

A: Datasheet

Algorithm: qnap_001

Developer: Qnap Security

Submission Date: 2021_12_09

Template size: 2048 bytes

Template time (2.5 percentile): 612 msec

Template time (median): 614 msec

Template time (97.5 percentile): 629 msec

Investigation:

Frontal mugshot ranking 117 (out of 322) -- FNIR(1600000, 0, 1) = 0.0041 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 132 (out of 284) -- FNIR(1600000, 0, 1) = 0.0220 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 85 (out of 253) -- FNIR(1600000, 0, 1) = 0.4982 vs. lowest 0.0550 from sensetime_006

Immigration visa--border ranking 81 (out of 211) -- FNIR(1600000, 0, 1) = 0.0062 vs. lowest 0.0009 from sensetime_006

Immigration visa--kiosk ranking 77 (out of 208) -- FNIR(1600000, 0, 1) = 0.1122 vs. lowest 0.0487 from cubox_000

Identification:

Frontal mugshot ranking 138 (out of 322) -- FNIR(1600000, T, L+1) = 0.0535, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

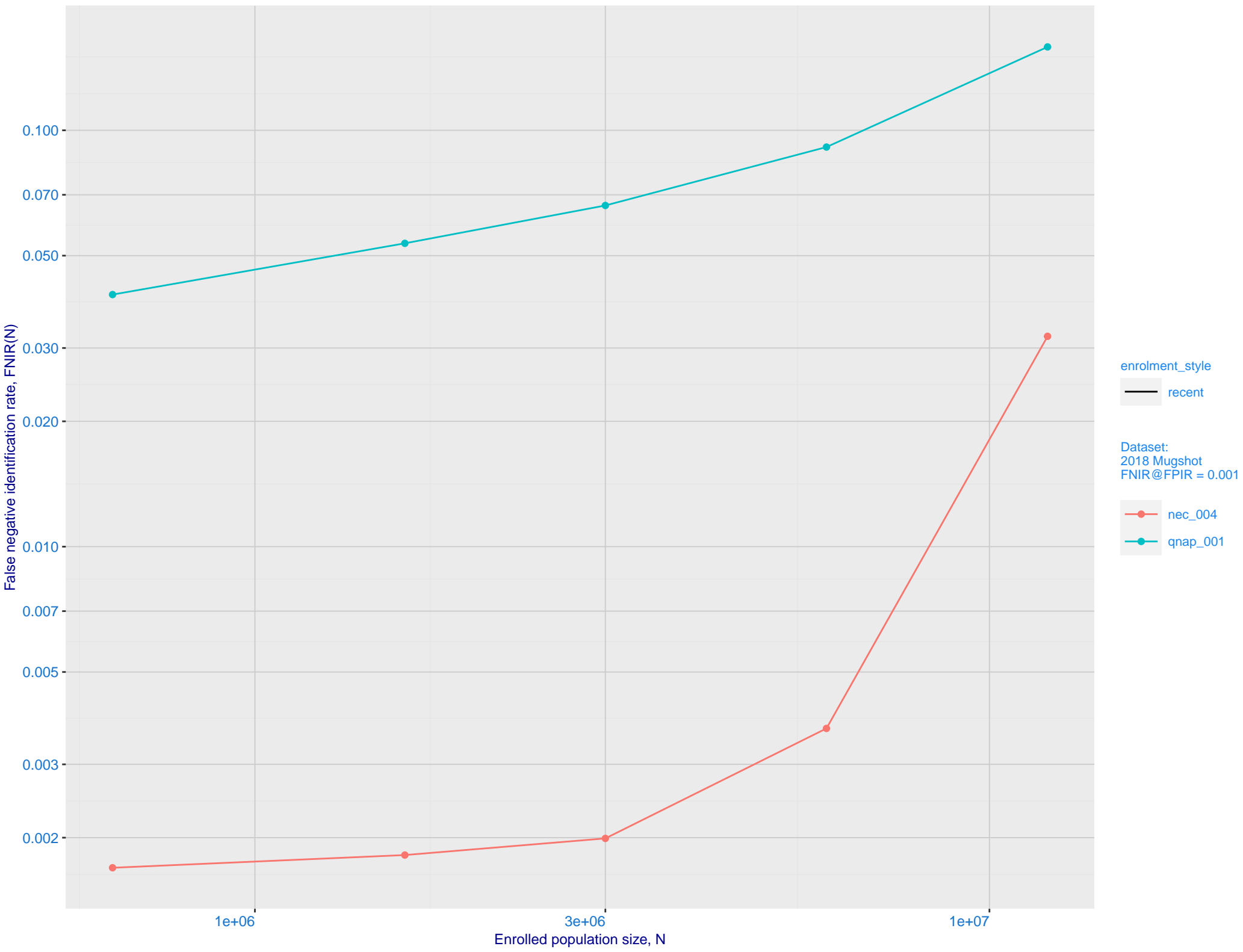
Mugshot webcam ranking 144 (out of 282) -- FNIR(1600000, T, L+1) = 0.1367, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 55 (out of 252) -- FNIR(1600000, T, L+1) = 0.9280, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

