

A: Datasheet

Algorithm: imperial_000

Developer: Imperial College London

Submission Date: 2019_08_28

Template size: 2048 bytes

Template time (2.5 percentile): 568 msec

Template time (median): 577 msec

Template time (97.5 percentile): 790 msec

Investigation:

Frontal mugshot ranking 86 (out of 329) -- FNIR(1600000, 0, 1) = 0.0024 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 90 (out of 291) -- FNIR(1600000, 0, 1) = 0.0148 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 58 (out of 260) -- FNIR(1600000, 0, 1) = 0.2803 vs. lowest 0.0550 from sensetime_006

Immigration visa-border ranking 68 (out of 218) -- FNIR(1600000, 0, 1) = 0.0044 vs. lowest 0.0009 from sensetime_006

Immigration visa-kiosk ranking 53 (out of 215) -- FNIR(1600000, 0, 1) = 0.0967 vs. lowest 0.0487 from cubox_000

Identification:

Frontal mugshot ranking 89 (out of 329) -- FNIR(1600000, T, L+1) = 0.0259, FPIR=0.001000 vs. lowest 0.0017 from nec_005

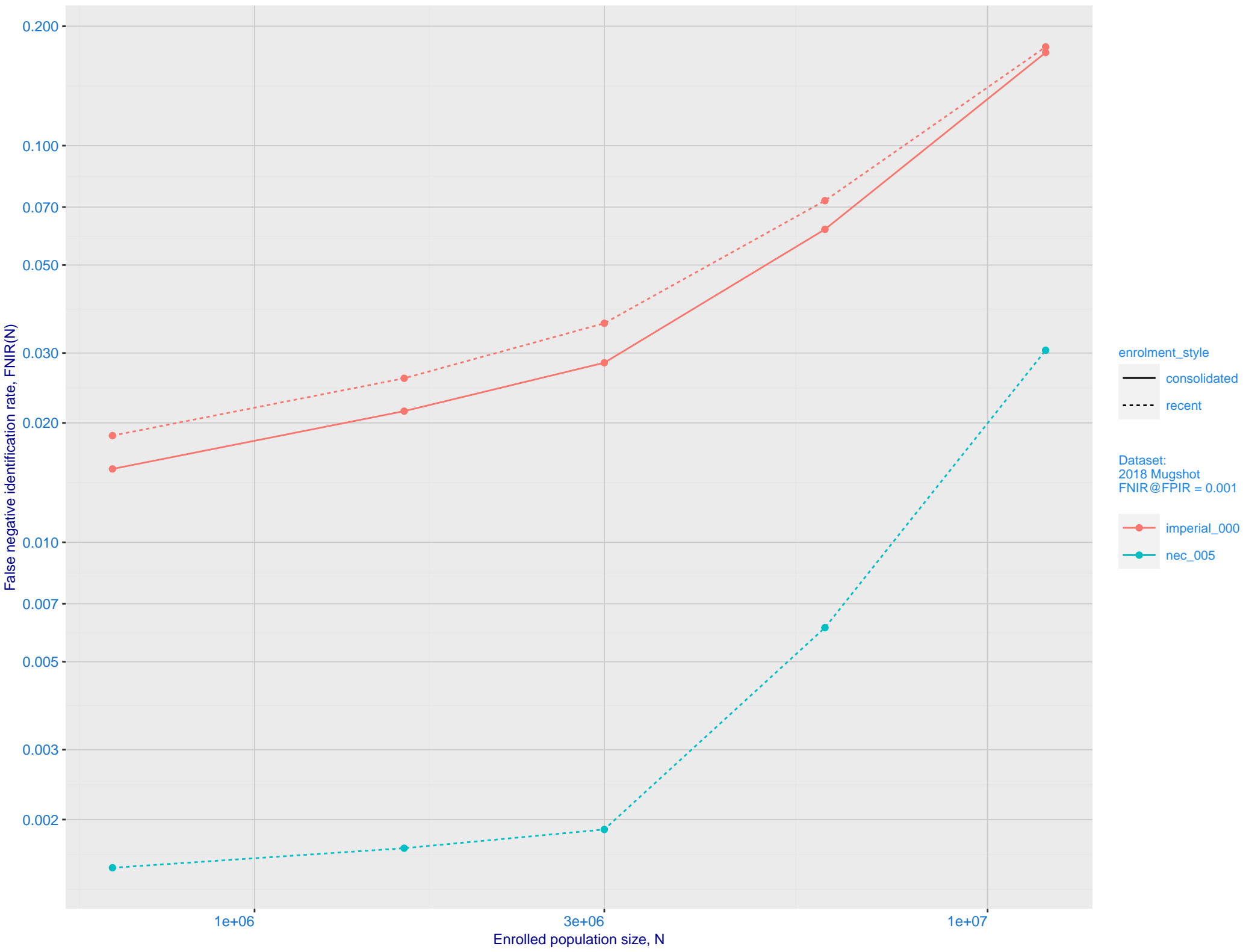
Mugshot webcam ranking 78 (out of 289) -- FNIR(1600000, T, L+1) = 0.0677, FPIR=0.001000 vs. lowest 0.0120 from nec_005

