

A: Datasheet

Algorithm: cloudwalk_mt_002

Developer: Cloudwalk – Moontime Smart Technology

Submission Date: 2023_02_24

Template size: 2048 bytes

Template time (2.5 percentile): 974 msec

Template time (median): 976 msec

Template time (97.5 percentile): 1008 msec

Investigation:

Frontal mugshot ranking 88 (out of 399) — FNIR(1600000, 0, 1) = 0.0018 vs. lowest 0.0008 from intema_001

Mugshot webcam ranking 87 (out of 361) — FNIR(1600000, 0, 1) = 0.0110 vs. lowest 0.0054 from sensetime_009

Mugshot profile ranking 2 (out of 330) — FNIR(1600000, 0, 1) = 0.0520 vs. lowest 0.0517 from sensetime_009

Immigration visa–border ranking 1 (out of 288) — FNIR(1600000, 0, 1) = 0.0006

Immigration visa–kiosk ranking 1 (out of 233) — FNIR(1600000, 0, 1) = 0.0387

Identification:

Frontal mugshot ranking 13 (out of 399) — FNIR(1600000, T, L+1) = 0.0019, FPIR=0.001000 vs. lowest 0.0011 from idemia_010

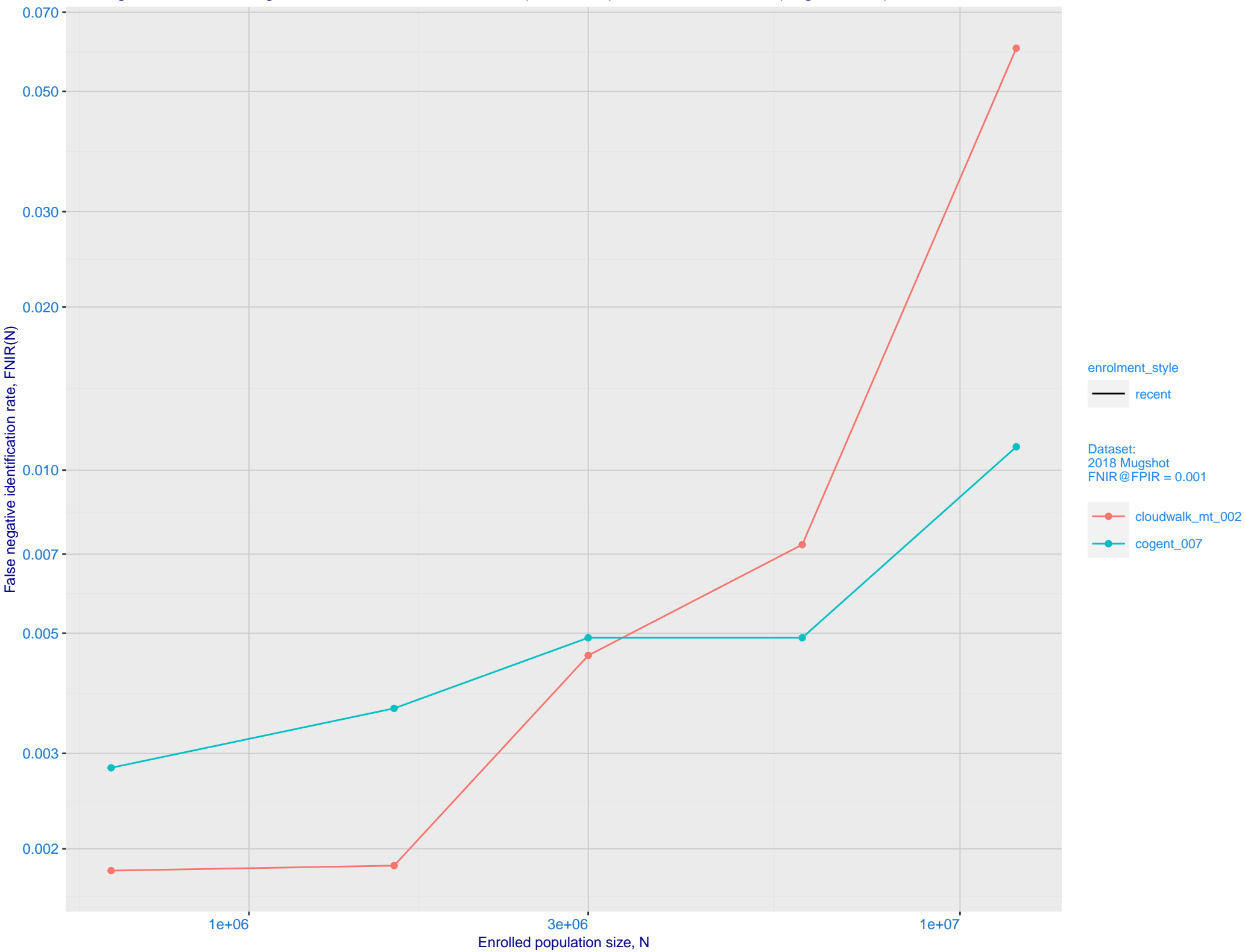
Mugshot webcam ranking 7 (out of 359) — FNIR(1600000, T, L+1) = 0.0114, FPIR=0.001000 vs. lowest 0.0072 from sensetime_009

Mugshot profile ranking 1 (out of 329) — FNIR(1600000, T, L+1) = 0.0634, FPIR=0.001000

