

A: Datasheet

Algorithm: cib\_000

Developer: Canon Inc

Submission Date: 2020\_10\_19

Template size: 8196 bytes

Template time (2.5 percentile): 669 msec

Template time (median): 674 msec

Template time (97.5 percentile): 681 msec

Investigation:

Frontal mugshot ranking 16 (out of 279) -- FNIR(1600000, 0, 1) = 0.0015 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 9 (out of 241) -- FNIR(1600000, 0, 1) = 0.0081 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 12 (out of 210) -- FNIR(1600000, 0, 1) = 0.1000 vs. lowest 0.0587 from xforwardai\_002

Immigration visa-border ranking 6 (out of 168) -- FNIR(1600000, 0, 1) = 0.0021 vs. lowest 0.0013 from visionlabs\_010

Immigration visa-kiosk ranking 2 (out of 165) -- FNIR(1600000, 0, 1) = 0.0694 vs. lowest 0.0568 from cloudwalk\_hr\_000

Identification:

Frontal mugshot ranking 24 (out of 279) -- FNIR(1600000, T, L+1) = 0.0125, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

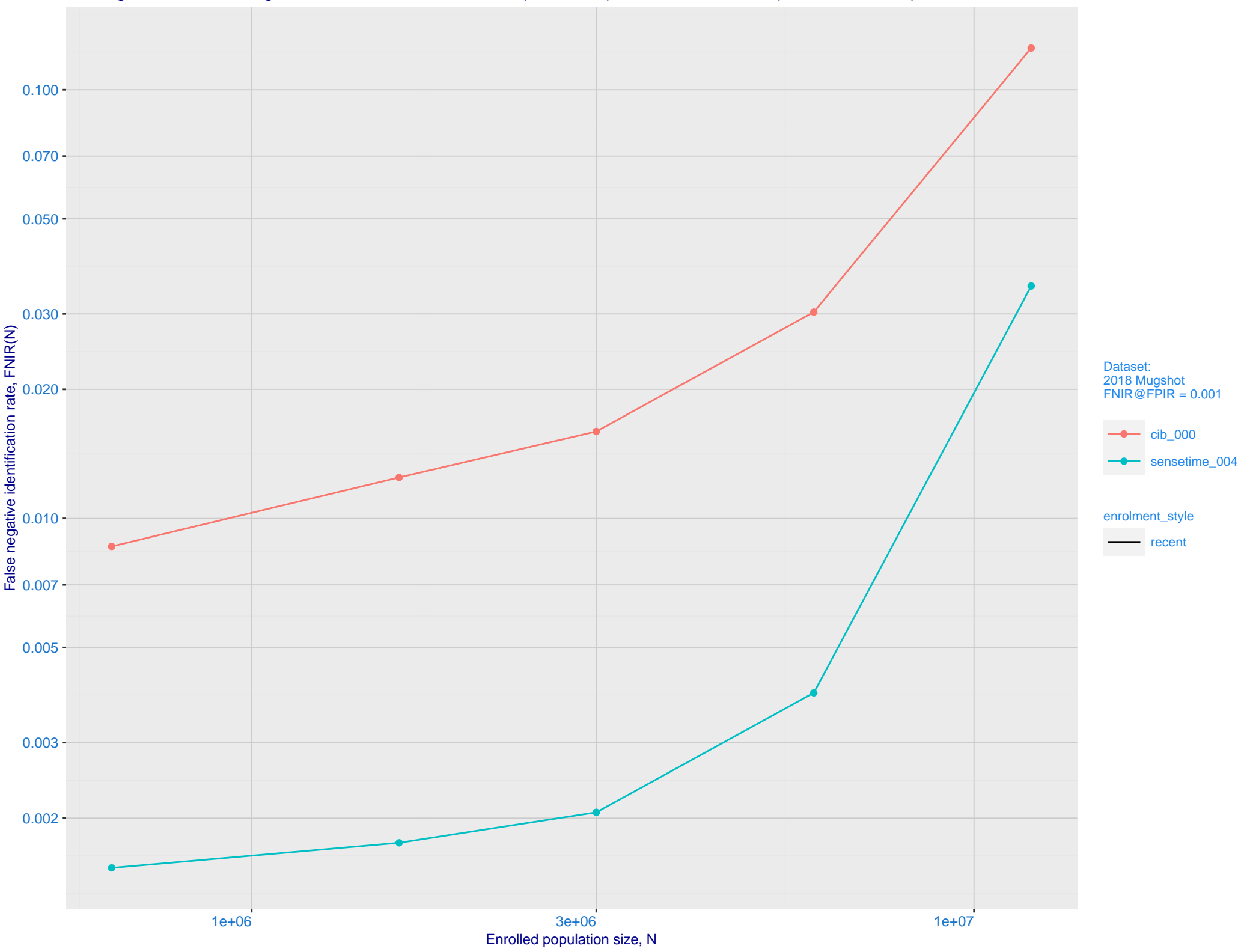
Mugshot webcam ranking 24 (out of 236) -- FNIR(1600000, T, L+1) = 0.0445, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 170 (out of 209) -- FNIR(1600000, T, L+1) = 0.9998, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk\_hr\_000

