

A: Datasheet

Algorithm: cubox_000

Developer: Cubox

Submission Date: 2021_08_24

Template size: 2048 bytes

Template time (2.5 percentile): 916 msec

Template time (median): 918 msec

Template time (97.5 percentile): 926 msec

Investigation:

Frontal mugshot ranking 27 (out of 329) — FNIR(1600000, 0, 1) = 0.0014 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 35 (out of 291) — FNIR(1600000, 0, 1) = 0.0099 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 2 (out of 260) — FNIR(1600000, 0, 1) = 0.0582 vs. lowest 0.0550 from sensetime_006

Immigration visa–border ranking 12 (out of 218) — FNIR(1600000, 0, 1) = 0.0016 vs. lowest 0.0009 from sensetime_006

Immigration visa–kiosk ranking 1 (out of 215) — FNIR(1600000, 0, 1) = 0.0487

Identification:

Frontal mugshot ranking 13 (out of 329) — FNIR(1600000, T, L+1) = 0.0028, FPIR=0.001000 vs. lowest 0.0017 from nec_005

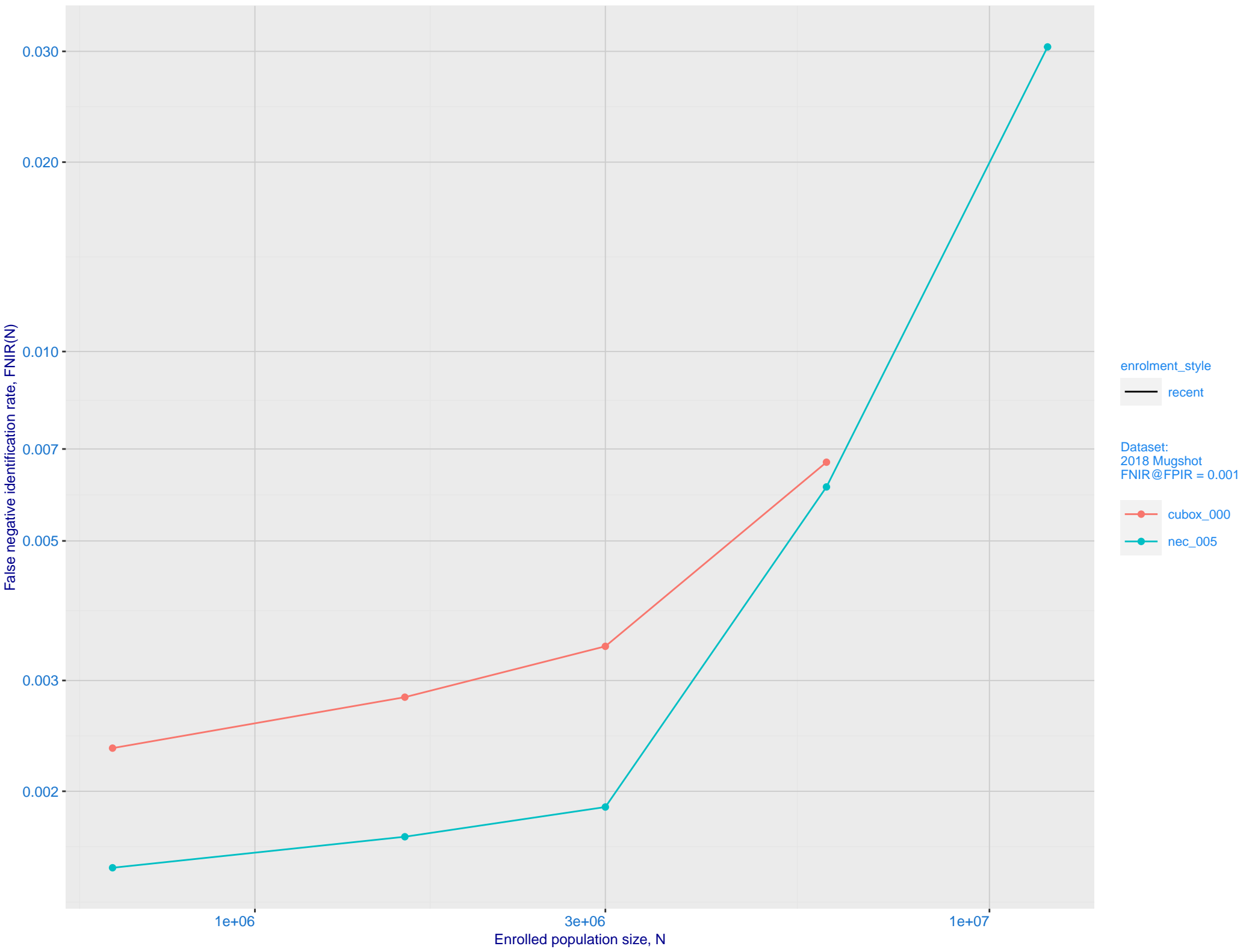
Mugshot webcam ranking 14 (out of 289) — FNIR(1600000, T, L+1) = 0.0185, FPIR=0.001000 vs. lowest 0.0120 from nec_005

Mugshot profile ranking 2 (out of 259) — FNIR(1600000, T, L+1) = 0.1680, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

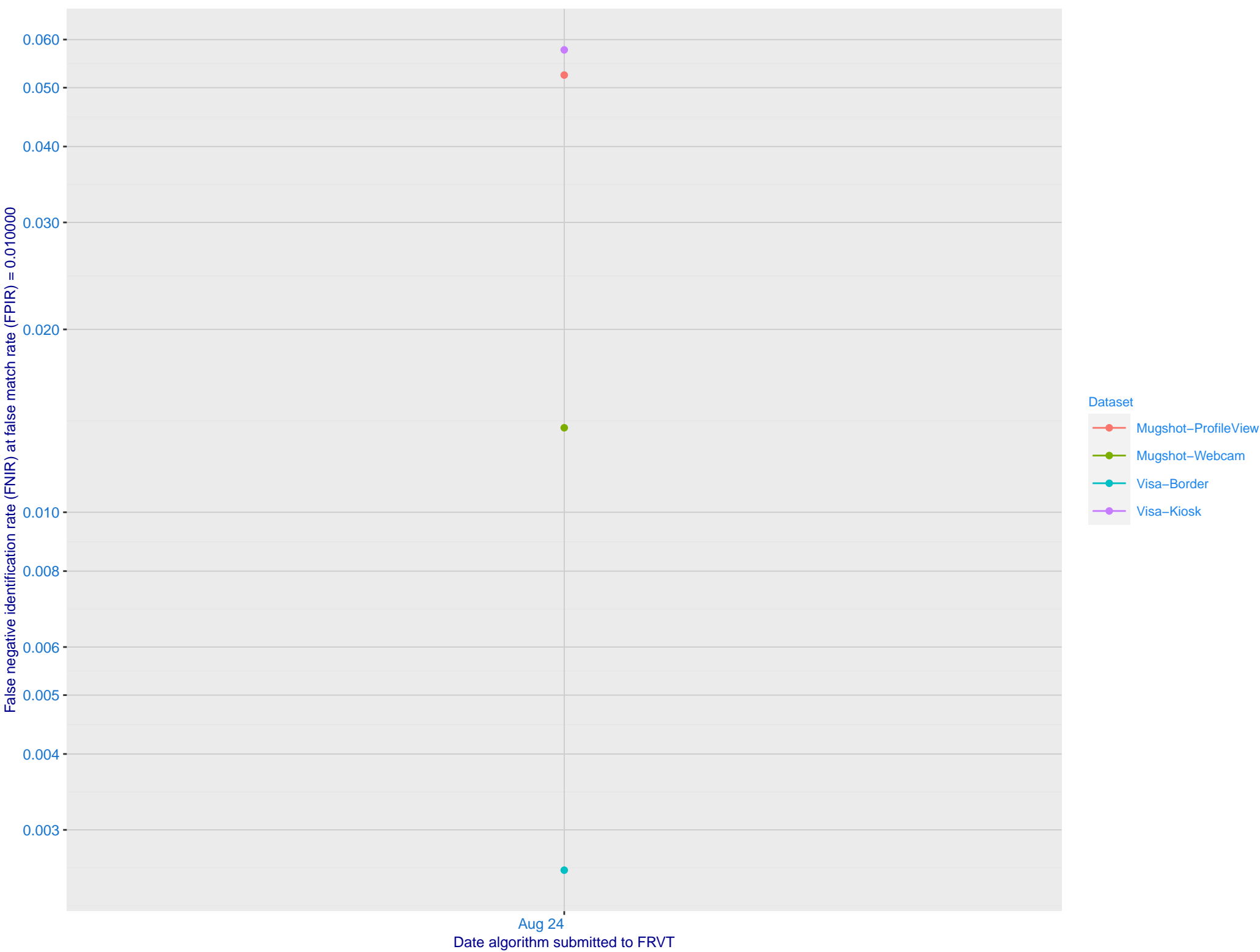
Immigration visa–border ranking 4 (out of 217) — FNIR(1600000, T, L+1) = 0.0043, FPIR=0.001000 vs. lowest 0.0032 from paravision_009