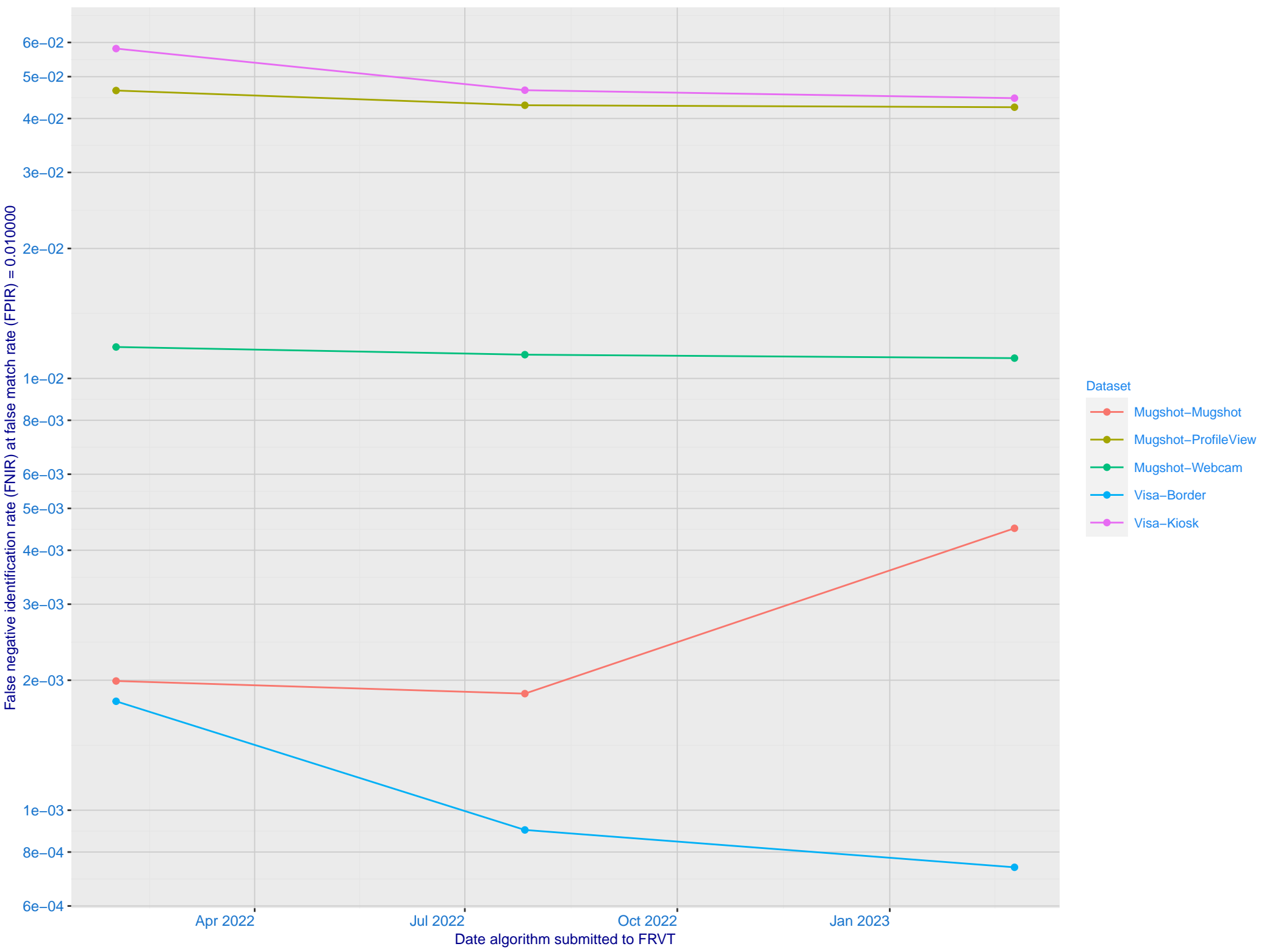
Immigration visa–border ranking 1 (out of 287) — FNIR(1600000, T, L+1) = 0.0010, FPIR=0.001000

Immigration visa–kiosk ranking 1 (out of 233) — FNIR(1600000, T, L+1) = 0.0517, FPIR=0.001000

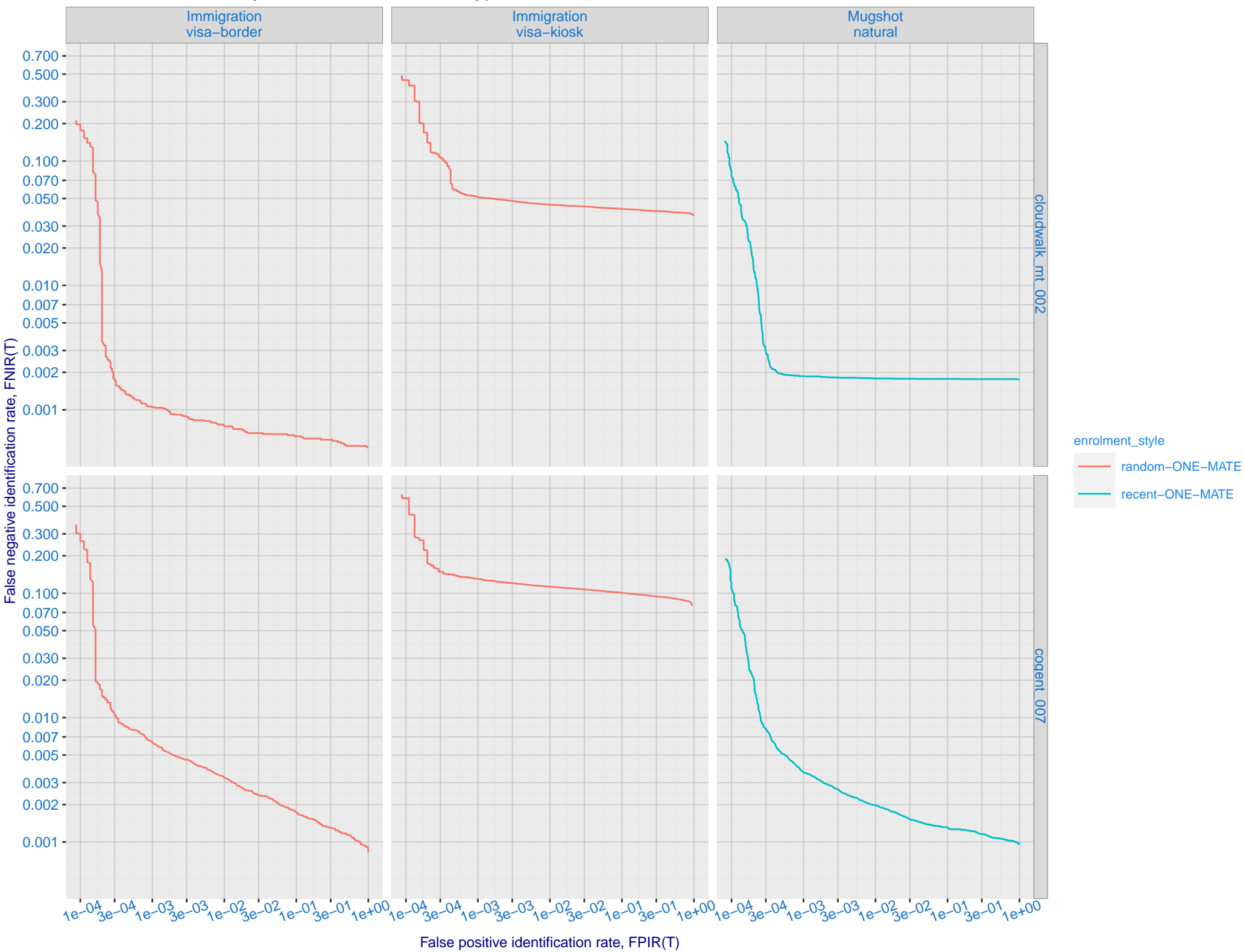
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (cogent_007)