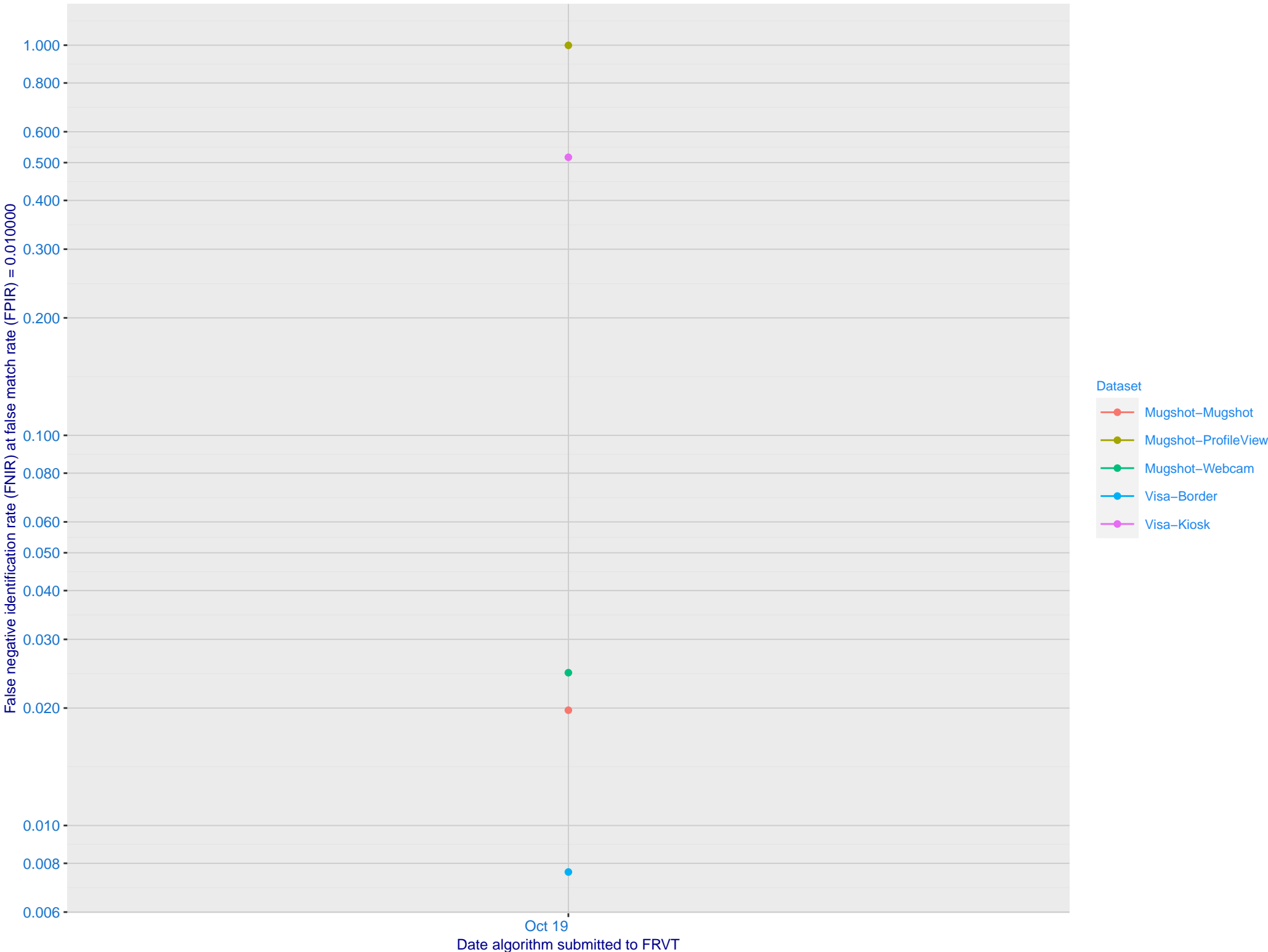
Immigration visa-border ranking 21 (out of 167) -- FNIR(1600000, T, L+1) = 0.0174, FPIR=0.001000 vs. lowest 0.0047 from idemia\_008

Immigration visa-kiosk ranking 113 (out of 162) -- FNIR(1600000, T, L+1) = 0.8983, FPIR=0.001000 vs. lowest 0.0996 from cloudwalk\_hr\_000

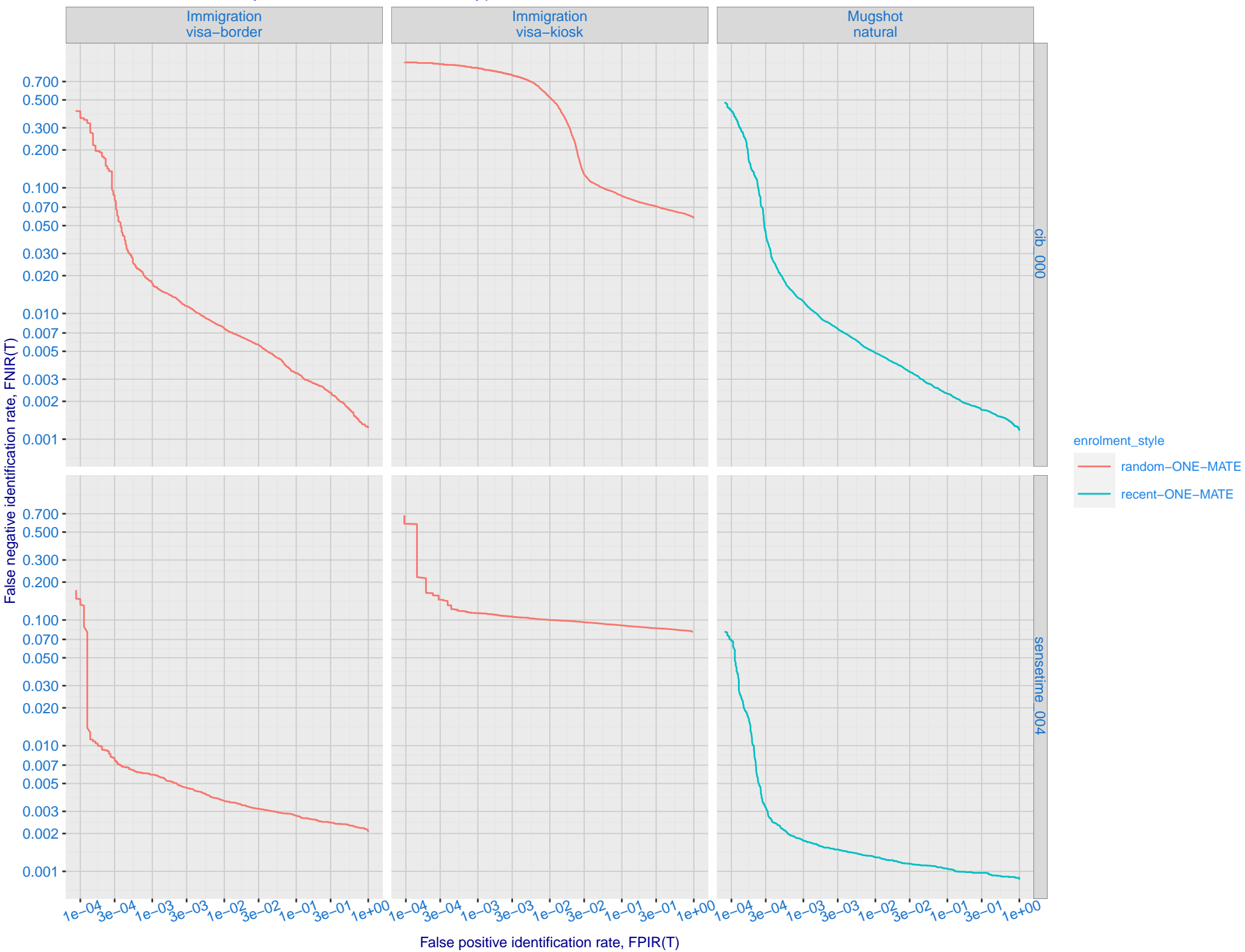
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (sensetime\_004)



