A: Datasheet

Algorithm: dilusense_001

Developer: DiluSense Technology

Submission Date: 2022_12_24

Template size: 4096 bytes

Template time (2.5 percentile): 883 msec

Template time (median): 884 msec

Template time (97.5 percentile): 897 msec

Investigation:

Frontal mugshot ranking 56 (out of 388) –– FNIR(1600000, 0, 1) = 0.0015 vs. lowest 0.0008 from sensetime_009

Mugshot webcam ranking 53 (out of 350) –– FNIR(1600000, 0, 1) = 0.0096 vs. lowest 0.0054 from sensetime_009

Mugshot profile ranking 100 (out of 319) –– FNIR(1600000, 0, 1) = 0.2500 vs. lowest 0.0517 from sensetime_009

Immigration visa–border ranking 131 (out of 277) –– FNIR(1600000, 0, 1) = 0.0060 vs. lowest 0.0006 from cloudwalk_mt_001

Immigration visa–kiosk ranking 77 (out of 222) –– FNIR(1600000, 0, 1) = 0.0796 vs. lowest 0.0395 from cloudwalk_mt_001

Identification:

Frontal mugshot ranking 62 (out of 388) –– FNIR(1600000, T, L+1) = 0.0084, FPIR=0.001000 vs. lowest 0.0011 from idemia_010

Mugshot webcam ranking 59 (out of 348) –– FNIR(1600000, T, L+1) = 0.0343, FPIR=0.001000 vs. lowest 0.0072 from sensetime_009

Mugshot profile ranking 32 (out of 318) –– FNIR(1600000, T, L+1) = 0.4569, FPIR=0.001000 vs. lowest 0.0698 from cloudwalk_mt_001

Immigration visa–border ranking 64 (out of 276) –– FNIR(1600000, T, L+1) = 0.0152, FPIR=0.001000 vs. lowest 0.0013 from cloudwalk_mt_001

