

A: Datasheet

Algorithm: intellivision_002

Developer: Intellivision

Submission Date: 2022_07_28

Template size: 2056 bytes

Template time (2.5 percentile): 330 msec

Template time (median): 331 msec

Template time (97.5 percentile): 357 msec

Investigation:

Mugshot webcam ranking 211 (out of 337) -- FNIR(1600000, 0, 1) = 0.0308 vs. lowest 0.0055 from sensetime_008

Mugshot profile ranking 245 (out of 306) -- FNIR(1600000, 0, 1) = 0.9424 vs. lowest 0.0521 from sensetime_007

Immigration visa-border ranking 172 (out of 264) -- FNIR(1600000, 0, 1) = 0.0175 vs. lowest 0.0006 from cloudwalk_mt_001

Immigration visa-kiosk ranking 167 (out of 209) -- FNIR(1600000, 0, 1) = 0.1865 vs. lowest 0.0395 from cloudwalk_mt_001

Identification:

Frontal mugshot ranking 257 (out of 375) -- FNIR(1600000, T, L+1) = 0.1538, FPIR=0.001000 vs. lowest 0.0013 from sensetime_008

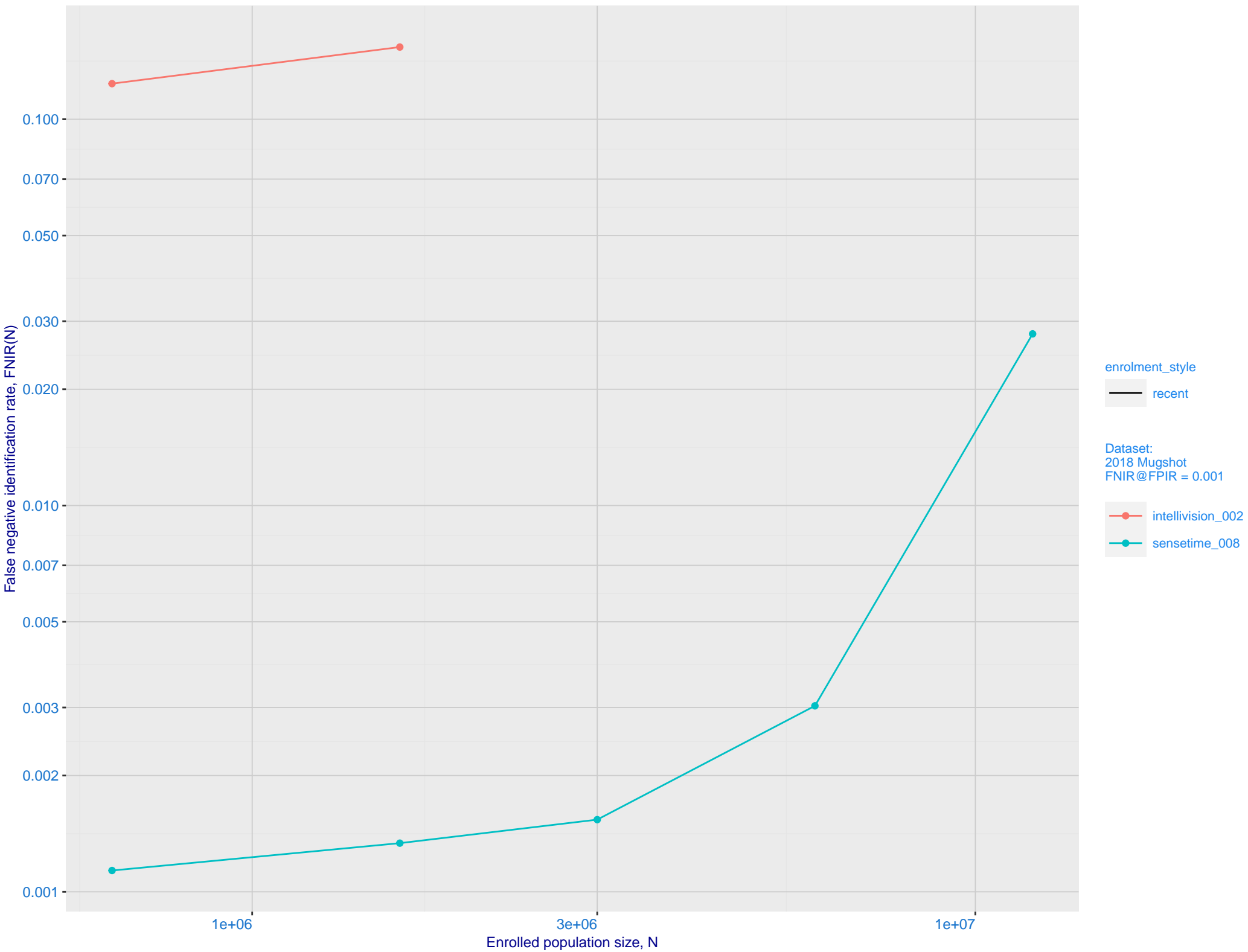
Mugshot webcam ranking 221 (out of 335) -- FNIR(1600000, T, L+1) = 0.1959, FPIR=0.001000 vs. lowest 0.0090 from sensetime_008

Mugshot profile ranking 208 (out of 305) -- FNIR(1600000, T, L+1) = 0.9988, FPIR=0.001000 vs. lowest 0.0698 from cloudwalk_mt_001

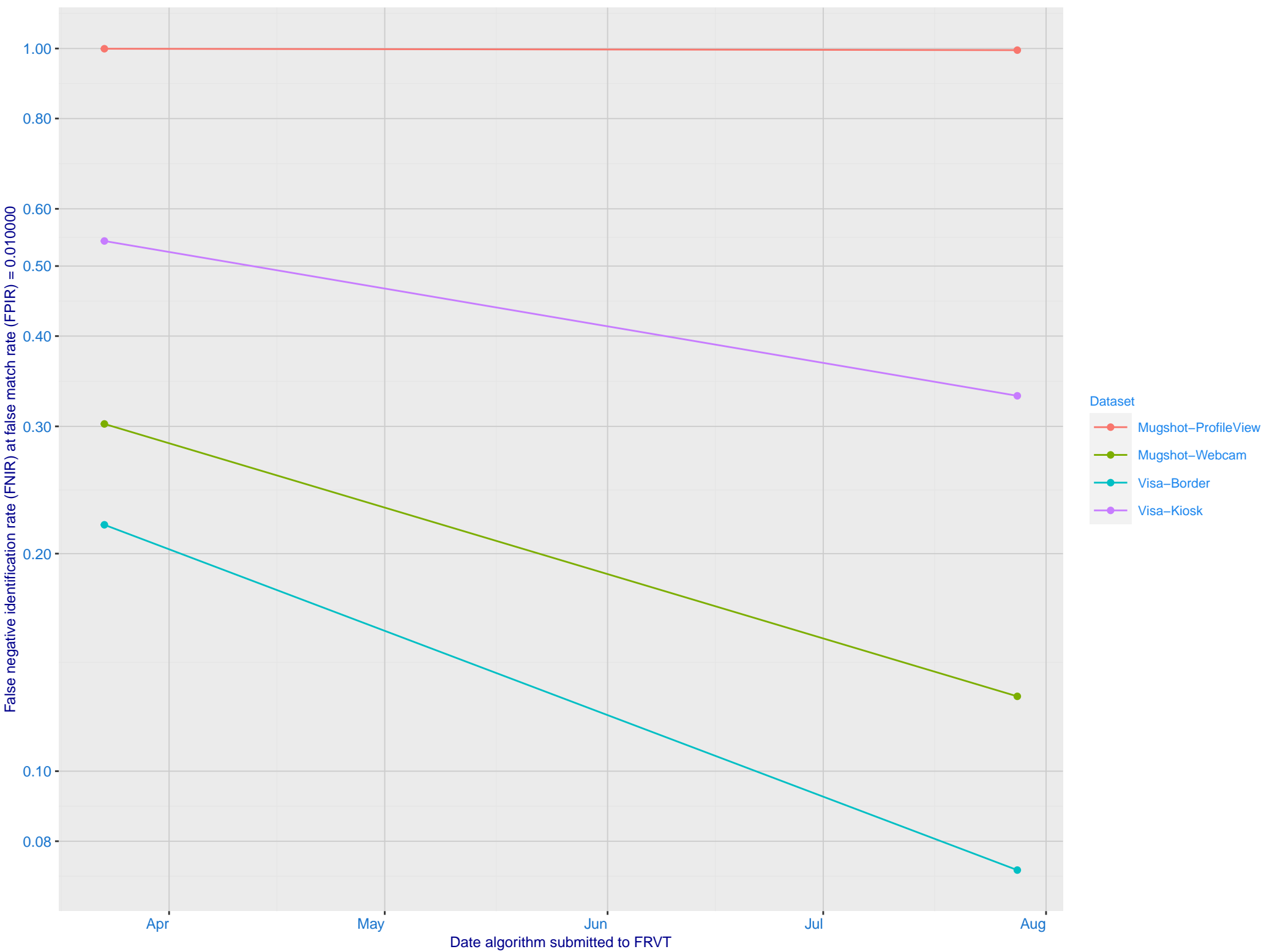
Immigration visa-border ranking 170 (out of 263) -- FNIR(1600000, T, L+1) = 0.1337, FPIR=0.001000 vs. lowest 0.0013 from cloudwalk_mt_001