Mugshot profile ranking 168 (out of 259) -- FNIR(1600000, T, L+1) = 0.9987, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

Immigration visa-border ranking 84 (out of 217) -- FNIR(1600000, T, L+1) = 0.0418, FPIR=0.001000 vs. lowest 0.0032 from paravision_009

Immigration visa-kiosk ranking 59 (out of 212) -- FNIR(1600000, T, L+1) = 0.2456, FPIR=0.001000 vs. lowest 0.0728 from paravision_009

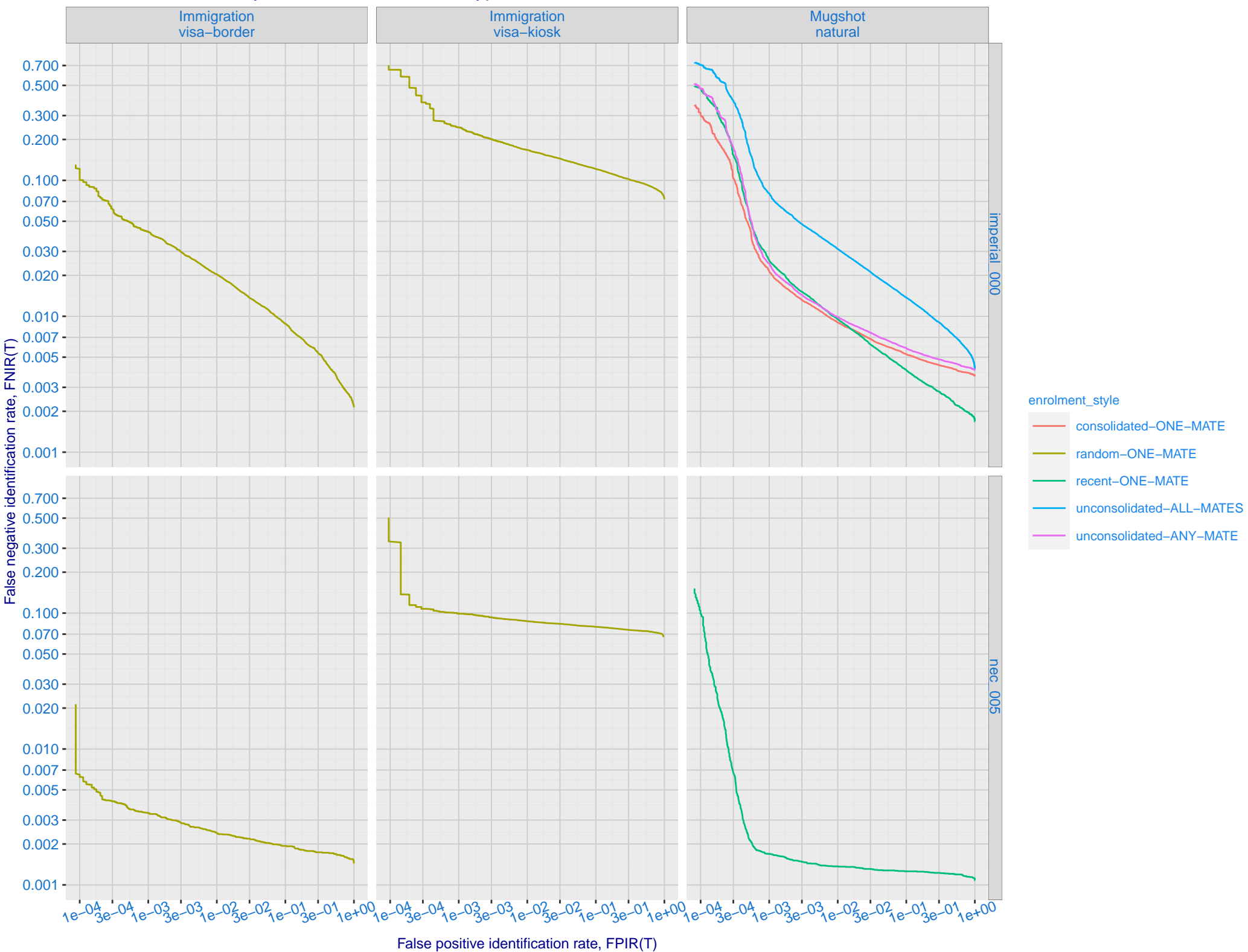
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (nec_005)



