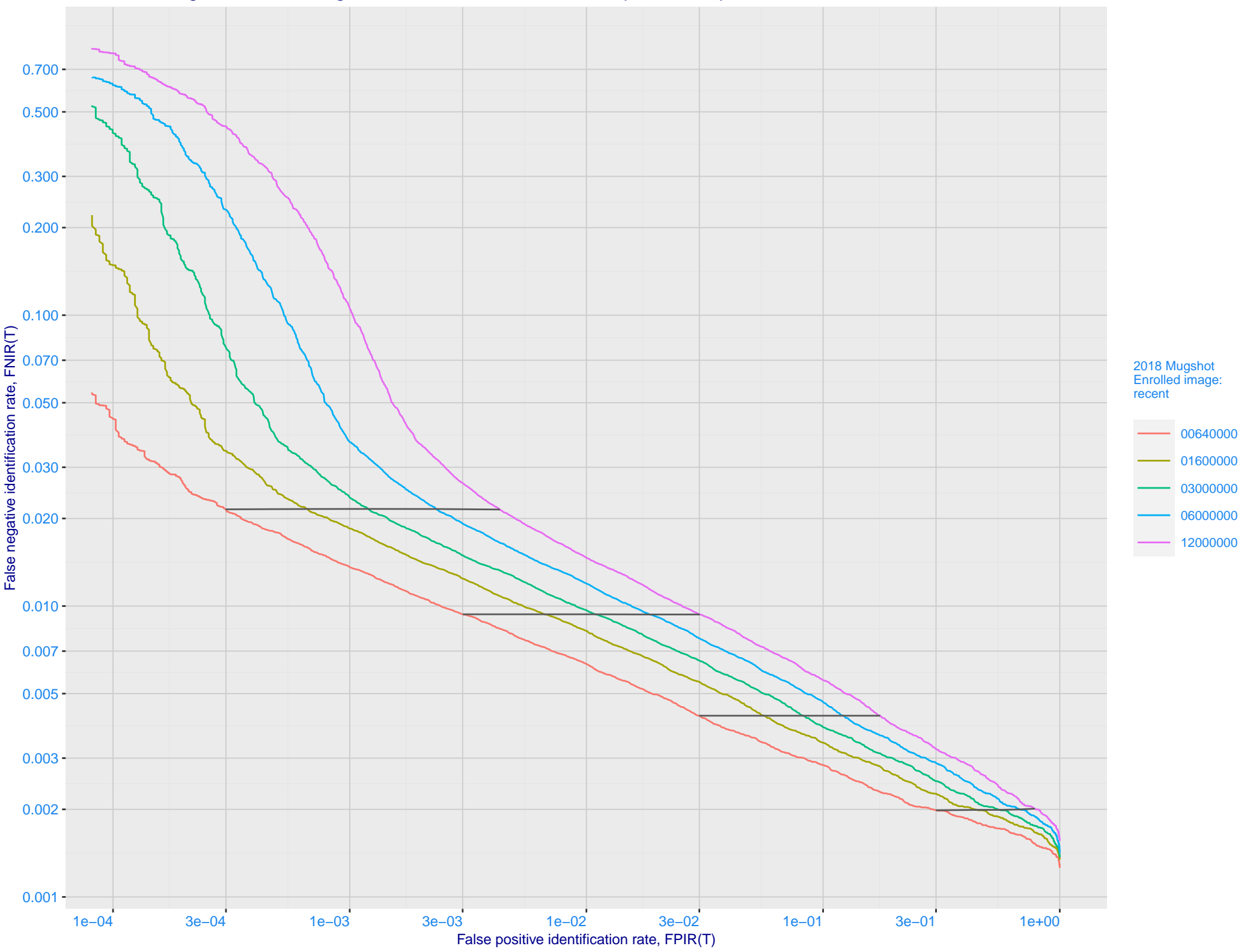
F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate