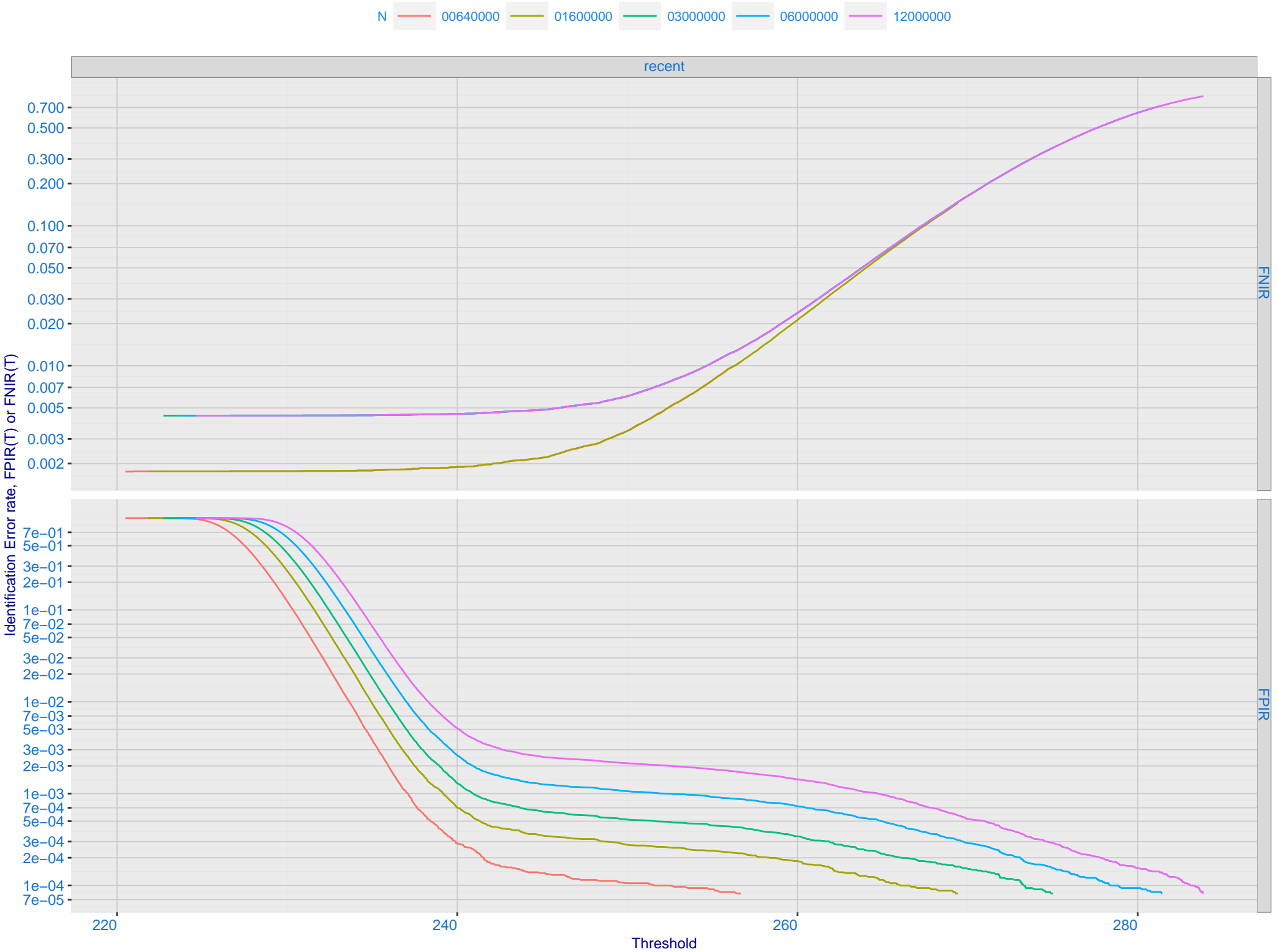
C: Evolution of accuracy for CLOUDWALK_MT algorithms on three datasets 2018 – present



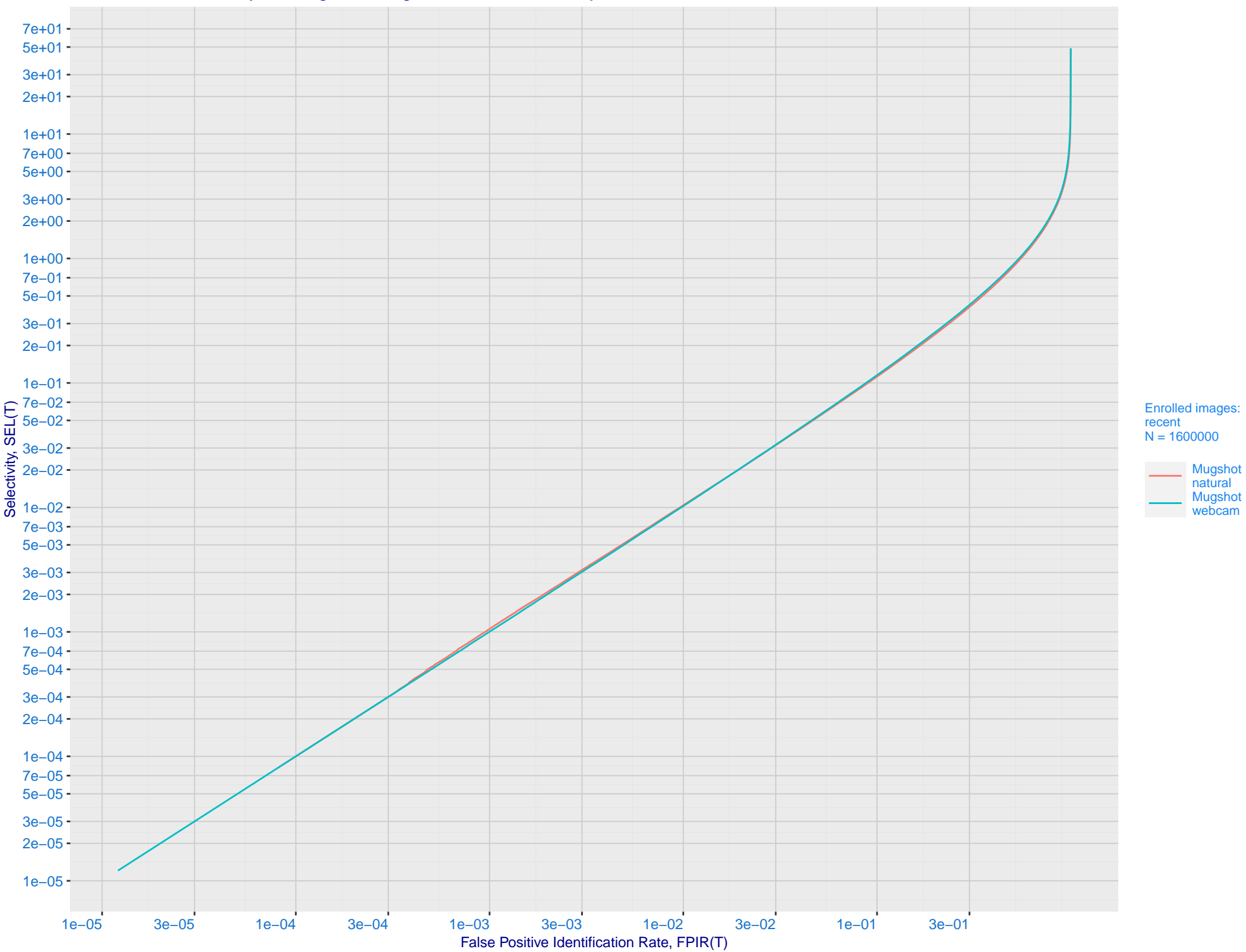
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals



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



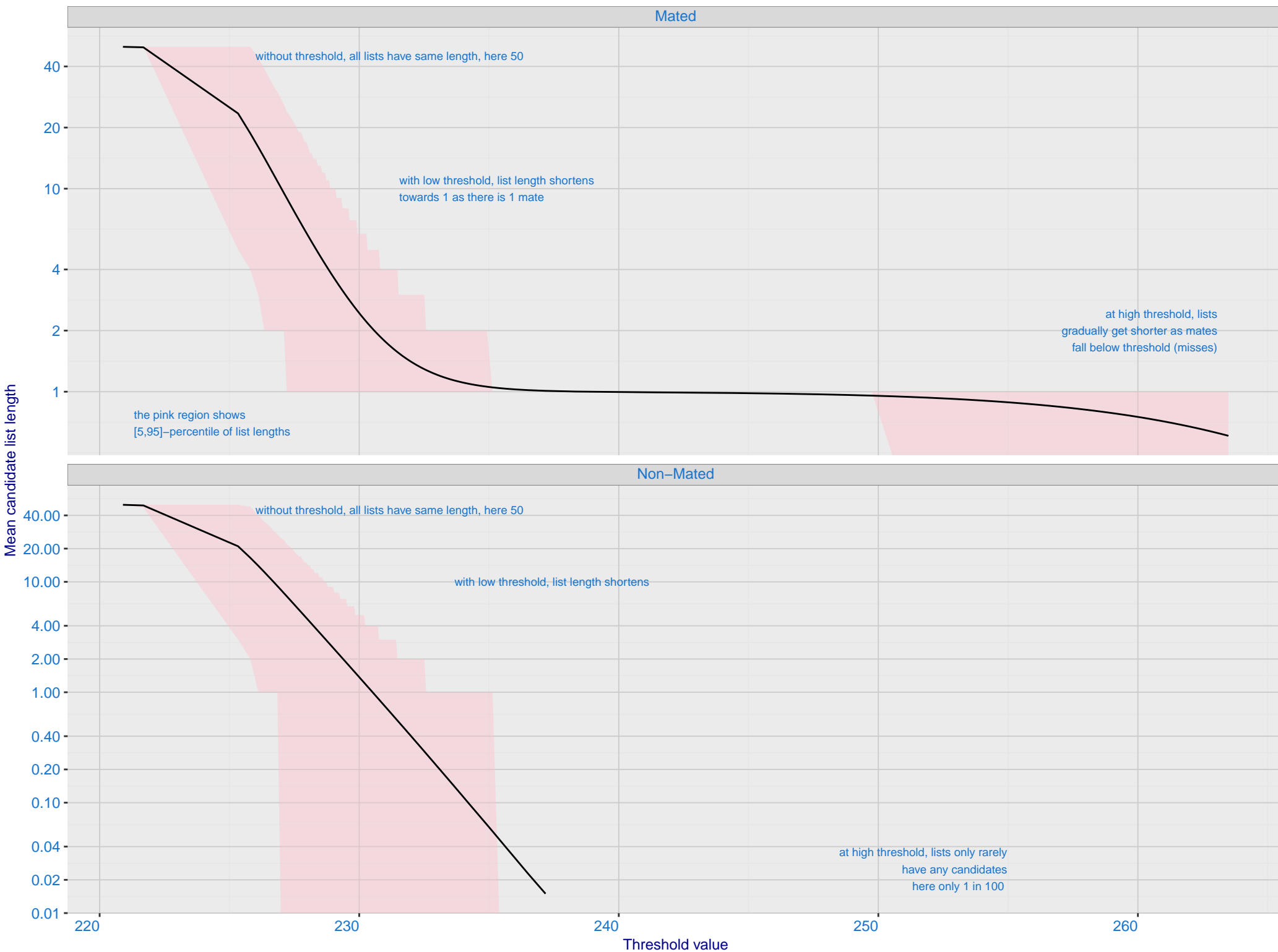
- Immigration visa—border
- Immigration visa—kiosk
- Mugshot natural
- Mugshot profile
- Mugshot webcam

enrolment_style

—	random
- - -	recent

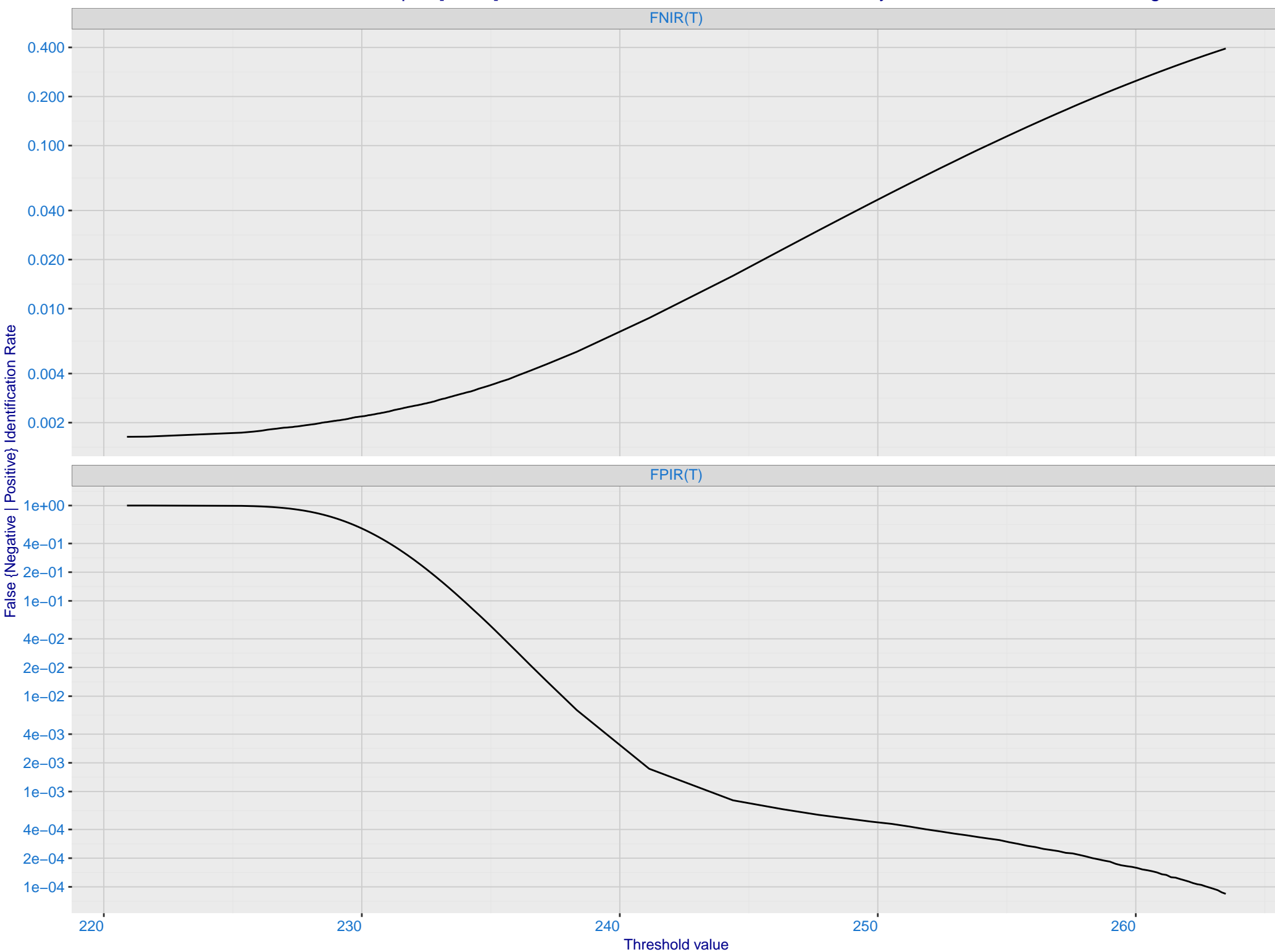
H: Reduced length candidate lists for human review