Immigration visa–kiosk ranking 42 (out of 222) –– FNIR(1600000, T, L+1) = 0.1254, FPIR=0.001000 vs. lowest 0.0532 from cloudwalk_mt_001
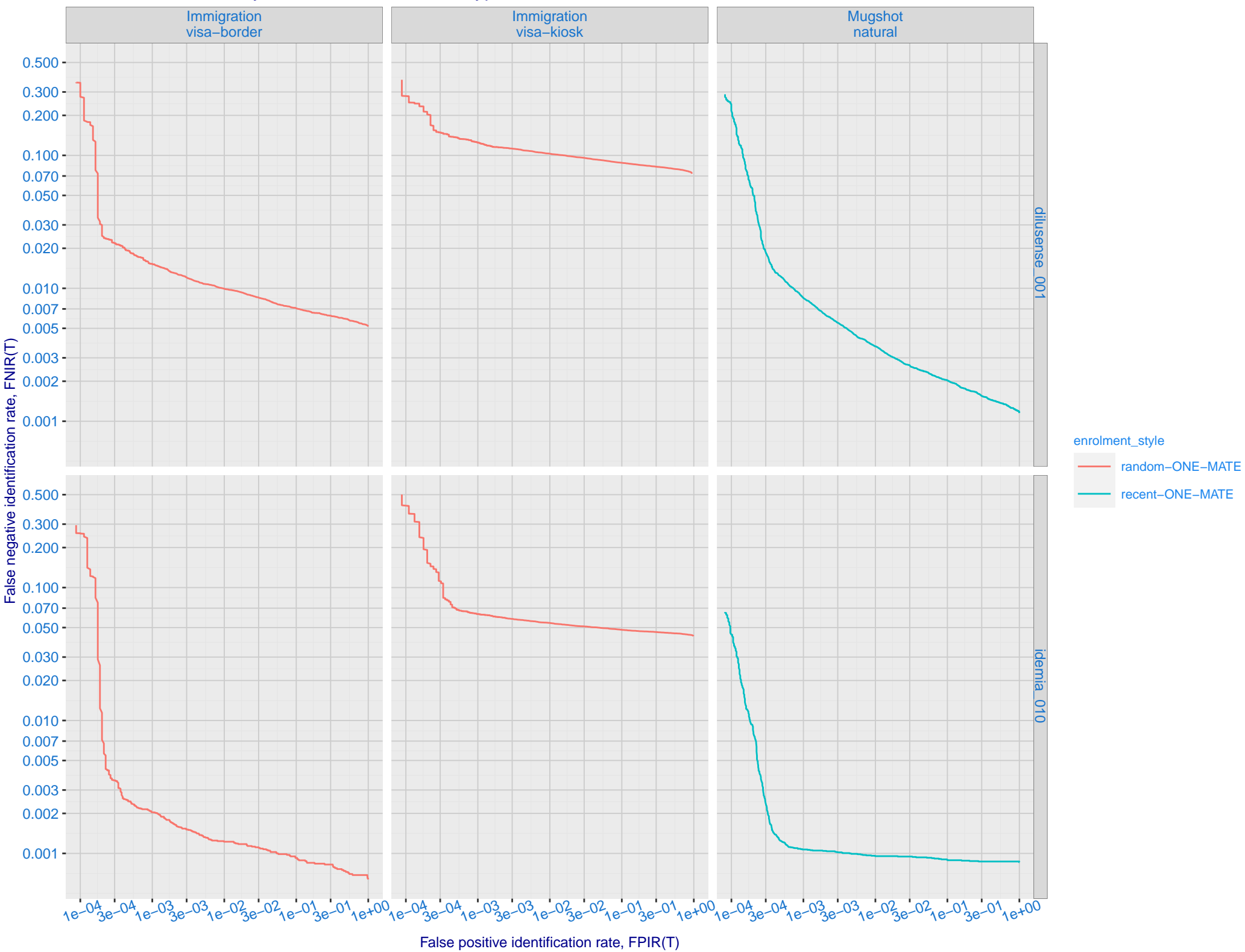
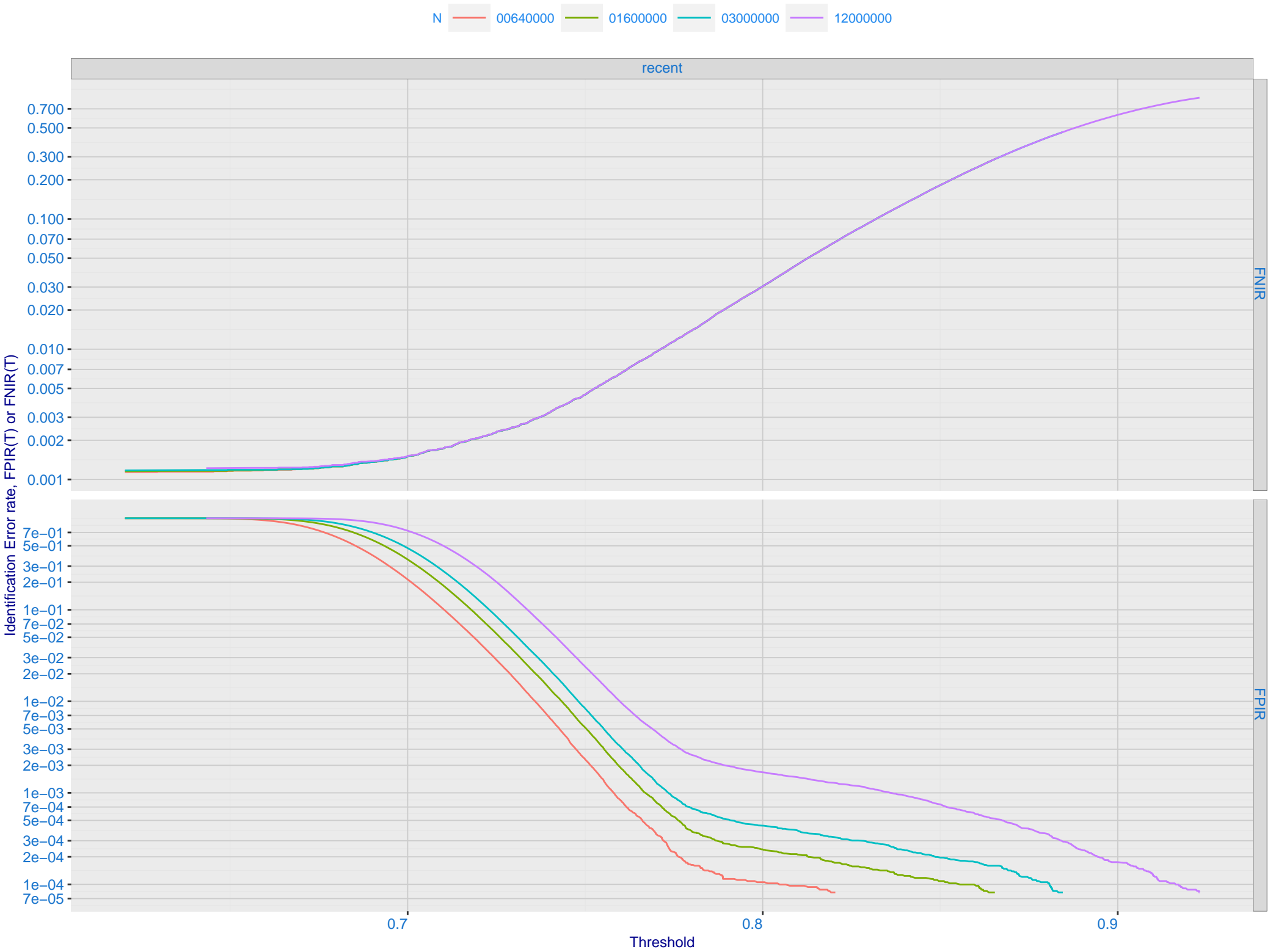