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

H: DET for Mugshot natural images and various N. Links connect points of equal threshold.
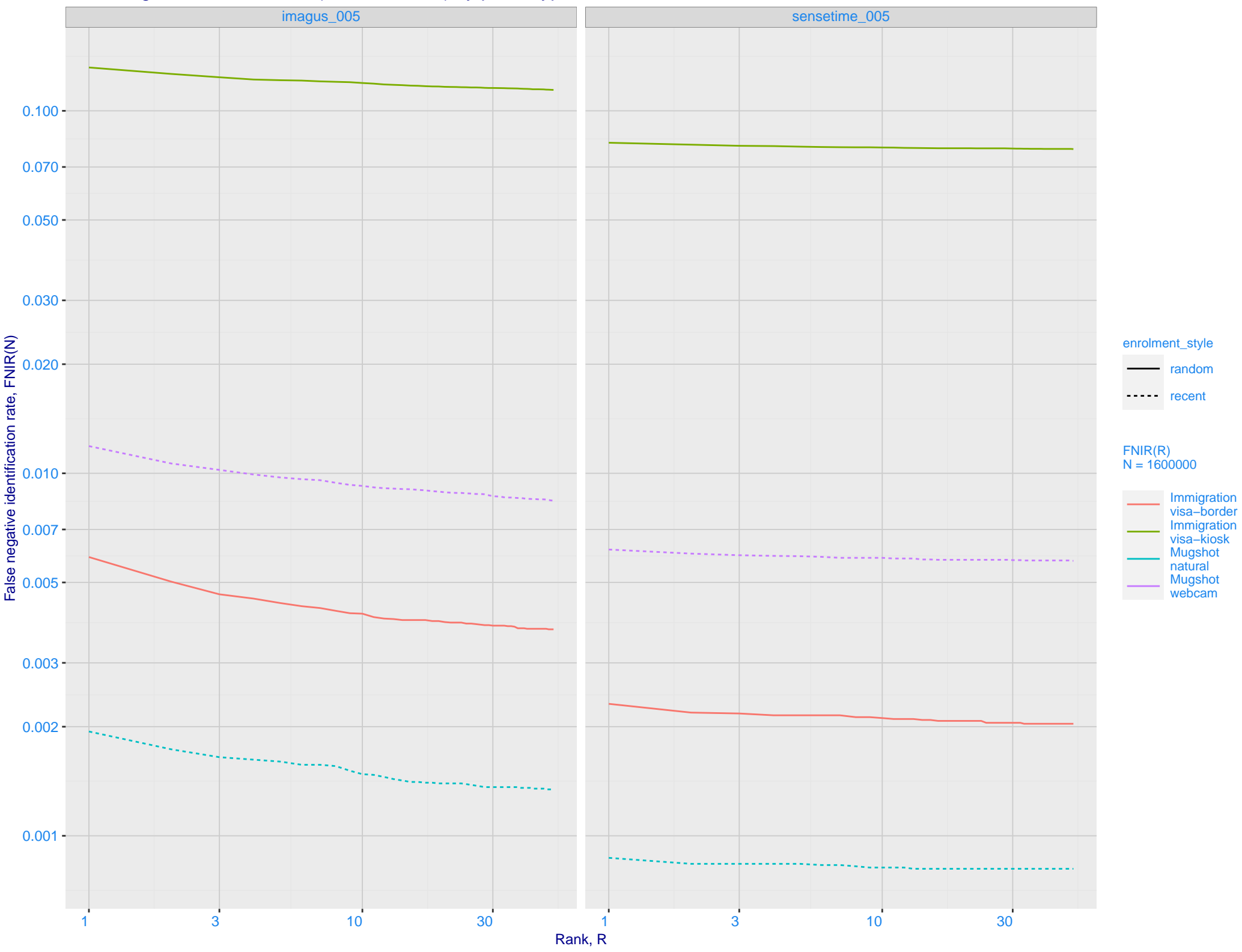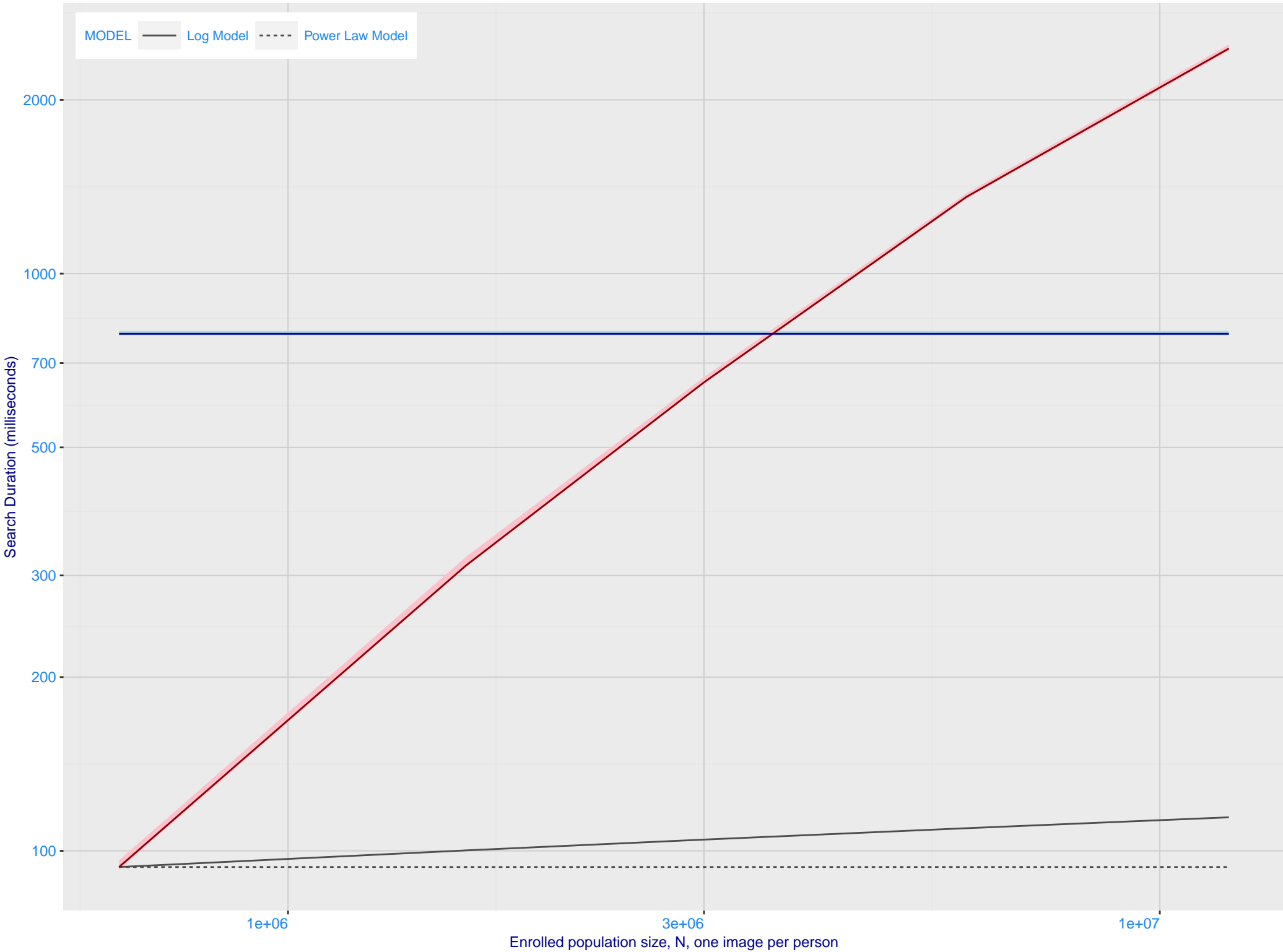