Immigration visa–kiosk ranking 2 (out of 212) — FNIR(1600000, T, L+1) = 0.0729, FPIR=0.001000 vs. lowest 0.0728 from paravision_009

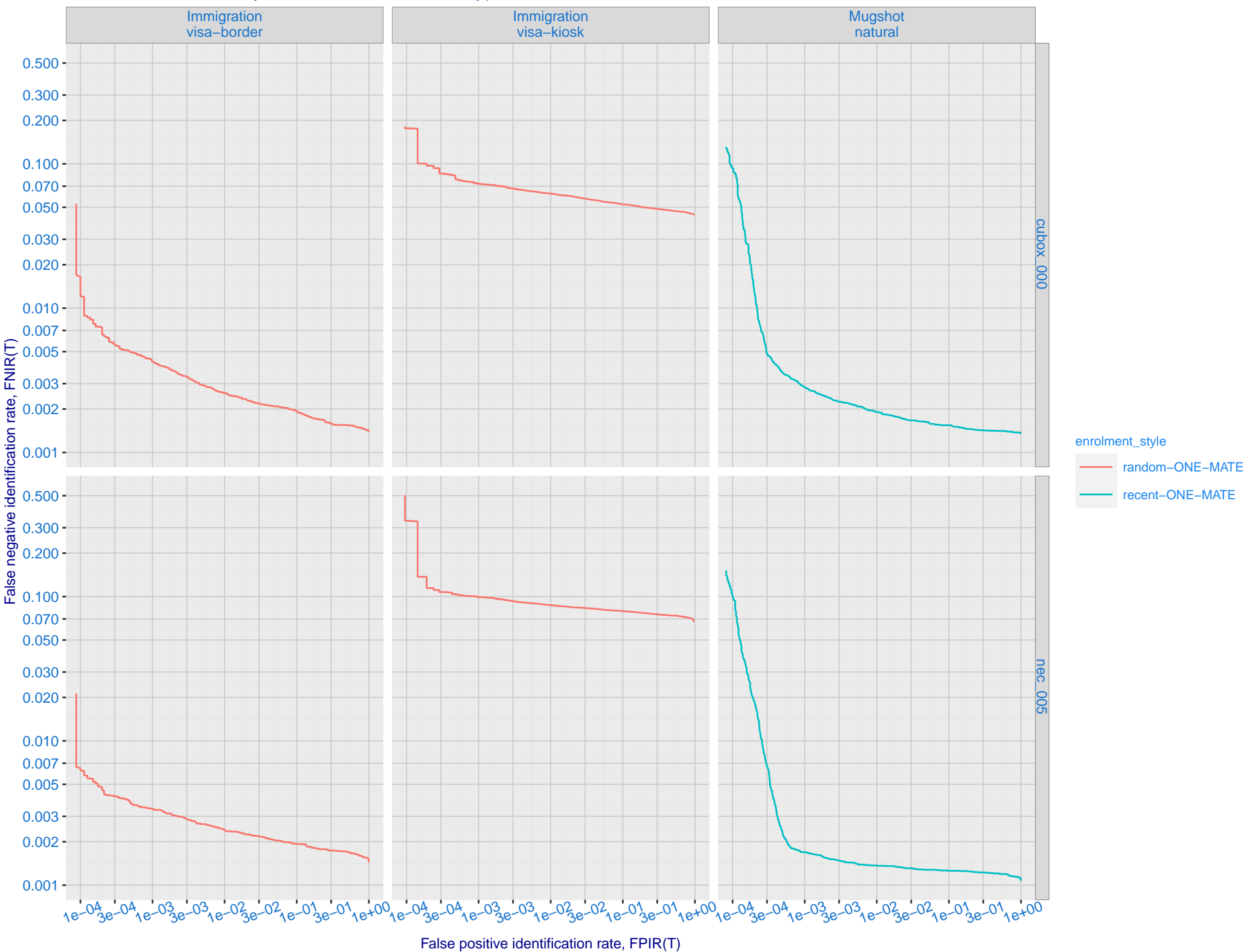
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (nec_005)



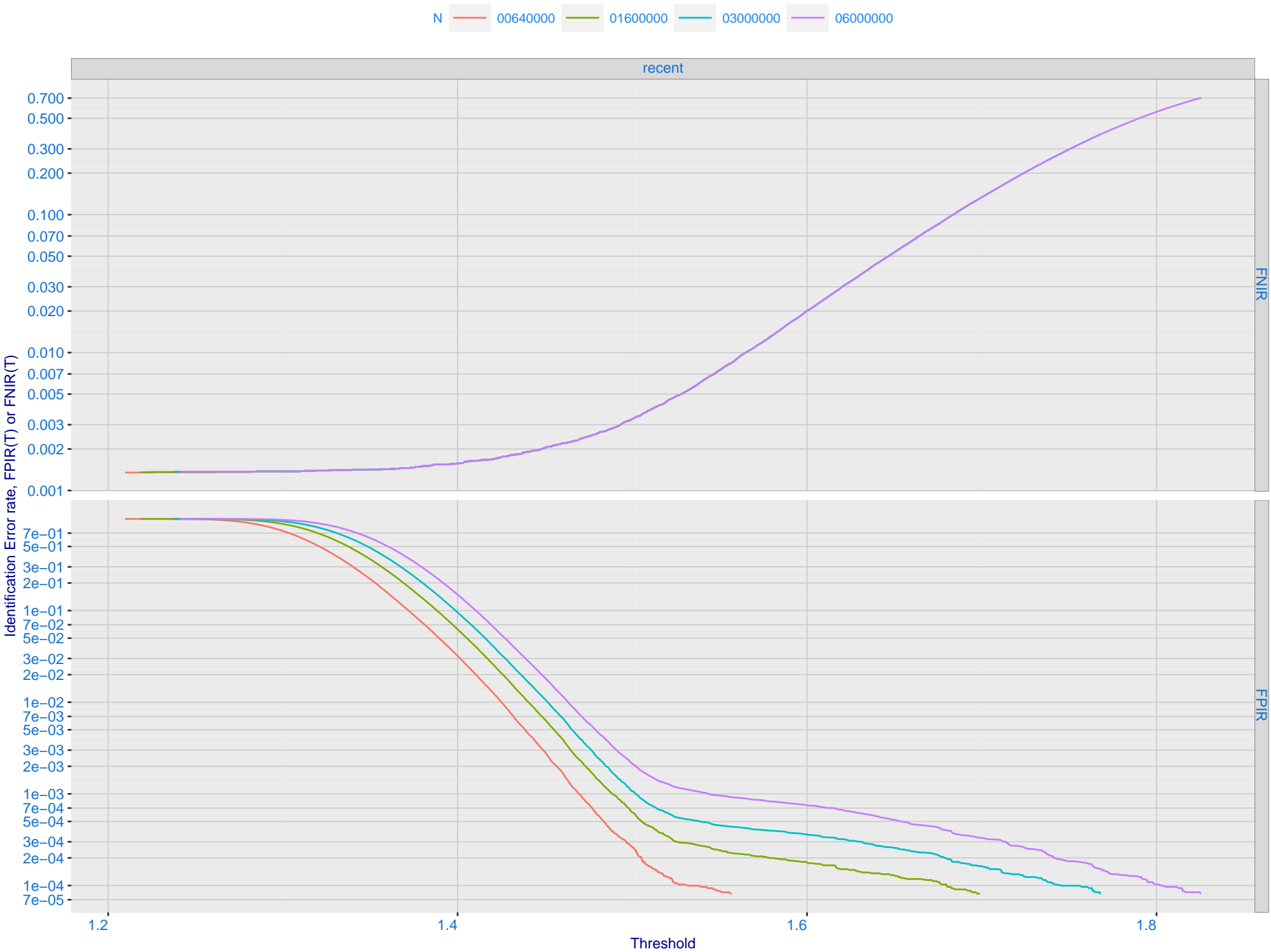
C: Evolution of accuracy for CUBOX algorithms on three datasets 2018 – present