B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (idemia_010)
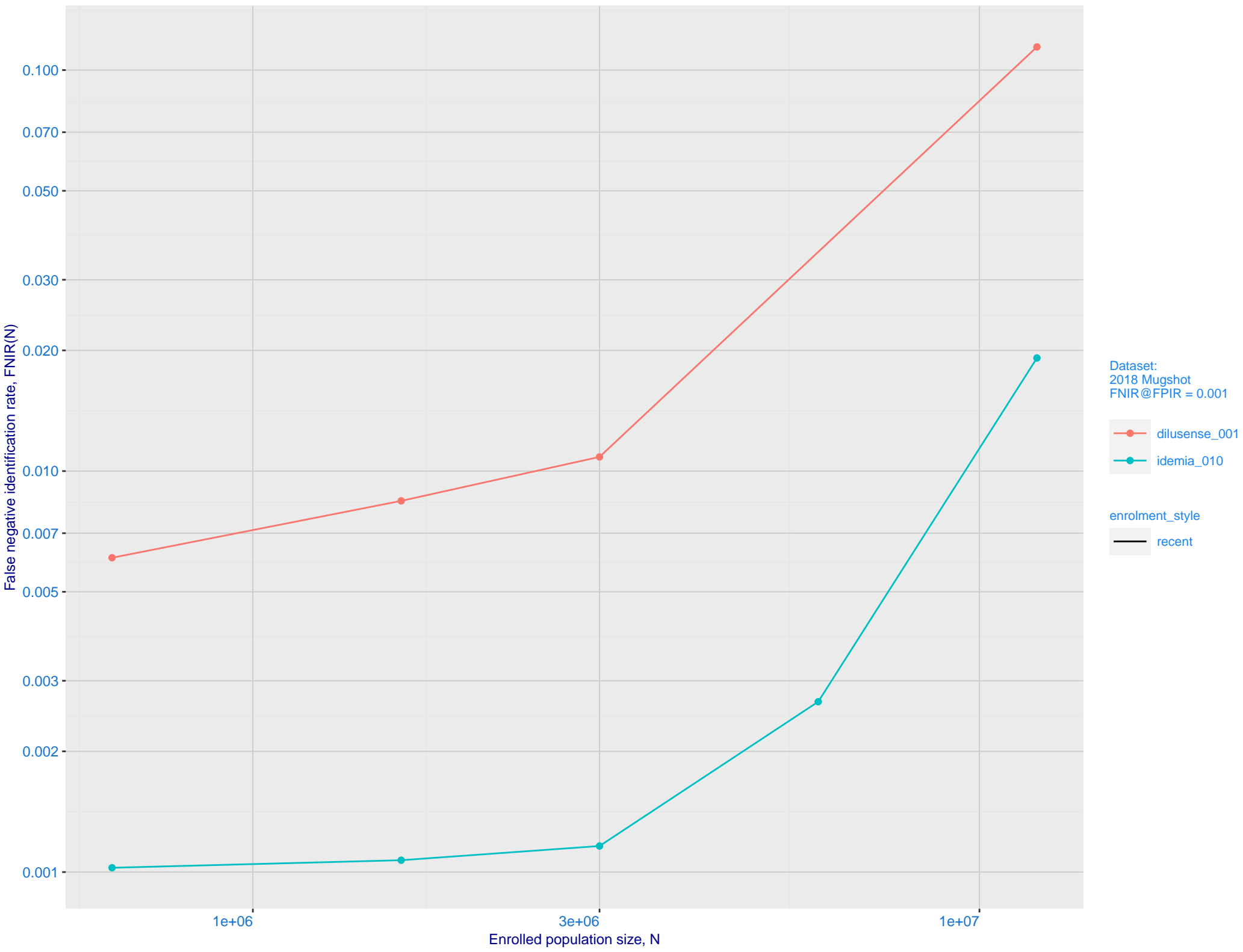
C: Evolution of accuracy for DILUSENSE algorithms on three datasets 2018 – present