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

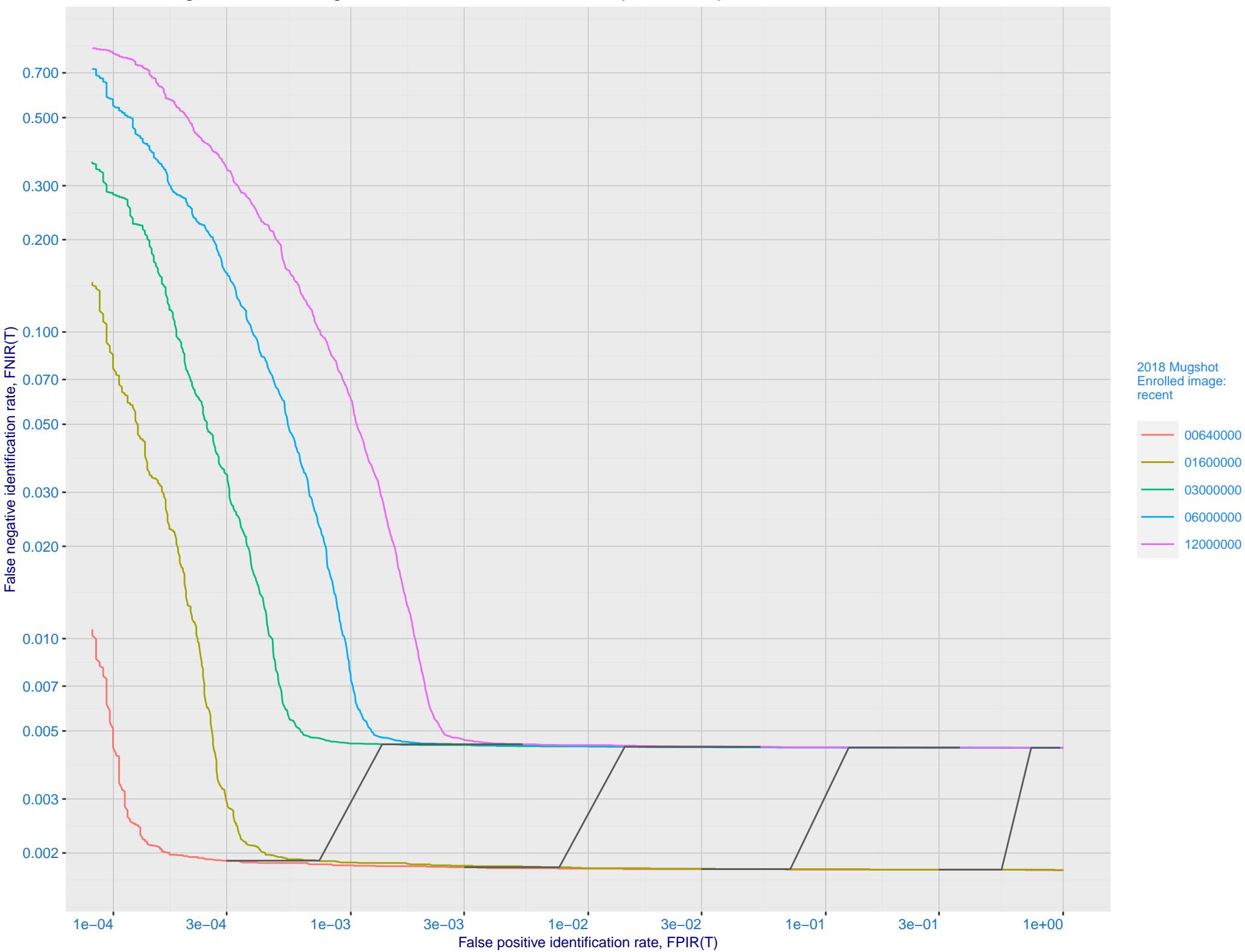


I: FNIR and FPIR dependence on threshold

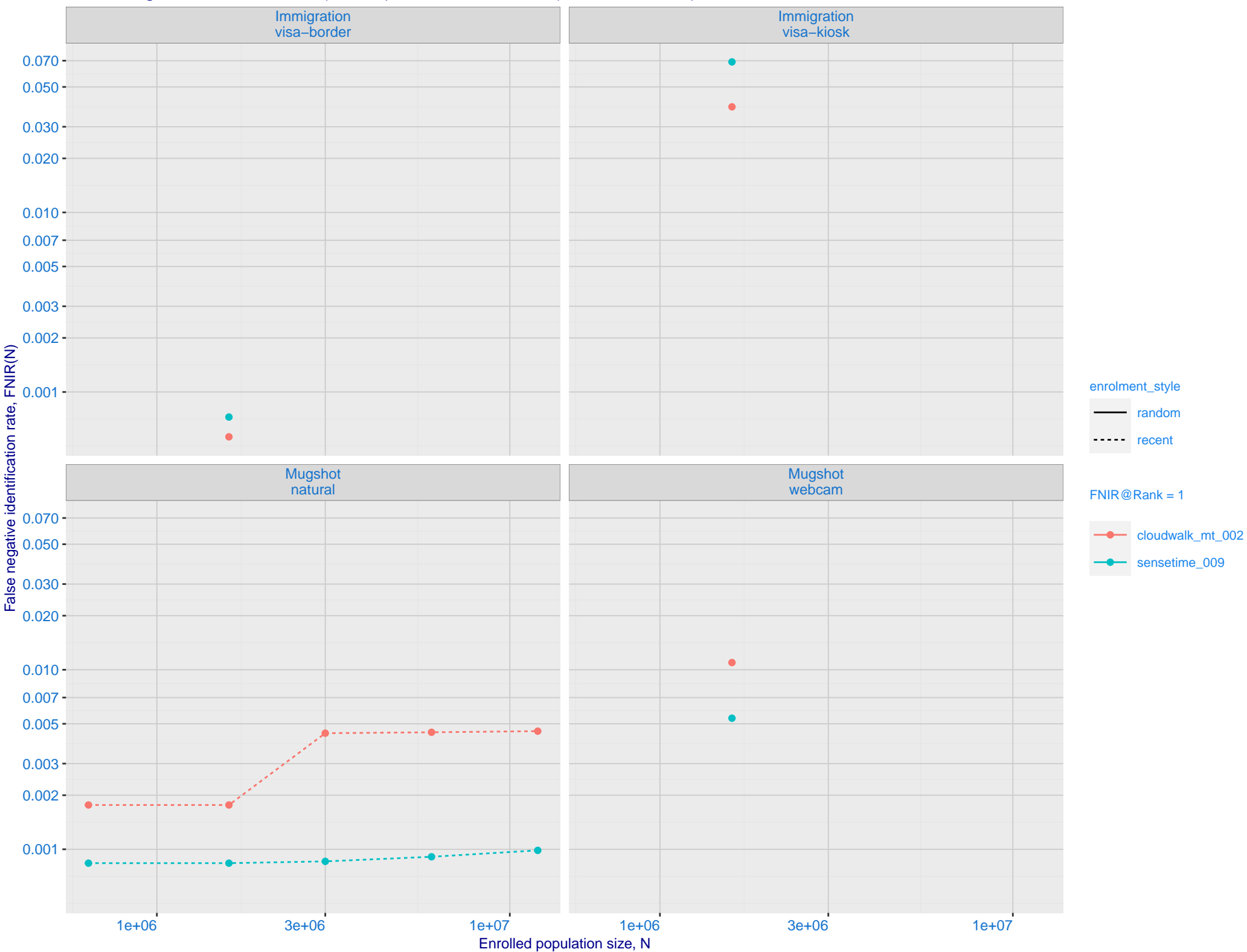
Dataset is border-border with time-lapse [10,15] YRS with N = 1600000. Probes are 10-15 years later than enrollment image