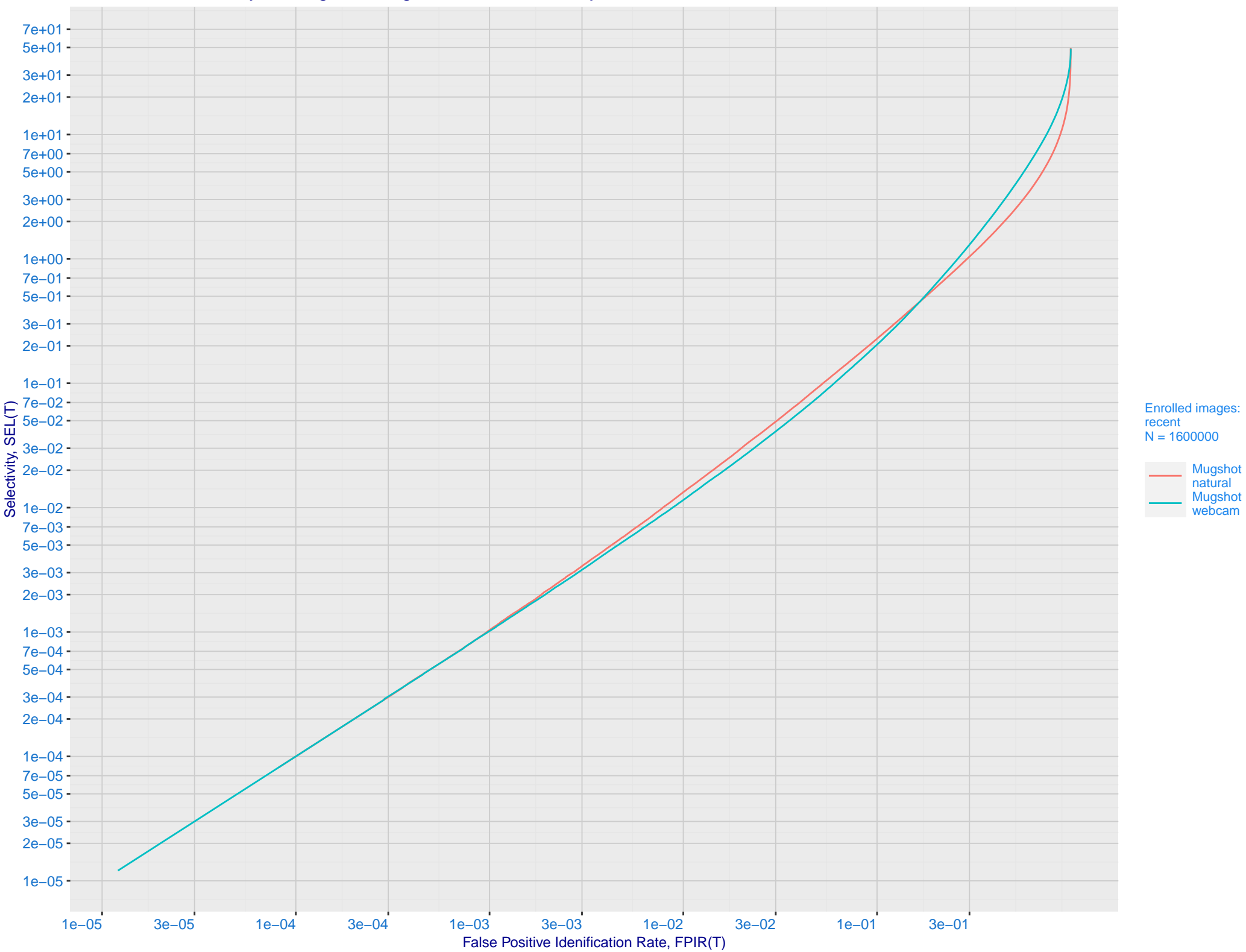
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals



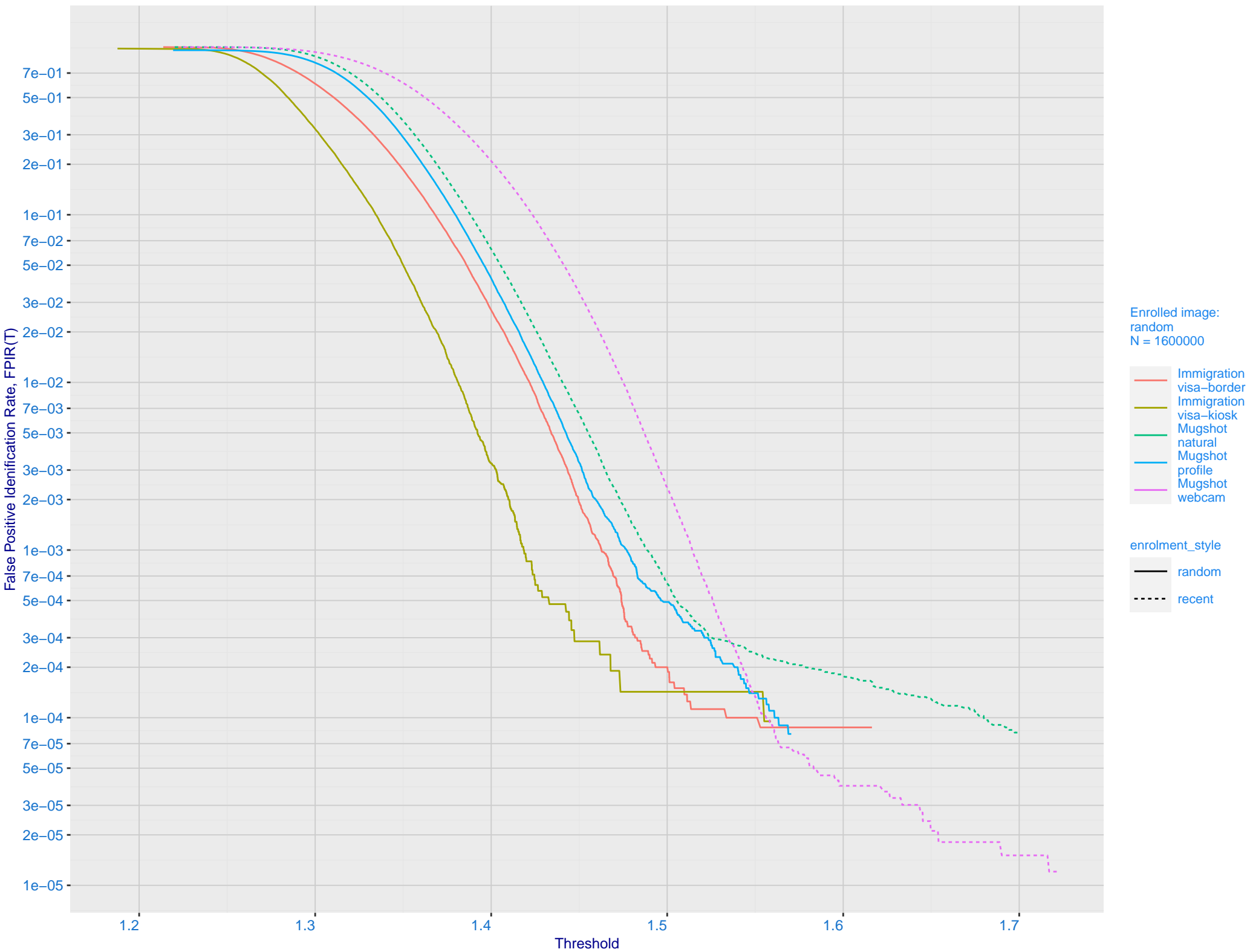
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate

