

A: Datasheet

Algorithm: rendip\_000

Developer: Rendip

Submission Date: 2021\_05\_21

Template size: 2048 bytes

Template time (2.5 percentile): 875 msec

Template time (median): 891 msec

Template time (97.5 percentile): 982 msec

Investigation:

Frontal mugshot ranking 18 (out of 279) -- FNIR(1600000, 0, 1) = 0.0015 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 50 (out of 241) -- FNIR(1600000, 0, 1) = 0.0147 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 49 (out of 210) -- FNIR(1600000, 0, 1) = 0.4235 vs. lowest 0.0587 from xforwardai\_002

Immigration visa-border ranking 51 (out of 168) -- FNIR(1600000, 0, 1) = 0.0061 vs. lowest 0.0013 from visionlabs\_010

Immigration visa-kiosk ranking 18 (out of 165) -- FNIR(1600000, 0, 1) = 0.0839 vs. lowest 0.0568 from cloudwalk\_hr\_000

Identification:

Frontal mugshot ranking 23 (out of 279) -- FNIR(1600000, T, L+1) = 0.0121, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

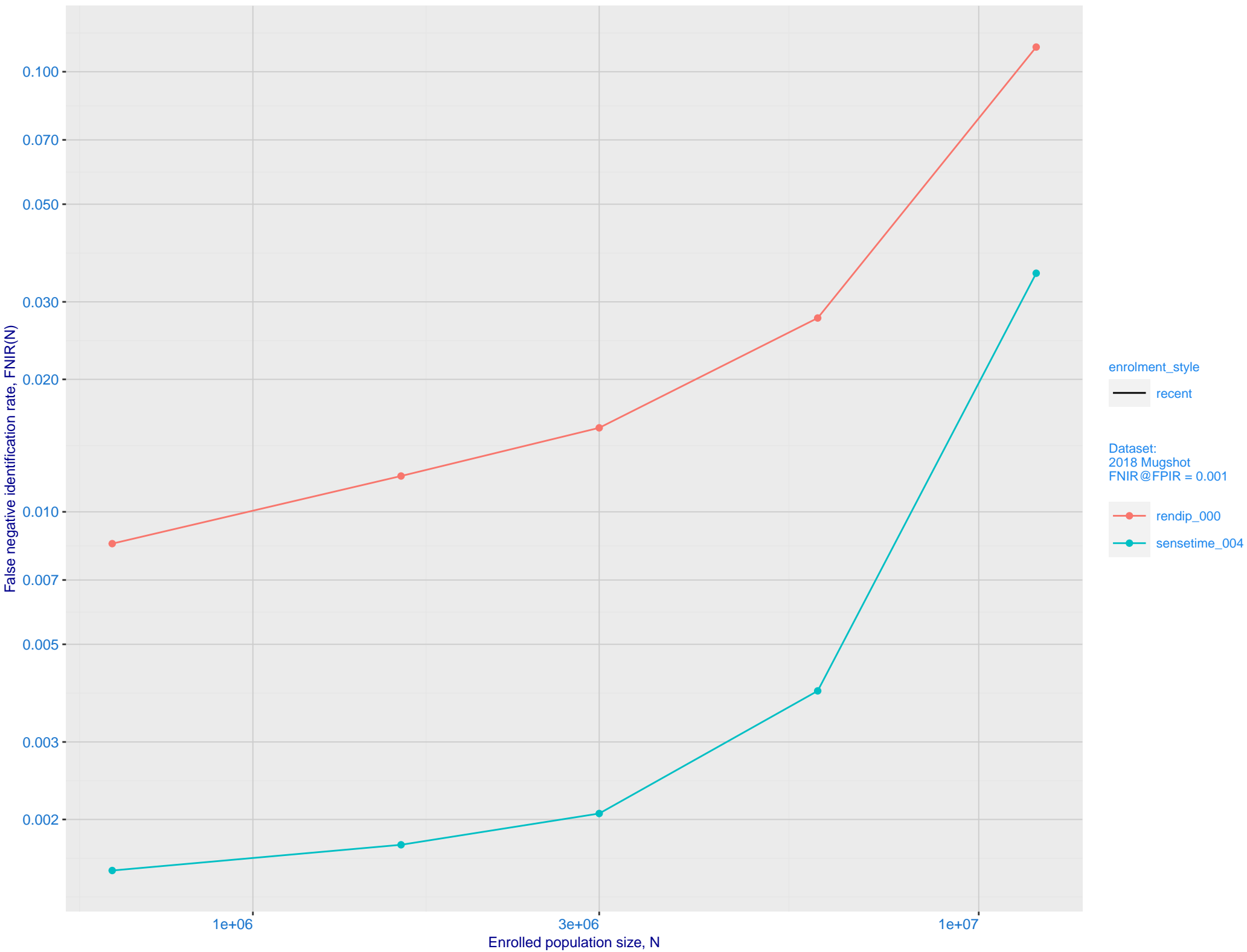
Mugshot webcam ranking 36 (out of 236) -- FNIR(1600000, T, L+1) = 0.0586, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 35 (out of 209) -- FNIR(1600000, T, L+1) = 0.8937, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk\_hr\_000