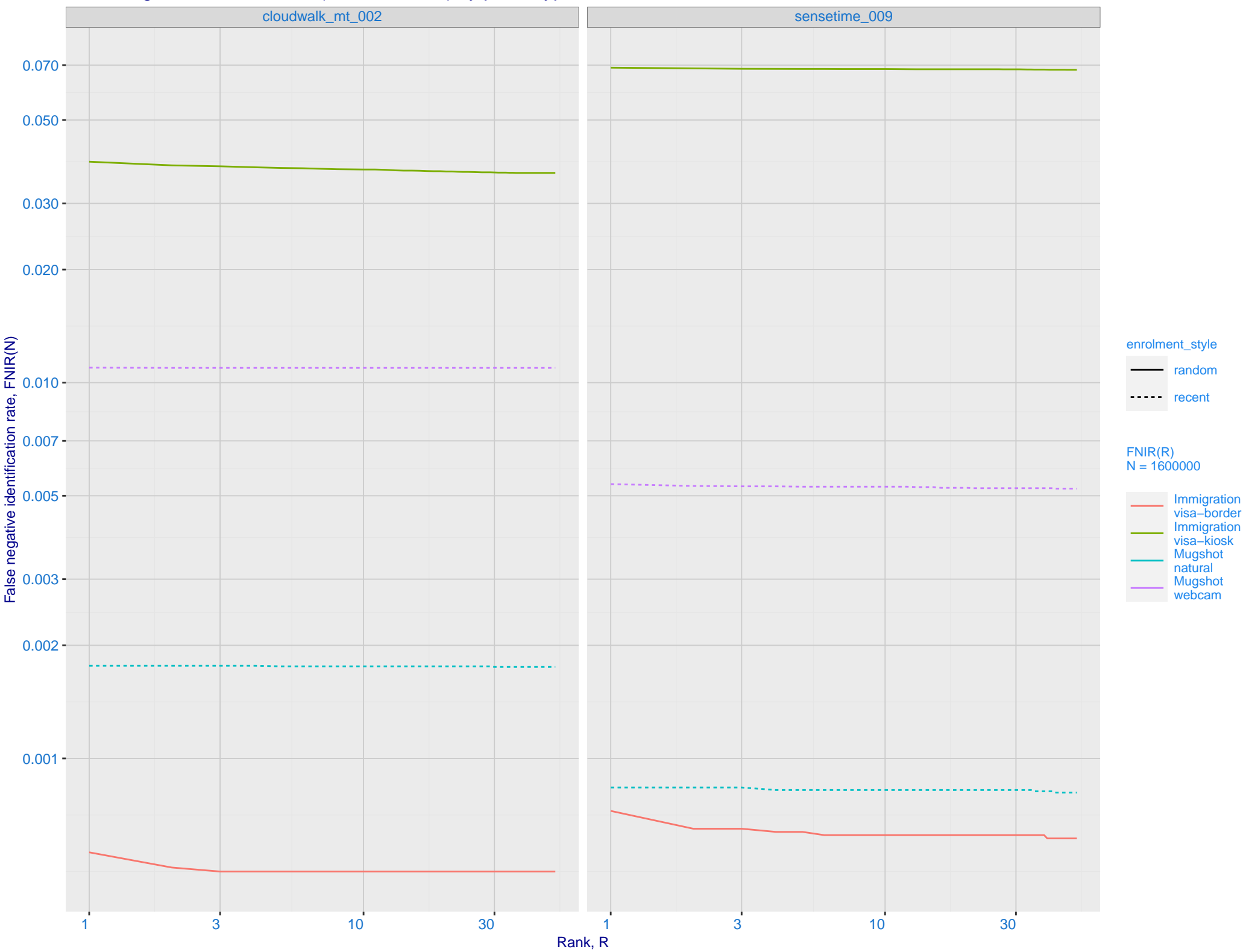
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.