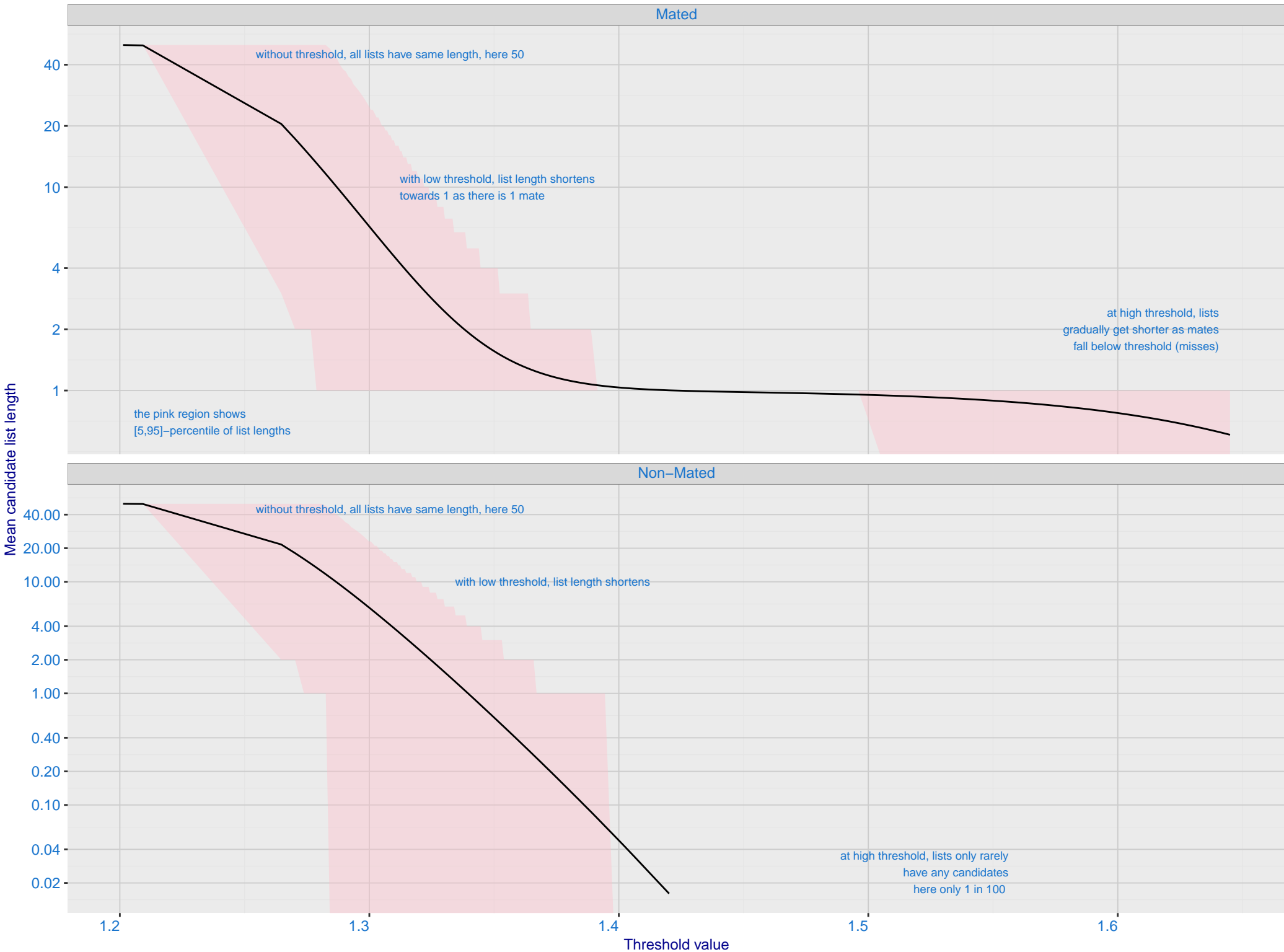


G: FPIR dependence on T by probe type for N = 1600000 subjects



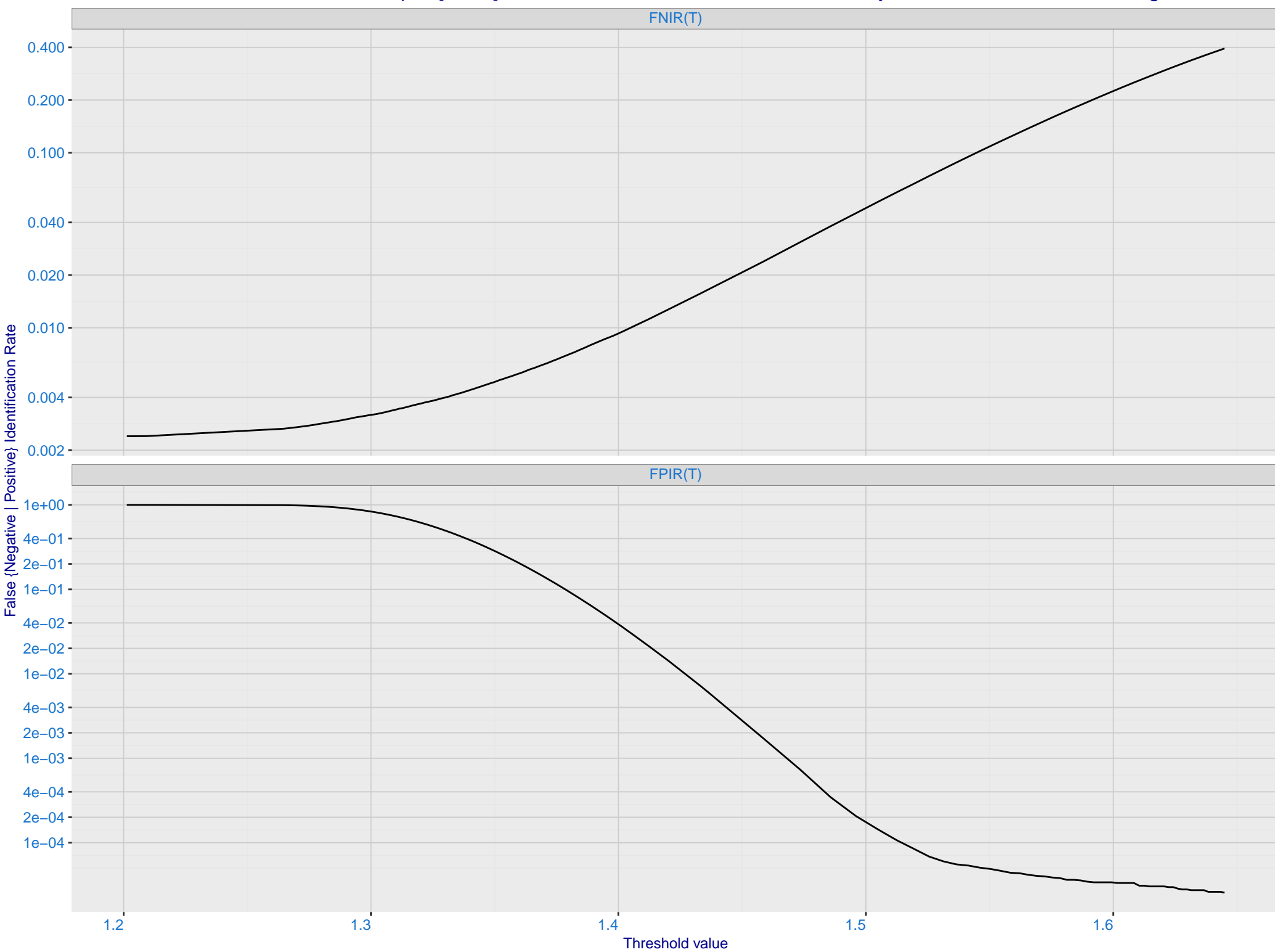
H: Reduced length candidate lists for human review

Dataset is border–border with time–lapse [10,15] YRS with N = 1600000. Probes are 10–15 years later than enrollment image