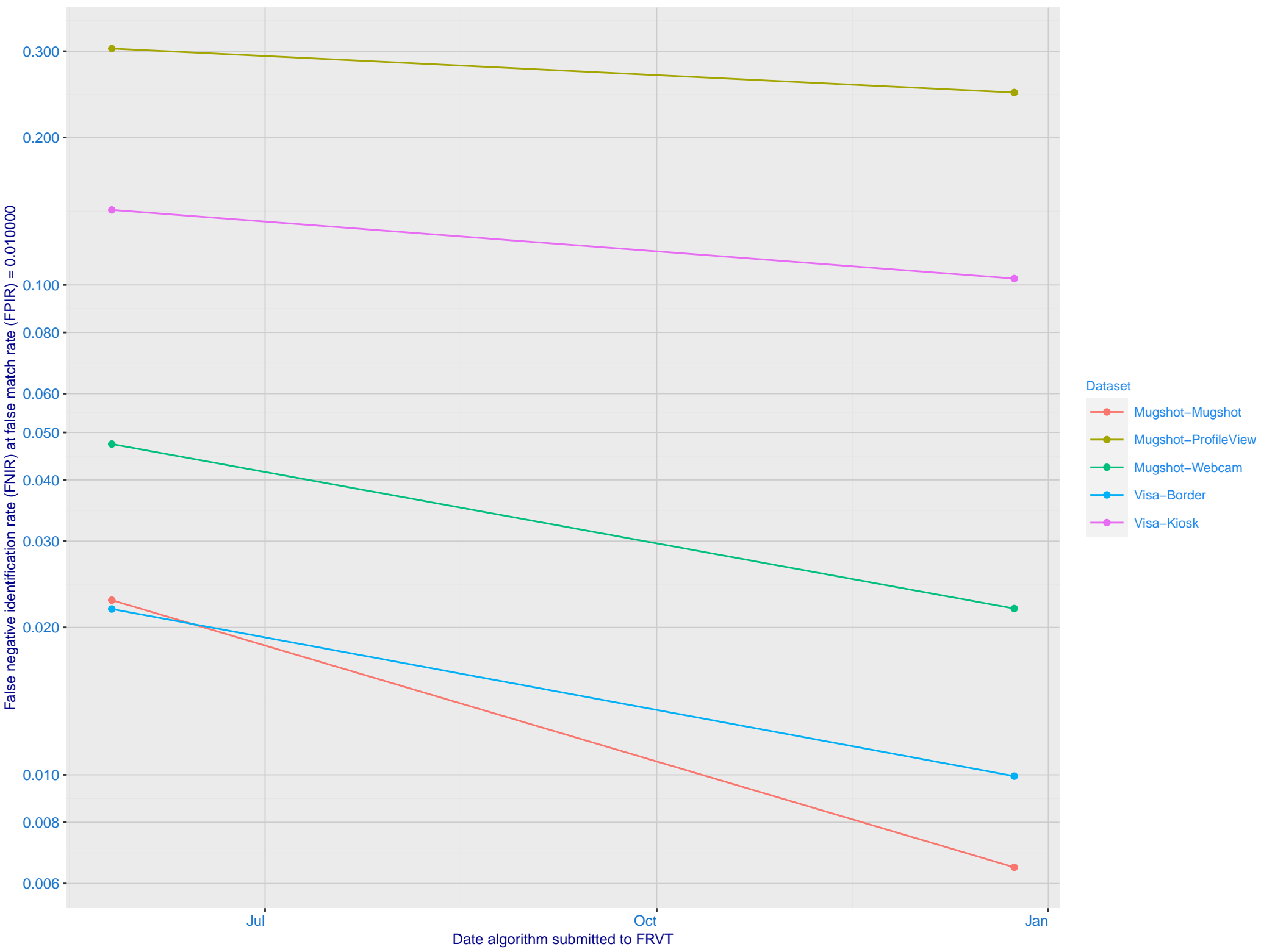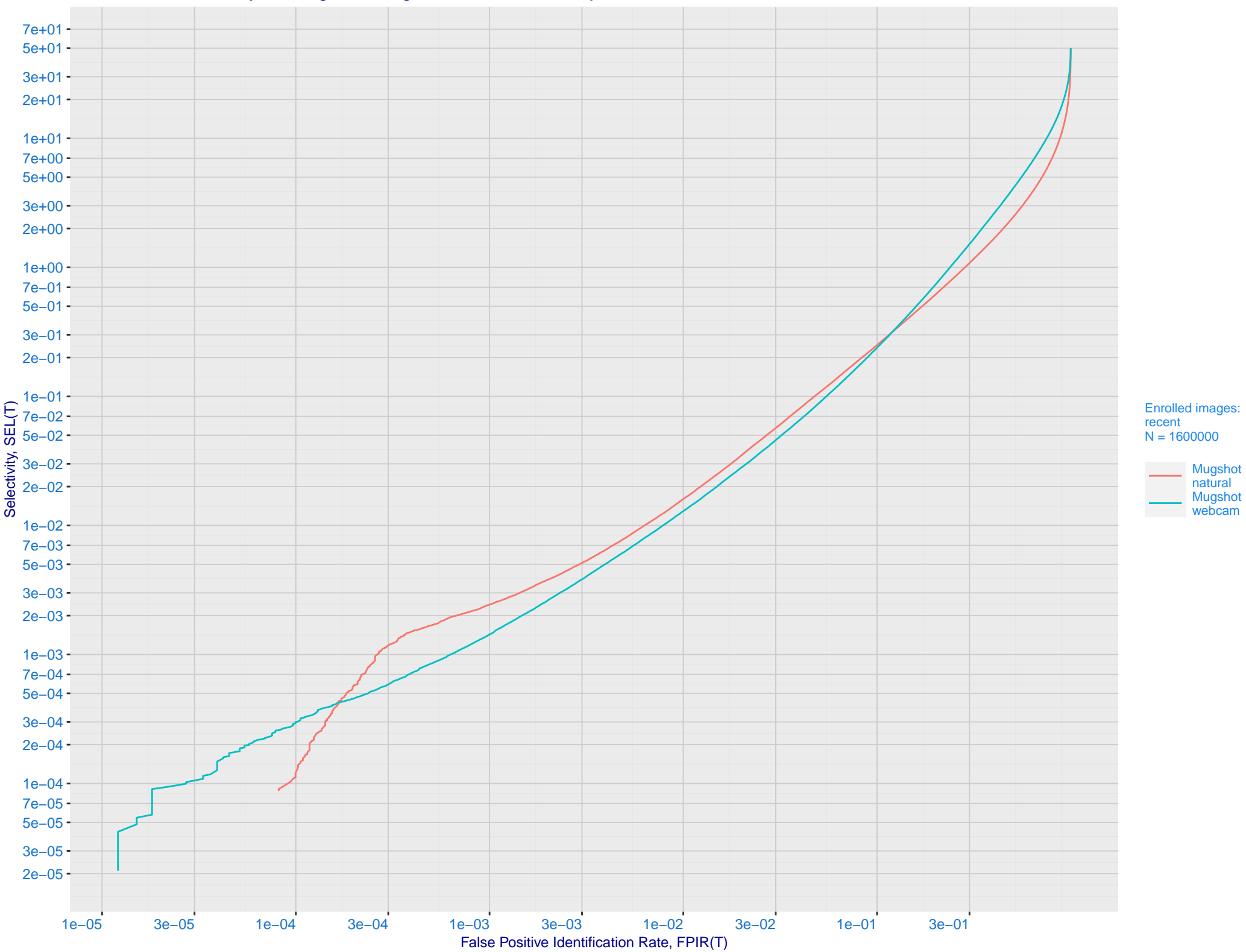
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals
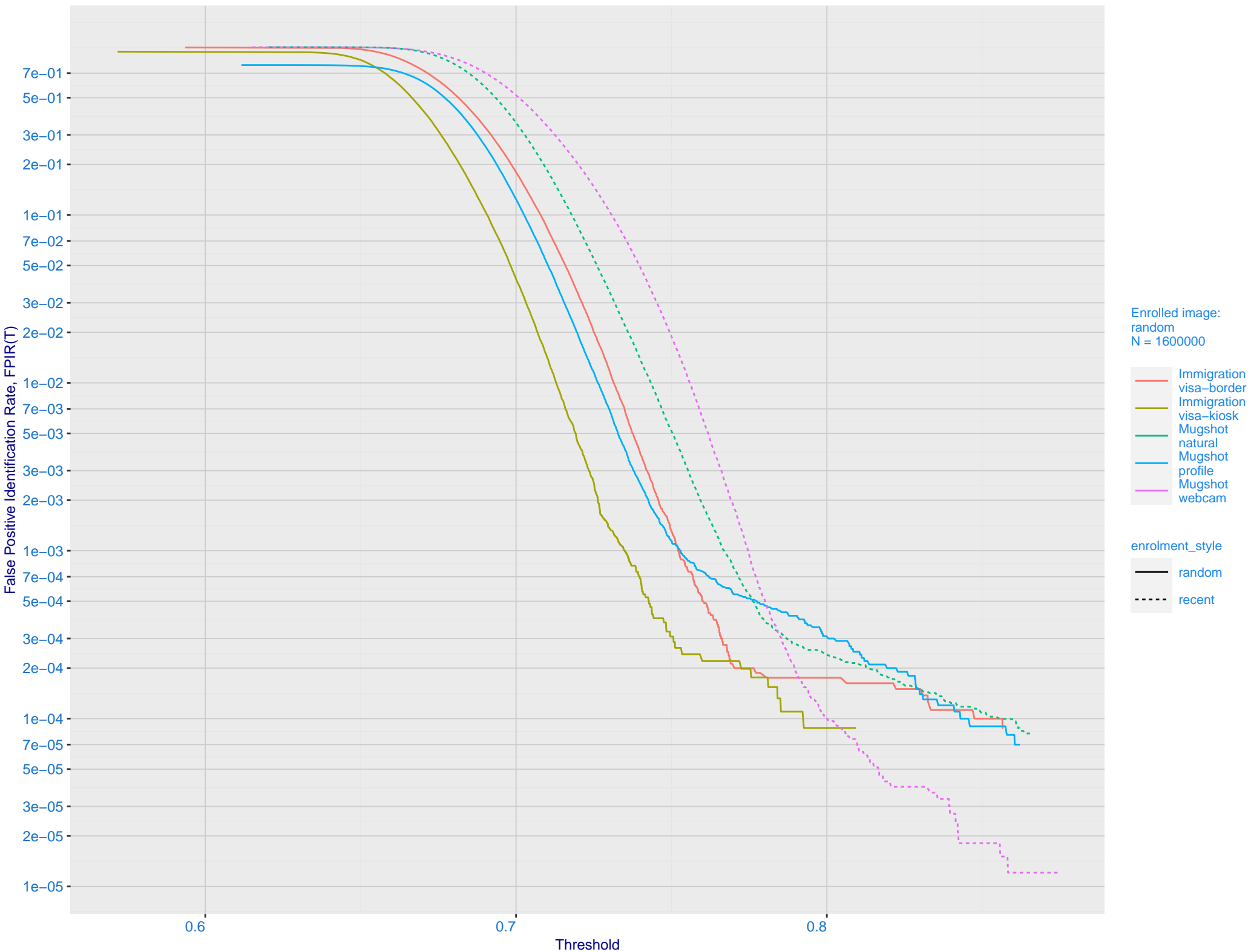
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images