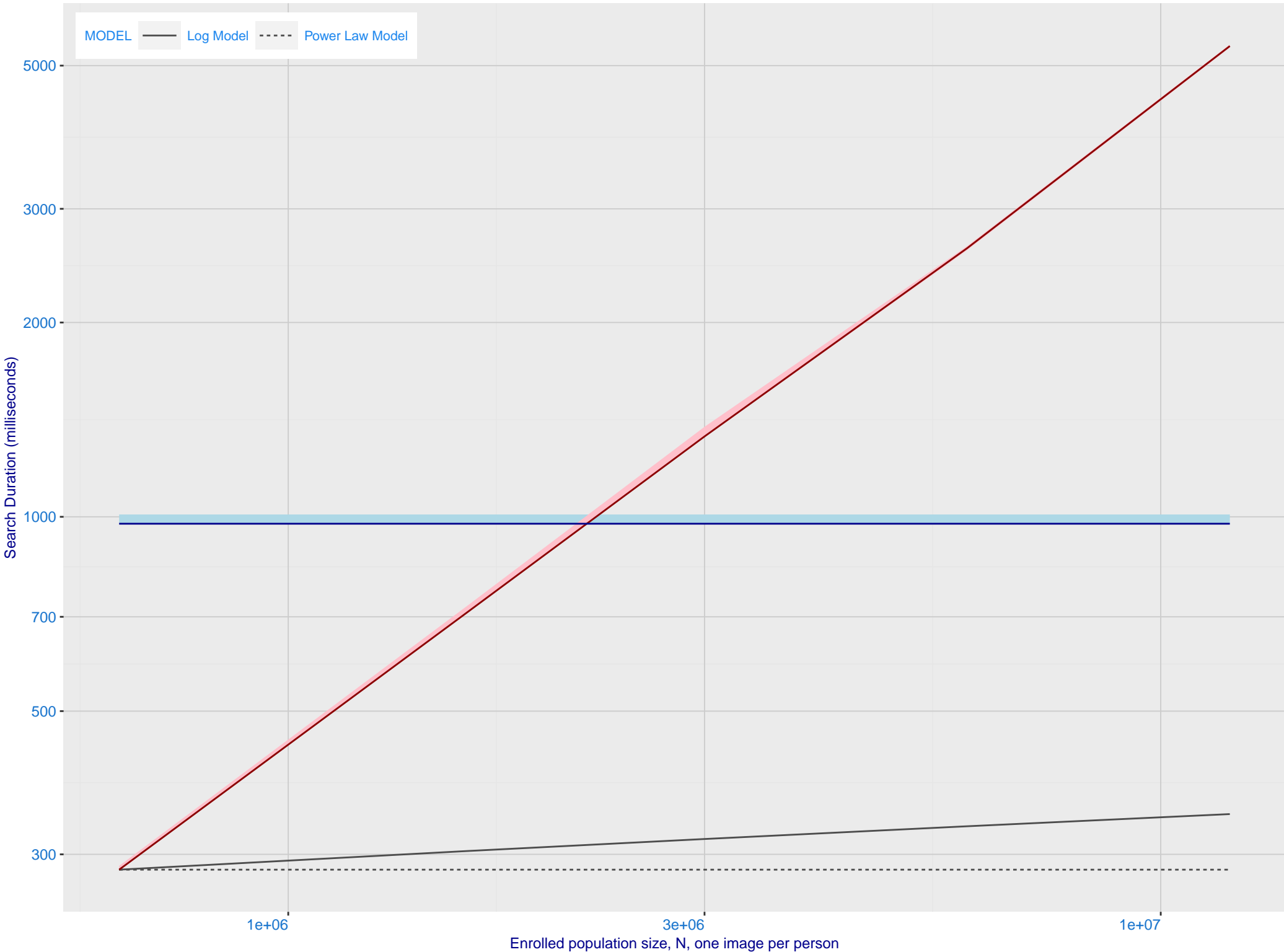
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_009)



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

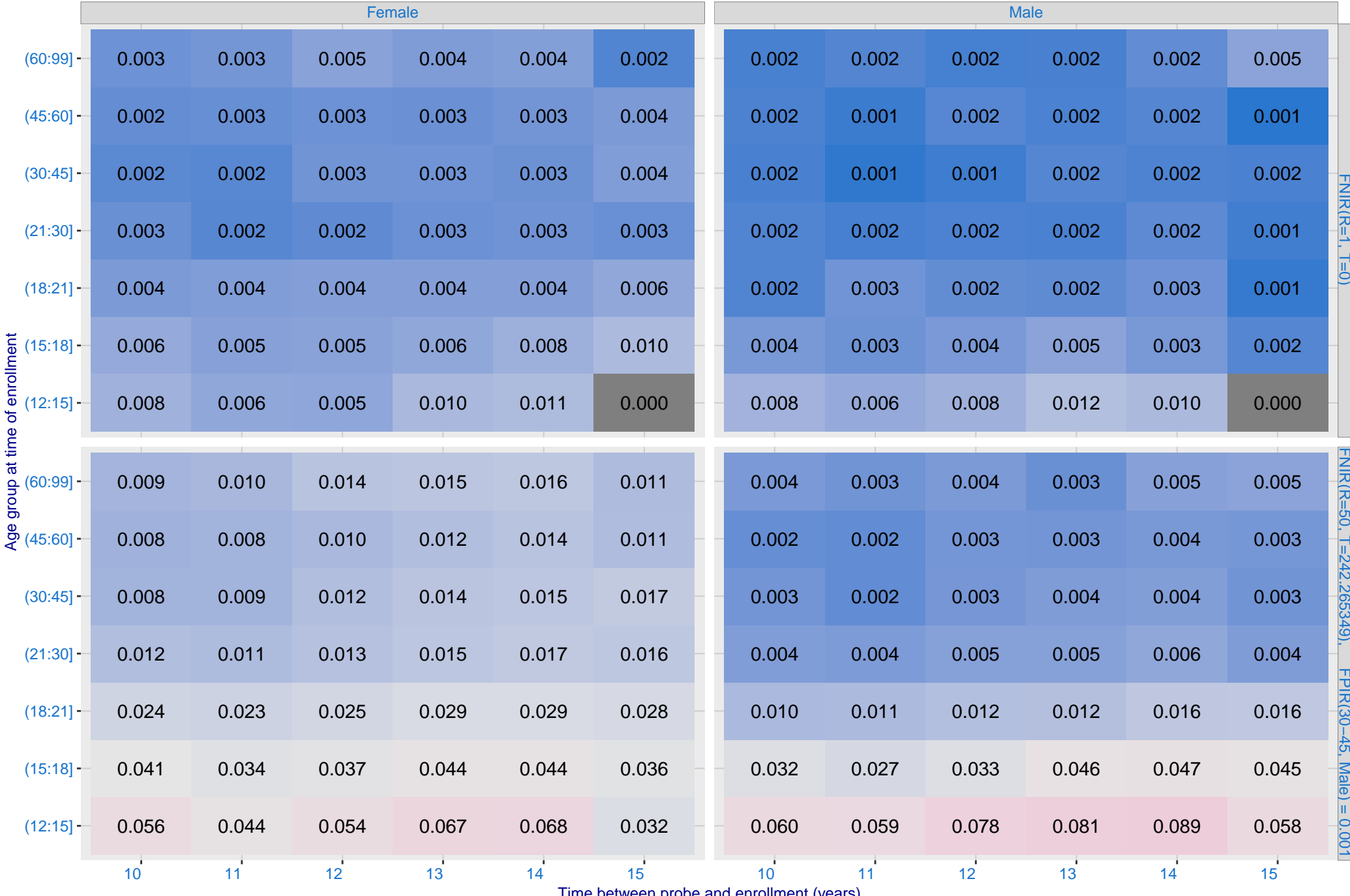
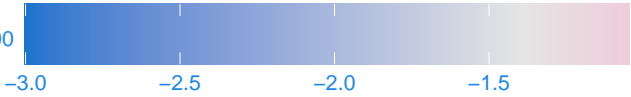


M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power-law models are fit to the first two (N,T) observations



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.