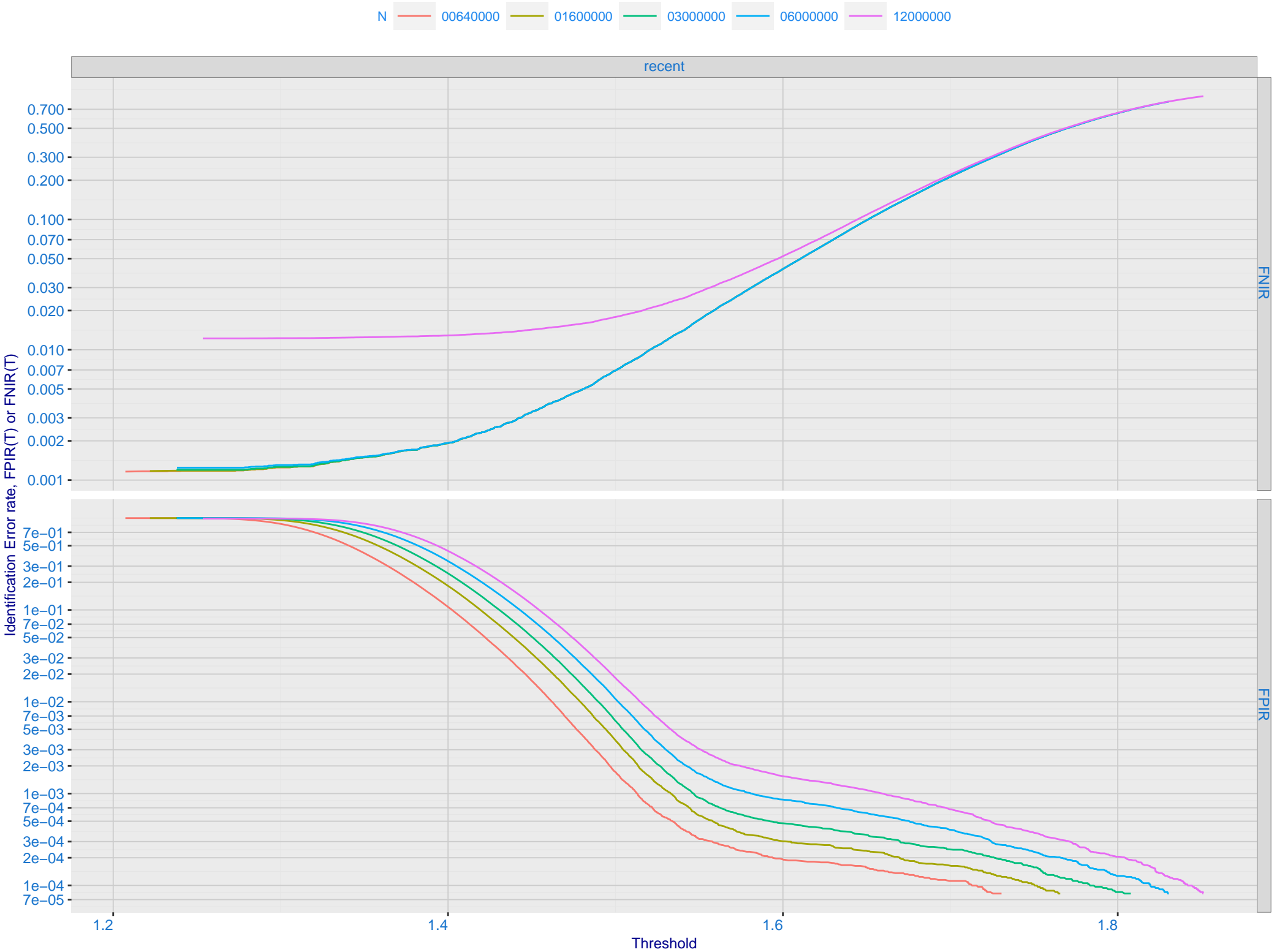
C: Evolution of accuracy for CANON algorithms on three datasets 2018 – present



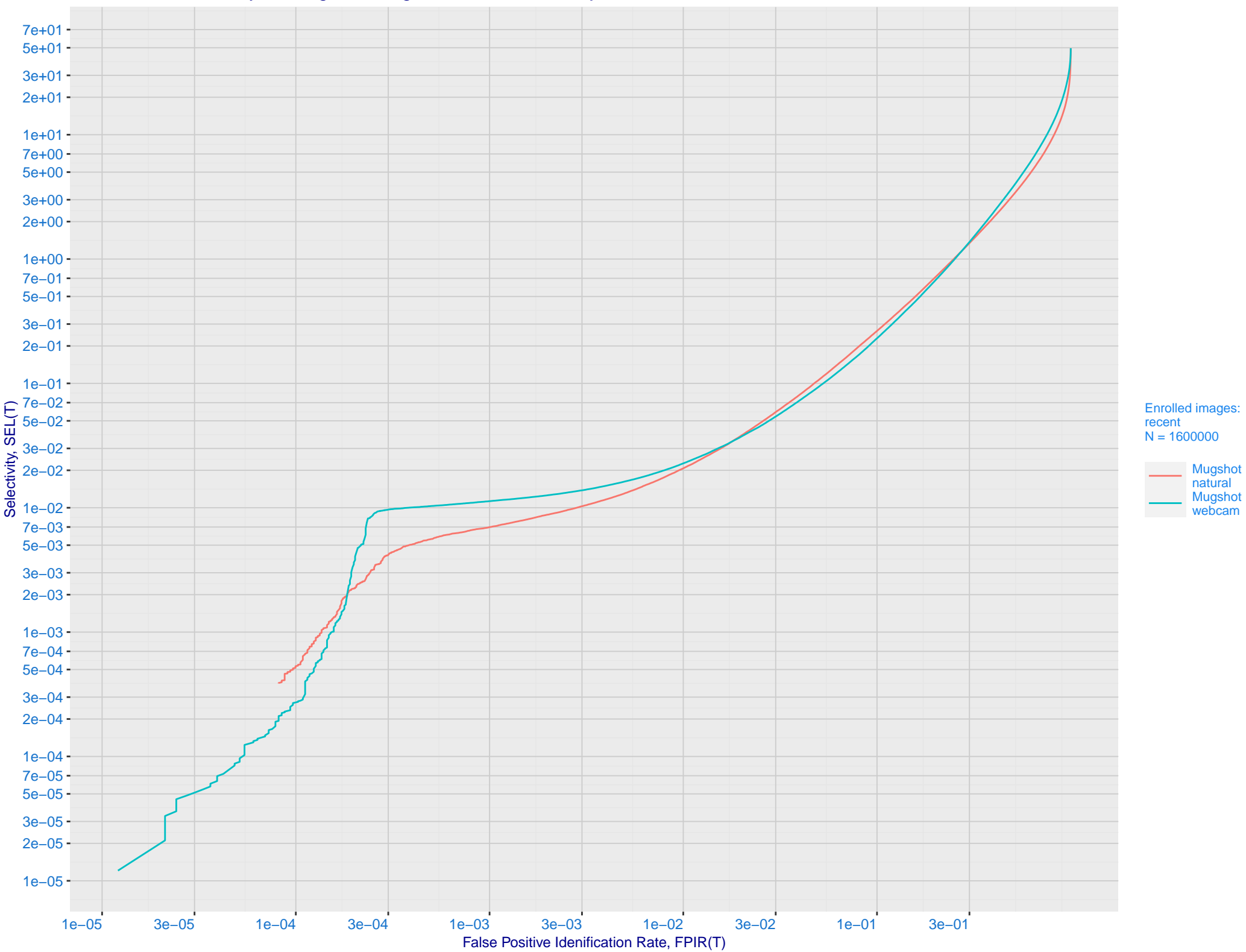
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals



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



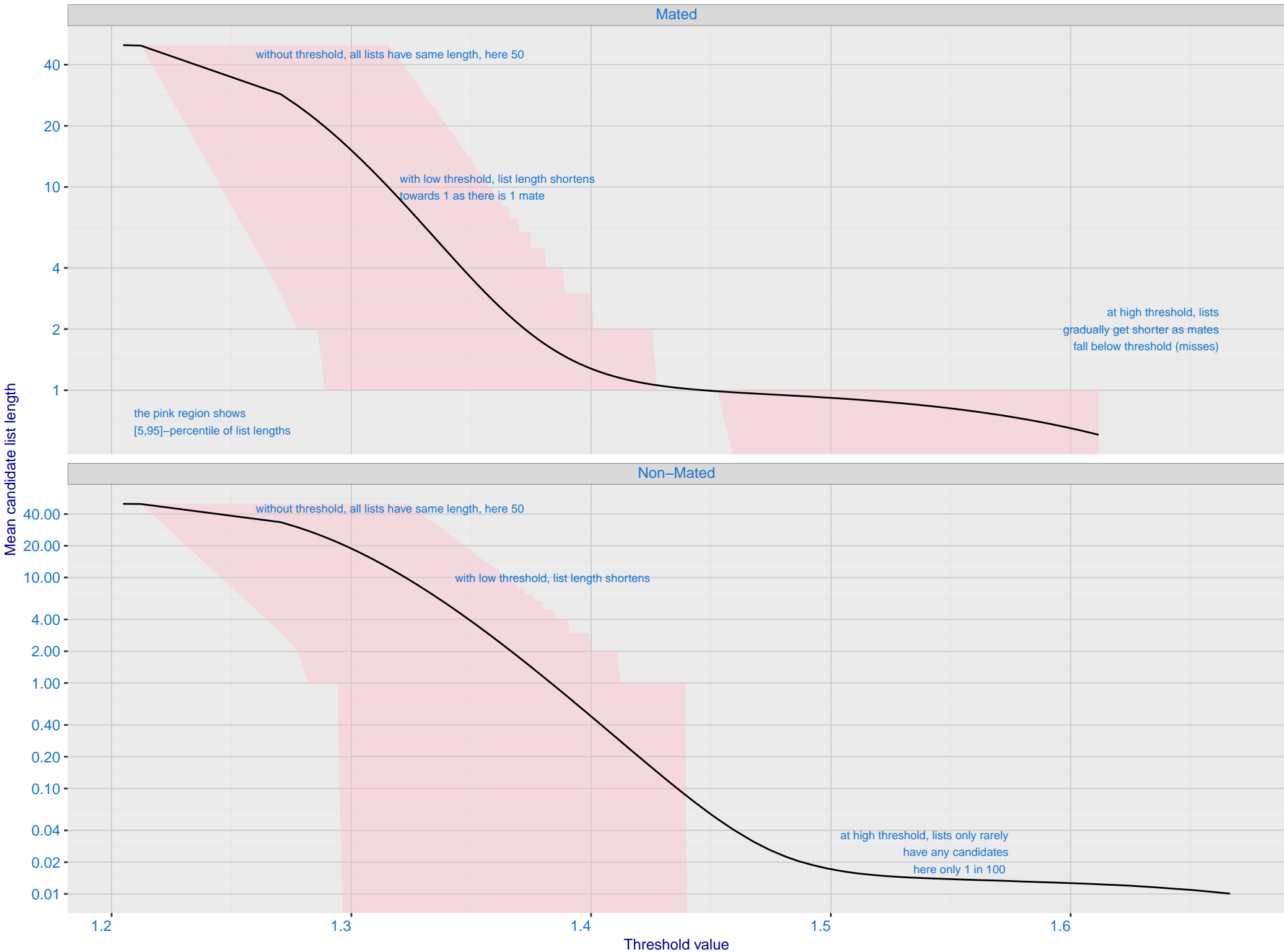
- Immigration visa-border
- Immigration visa-kiosk
- Mugshot natural
- Mugshot profile
- Mugshot webcam

enrolment\_style

—	random
- - - -	recent

# H: Reduced length candidate lists for human review

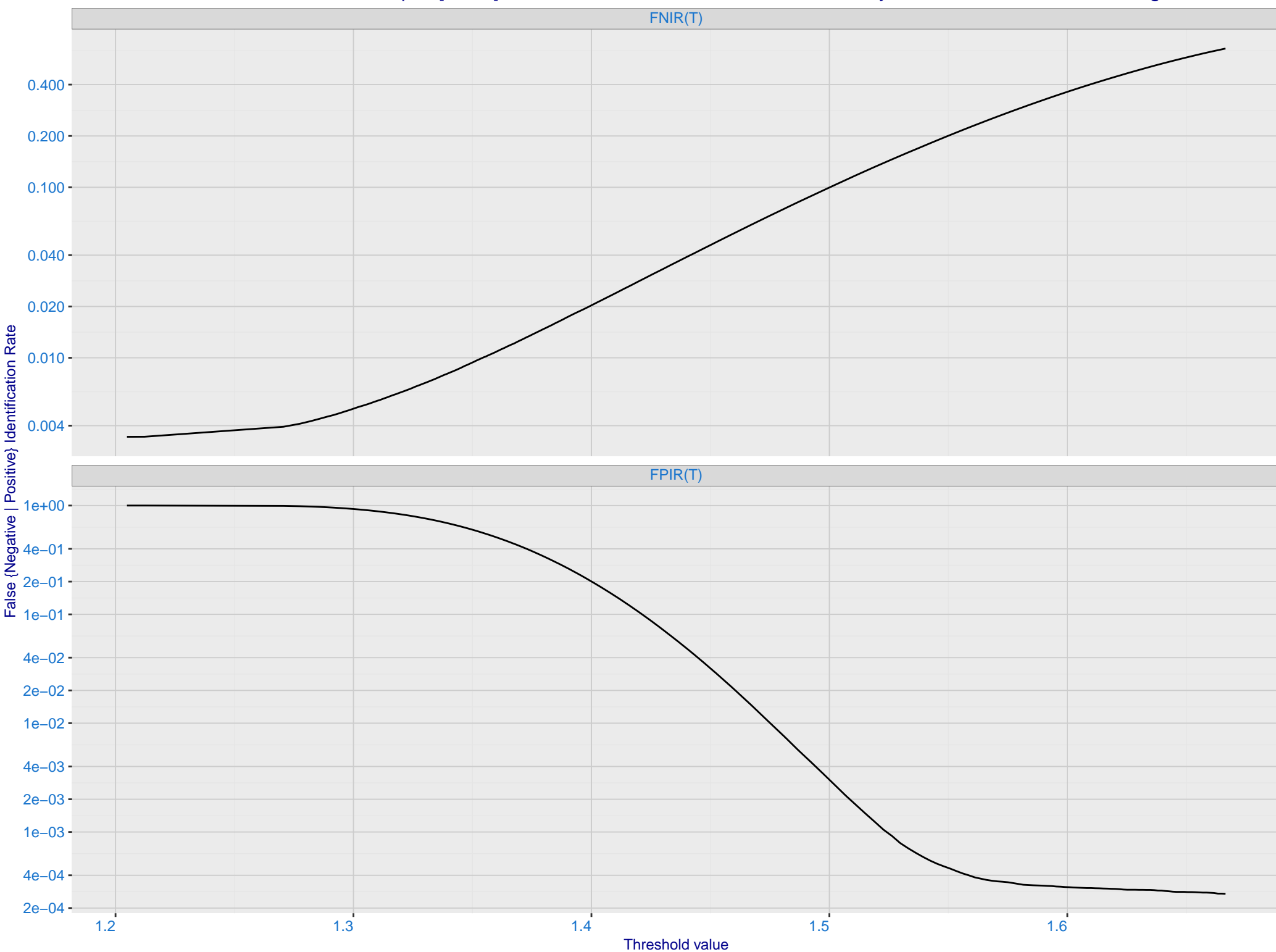
Dataset is border–border with time–lapse [10,15] YRS with N = 1600000. Probes are 10–15 years later than enrollment image