Immigration visa-kiosk ranking 120 (out of 209) -- FNIR(1600000, T, L+1) = 0.4288, FPIR=0.001000 vs. lowest 0.0532 from cloudwalk_mt_001

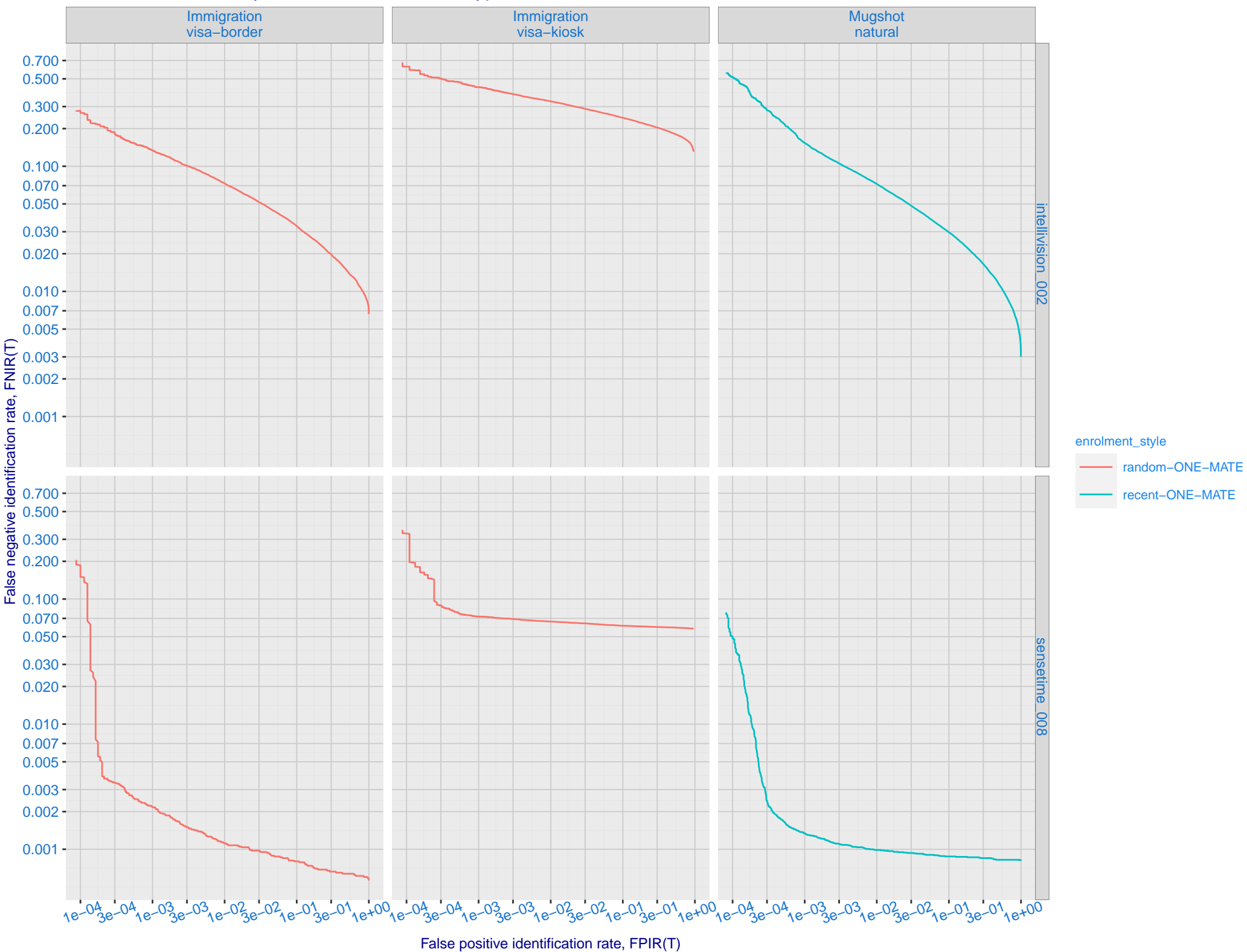
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (sensetime_008)