F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate
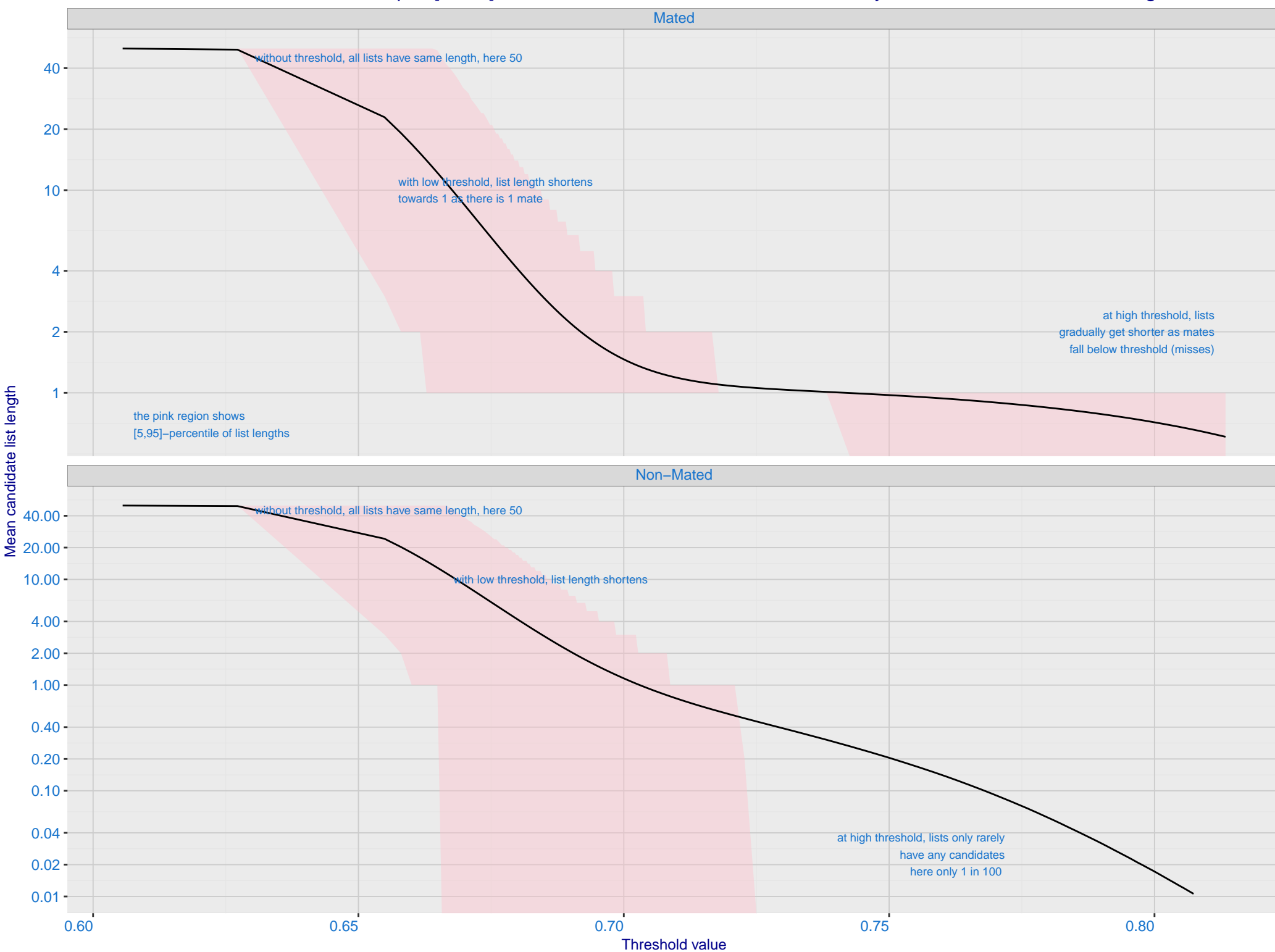
G: FPIR dependence on T by probe type for N = 1600000 subjects
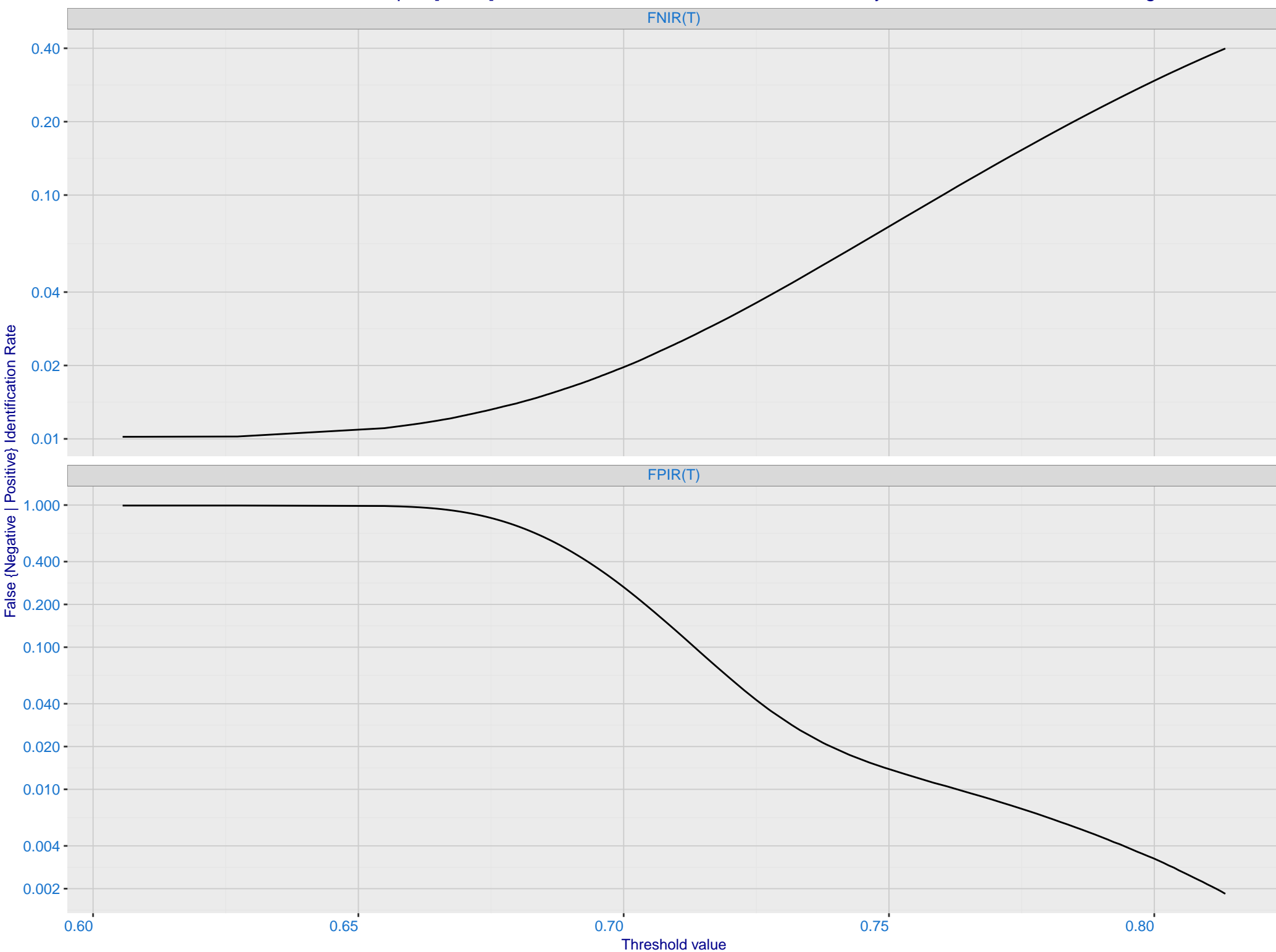
H: Reduced length candidate lists for human review