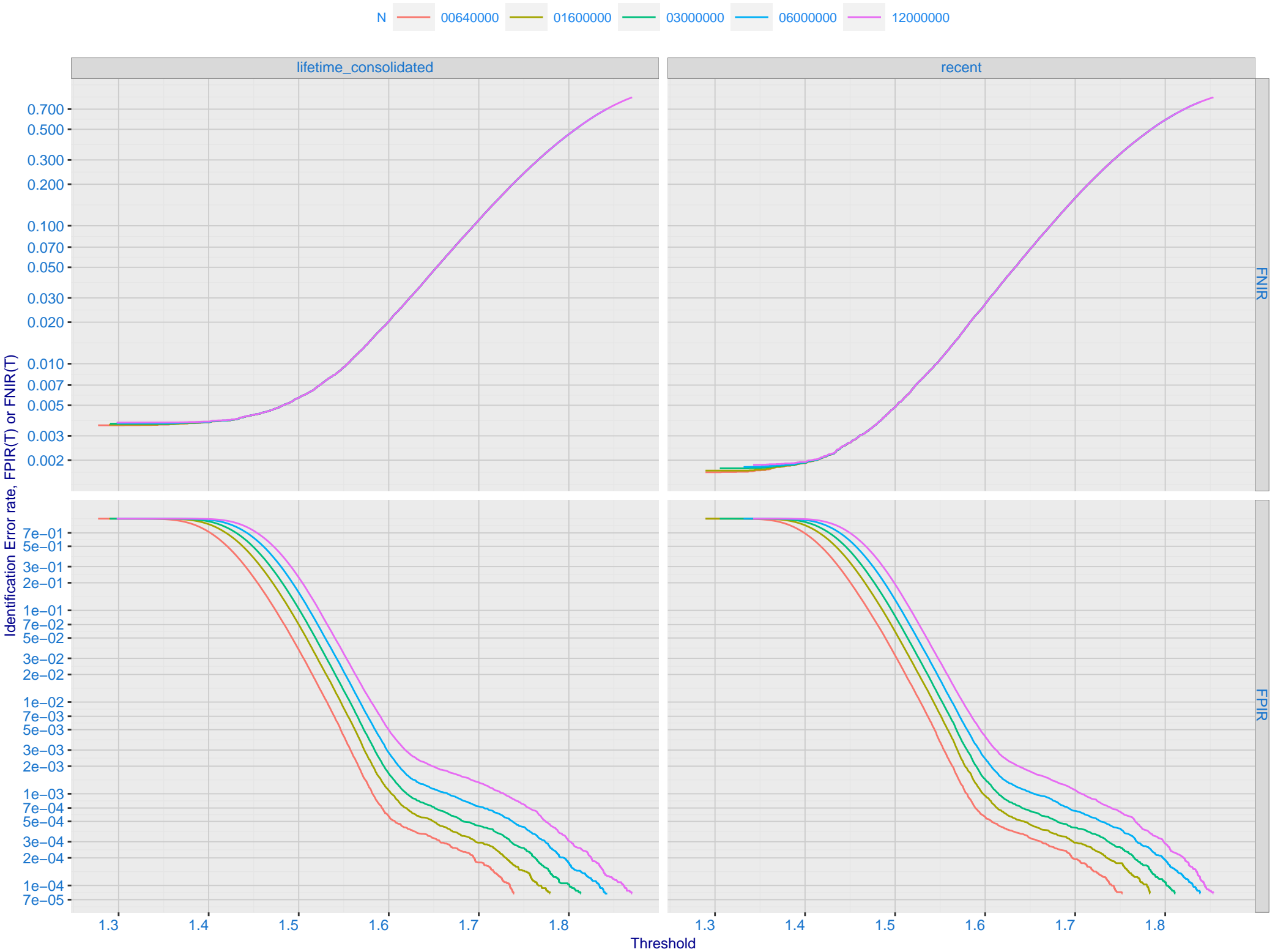
C: Evolution of accuracy for IMPERIAL algorithms on three datasets 2018 – present