I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005)
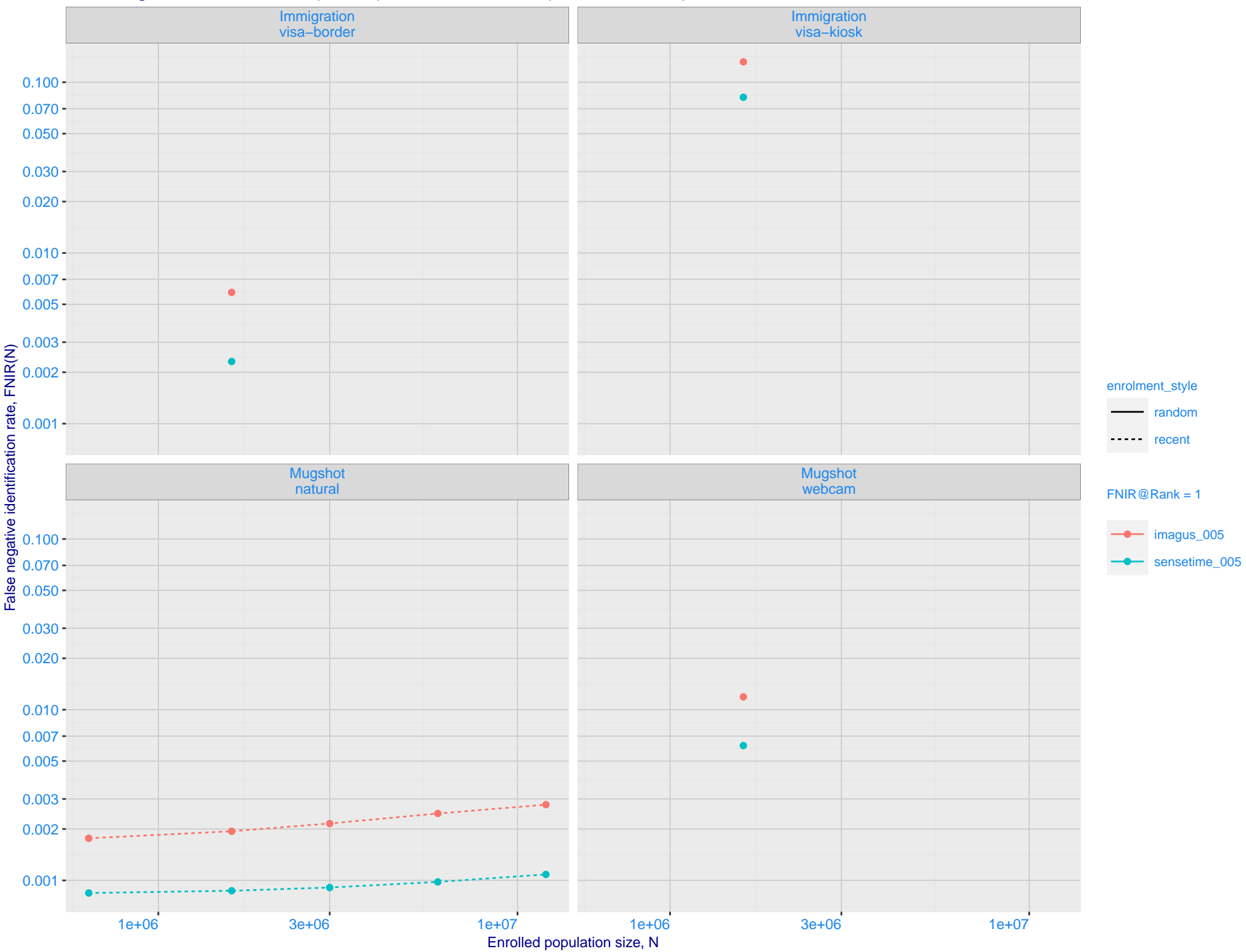