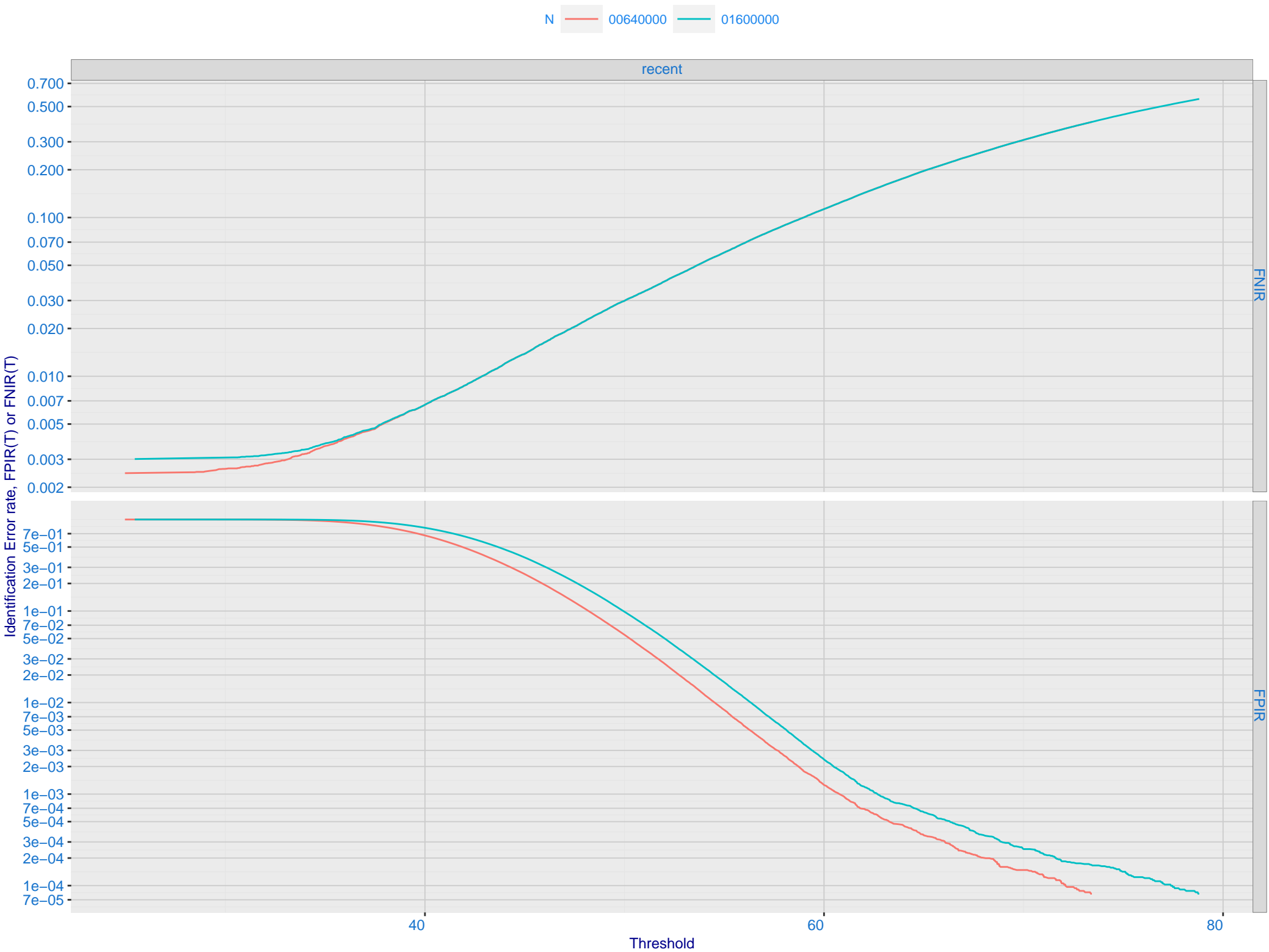
C: Evolution of accuracy for INTELLIVISION algorithms on three datasets 2018 – present



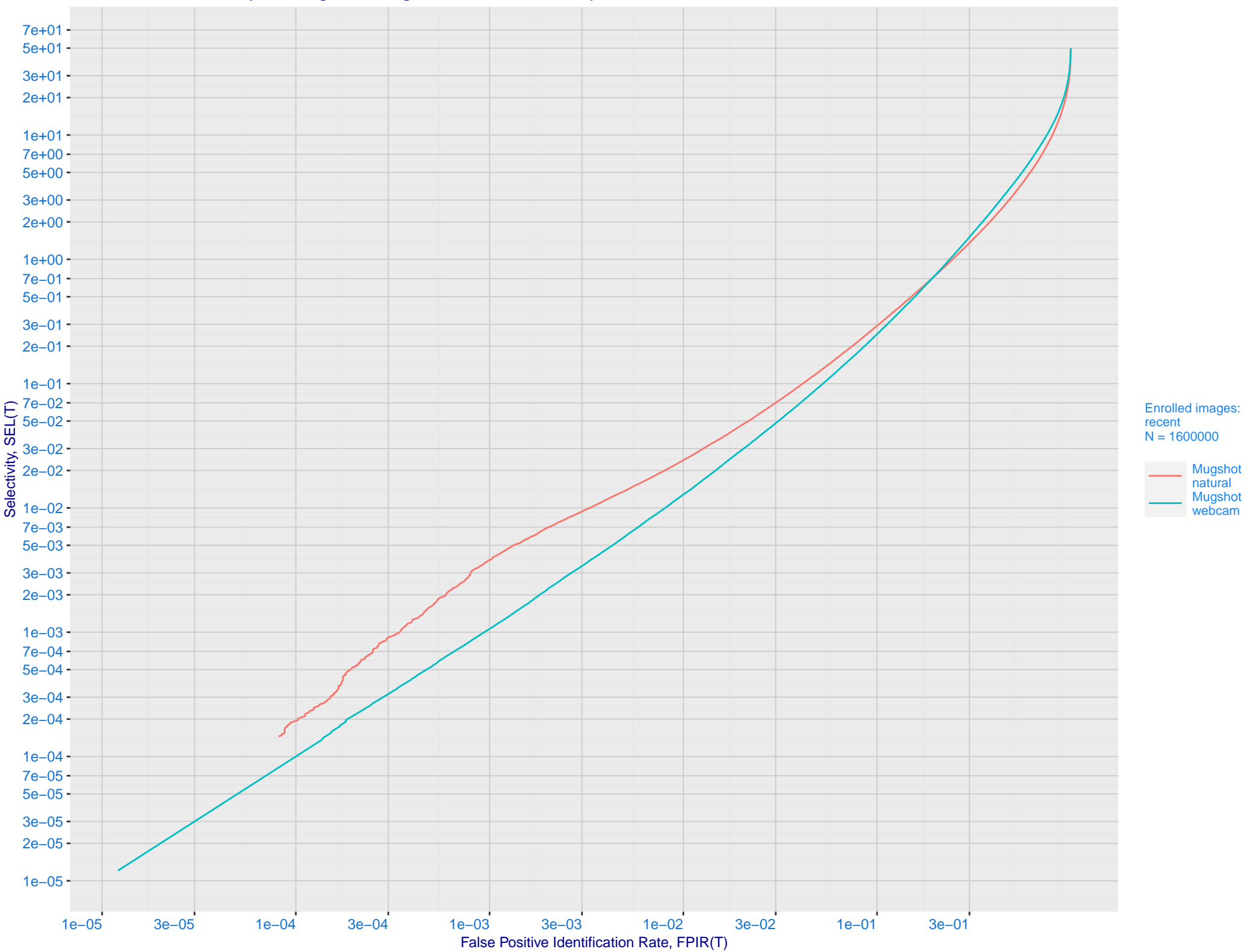
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals