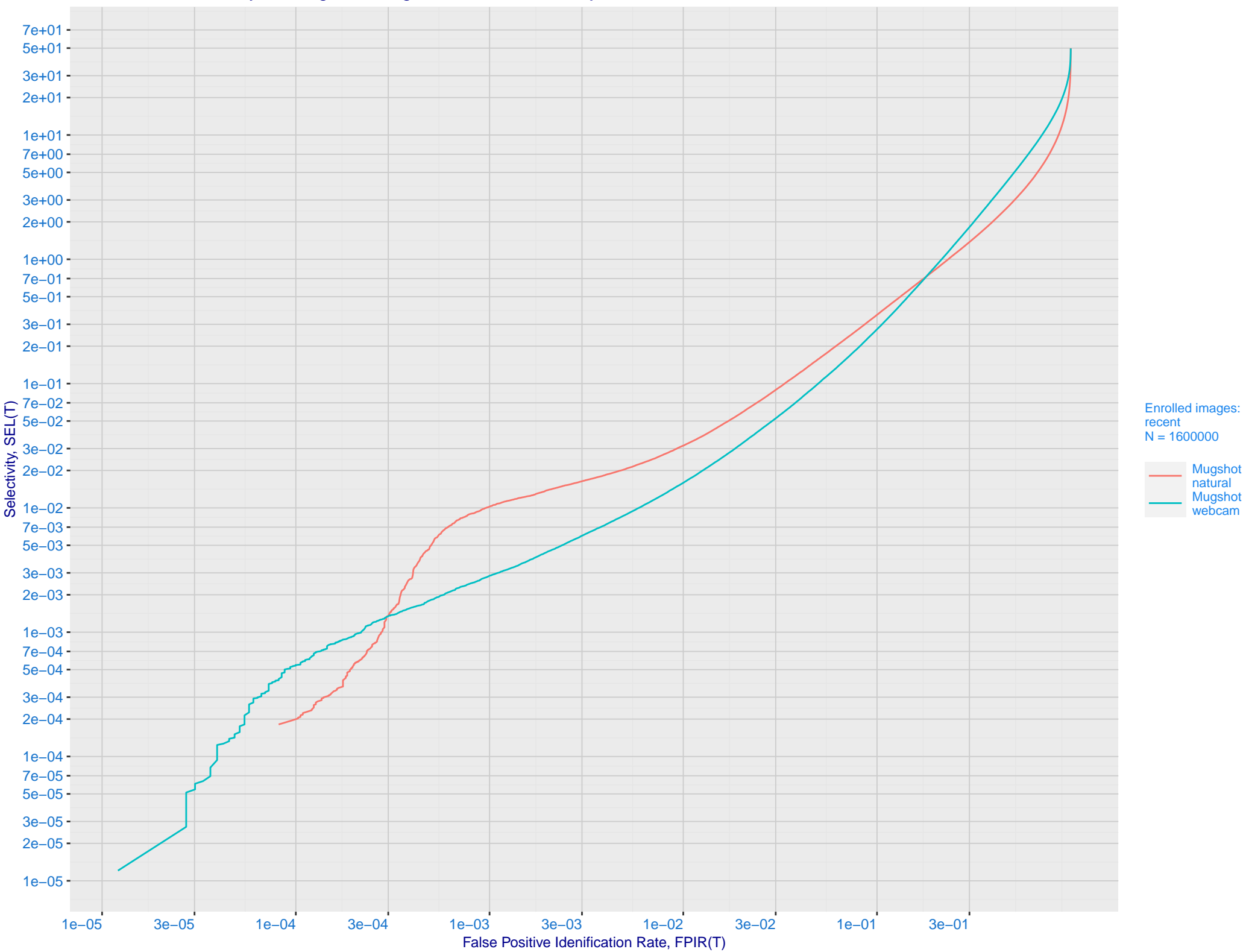
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals



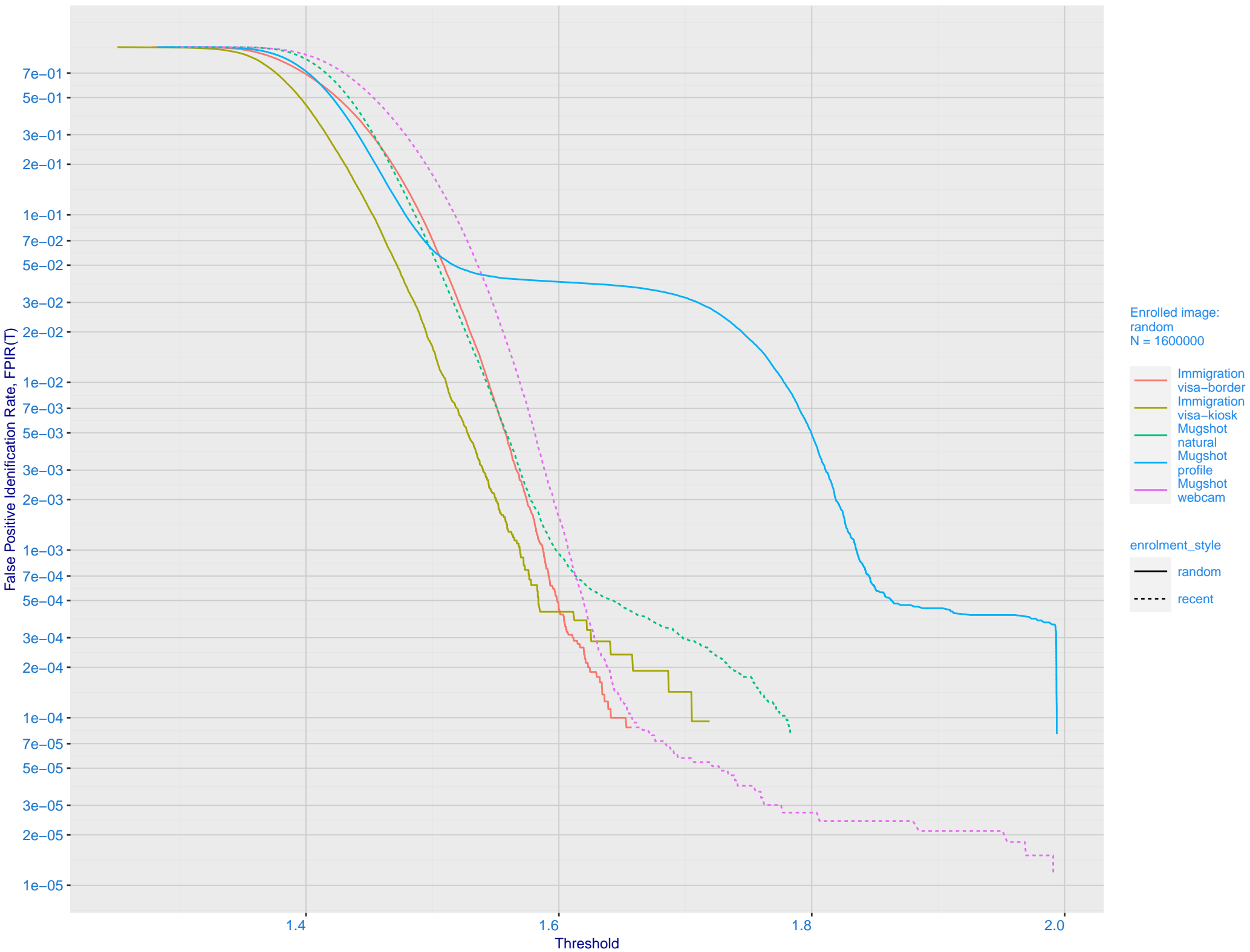
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