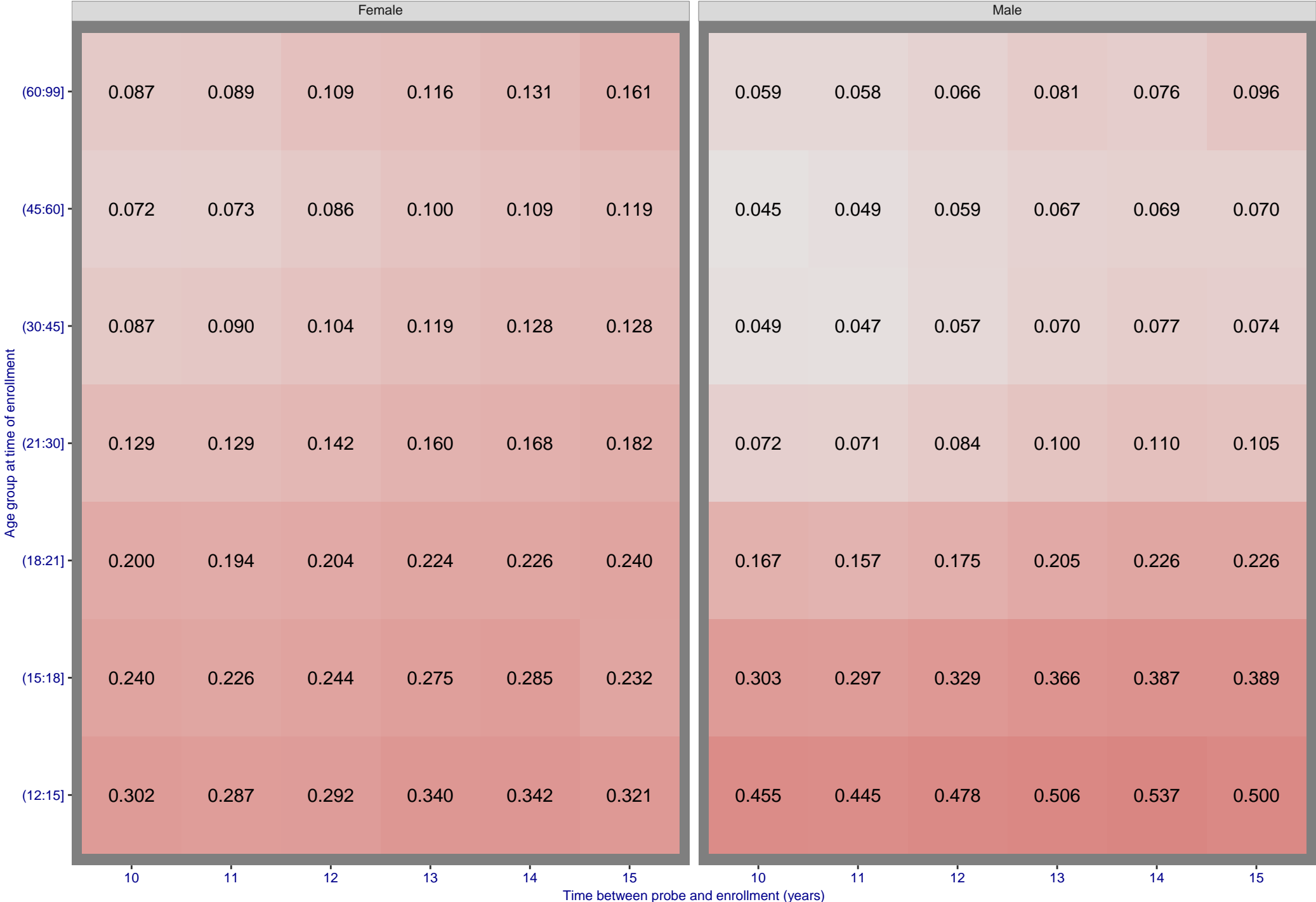J: Investigational mode: FNIR(1600000, R, 0) by probe type