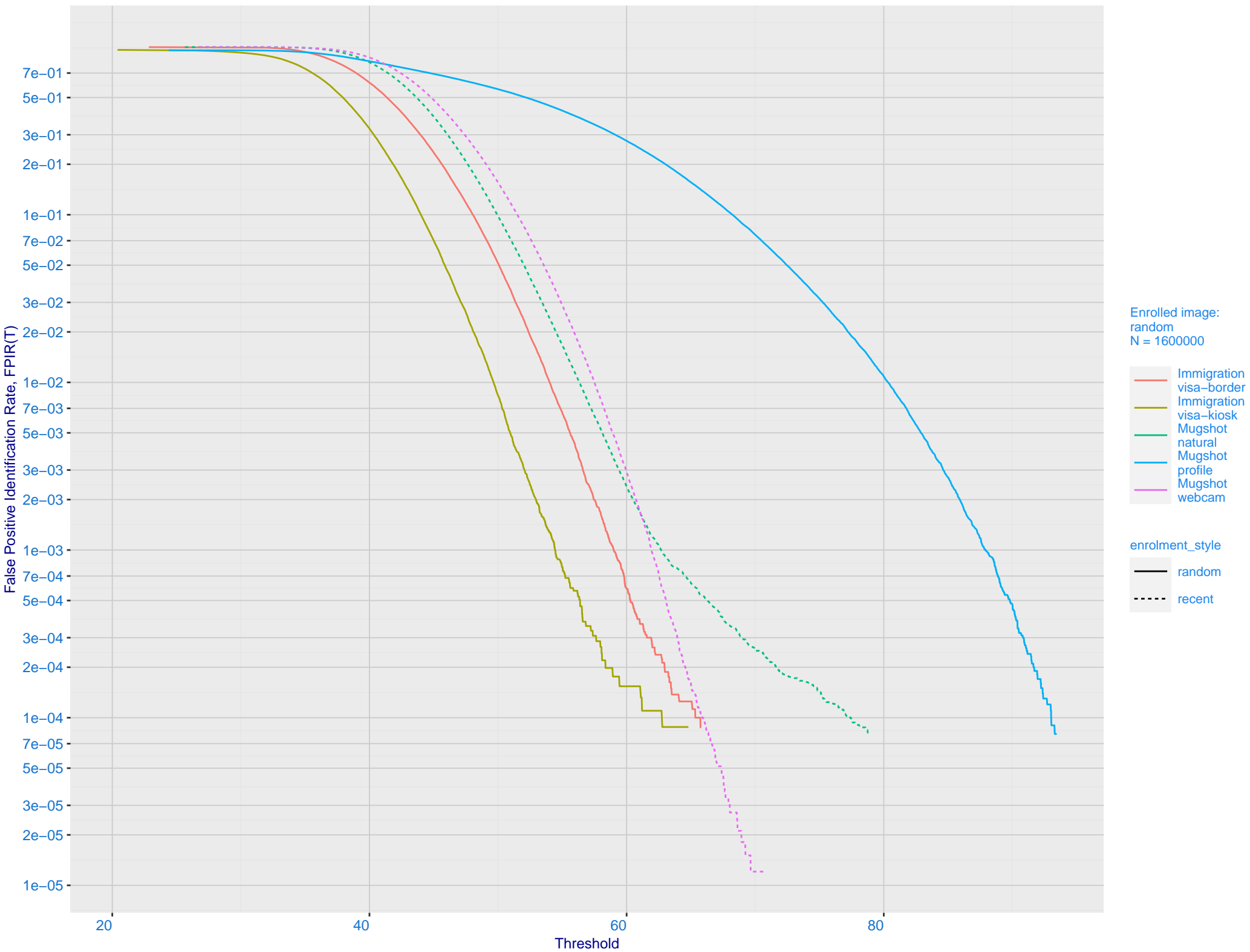
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