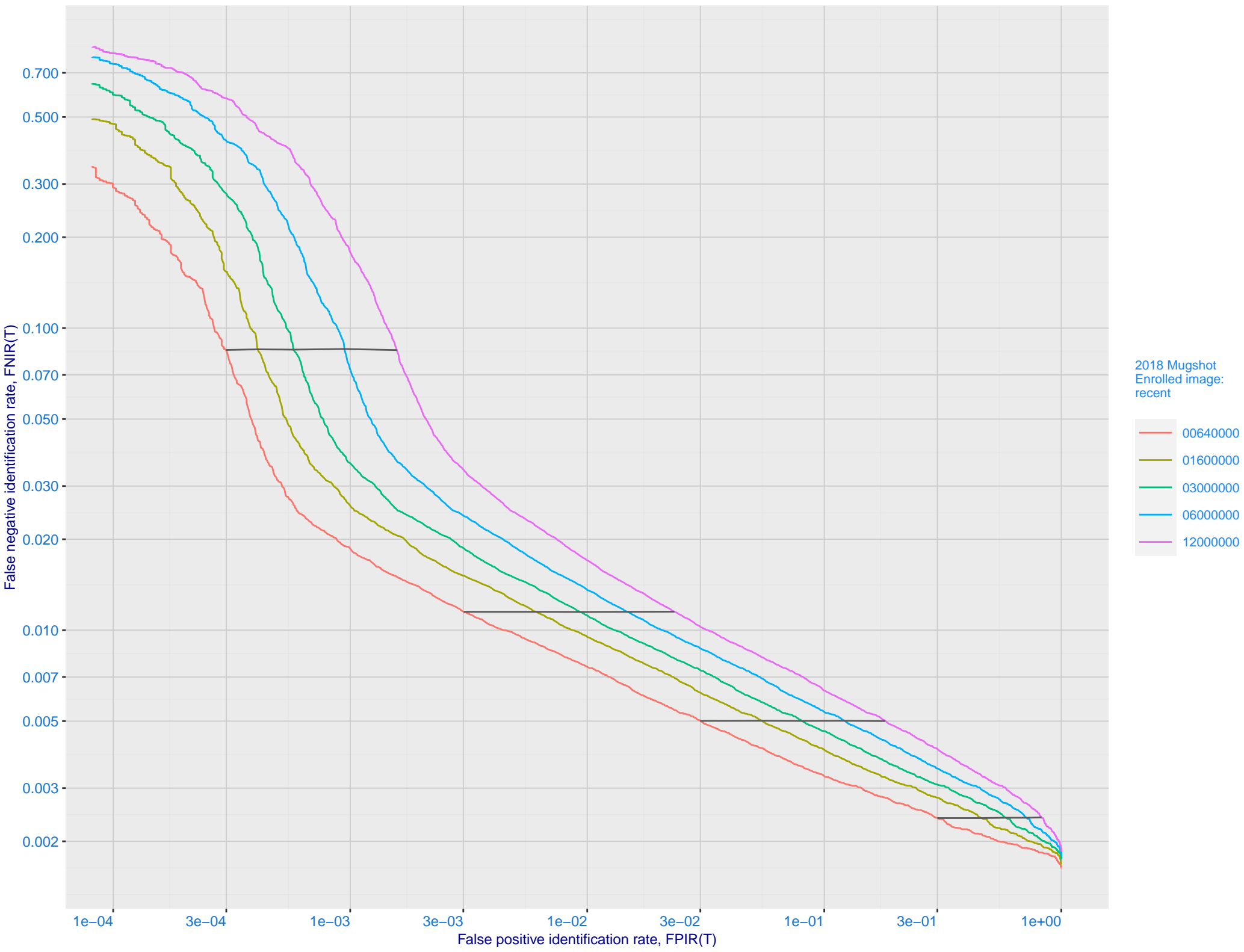
F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate