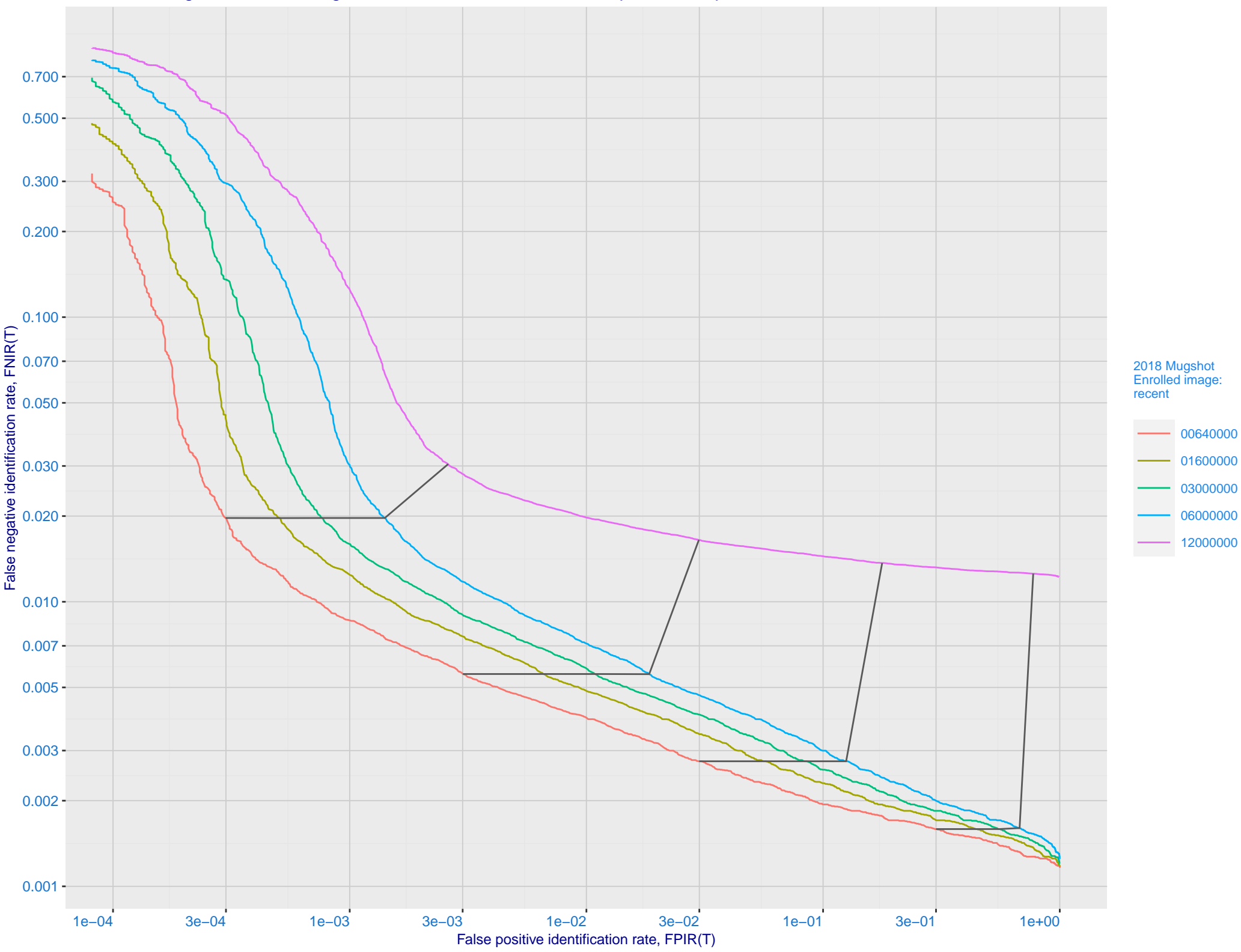


# I: FNIR and FPIR dependence on threshold

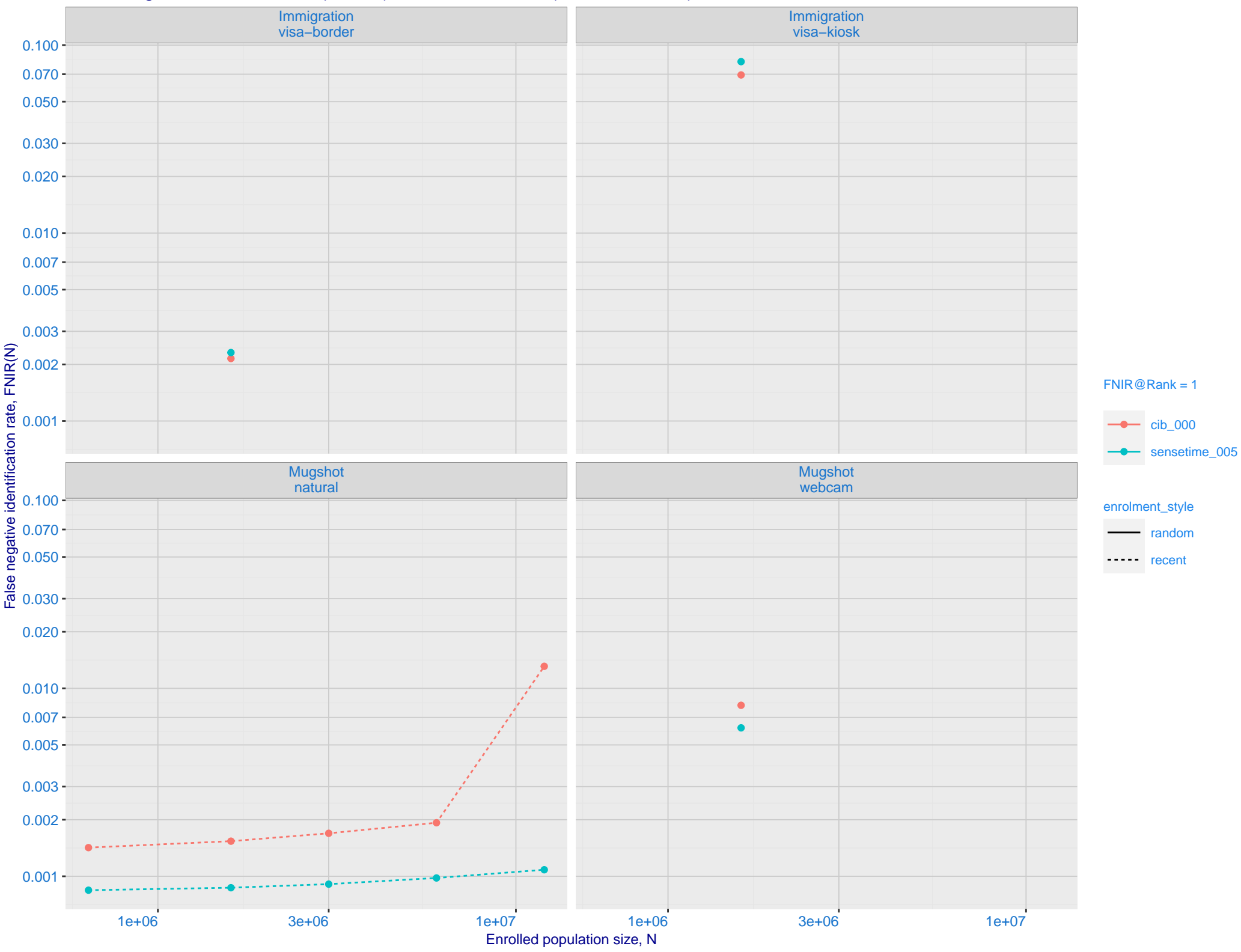
Dataset is border-border with time-lapse [10,15] YRS with N = 1600000. Probes are 10-15 years later than enrollment image