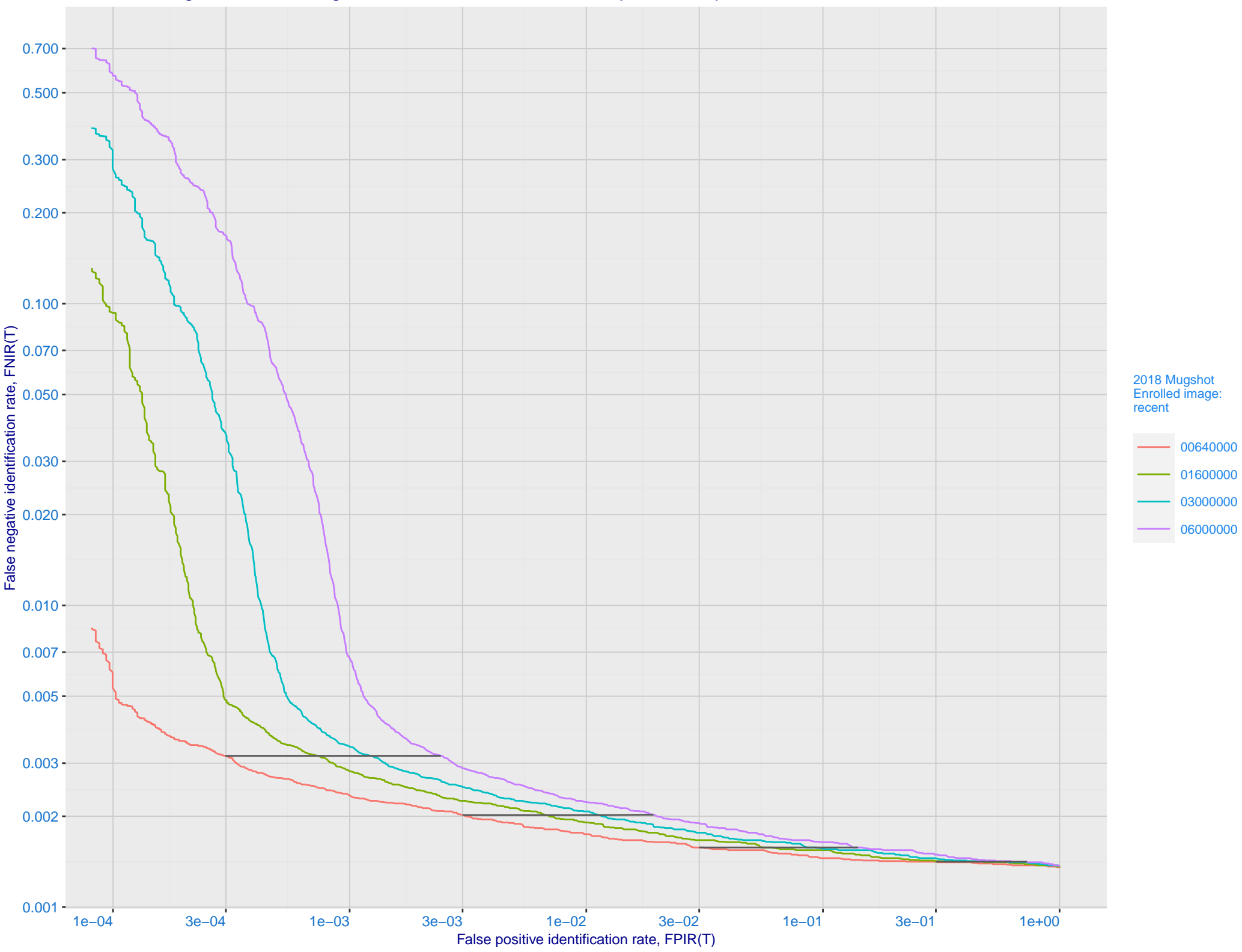


I: FNIR and FPIR dependence on threshold

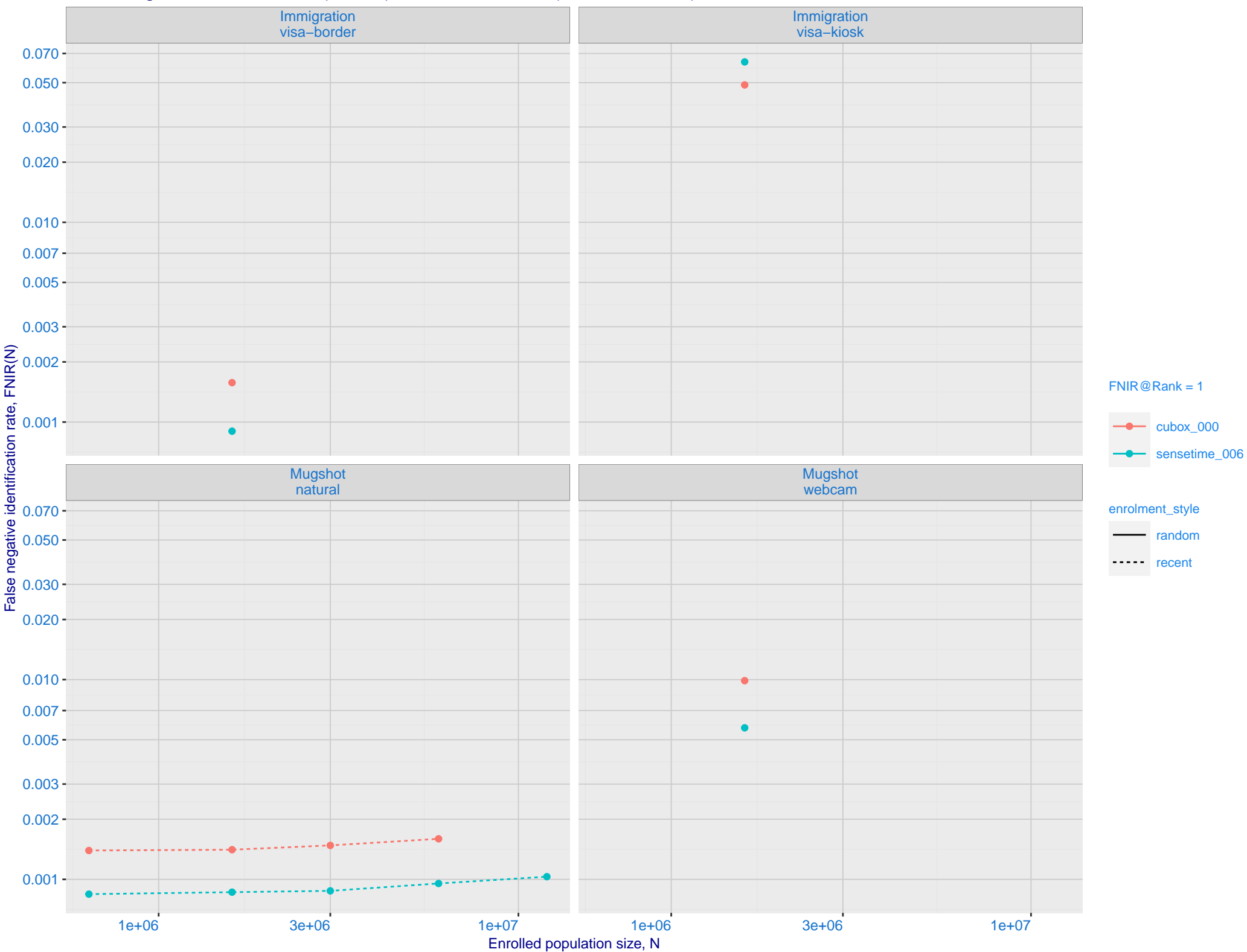
Dataset is border-border with time-lapse [10,15] YRS with N = 1600000. Probes are 10-15 years later than enrollment image



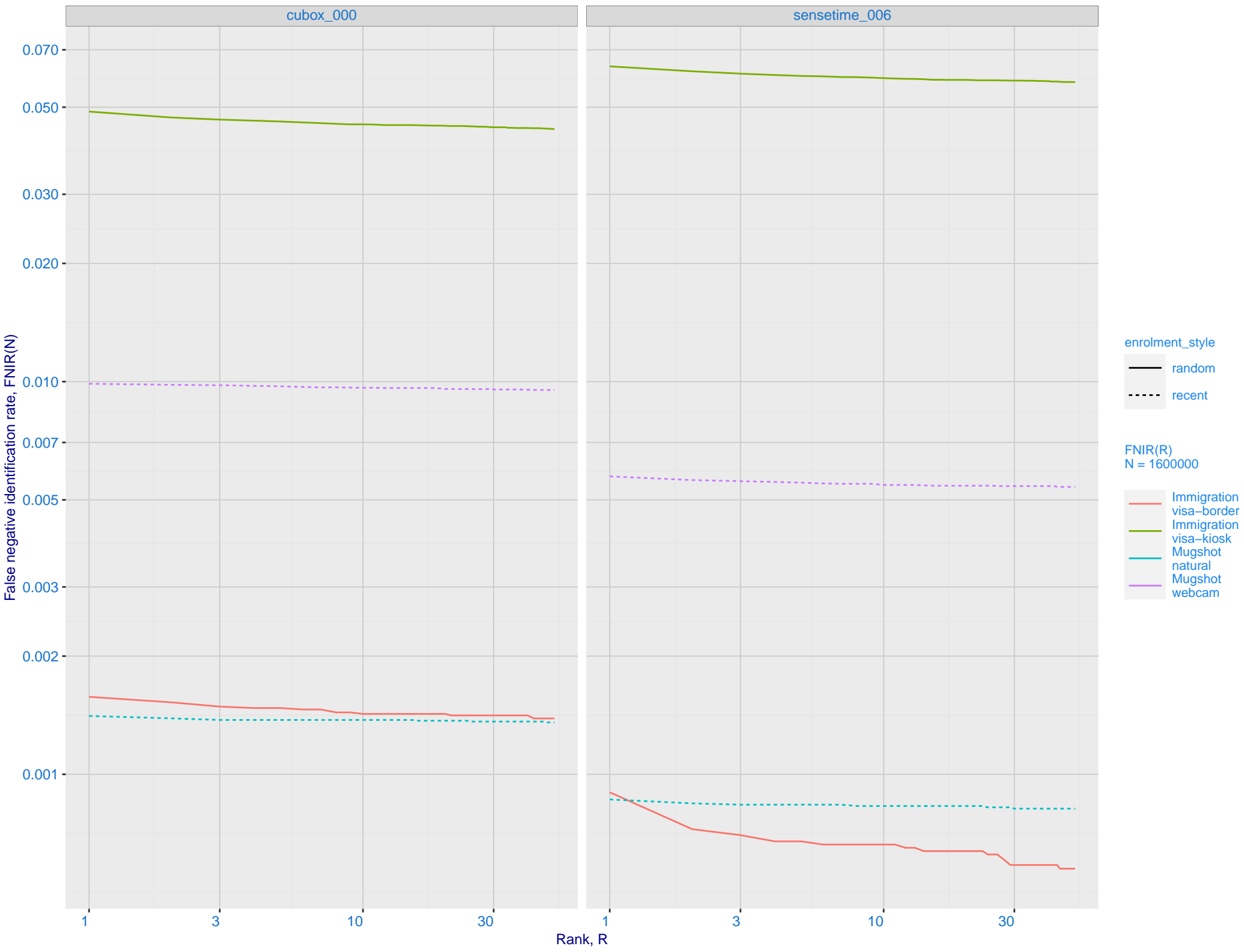
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.