Dataset is border–border with time–lapse [10,15] YRS with N = 1600000. Probes are 10–15 years later than enrollment image
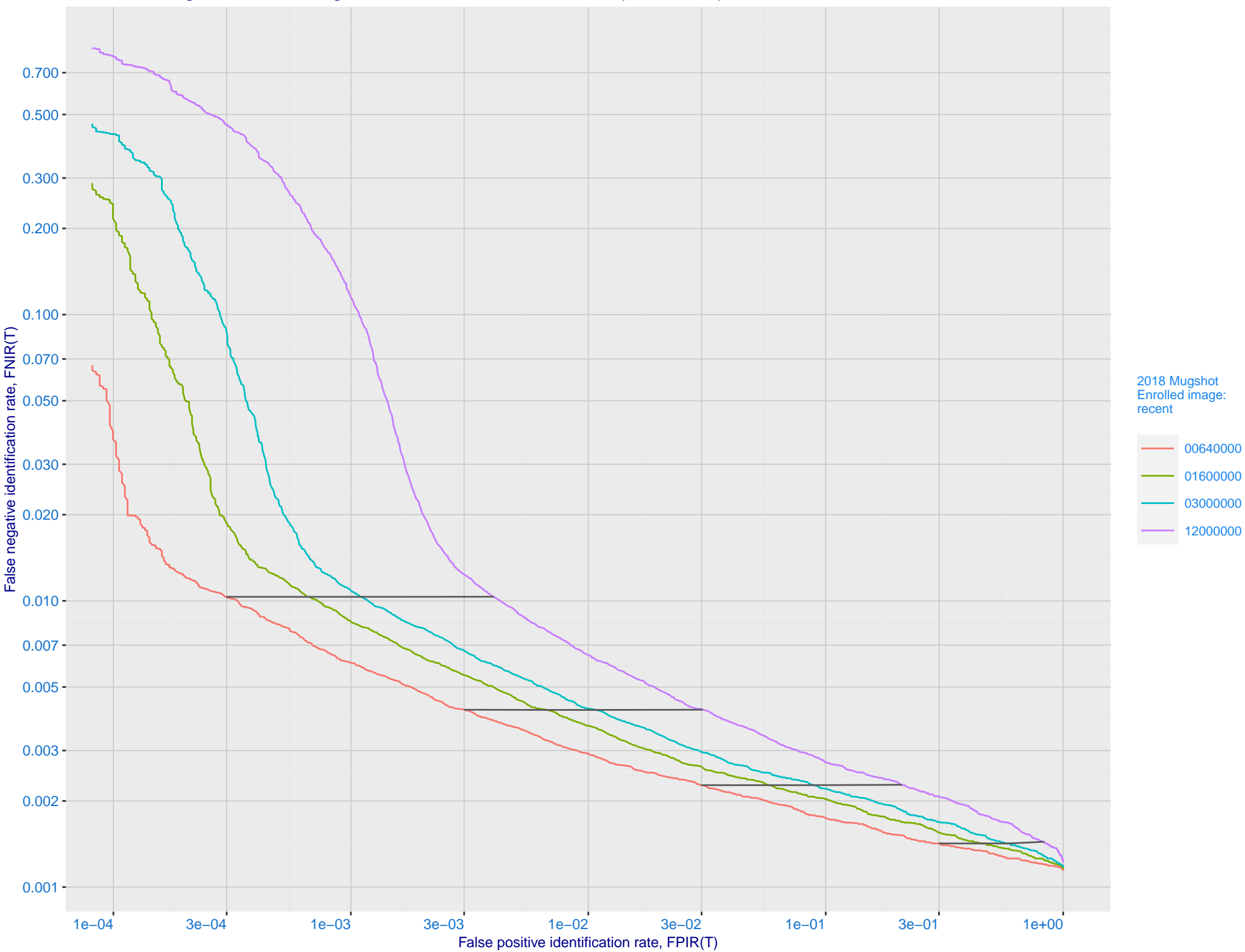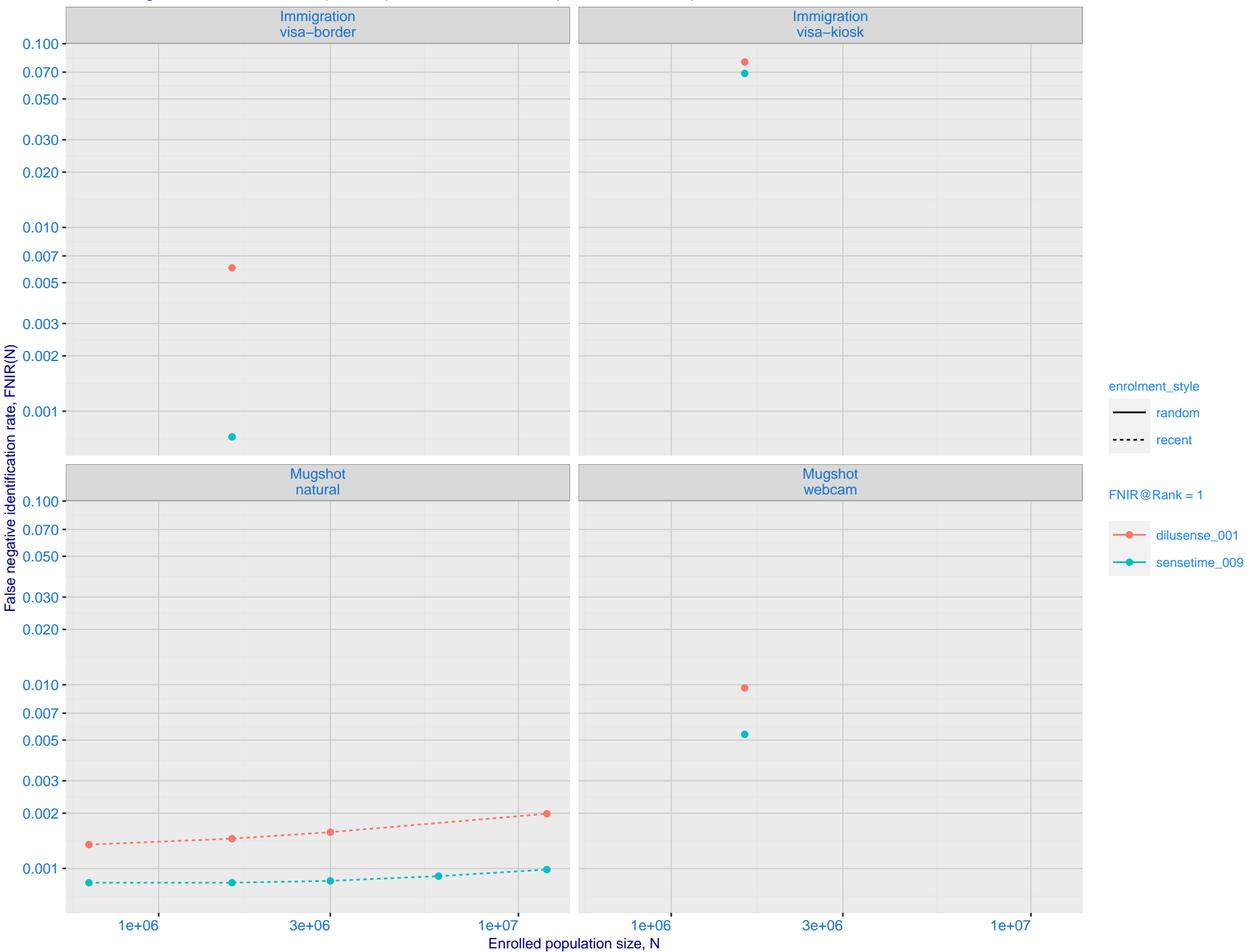
I: FNIR and FPIR dependence on threshold
Dataset is border−border with time−lapse [10,15] YRS with N = 1600000. Probes are 10−15 years later than enrollment image
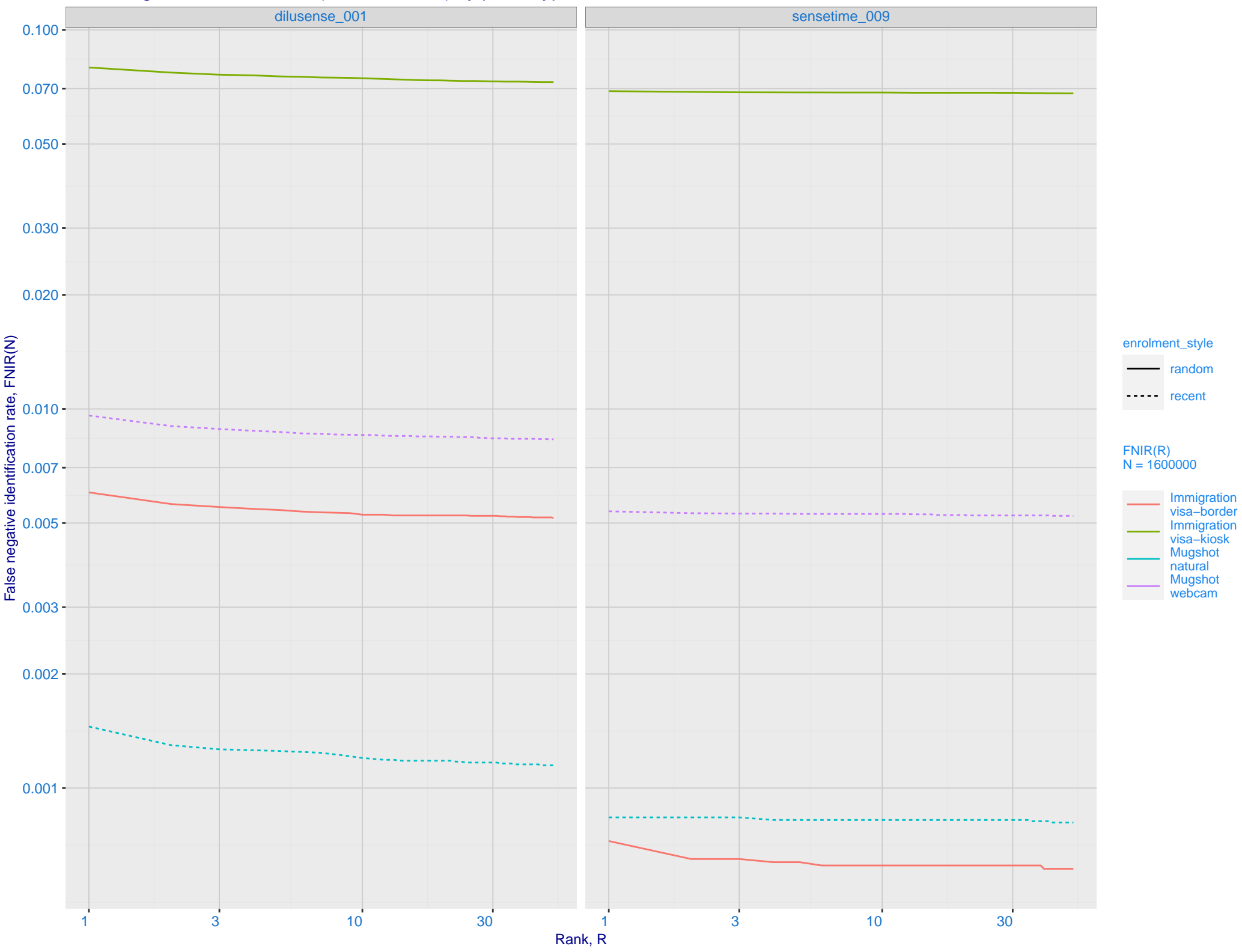
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.
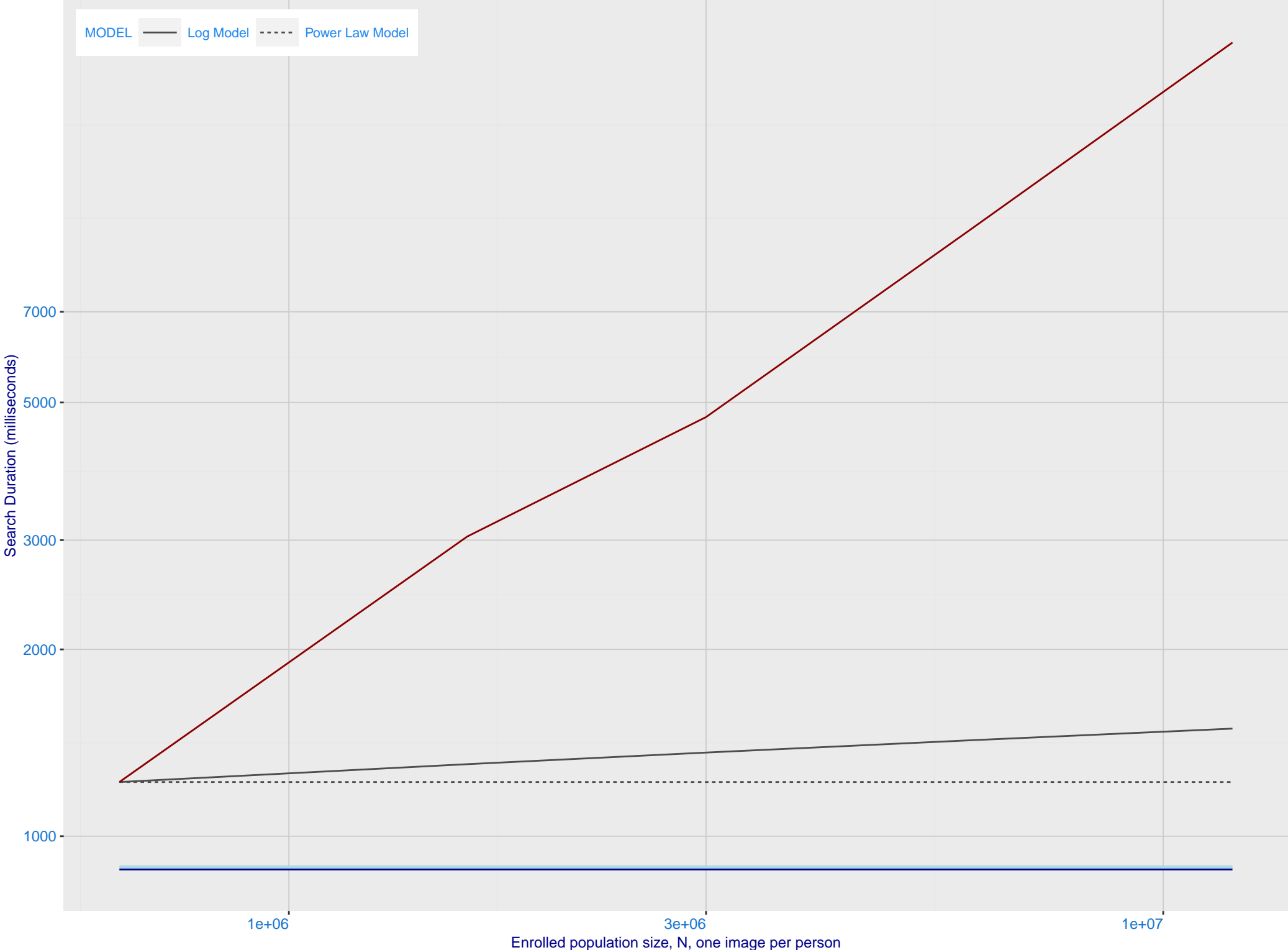
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_009)