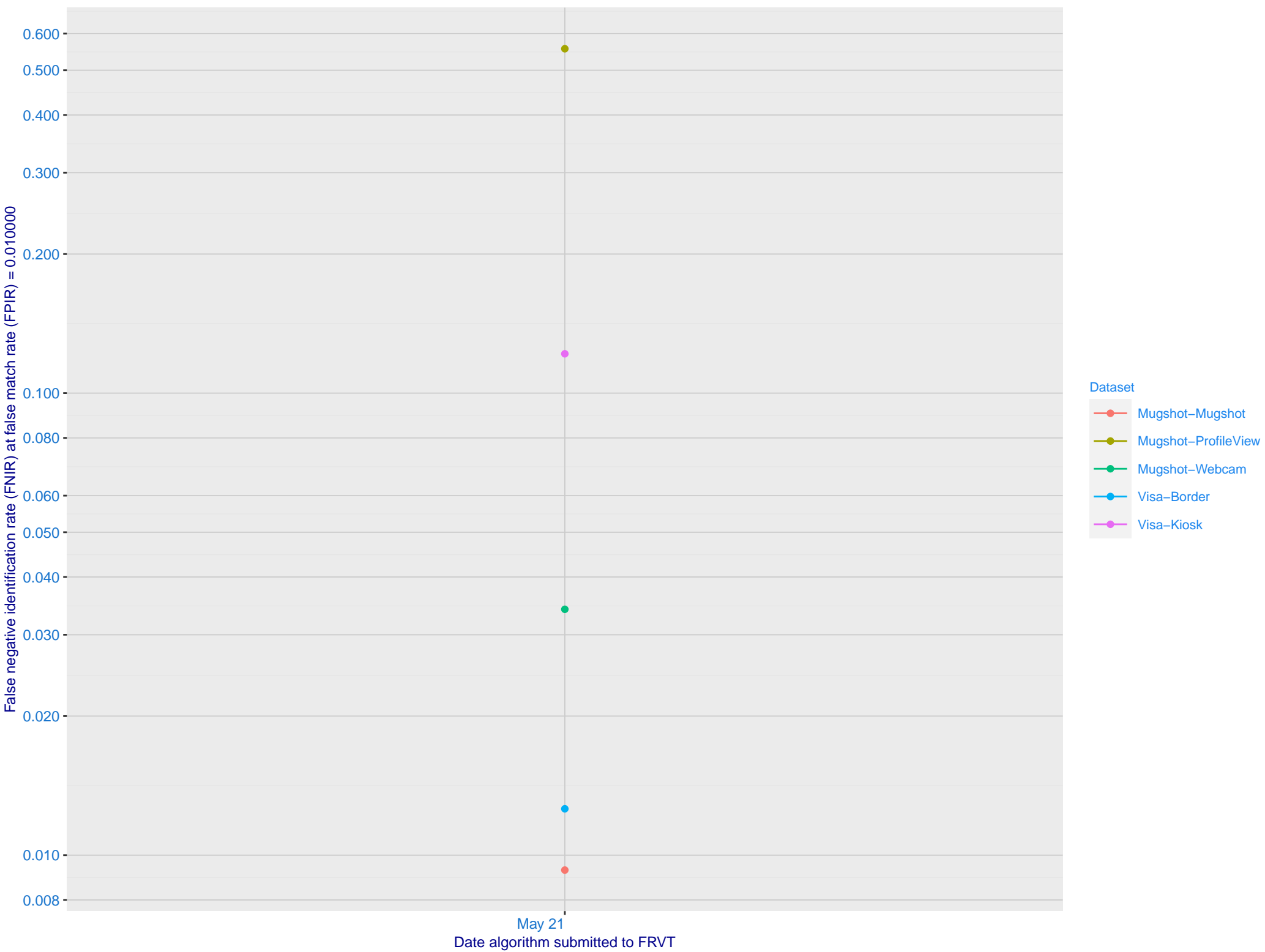
Immigration visa-border ranking 24 (out of 167) -- FNIR(1600000, T, L+1) = 0.0220, FPIR=0.001000 vs. lowest 0.0047 from idemia\_008

Immigration visa-kiosk ranking 16 (out of 162) -- FNIR(1600000, T, L+1) = 0.1689, FPIR=0.001000 vs. lowest 0.0996 from cloudwalk\_hr\_000

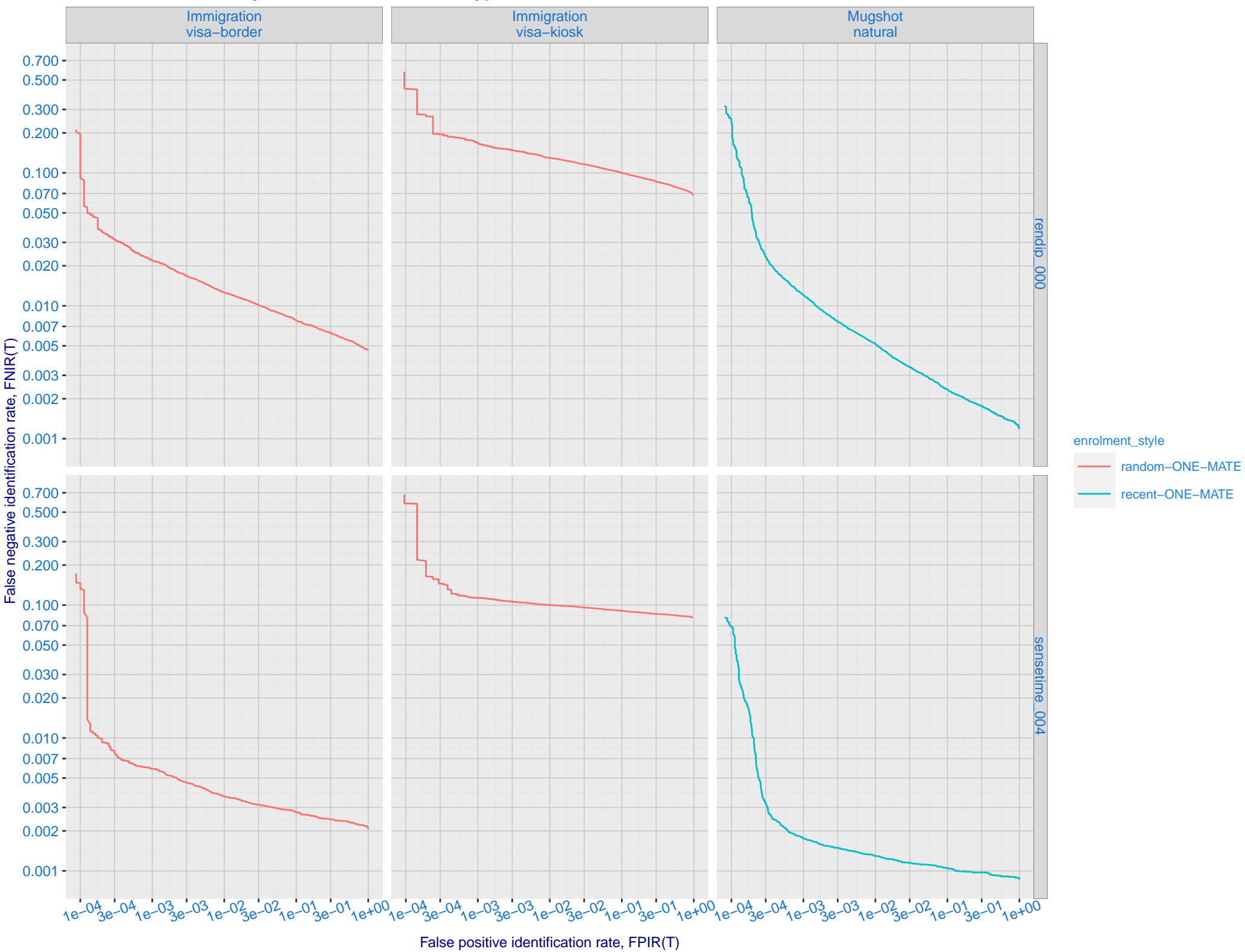
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (sensetime\_004)