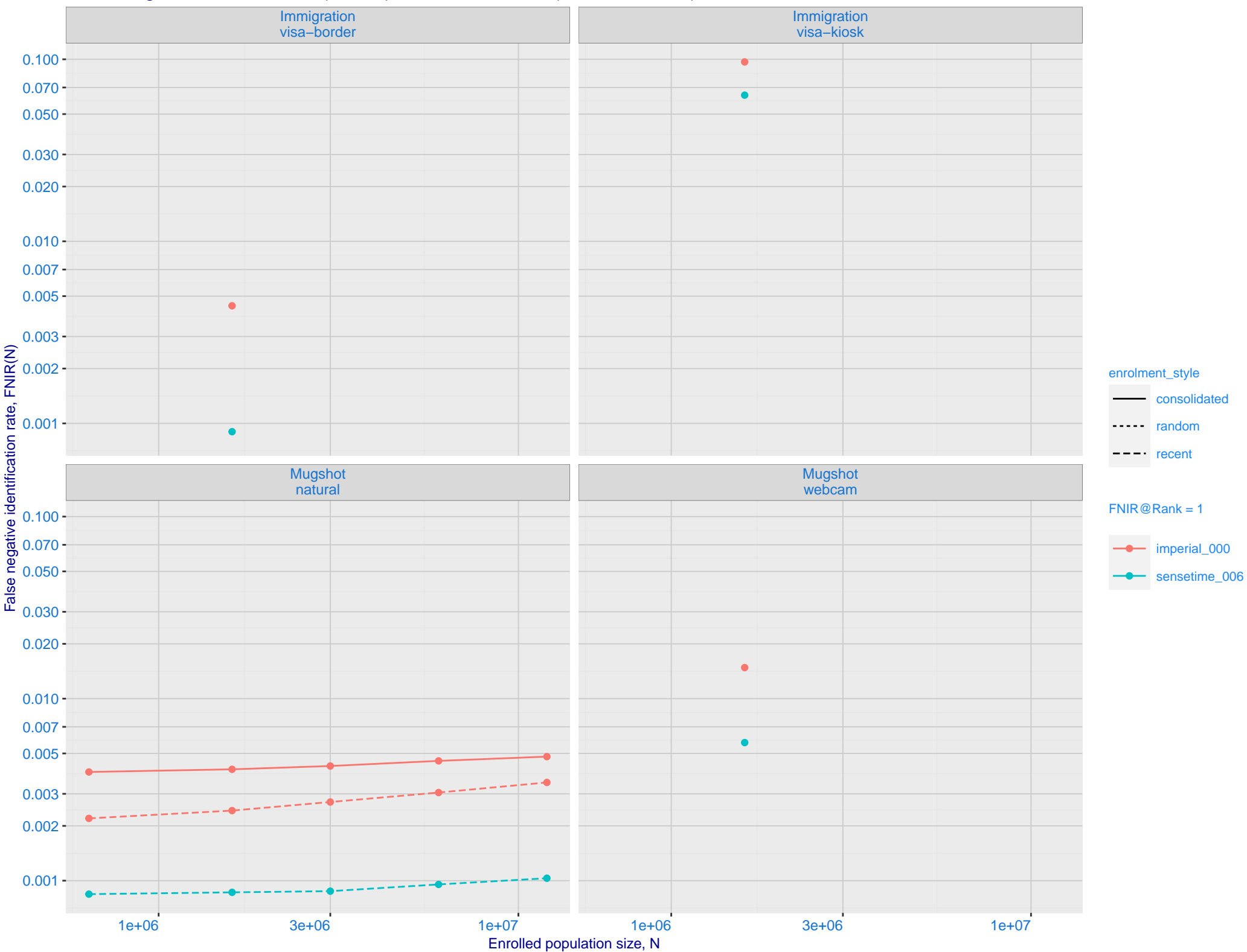
G: FPIR dependence on T by probe type for N = 1600000 subjects