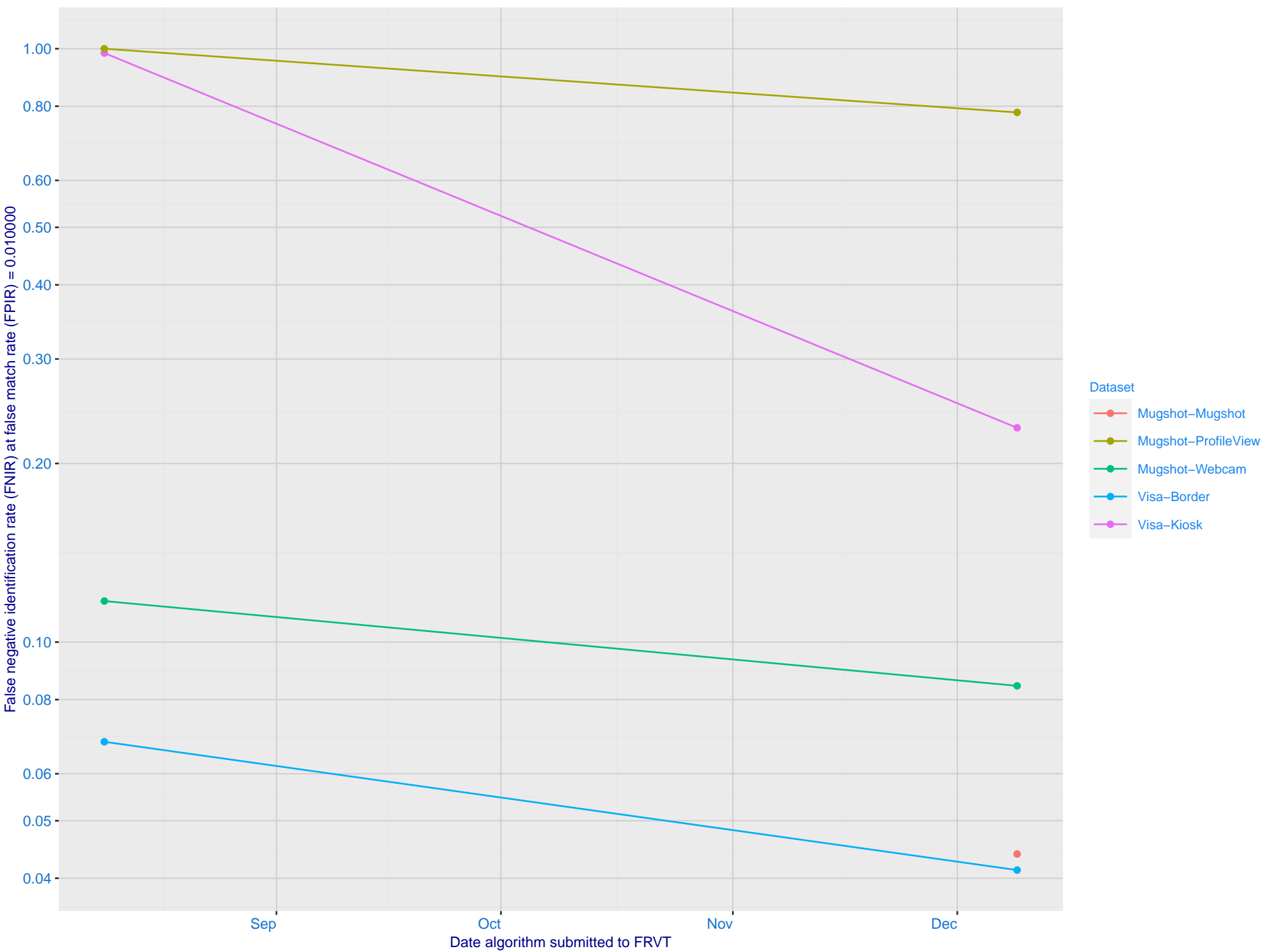
Immigration visa--border ranking 111 (out of 210) -- FNIR(1600000, T, L+1) = 0.0813, FPIR=0.001000 vs. lowest 0.0039 from sensetime_006

Immigration visa--kiosk ranking 82 (out of 205) -- FNIR(1600000, T, L+1) = 0.3342, FPIR=0.001000 vs. lowest 0.0729 from cubox_000

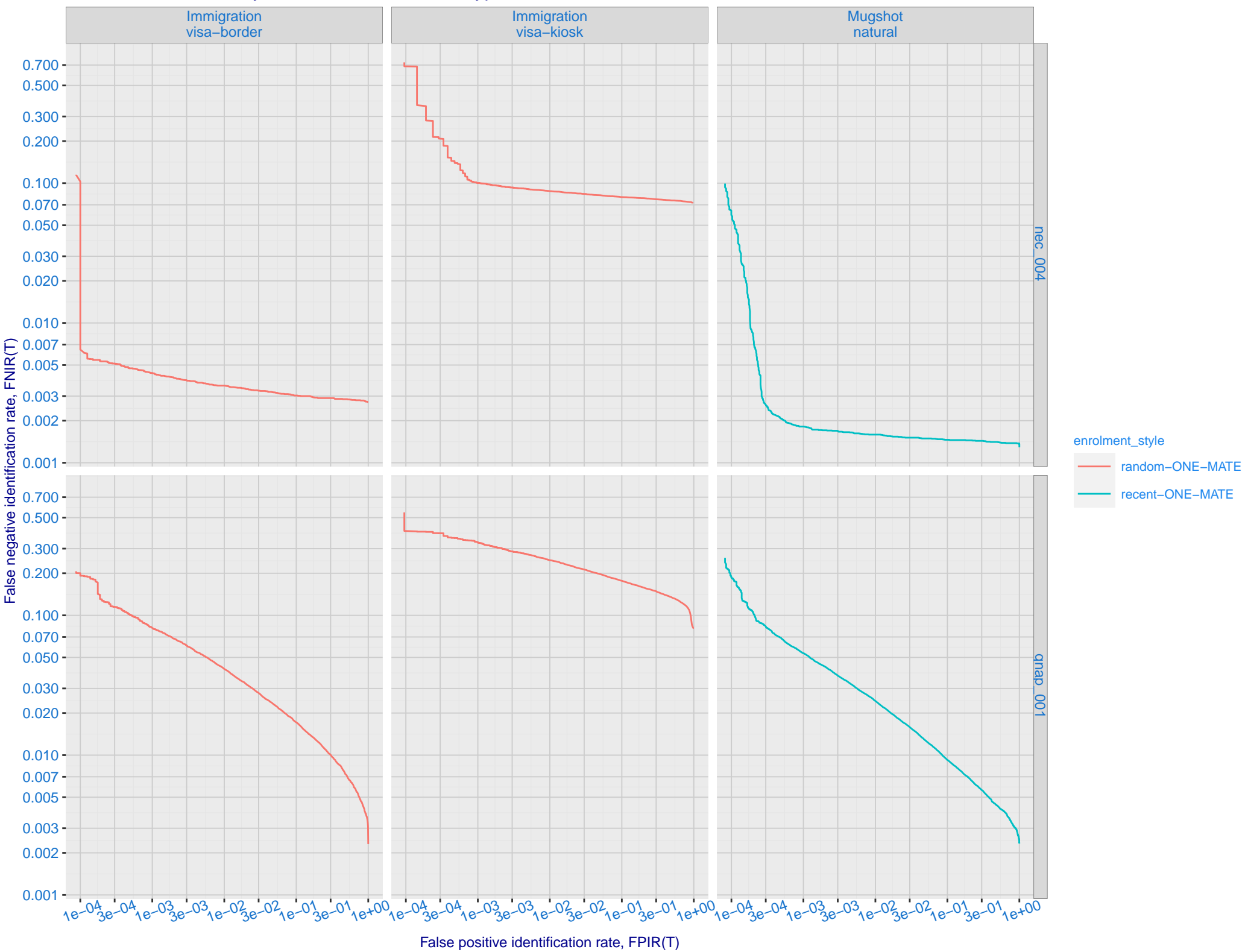
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (nec_004)