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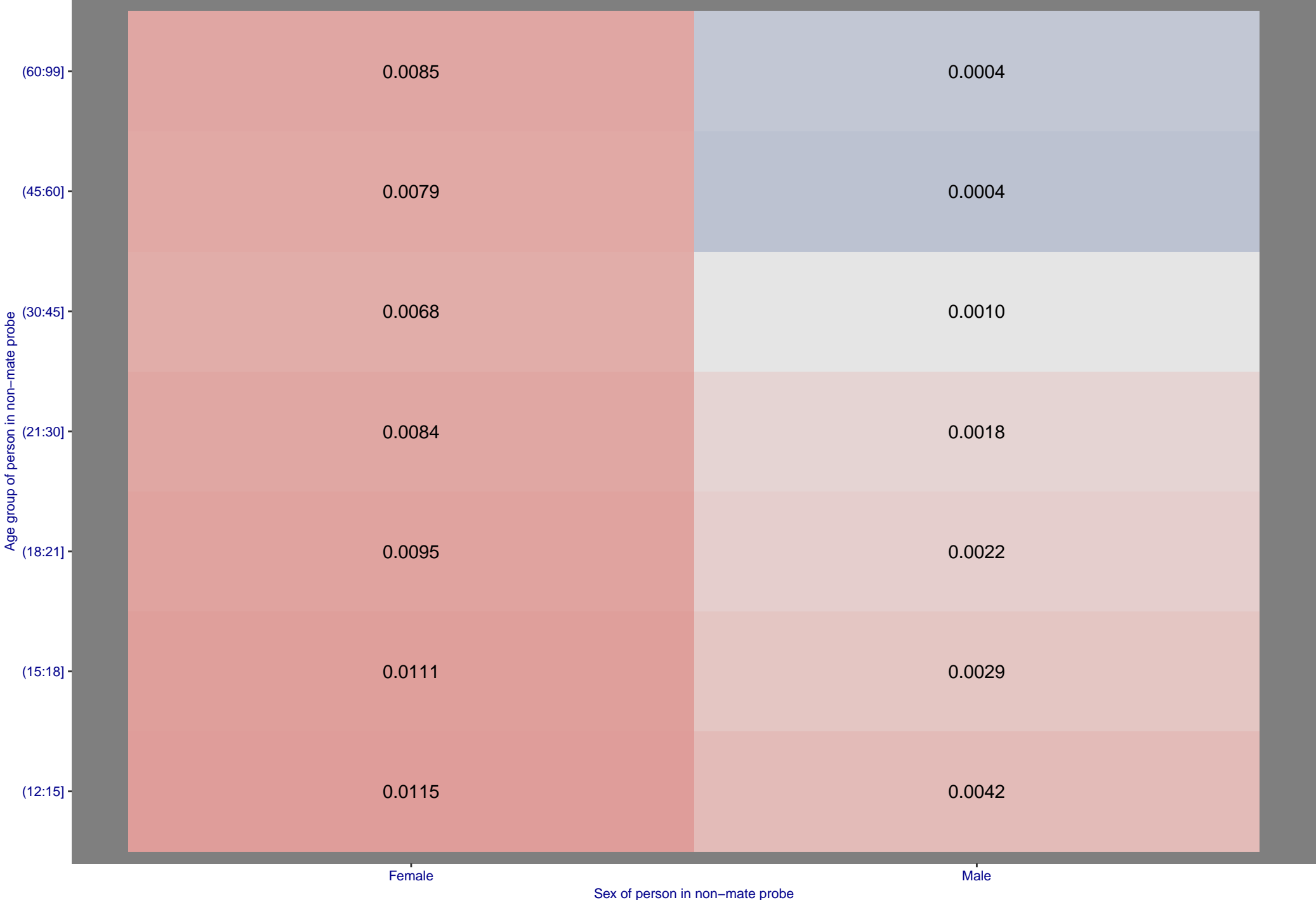
M–A: FNIR(T, N = 1.6 million) by sex, age and time–lapse