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

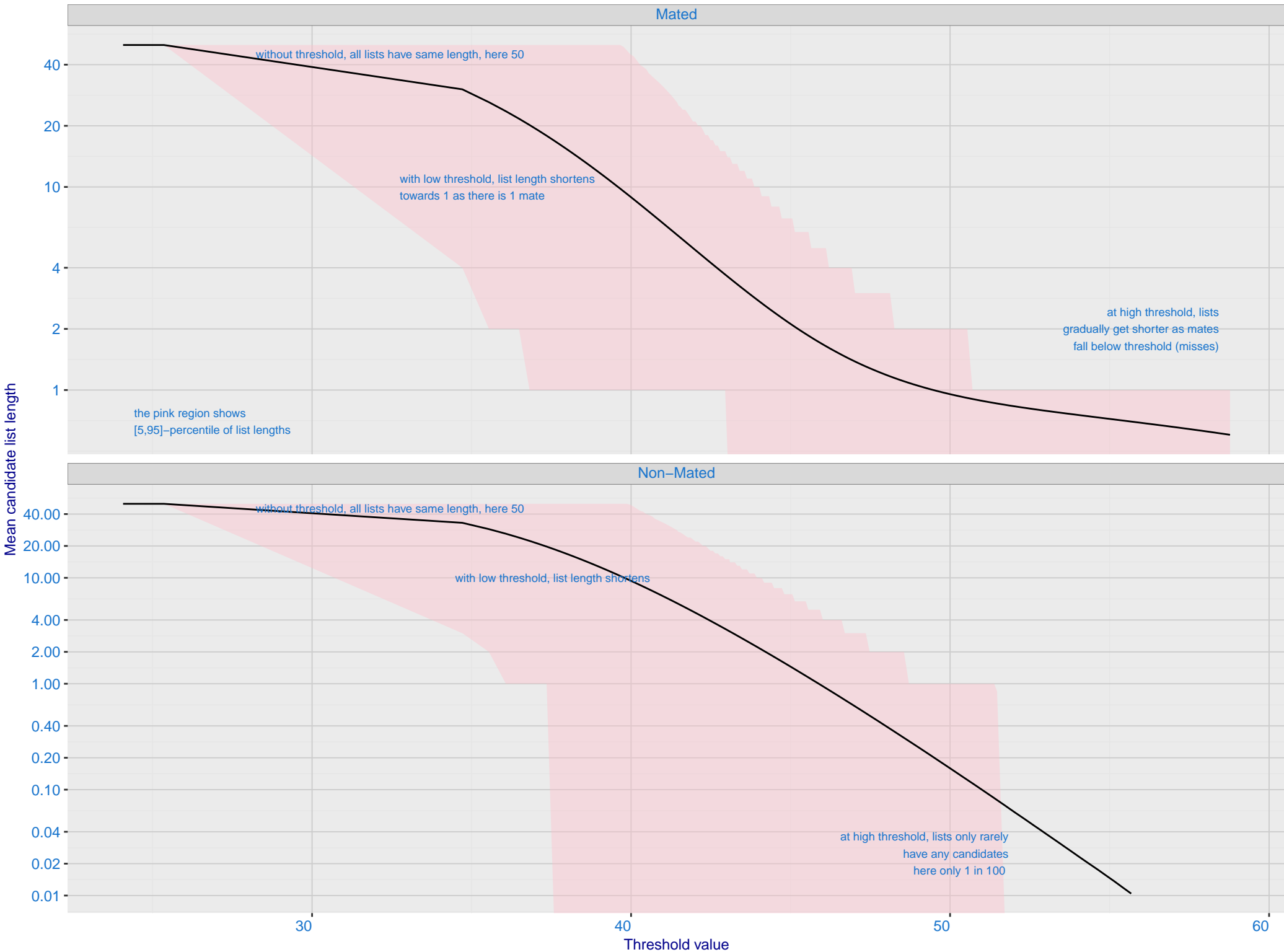


G: FPIR dependence on T by probe type for N = 1600000 subjects



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

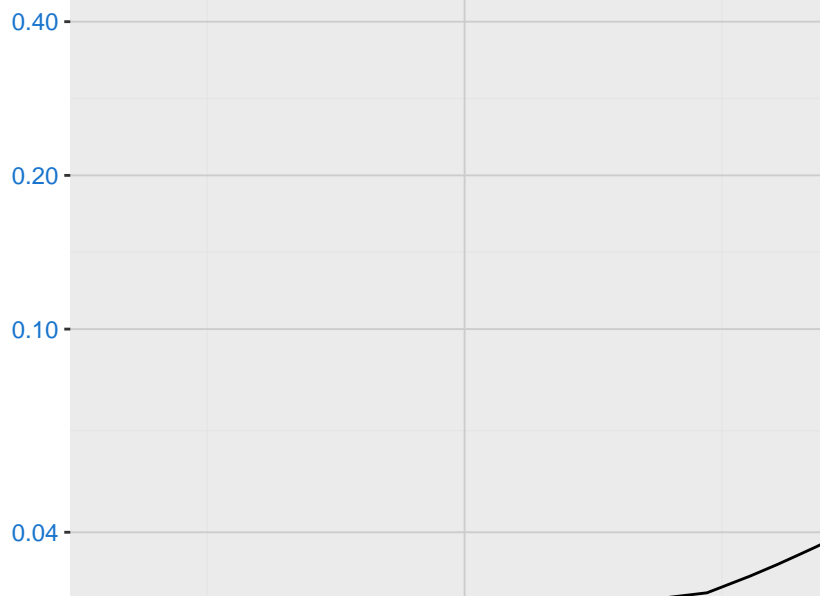


I: FNIR and FPIR dependence on threshold

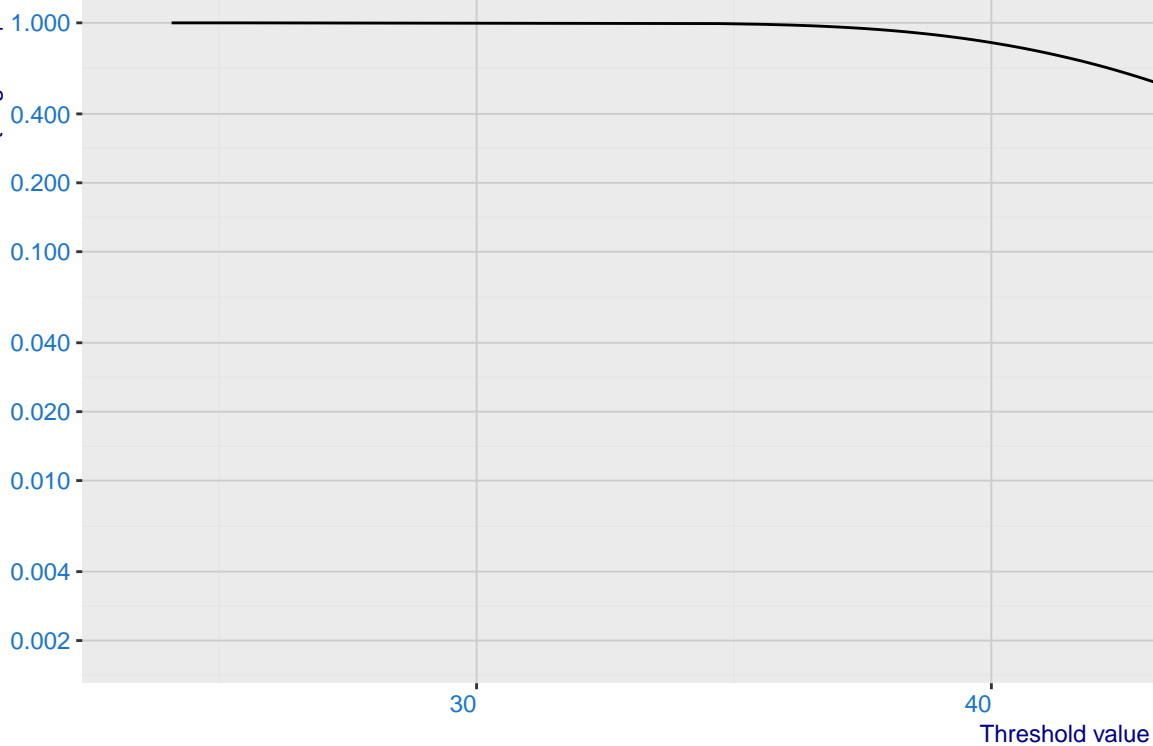
Dataset is border-border with time-lapse [10,15] YRS with N = 1600000. Probes are 10-15 years later than enrollment image

False {Negative | Positive} Identification Rate

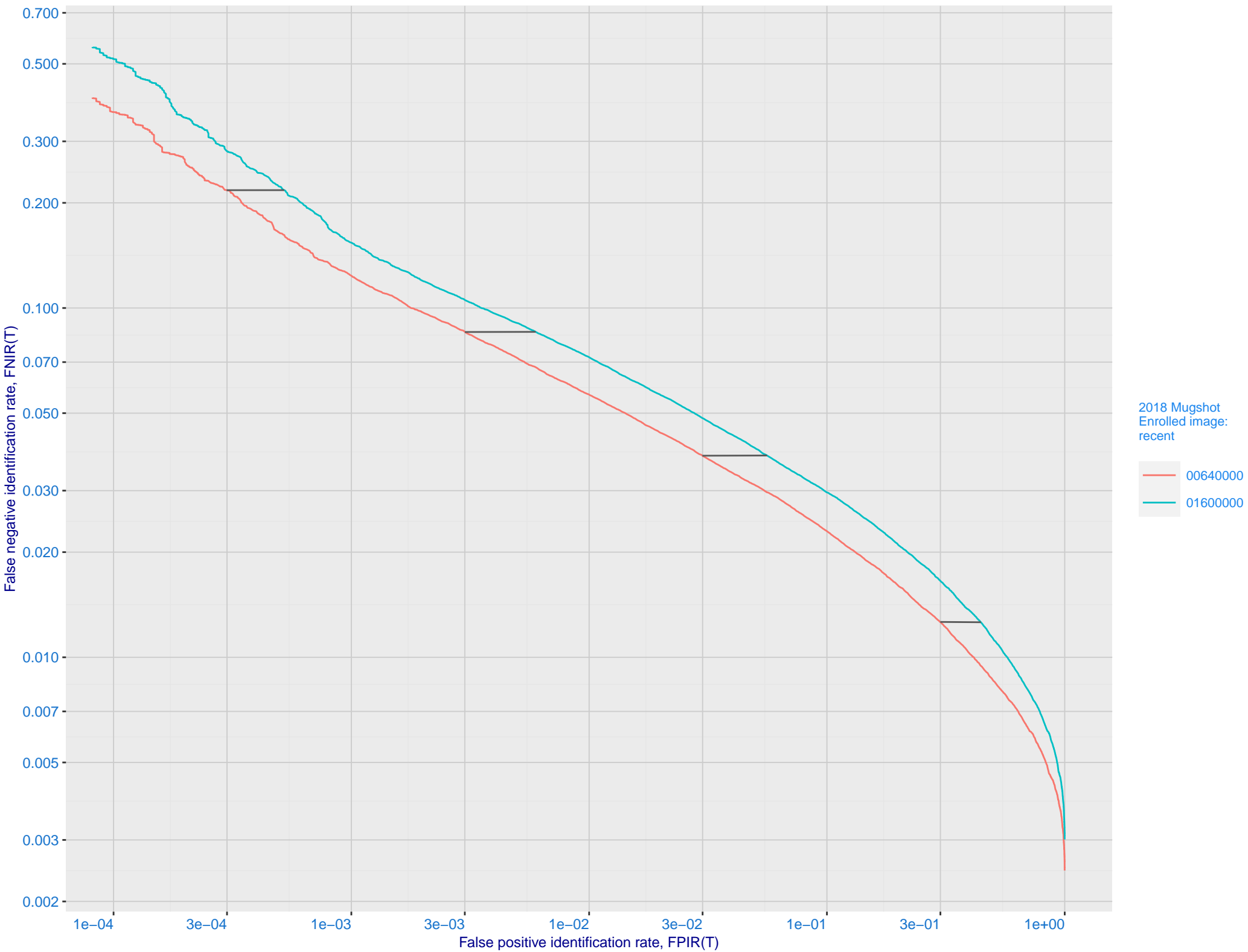
FNIR(T)