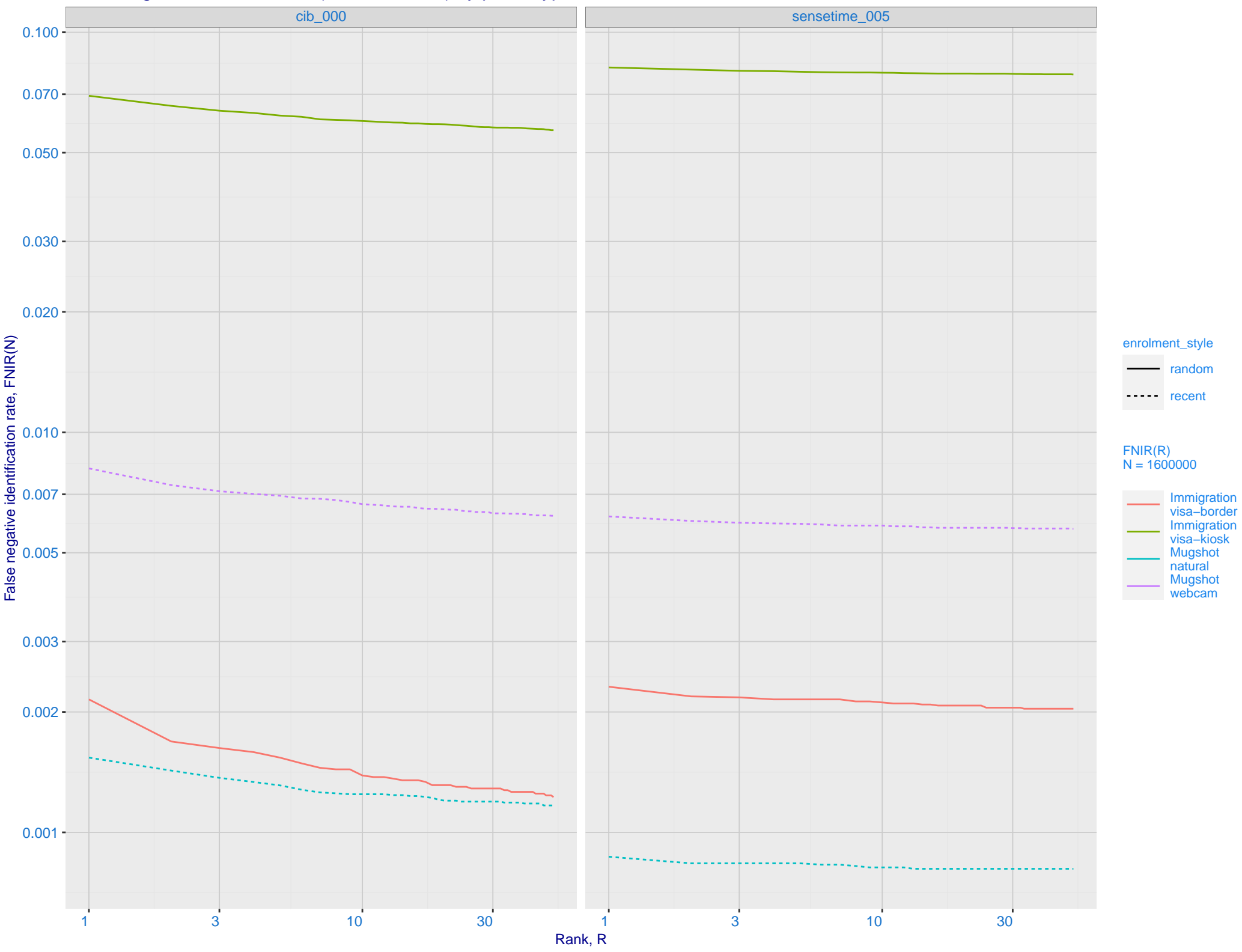
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.