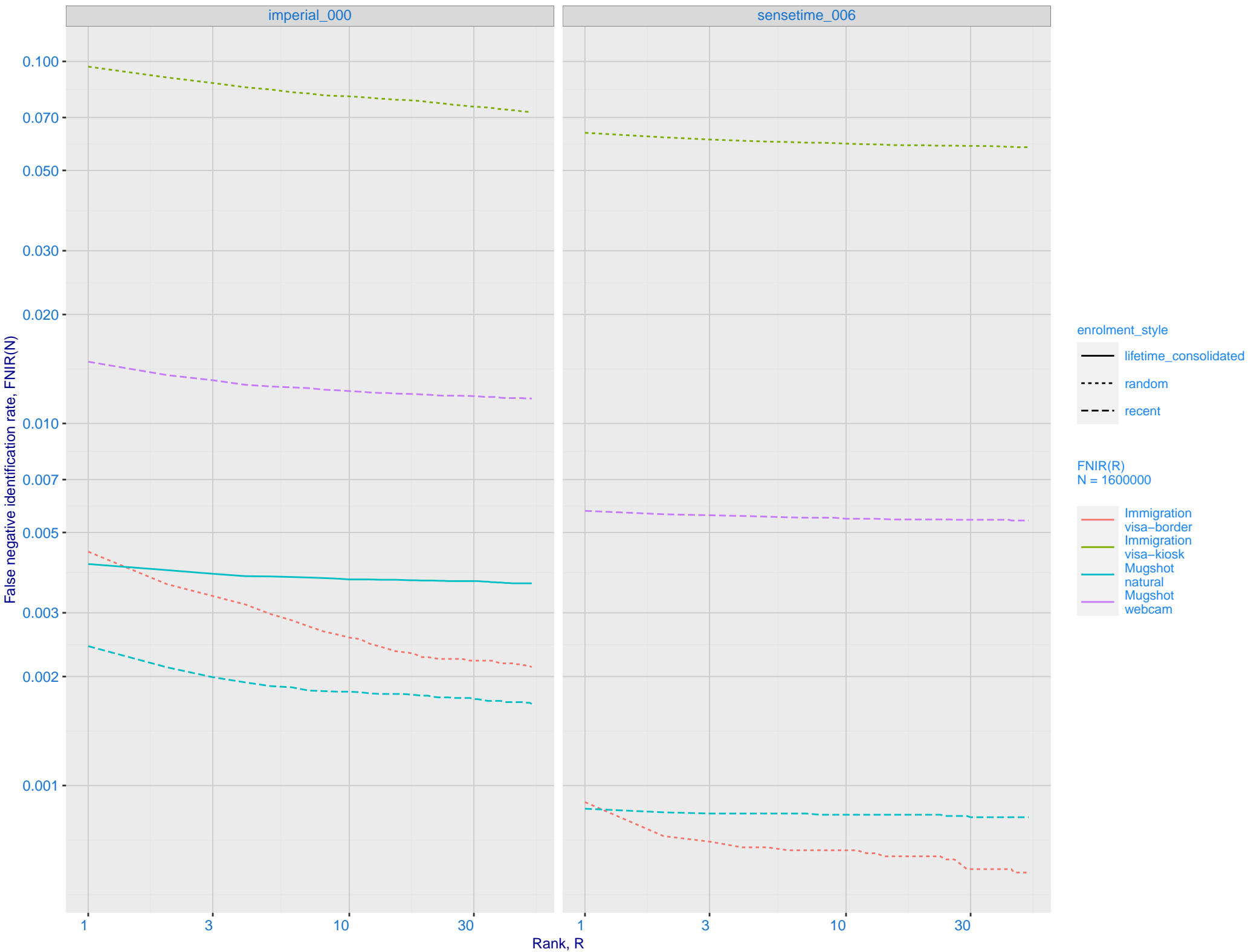
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.



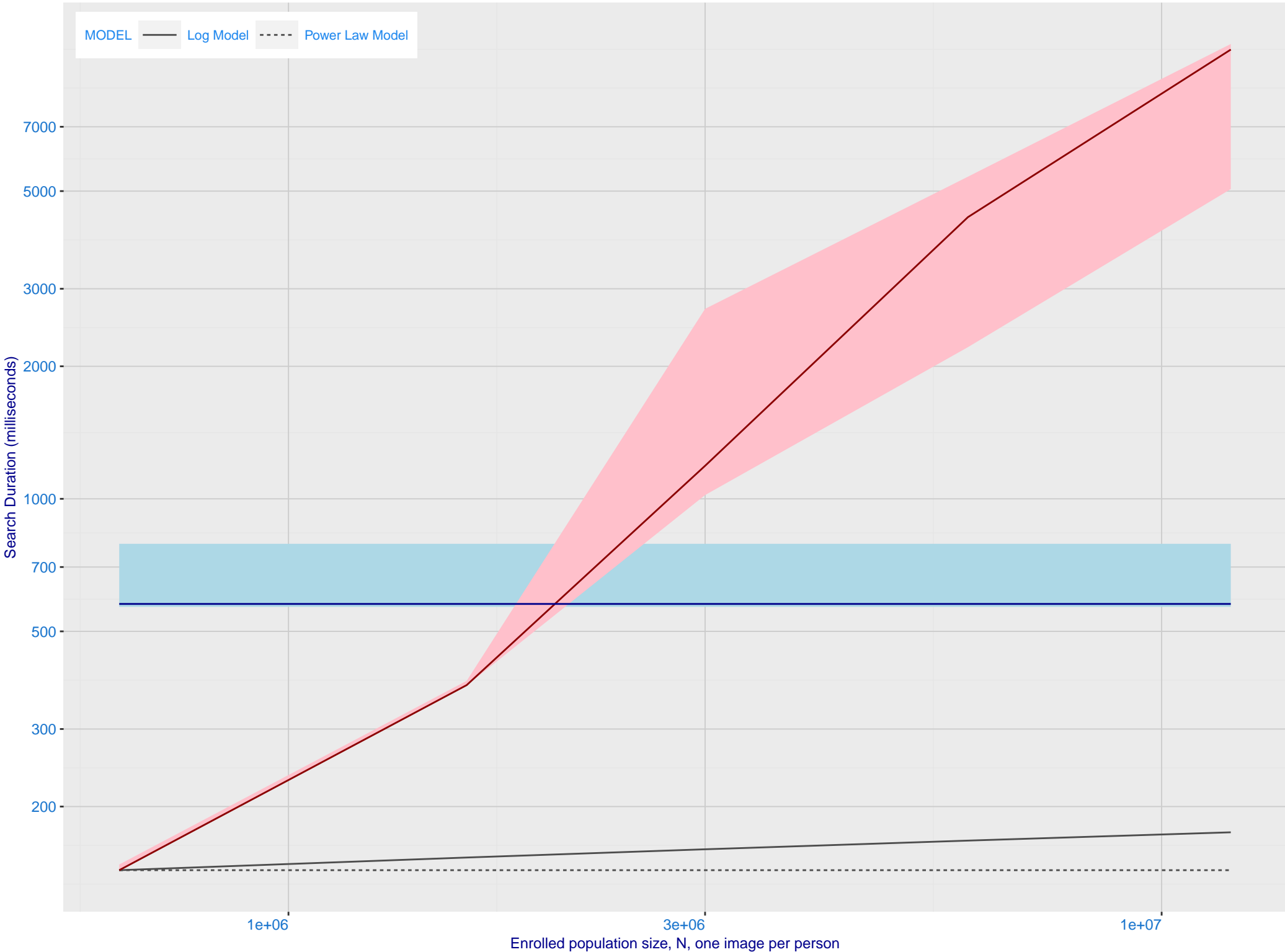
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006)