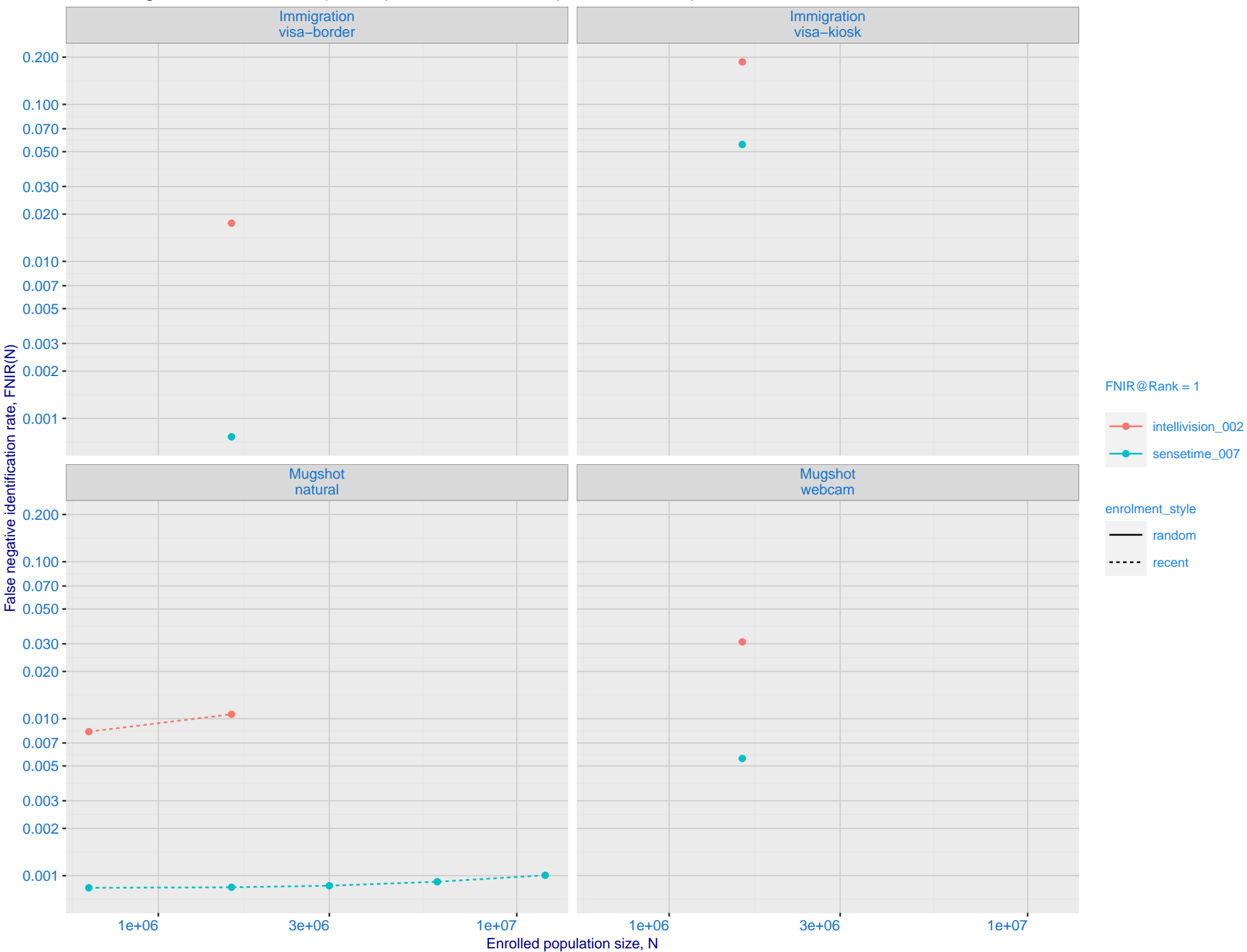
FPIR(T)



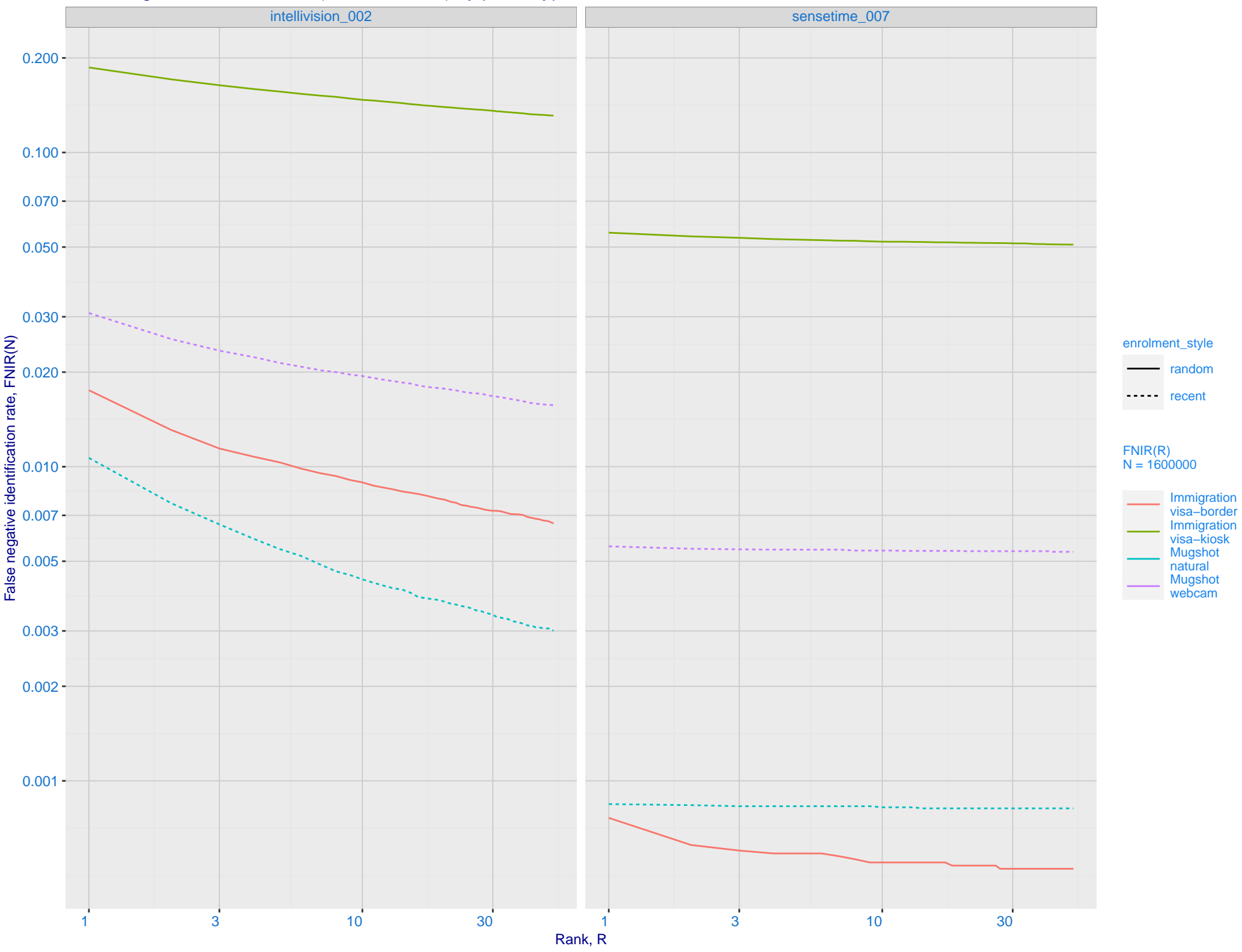
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.