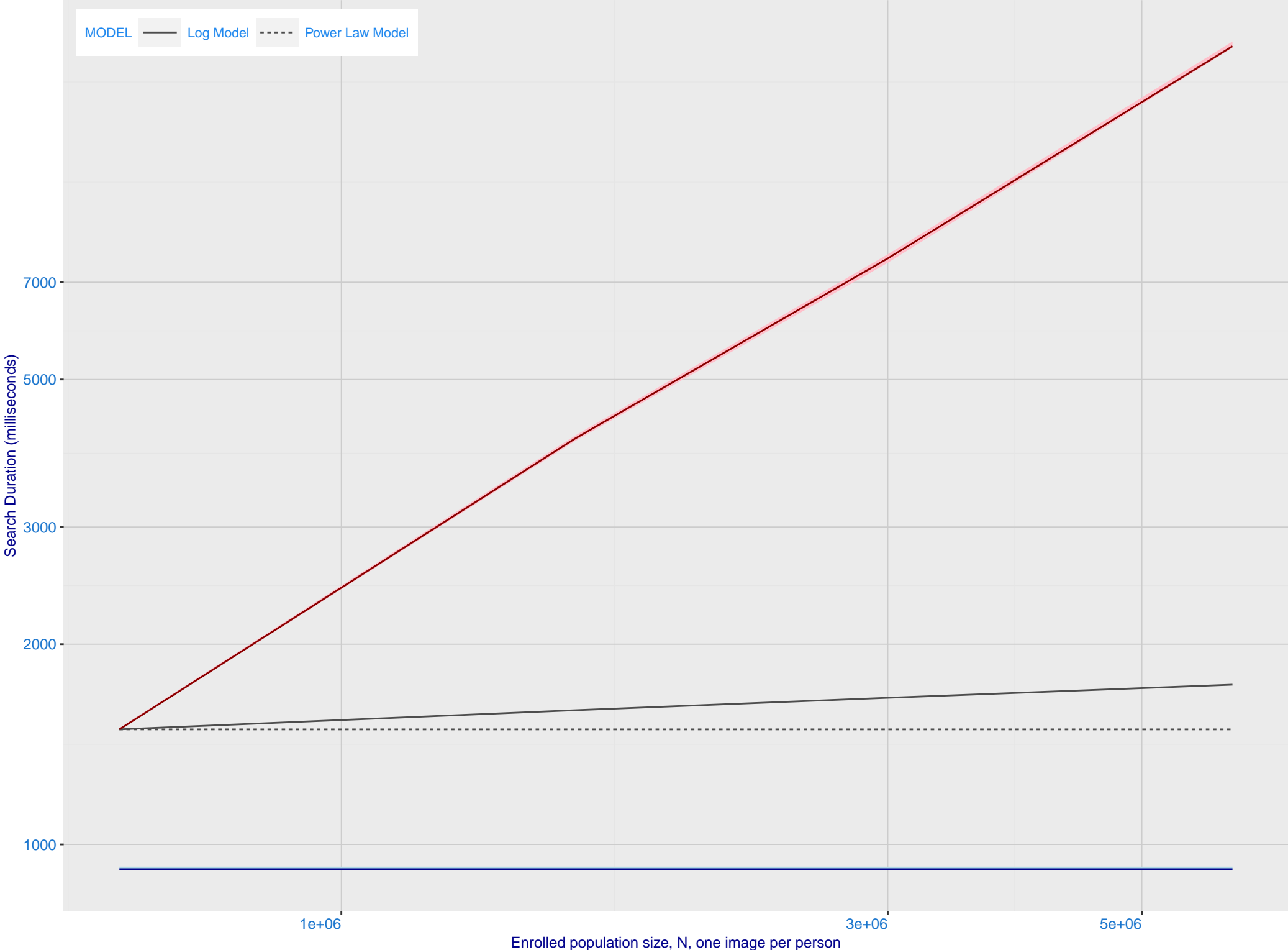
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006)



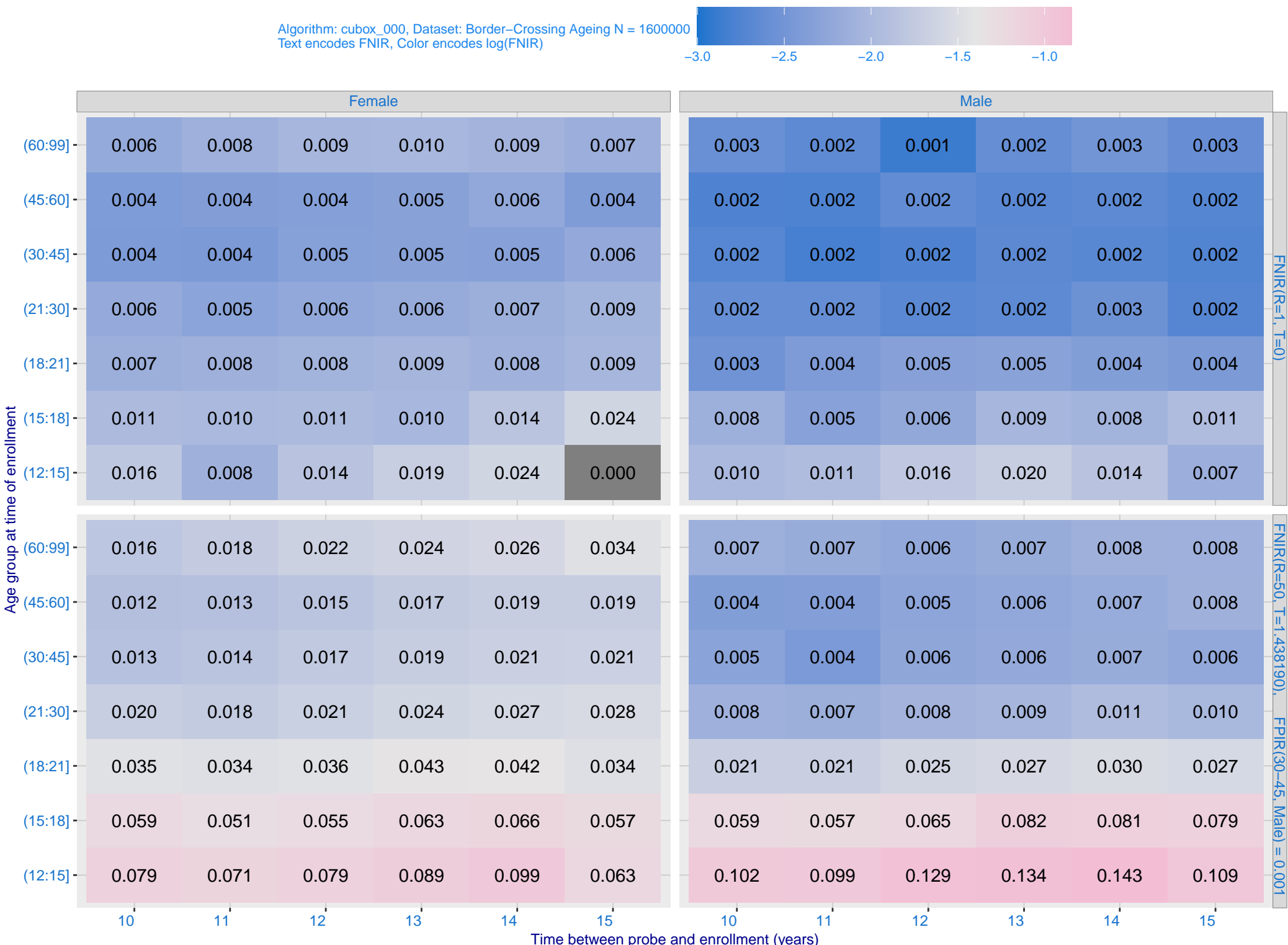
L: Investigational mode: FNIR(1600000, R, 0) by probe type