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

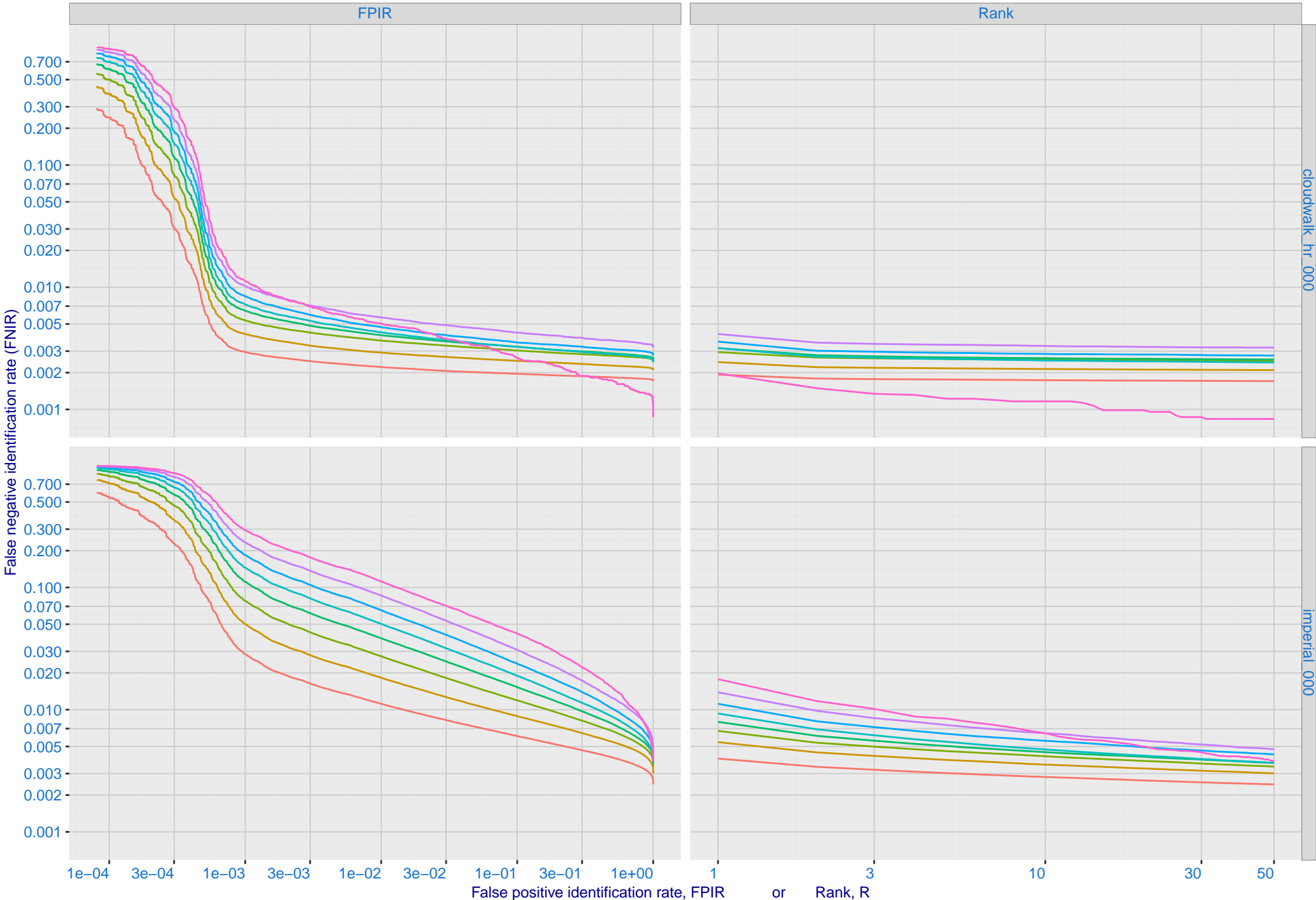


M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power-law models are fit to the first two (N,T) observations



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