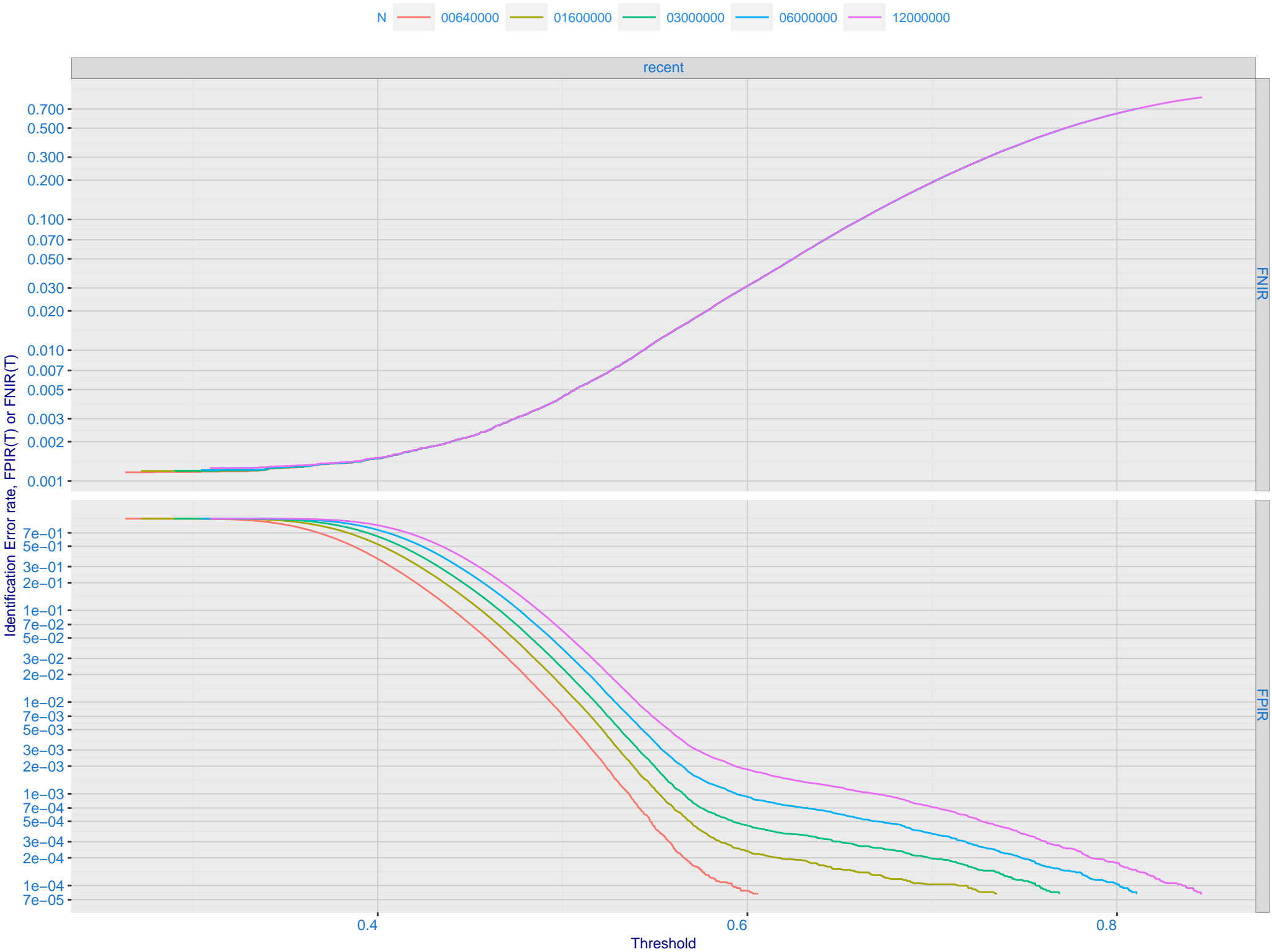
C: Evolution of accuracy for RENDIP algorithms on three datasets 2018 – present



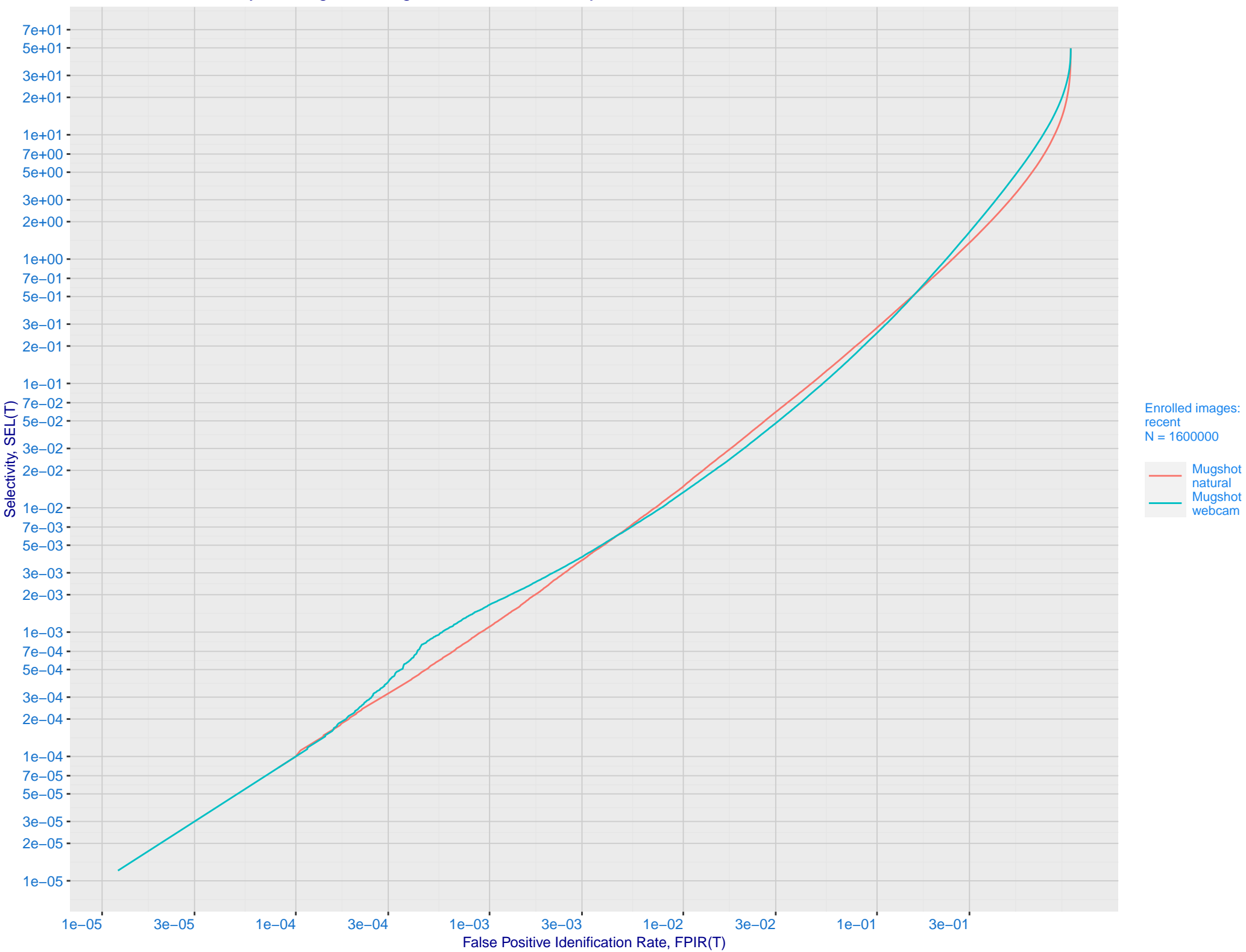
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals