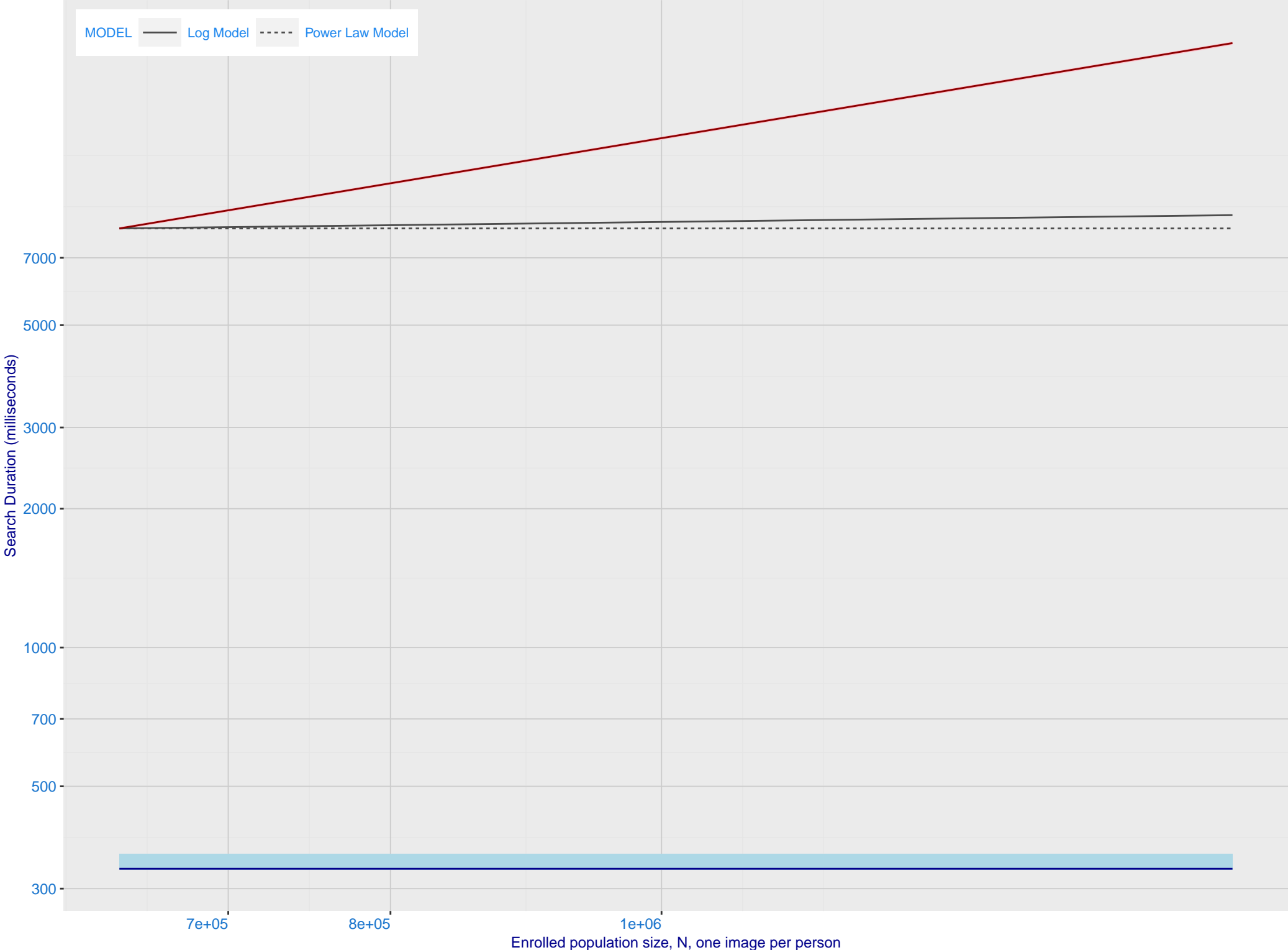
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_007)



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

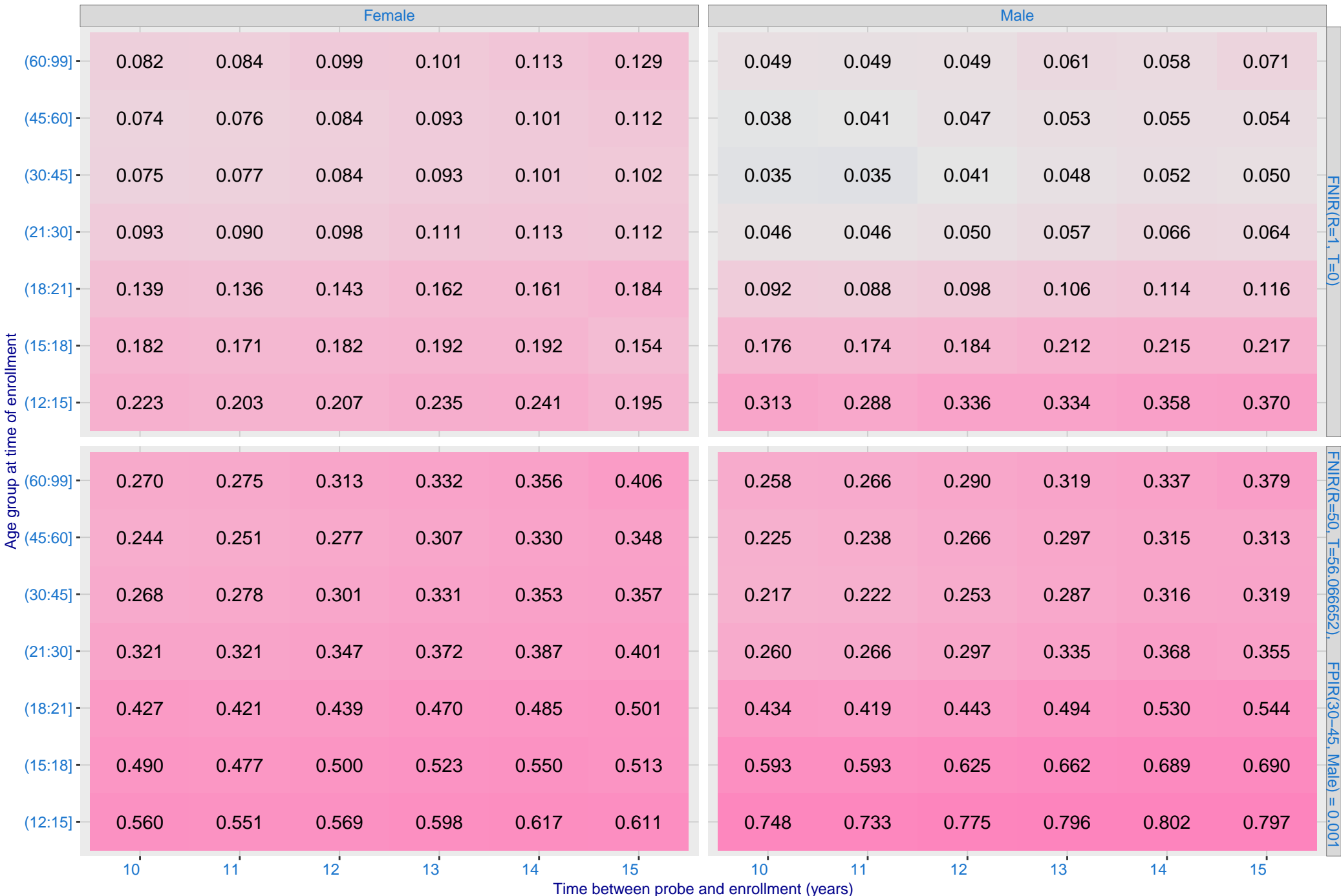


M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power-law models are fit to the first two (N,T) observations



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.