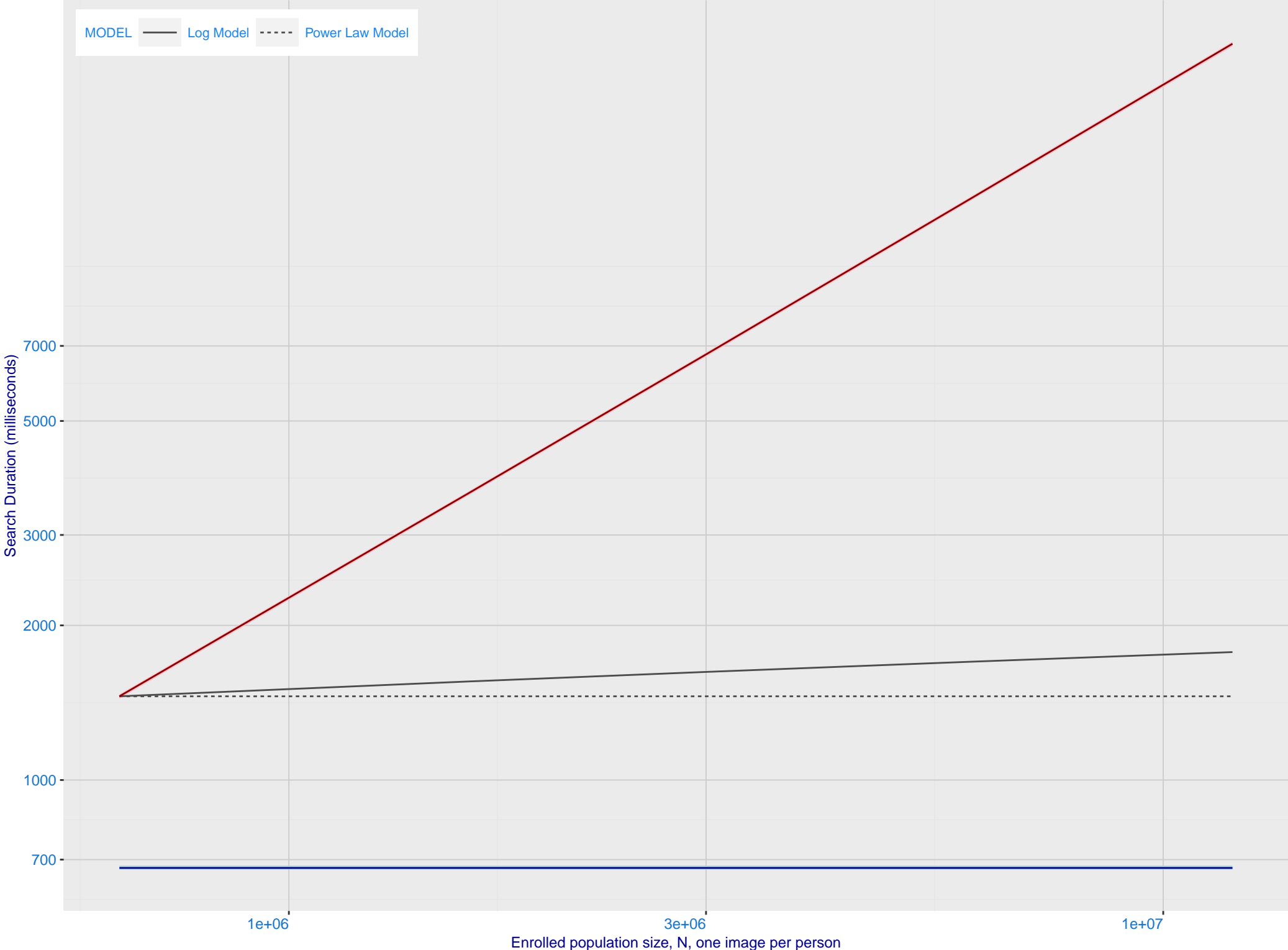
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005)



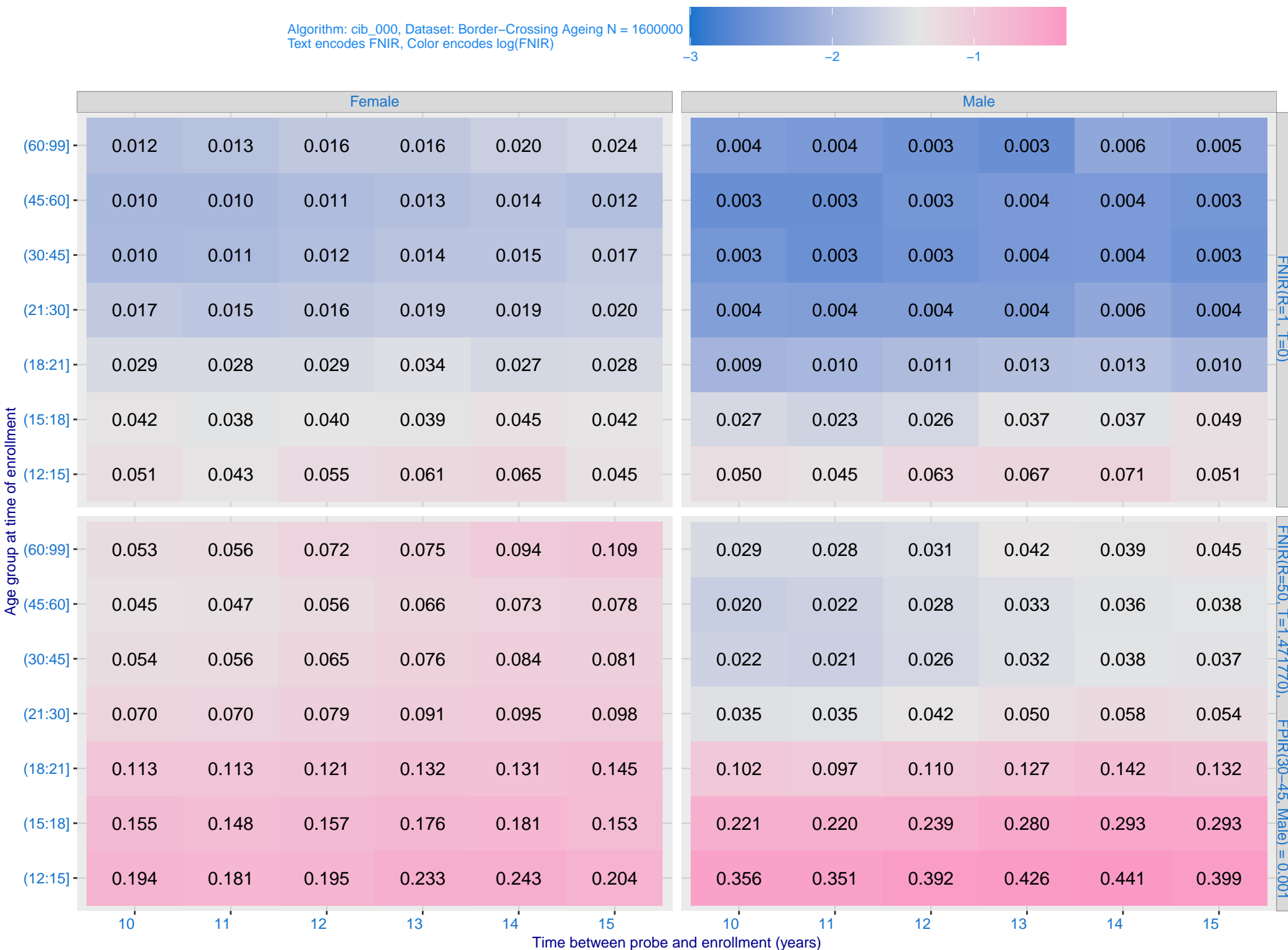
L: Investigational mode: FNIR(1600000, R, 0) by probe type