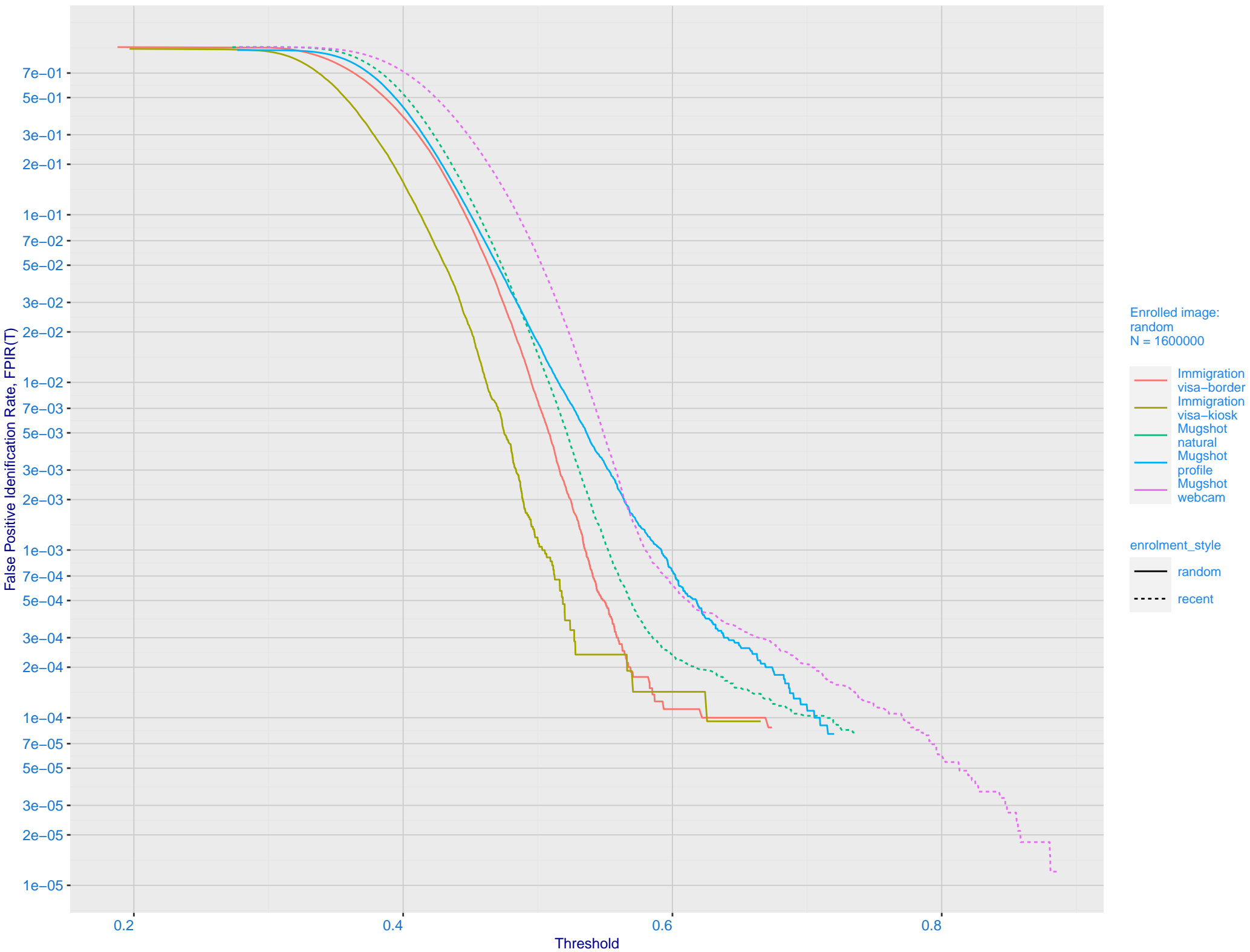
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