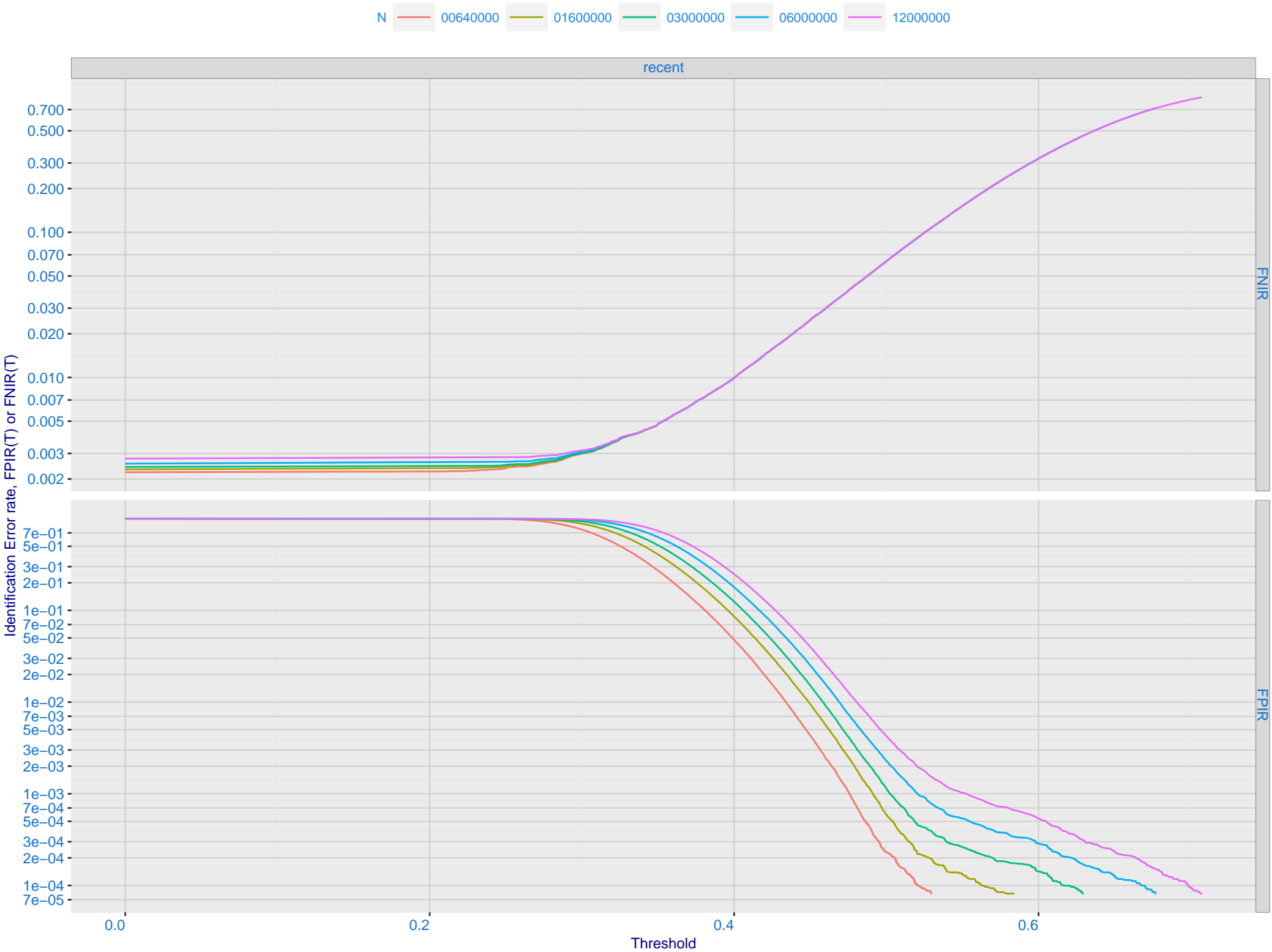
C: Evolution of accuracy for QNAP algorithms on three datasets 2018 – present



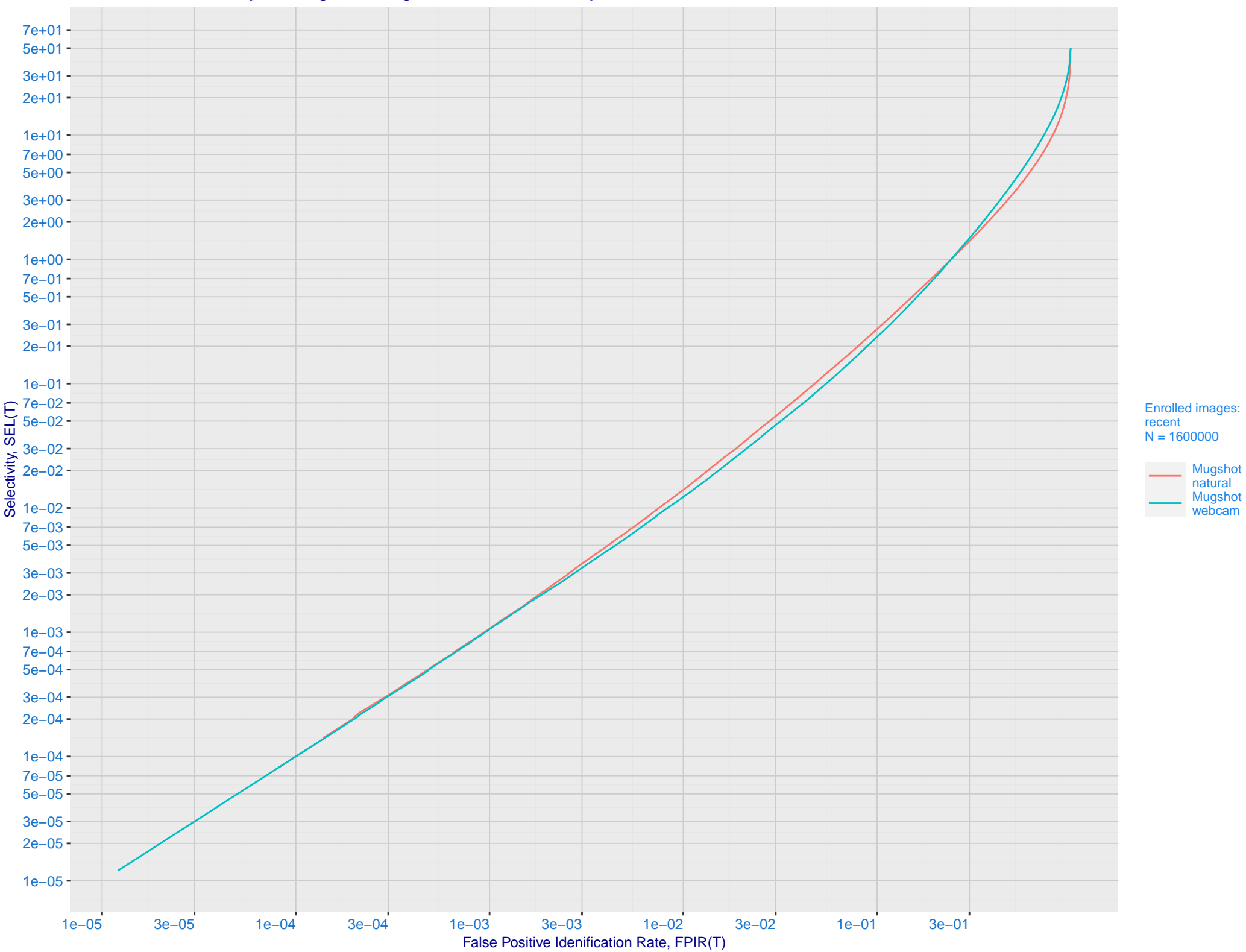
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals



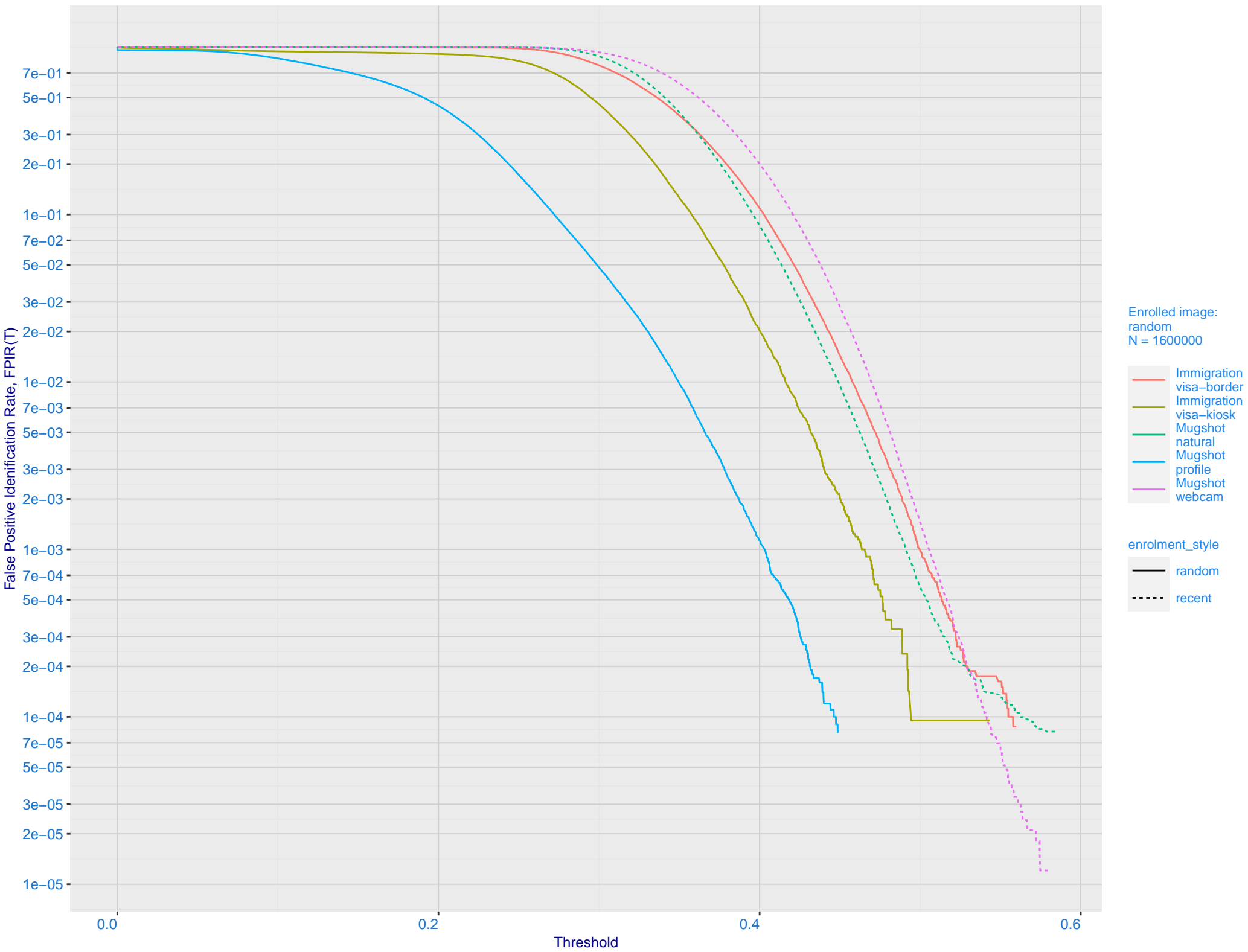
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