Algorithm: imagus_005, Dataset: Border–Crossing Ageing
Threshold: 0.529797 set to achieve FPIR(30–45, Male) = 0.001

Color encodes log(FNIR)

-3 -2 -1

		Female						Male			
(60:99]	0.087	0.089	0.109	0.116	0.131	0.161	0.059	0.058	0.066	0.081	0.076	0.096
(45:60]	0.072	0.073	0.086	0.100	0.109	0.119	0.045	0.049	0.059	0.067	0.069	0.070
(30:45]	0.087	0.090	0.104	0.119	0.128	0.128	0.049	0.047	0.057	0.070	0.077	0.074
(21:30]	0.129	0.129	0.142	0.160	0.168	0.182	0.072	0.071	0.084	0.100	0.110	0.105
(18:21]	0.200	0.194	0.204	0.224	0.226	0.240	0.167	0.157	0.175	0.205	0.226	0.226
(15:18]	0.240	0.226	0.244	0.275	0.285	0.232	0.303	0.297	0.329	0.366	0.387	0.389
(12:15]	0.302	0.287	0.292	0.340	0.342	0.321	0.455	0.445	0.478	0.506	0.537	0.500

Age group at time of enrollment

Time between probe and enrollment (years)

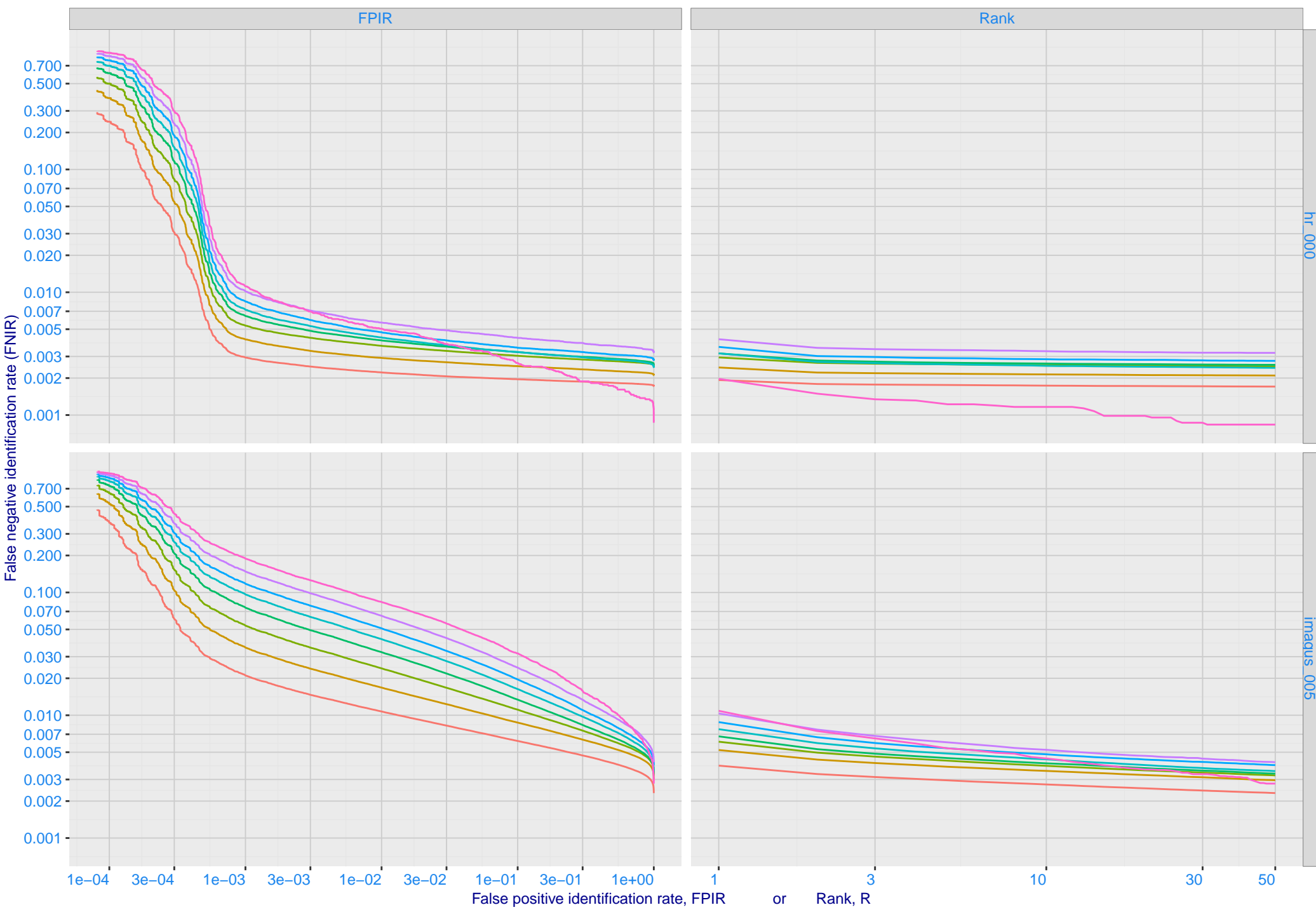Female x-axis: 10 11 12 13 14 15
Male x-axis: 10 11 12 13 14 15

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

Algorithm: imagus_005, Dataset: Border–Crossing Ageing
Threshold: 0.529797 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]	0.0085	0.0004
(45:60]	0.0079	0.0004
(30:45]	0.0068	0.0010
(21:30]	0.0084	0.0018
(18:21]	0.0095	0.0022
(15:18]	0.0111	0.0029
(12:15]	0.0115	0.0042

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