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

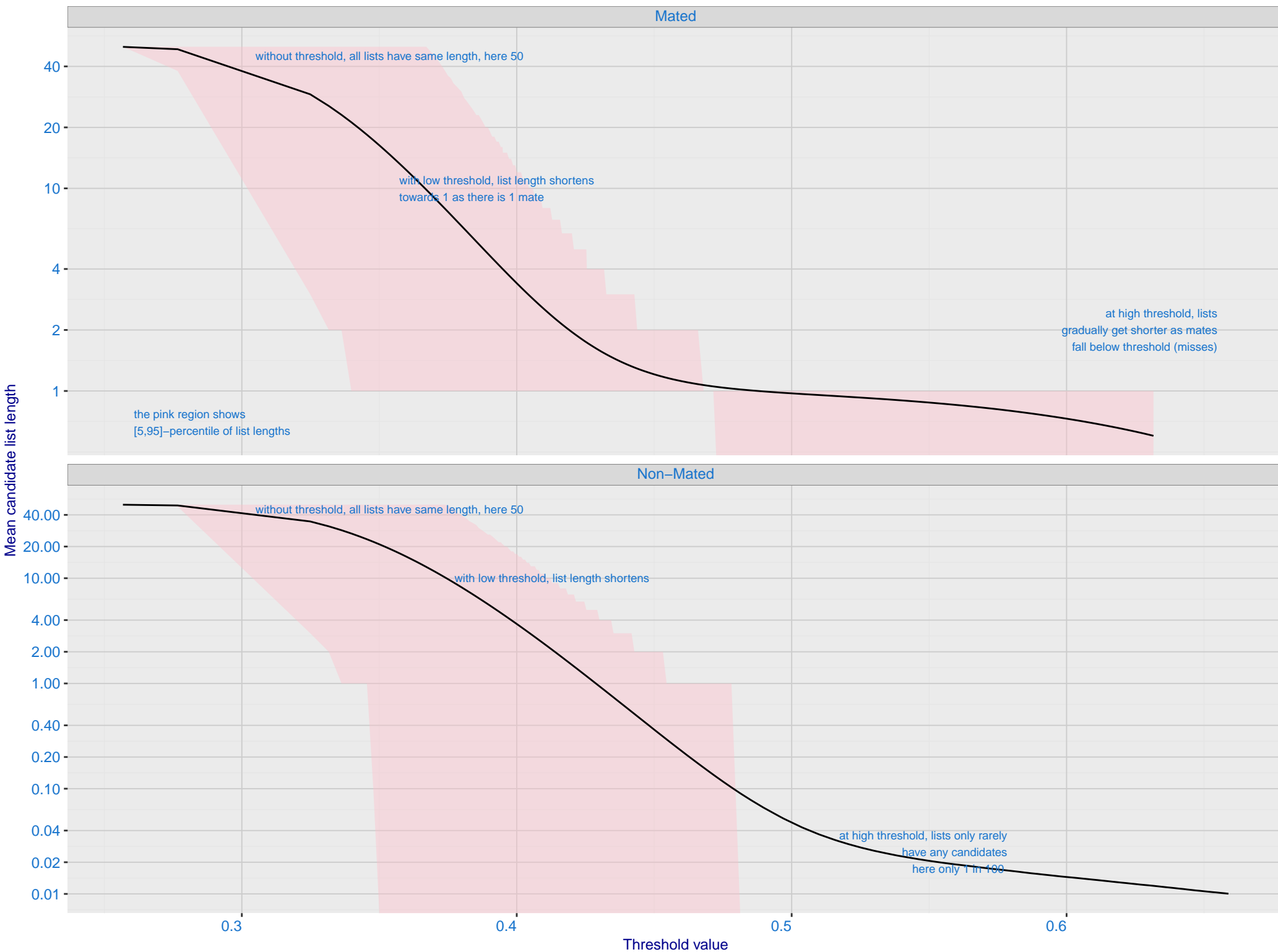


G: FPIR dependence on T by probe type for N = 1600000 subjects



# H: Reduced length candidate lists for human review

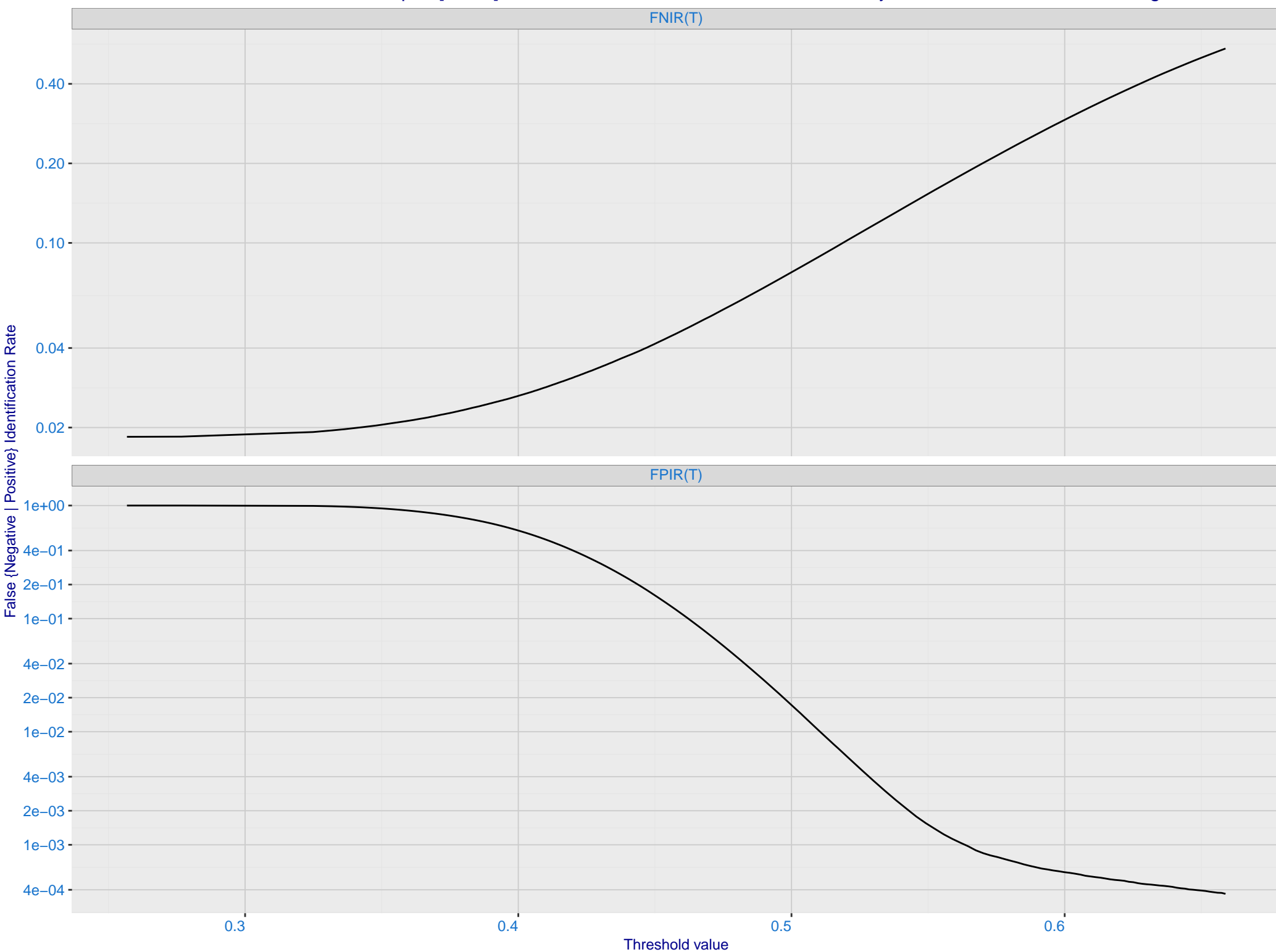
Dataset is border–border with time–lapse [10,15] YRS with N = 1600000. Probes are 10–15 years later than enrollment image