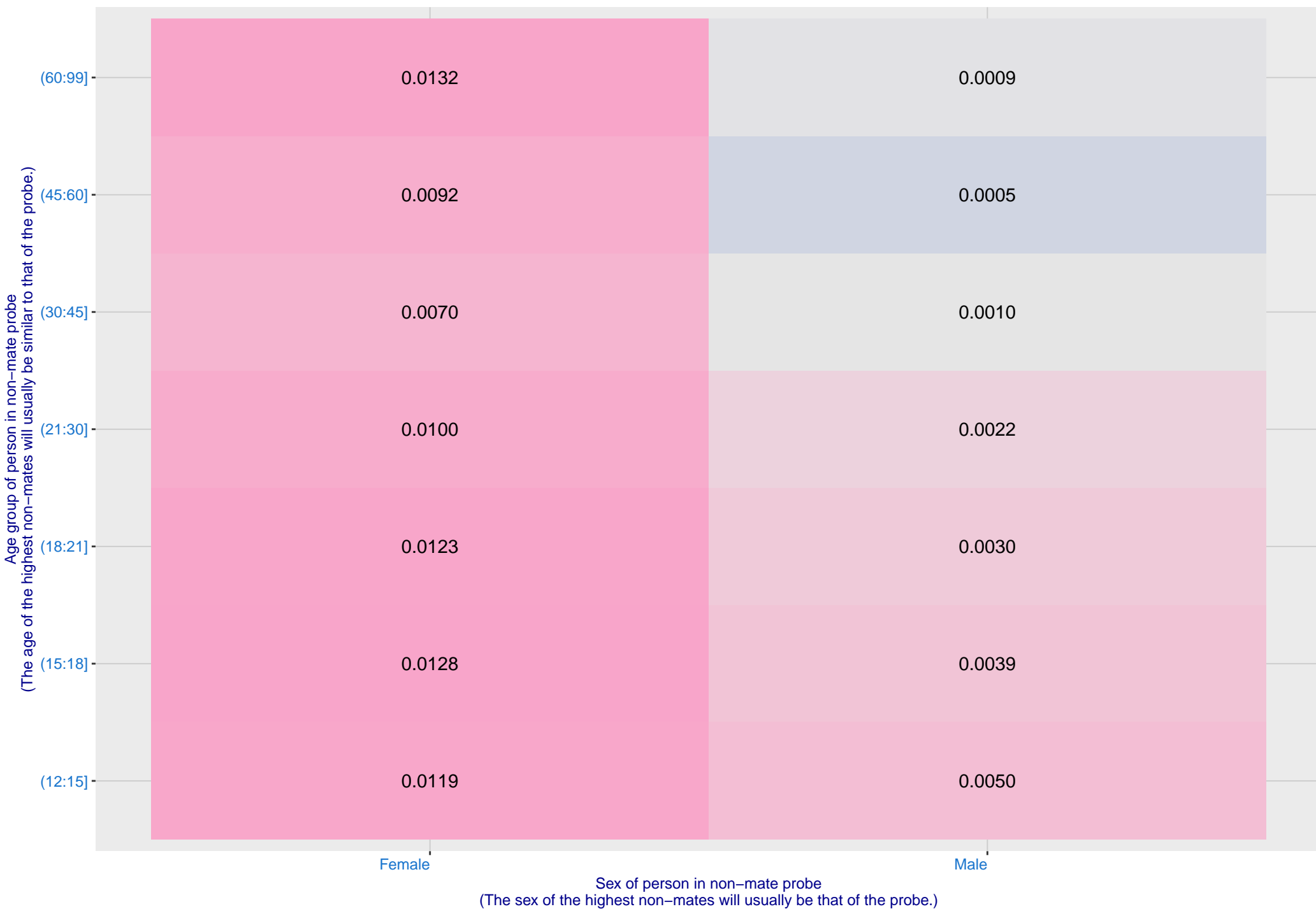
Algorithm: intellivision_002, Dataset: Border-Crossing Ageing N = 1600000
Text encodes FNIR, Color encodes log(FNIR)



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.

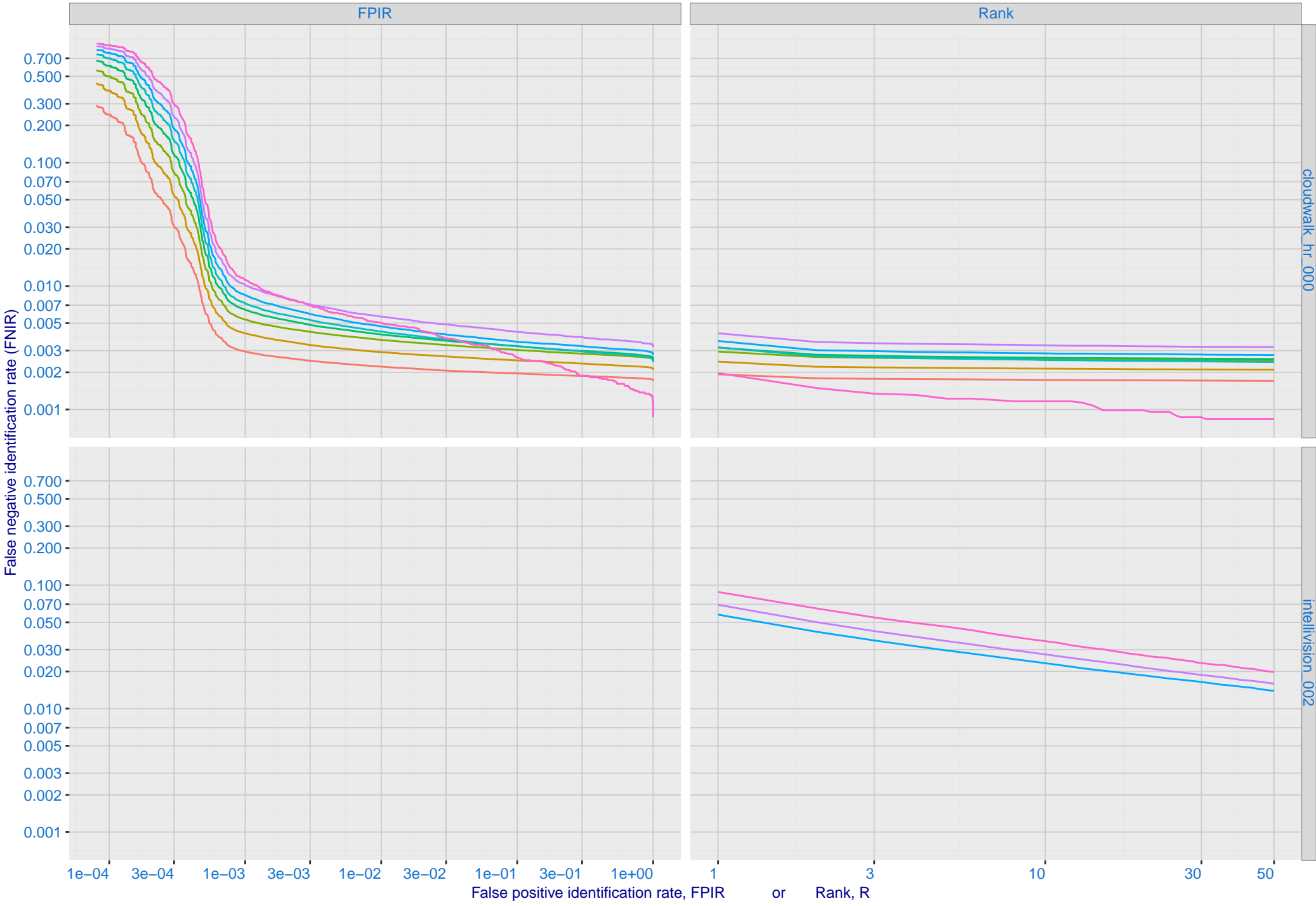
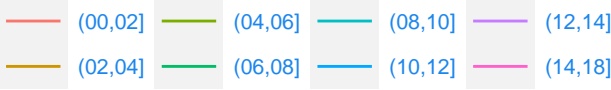
Algorithm: intellivision_002, Dataset: Border-Crossing Ageing
Threshold: 56.066652 set to achieve FPIR(30–45, Male) = 0.001

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