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



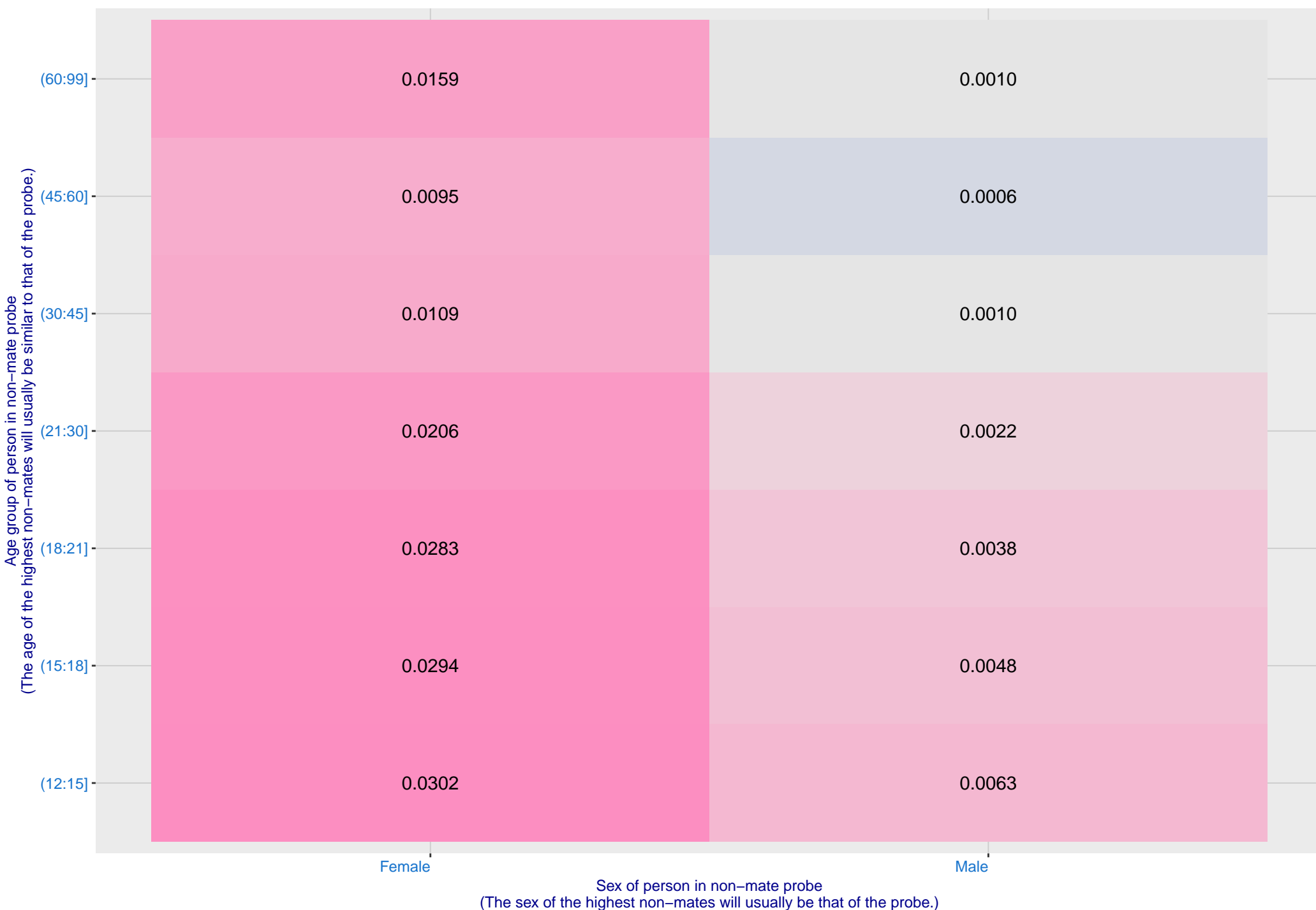
O: FNIR(T, N = 1.6 million) by sex, age and time-lapse. The top row gives investigational rank-1 miss rates. The bottom panels give high threshold for more lights-out identification with low FPIR.



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.

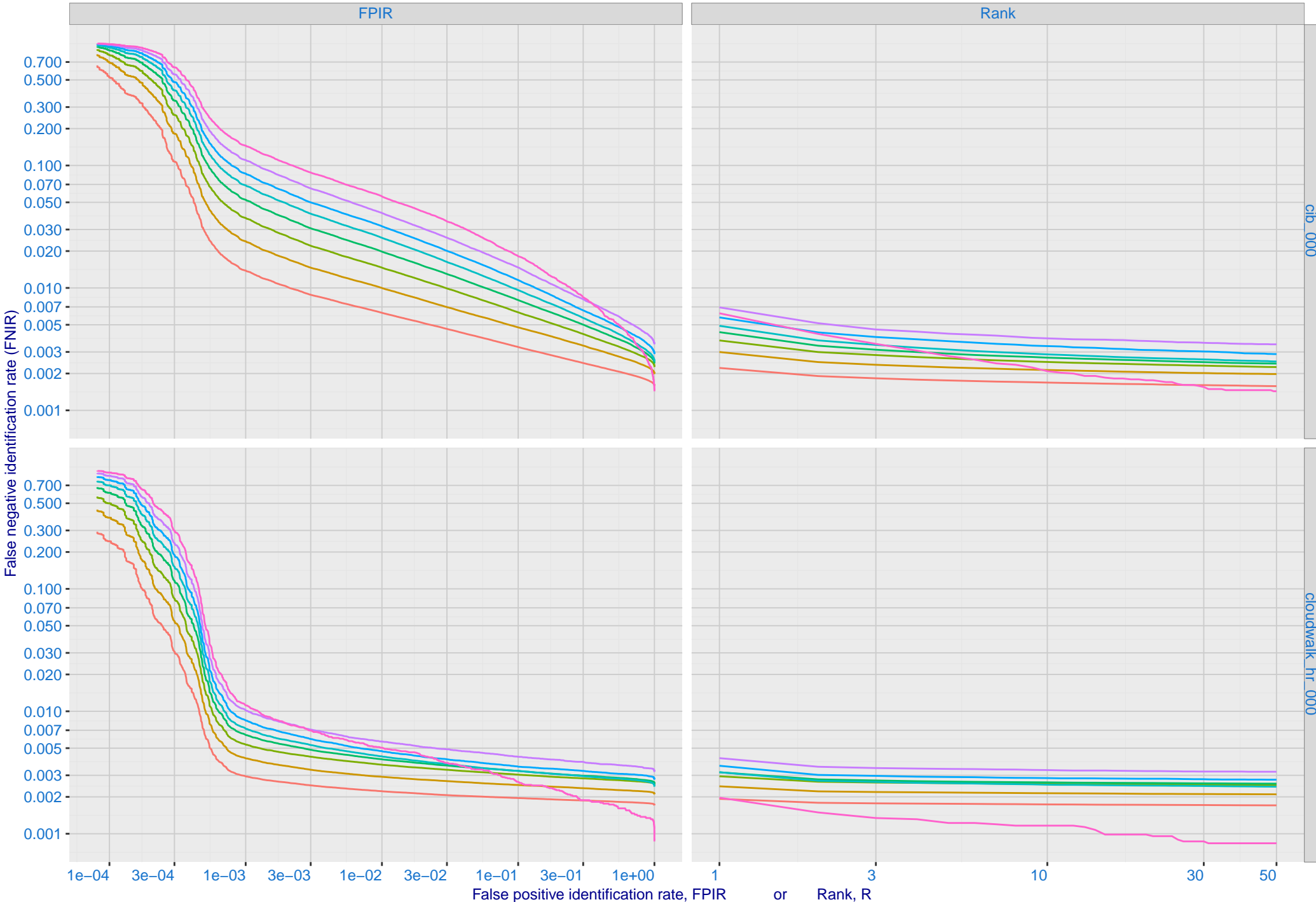
Algorithm: cib\_000, Dataset: Border-Crossing Ageing  
Threshold: 1.471770 set to achive FPIR(30–45, Male) = 0.001

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