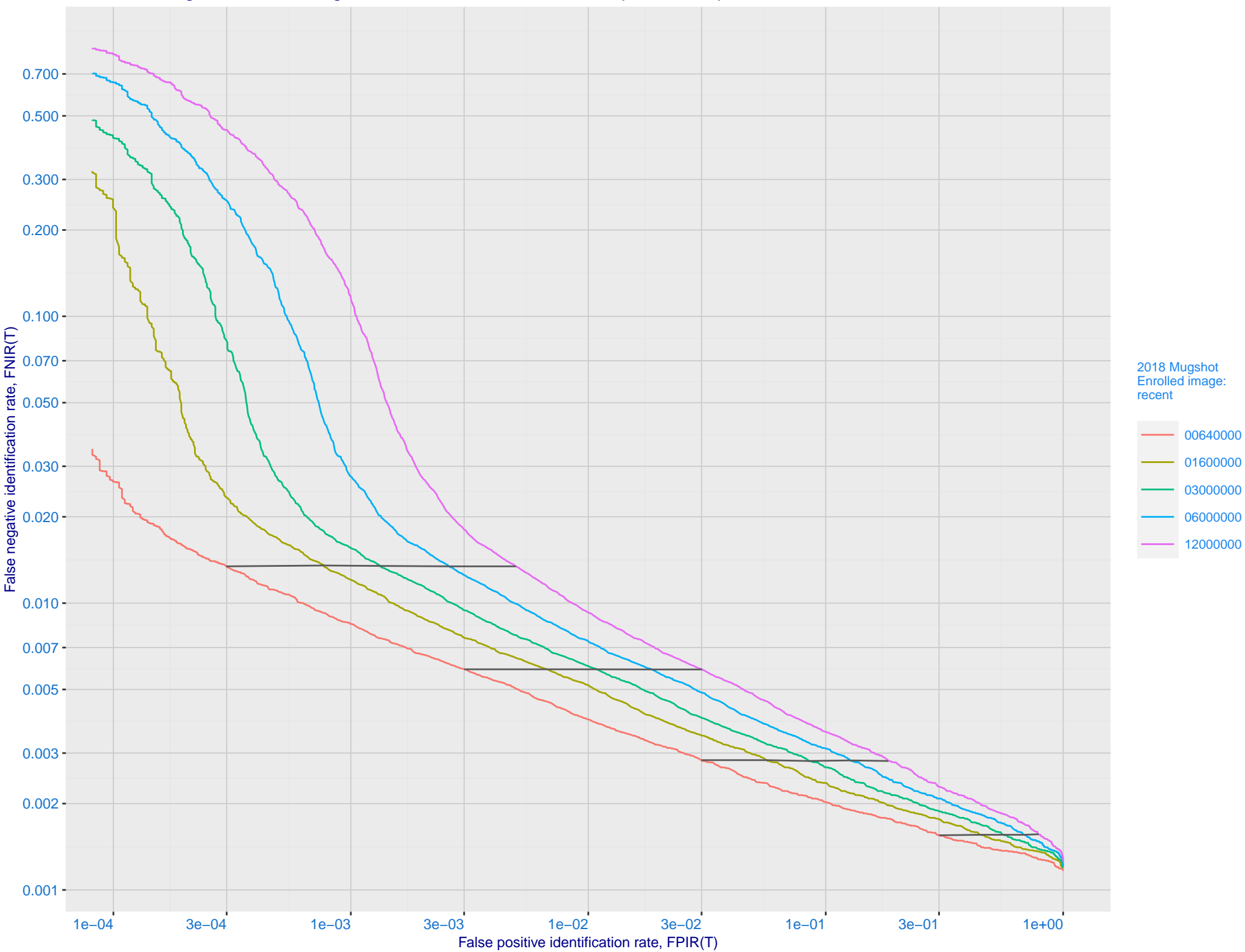


# I: FNIR and FPIR dependence on threshold

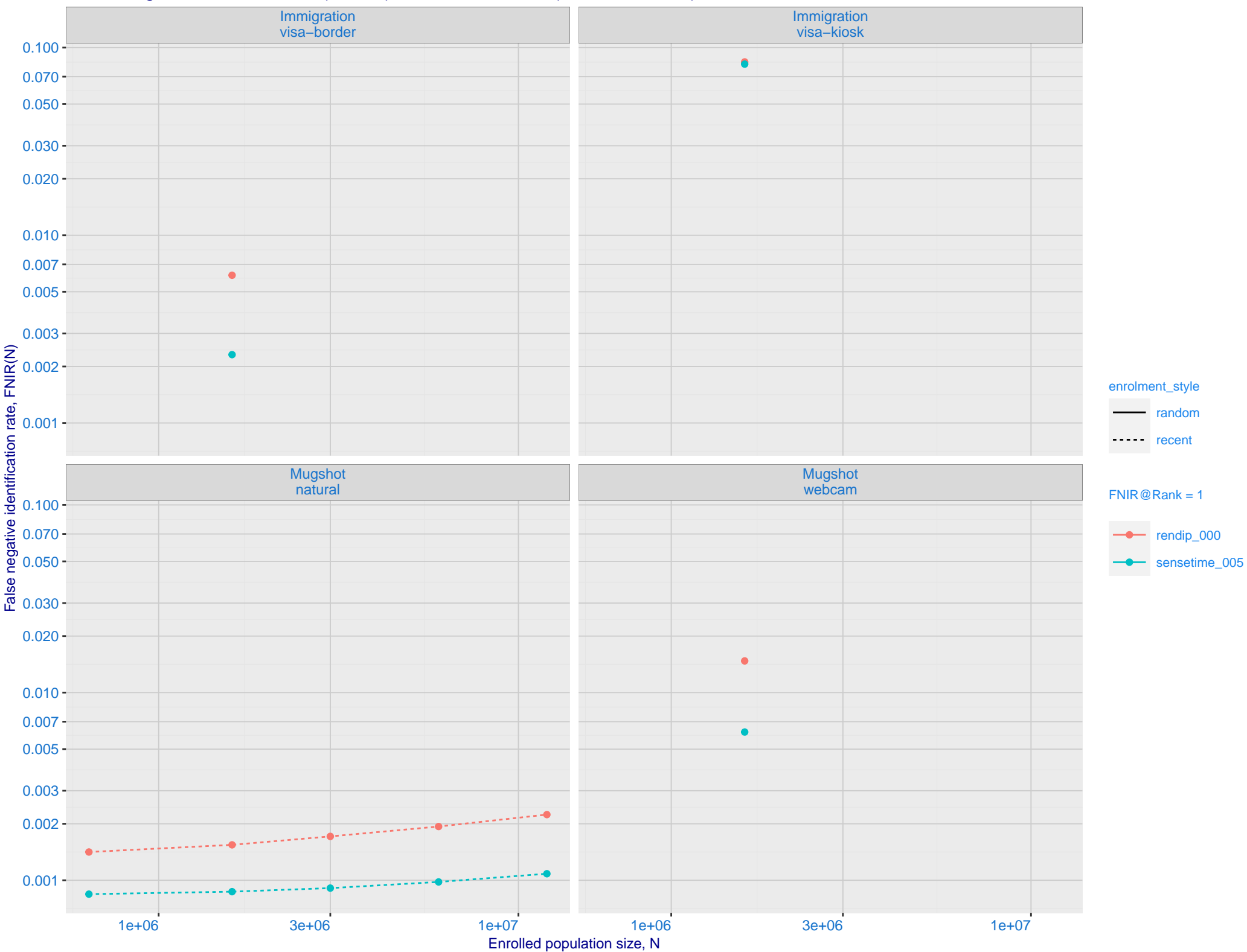
Dataset is border-border with time-lapse [10,15] YRS with N = 1600000. Probes are 10-15 years later than enrollment image