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

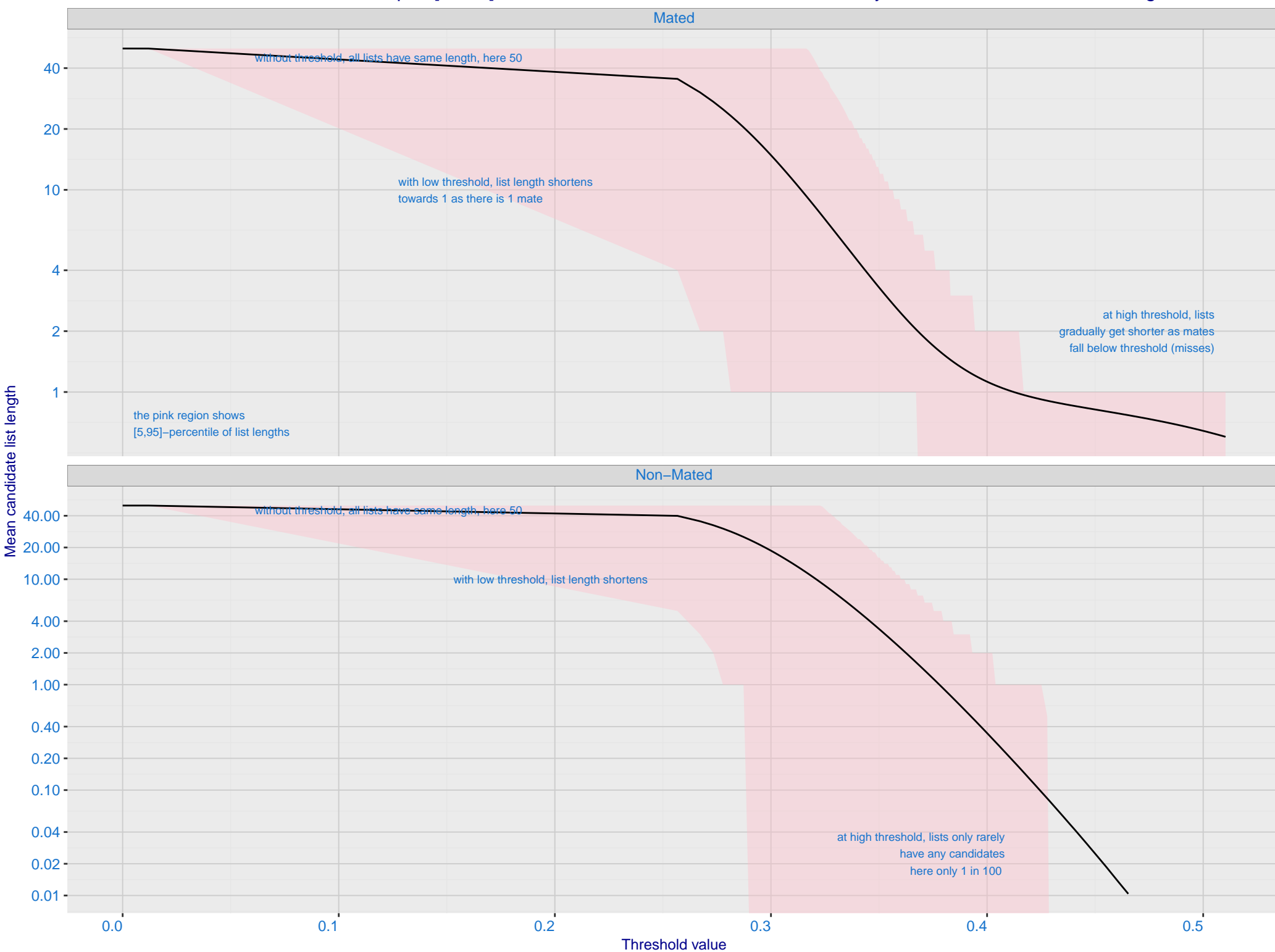


G: FPIR dependence on T by probe type for N = 1600000 subjects



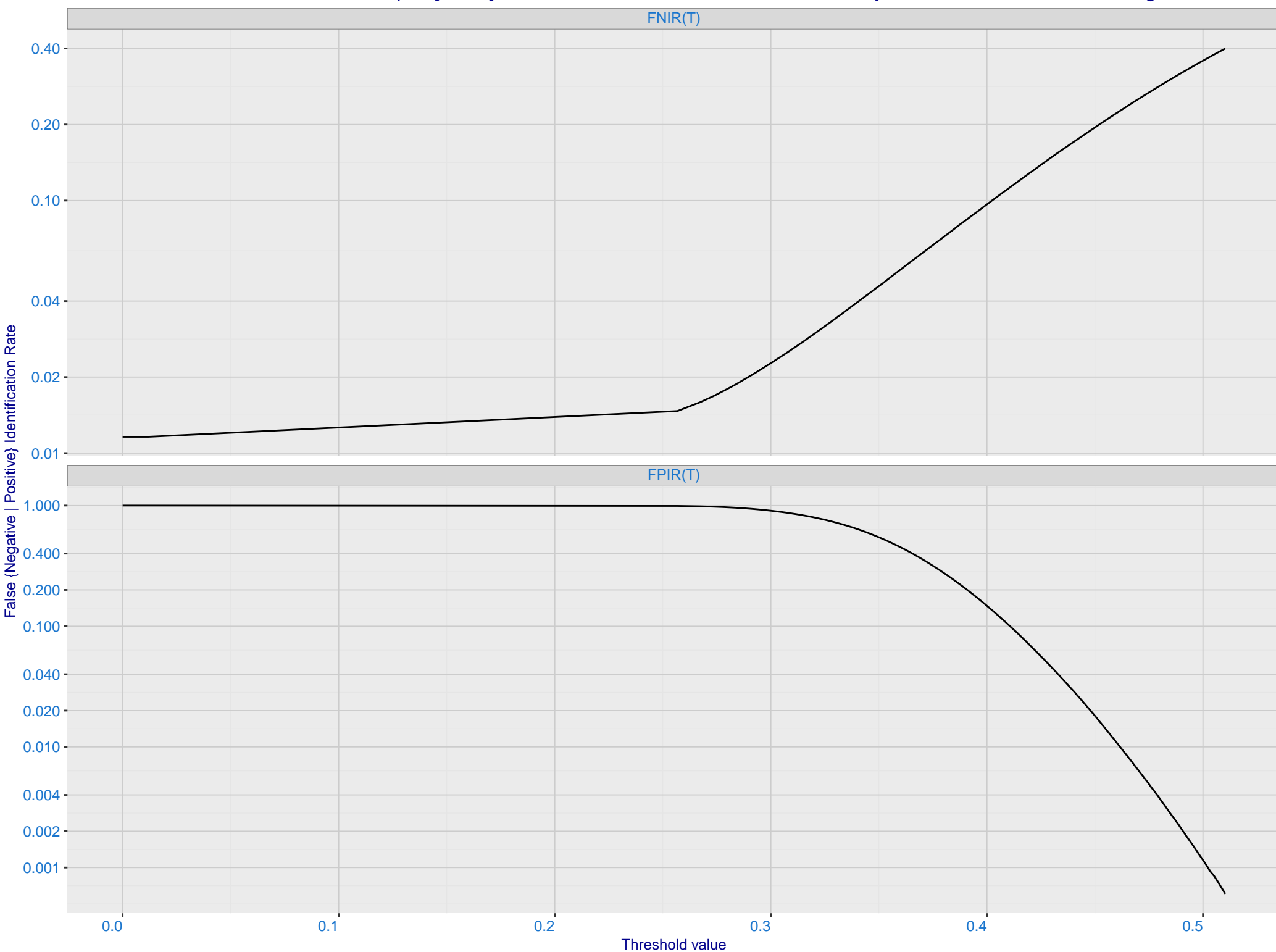
H: Reduced length candidate lists for human review