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



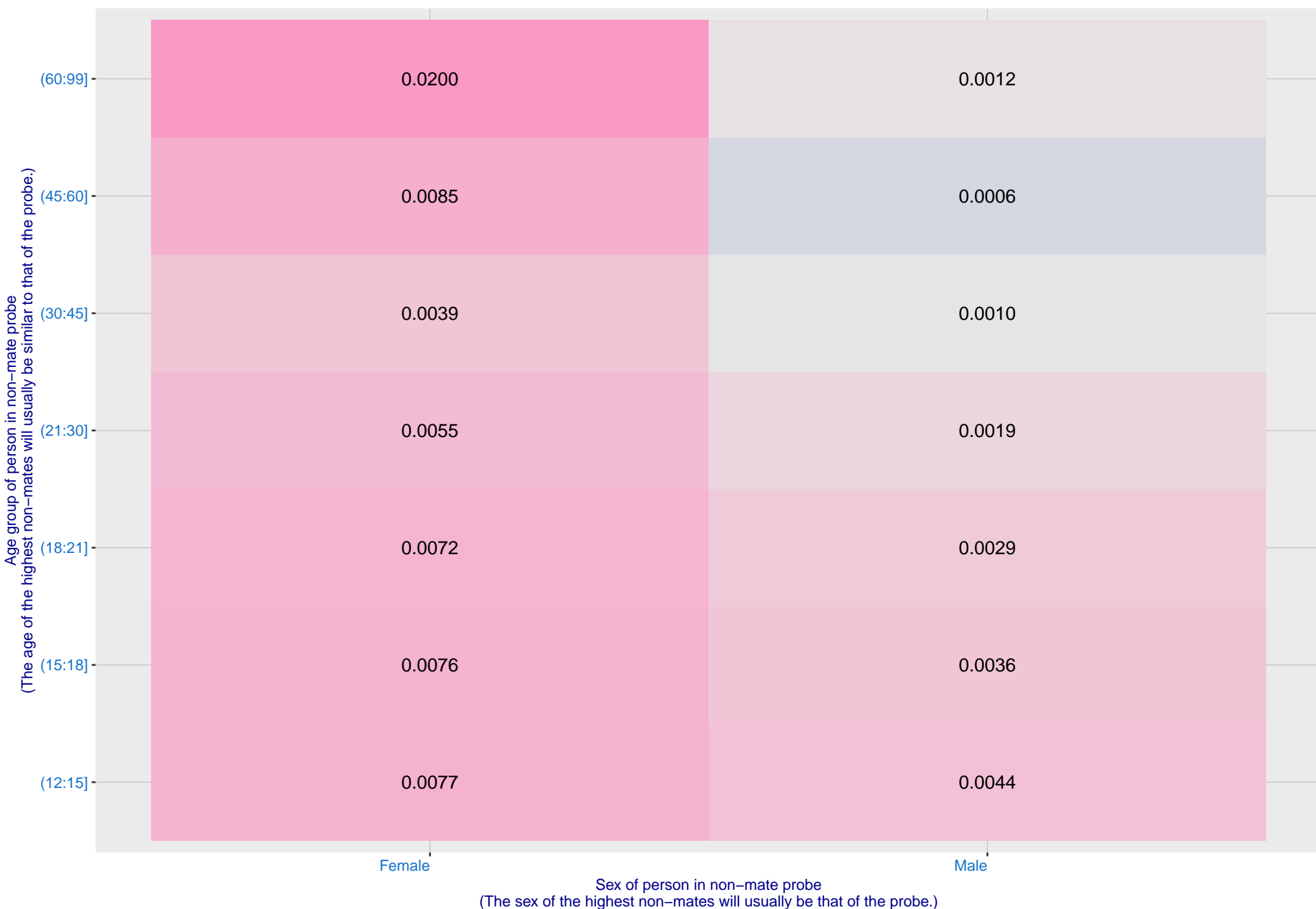
O: FNIR(T, N = 1.6 million) by sex, age and time-lapse. The top row gives investigational rank-1 miss rates. The bottom panels give high threshold for more lights-out identification with low FPIR.



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.

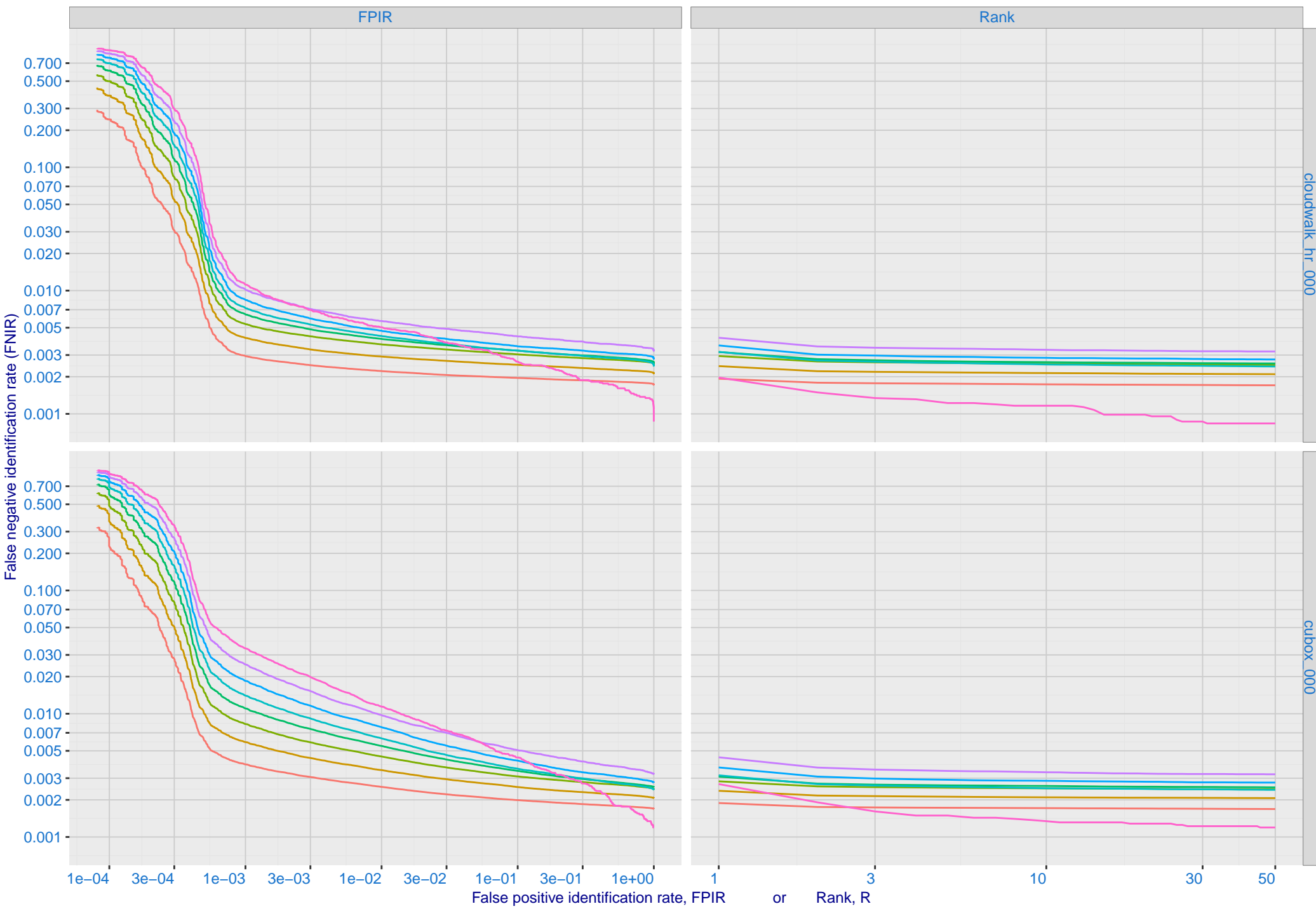
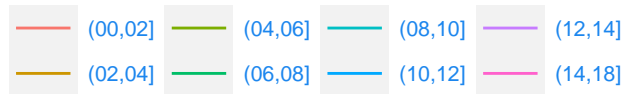
Algorithm: cubox_000, Dataset: Border-Crossing Ageing
Threshold: 1.438190 set to achive FPIR(30–45, Male) = 0.001

Color encodes log(FPIR)



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

Dataset: 2018 Mugshot N = 3068801



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