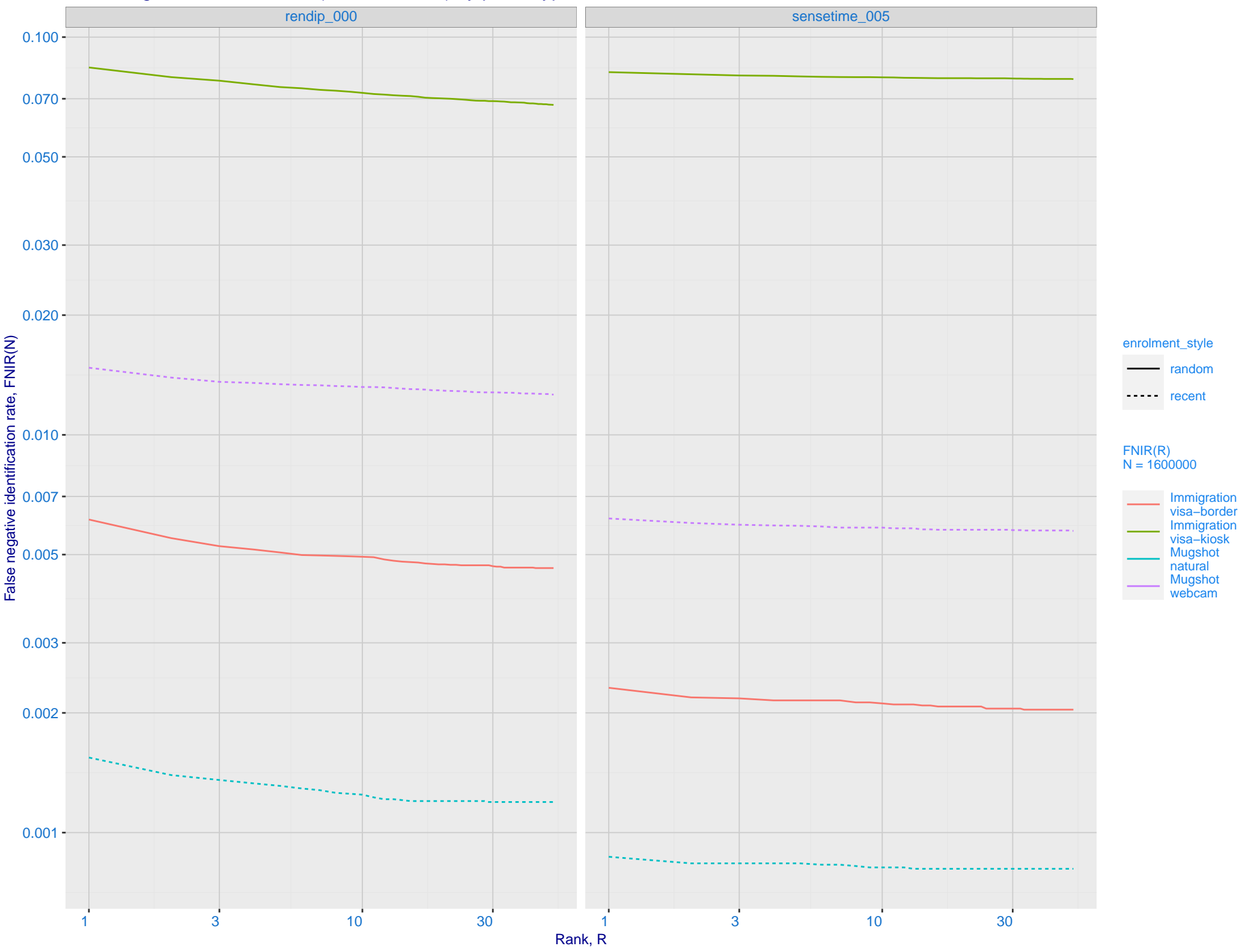
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.