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

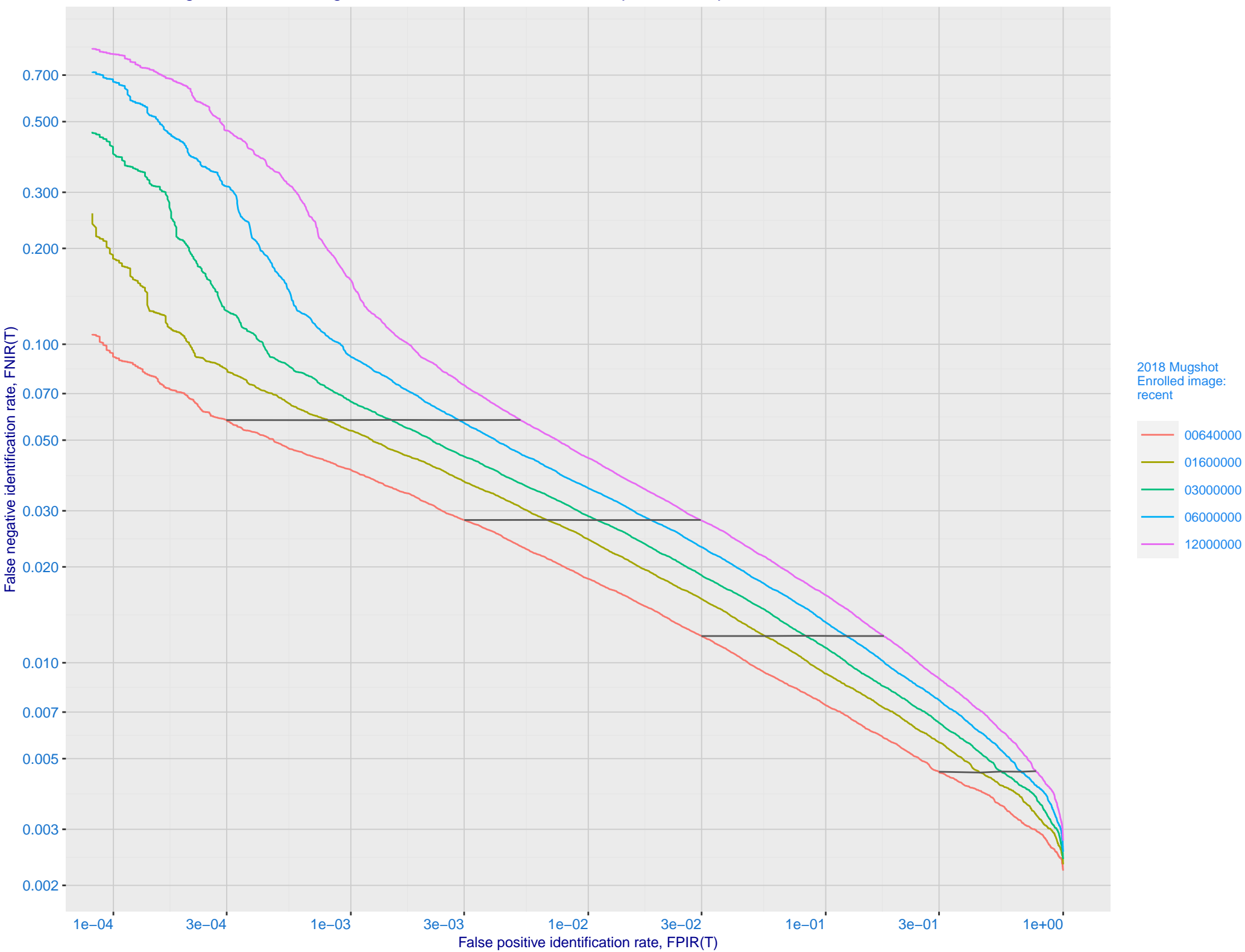


I: FNIR and FPIR dependence on threshold

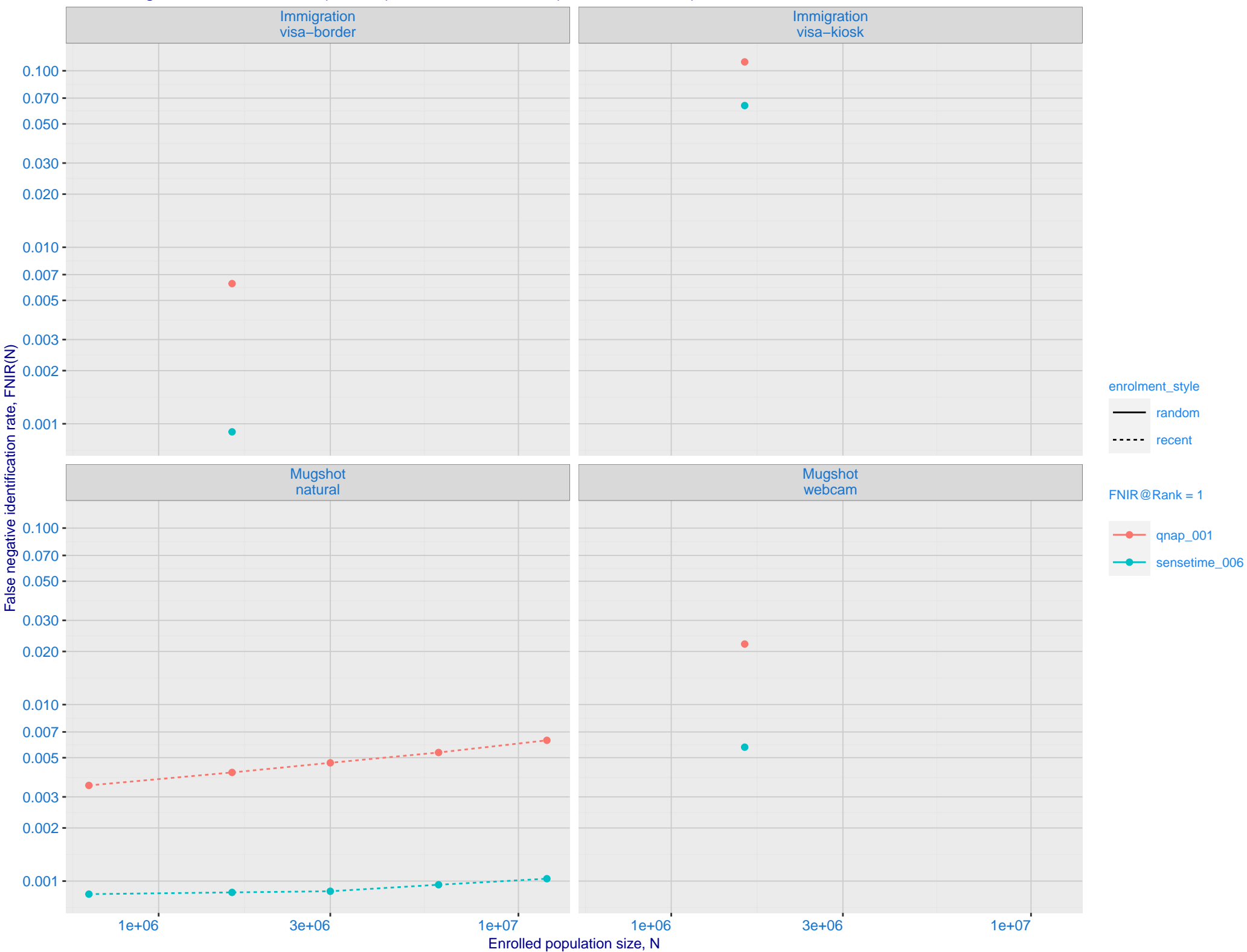
Dataset is border-border with time-lapse [10,15] YRS with N = 1600000. Probes are 10-15 years later than enrollment image