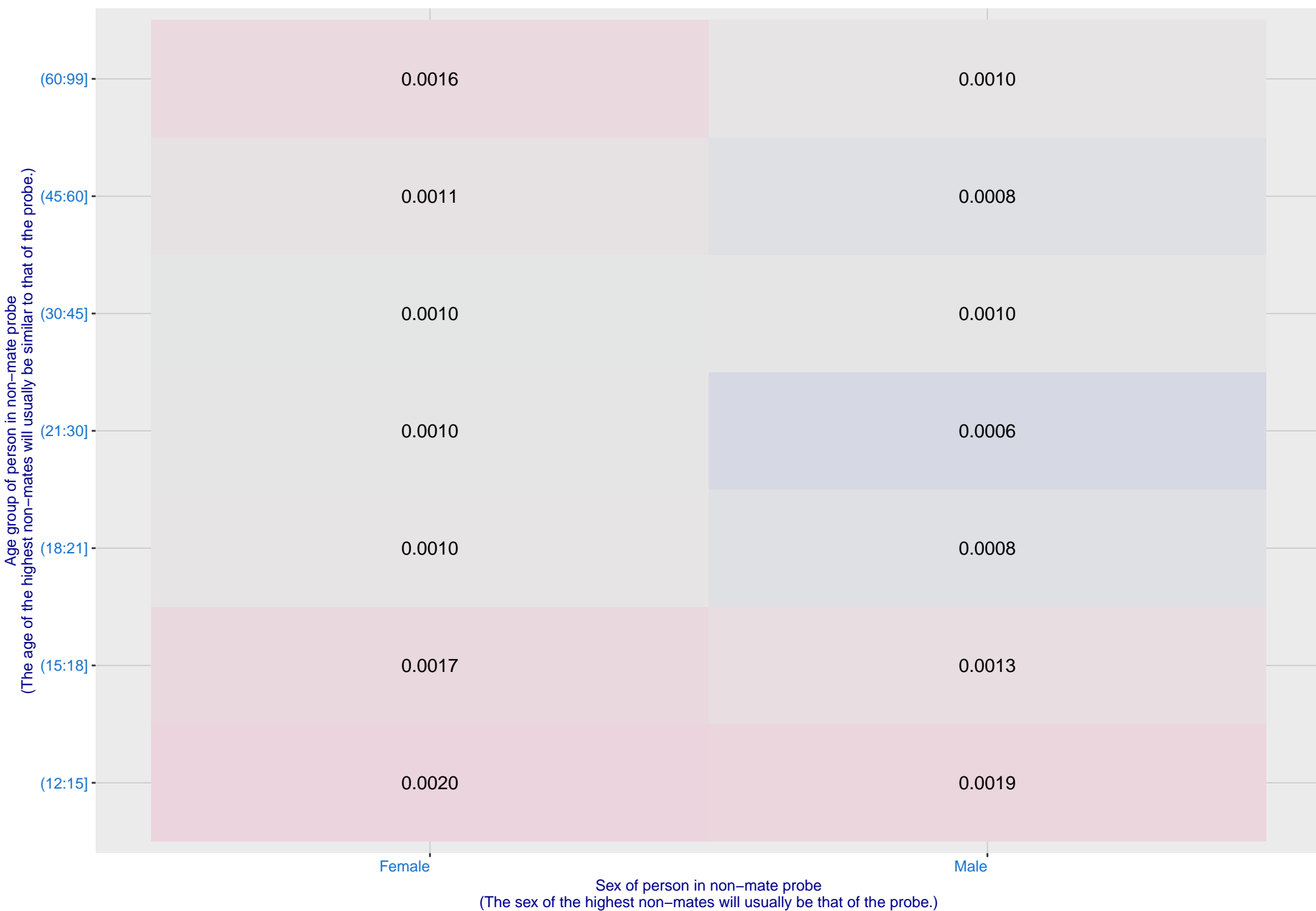
Algorithm: cloudwalk_mt_002, Dataset: Border-Crossing Ageing N = 1600000
Text encodes FNIR, Color encodes log(FNIR)



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.

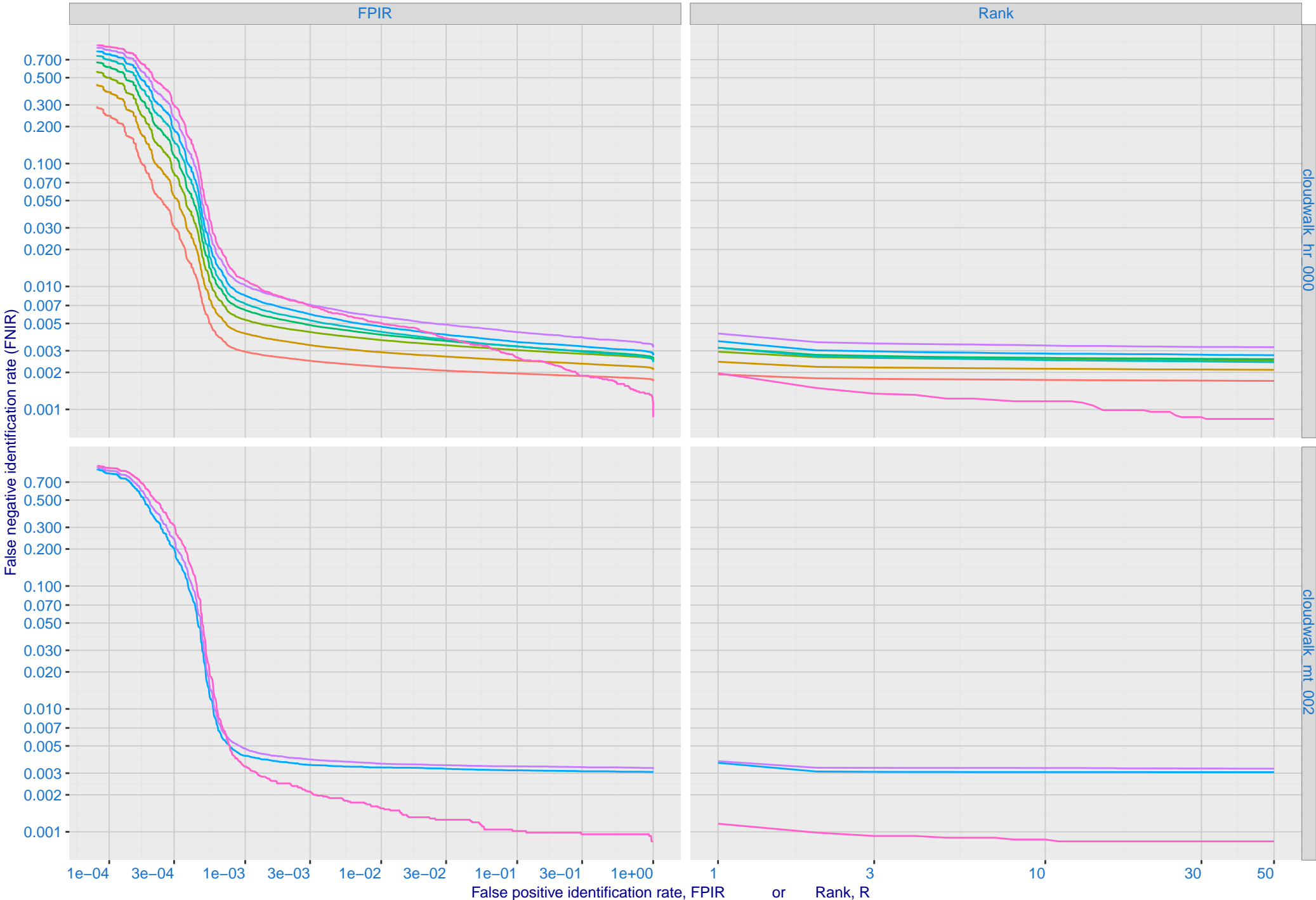
Algorithm: cloudwalk_mt_002, Dataset: Border-Crossing Ageing
Threshold: 242.265349 set to achieve FPIR(30–45, Male) = 0.001

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