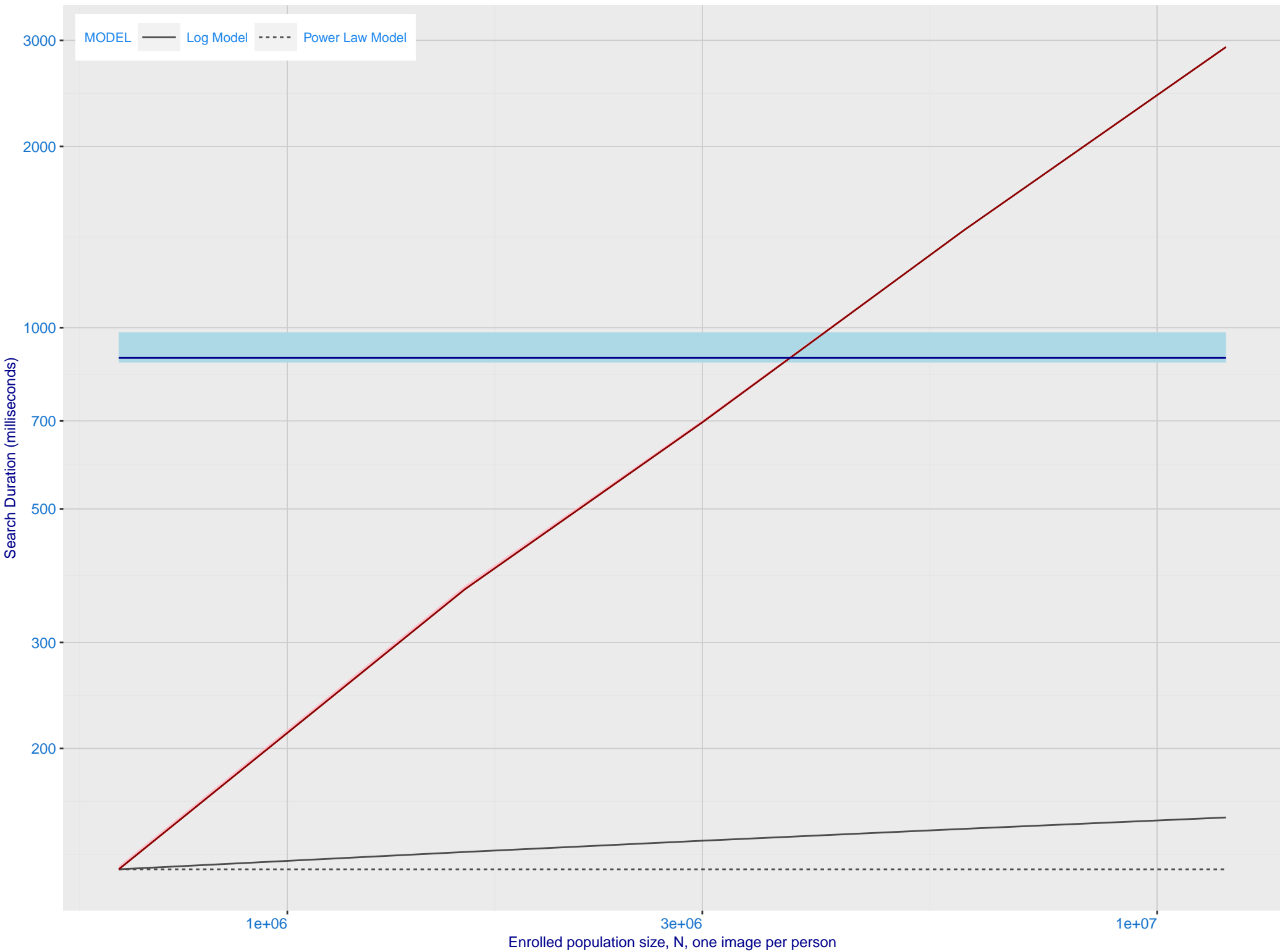
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005)



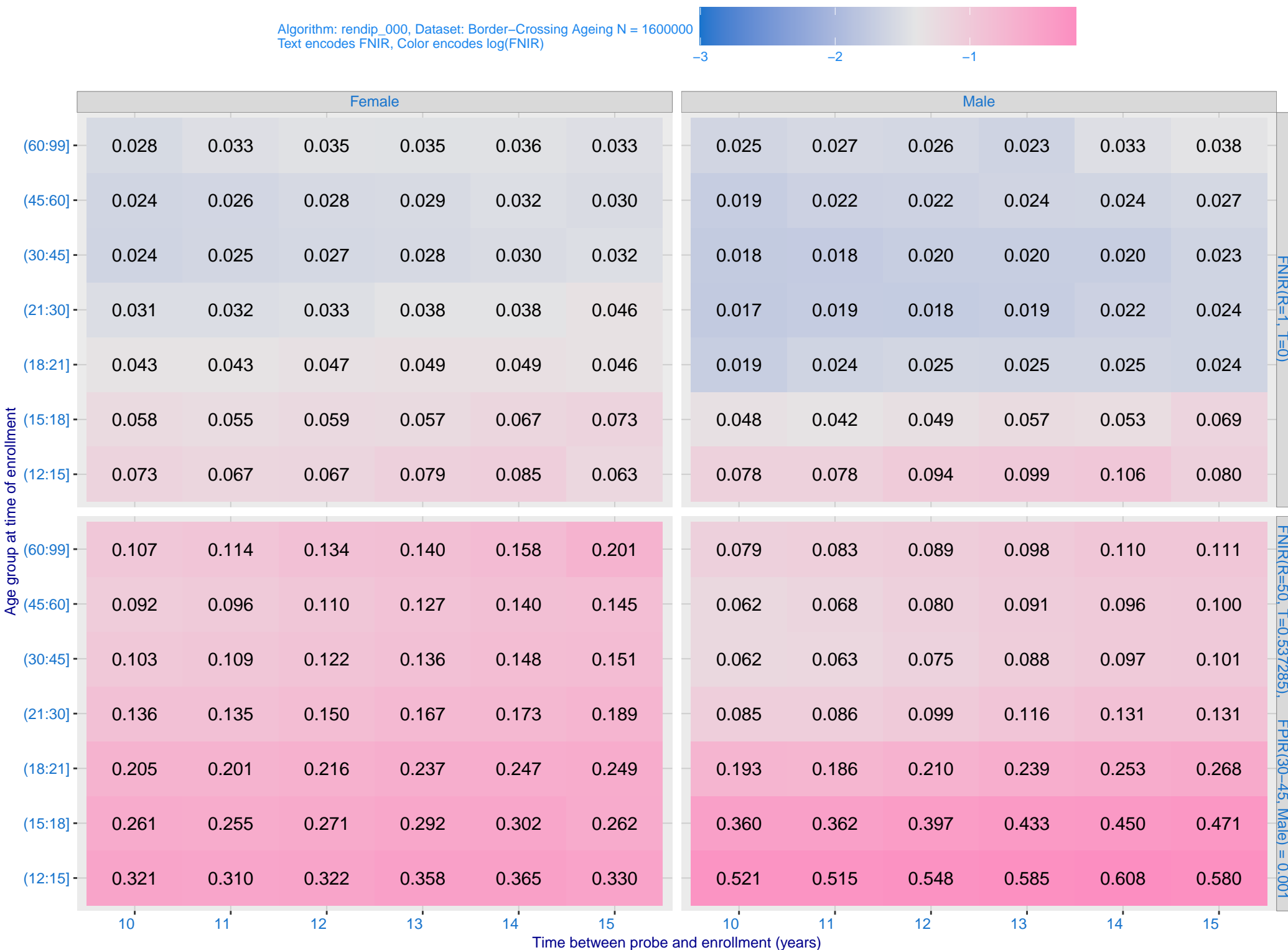
L: Investigational mode: FNIR(1600000, R, 0) by probe type



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: rendip\_000, Dataset: Border-Crossing Ageing  
Threshold: 0.537285 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