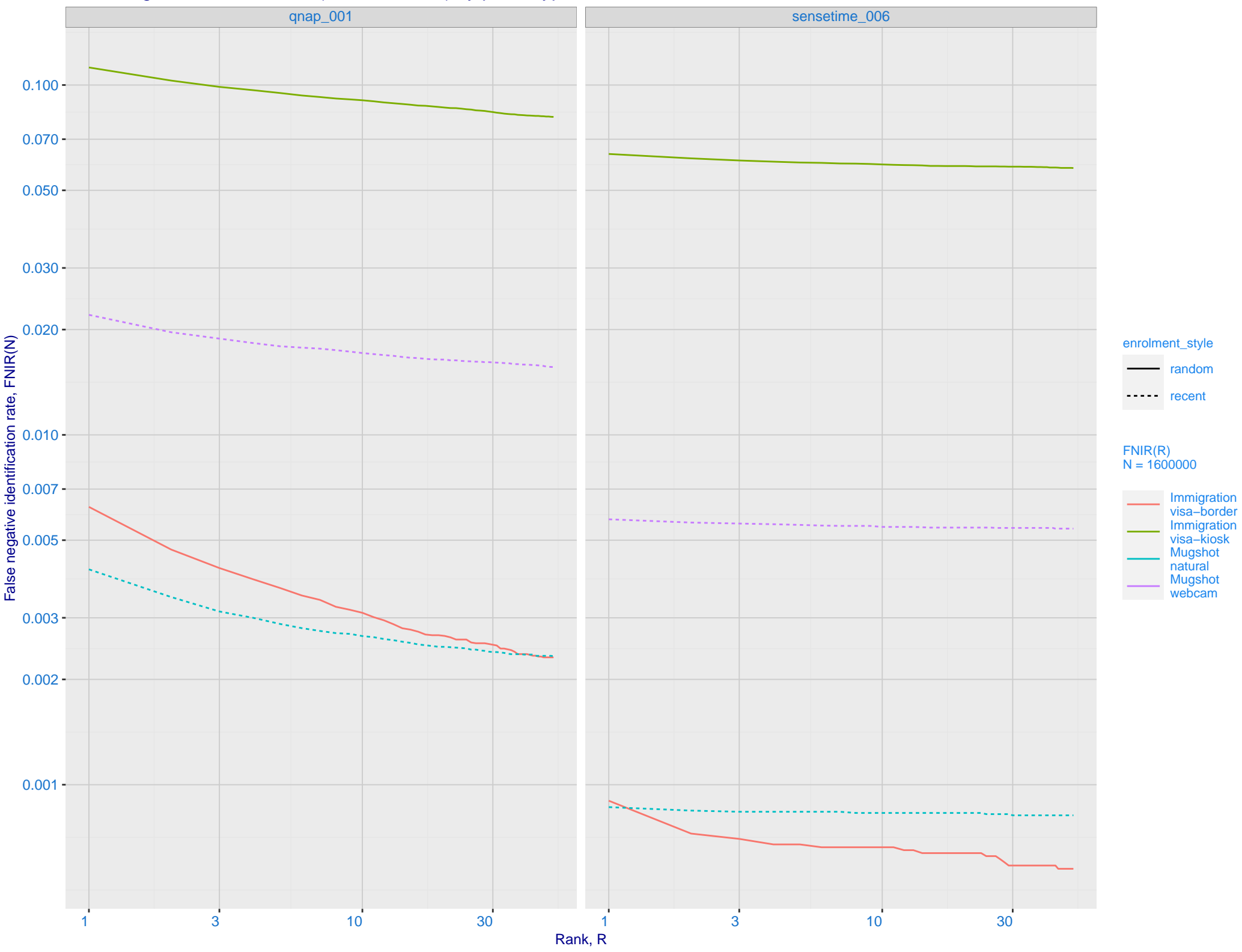
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.