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: dilusense_001, Dataset: Border−Crossing Ageing N = 1600000
Text encodes FNIR, Color encodes log(FNIR)
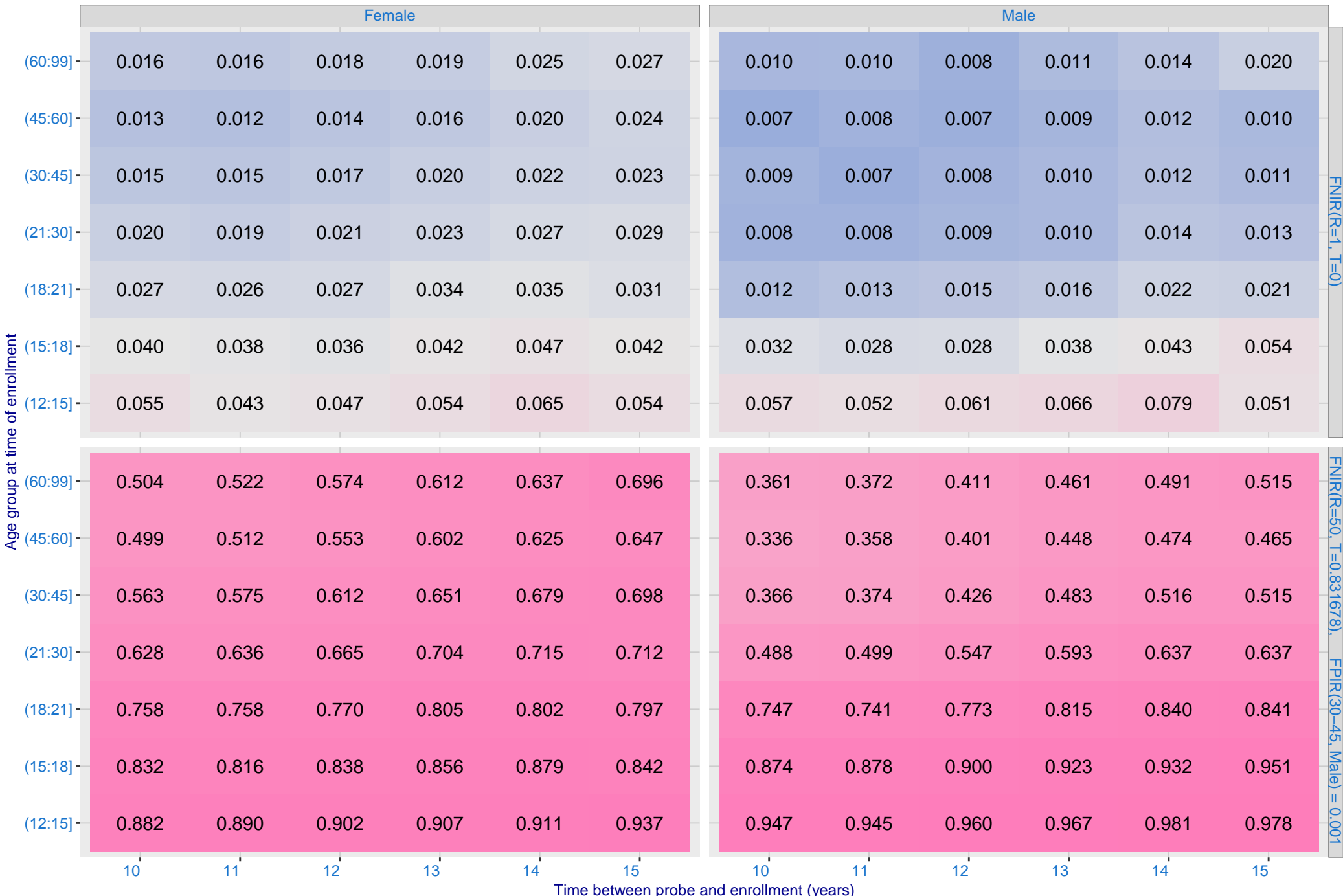
P: FPIR(N = 1.6 million) by sex and age. It is typical for false positive identification rates to be higher in women except in their teens.

Algorithm: dilusense_001, Dataset: Border−Crossing Ageing
Threshold: 0.831678 set to achve 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.)

	Female	Male
(60:99]	0.0008	0.0008
(45:60]	0.0009	0.0010
(30:45]	0.0008	0.0010
(21:30]	0.0008	0.0008
(18:21]	0.0007	0.0005
(15:18]	0.0006	0.0005
(12:15]	0.0004	0.0004

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