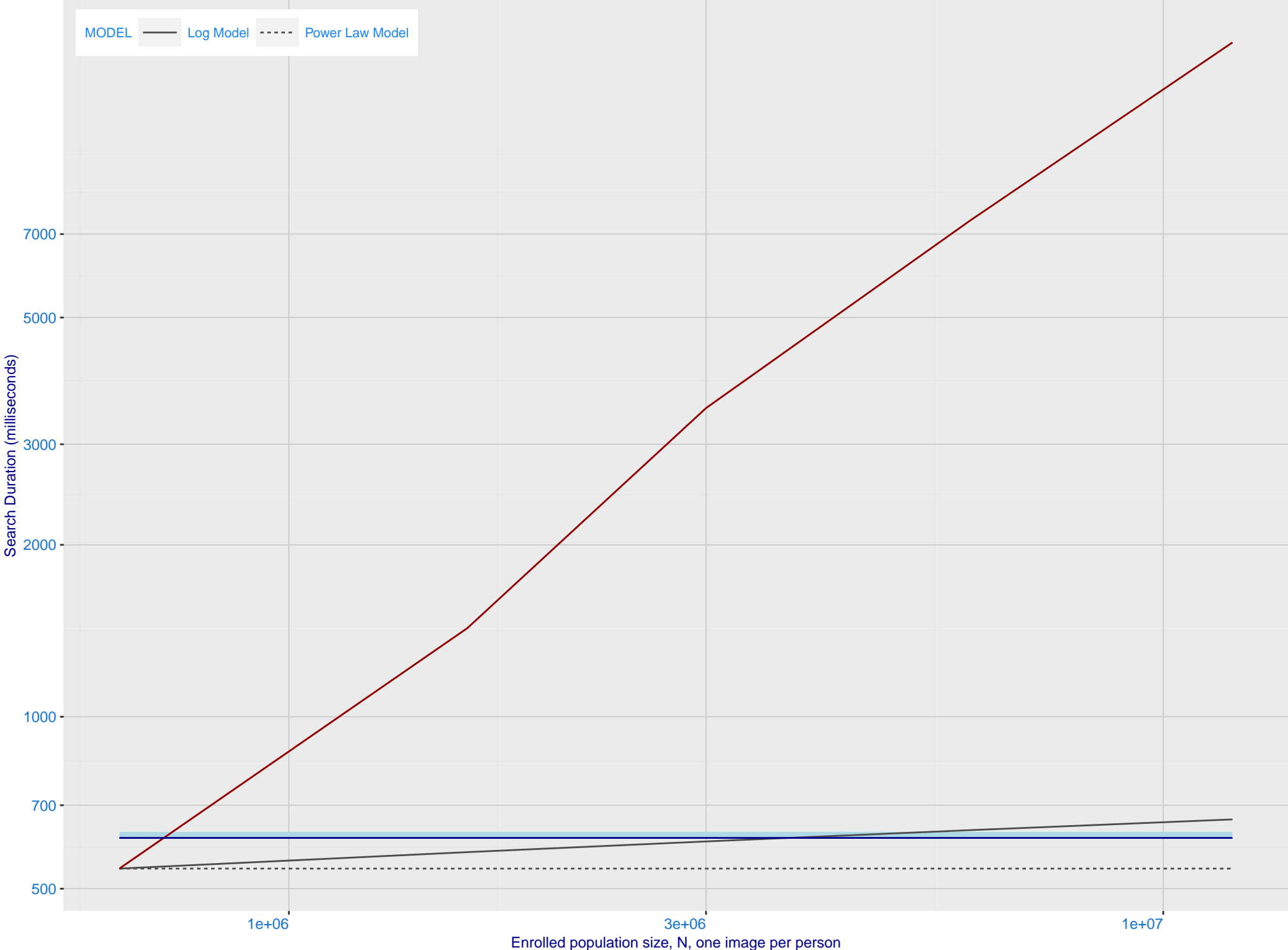
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006)



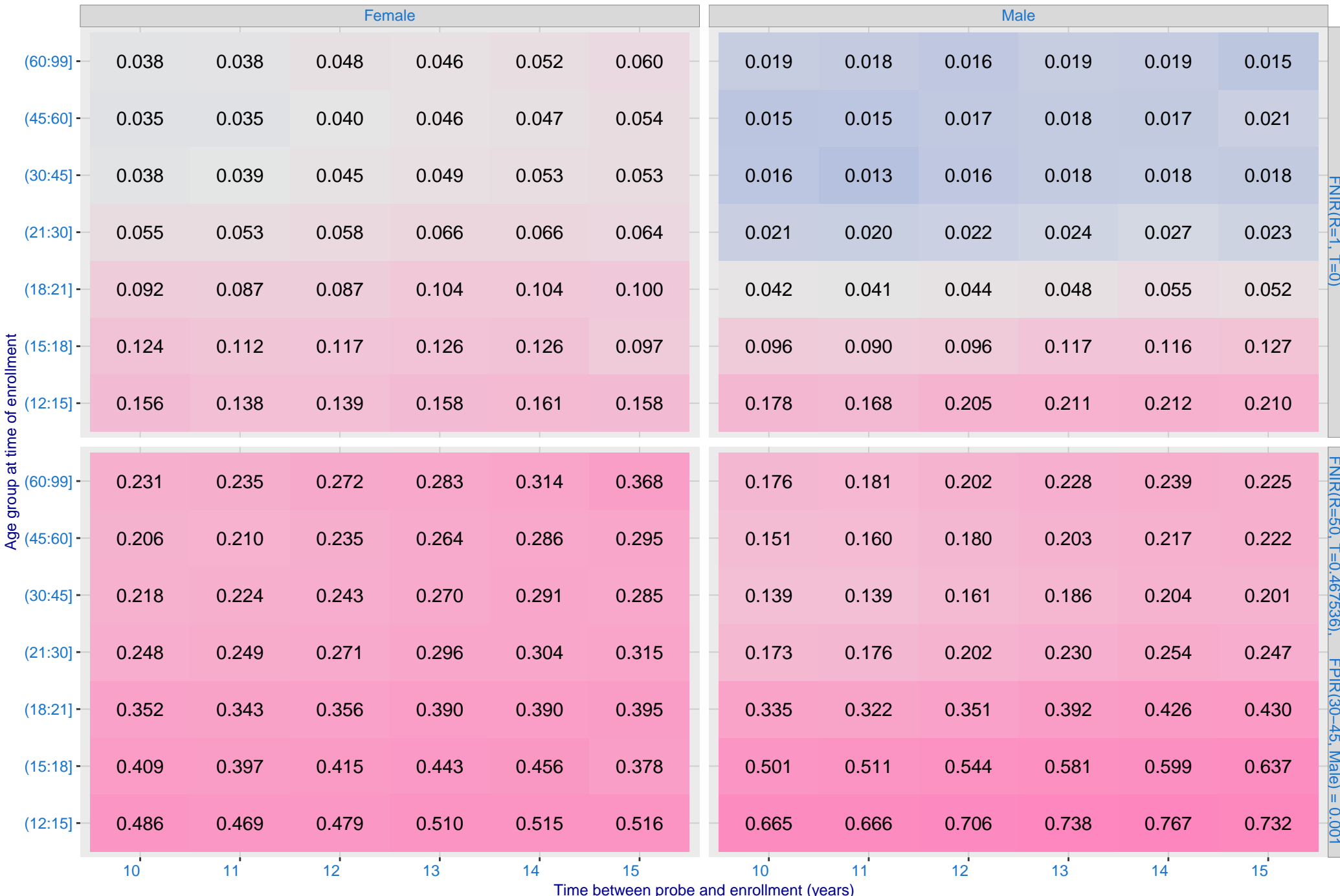
L: Investigational mode: FNIR(1600000, R, 0) by probe type



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: qnap_001, Dataset: Border-Crossing Ageing
Threshold: 0.467536 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

