

A: Datasheet

Algorithm: nec_2

Developer: NEC

Submission Date: 2018_10_30

Template size: 1616 bytes

Template time (2.5 percentile): 638 msec

Template time (median): 642 msec

Template time (97.5 percentile): 699 msec

Investigation:

Frontal mugshot ranking 4 (out of 279) -- FNIR(1600000, 0, 1) = 0.0010 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 12 (out of 241) -- FNIR(1600000, 0, 1) = 0.0088 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 44 (out of 210) -- FNIR(1600000, 0, 1) = 0.3628 vs. lowest 0.0587 from xforwardai_002

Immigration visa-border ranking 23 (out of 168) -- FNIR(1600000, 0, 1) = 0.0034 vs. lowest 0.0013 from visionlabs_010

Immigration visa-kiosk ranking 50 (out of 165) -- FNIR(1600000, 0, 1) = 0.1170 vs. lowest 0.0568 from cloudwalk_hr_000

Identification:

Frontal mugshot ranking 7 (out of 279) -- FNIR(1600000, T, L+1) = 0.0025, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

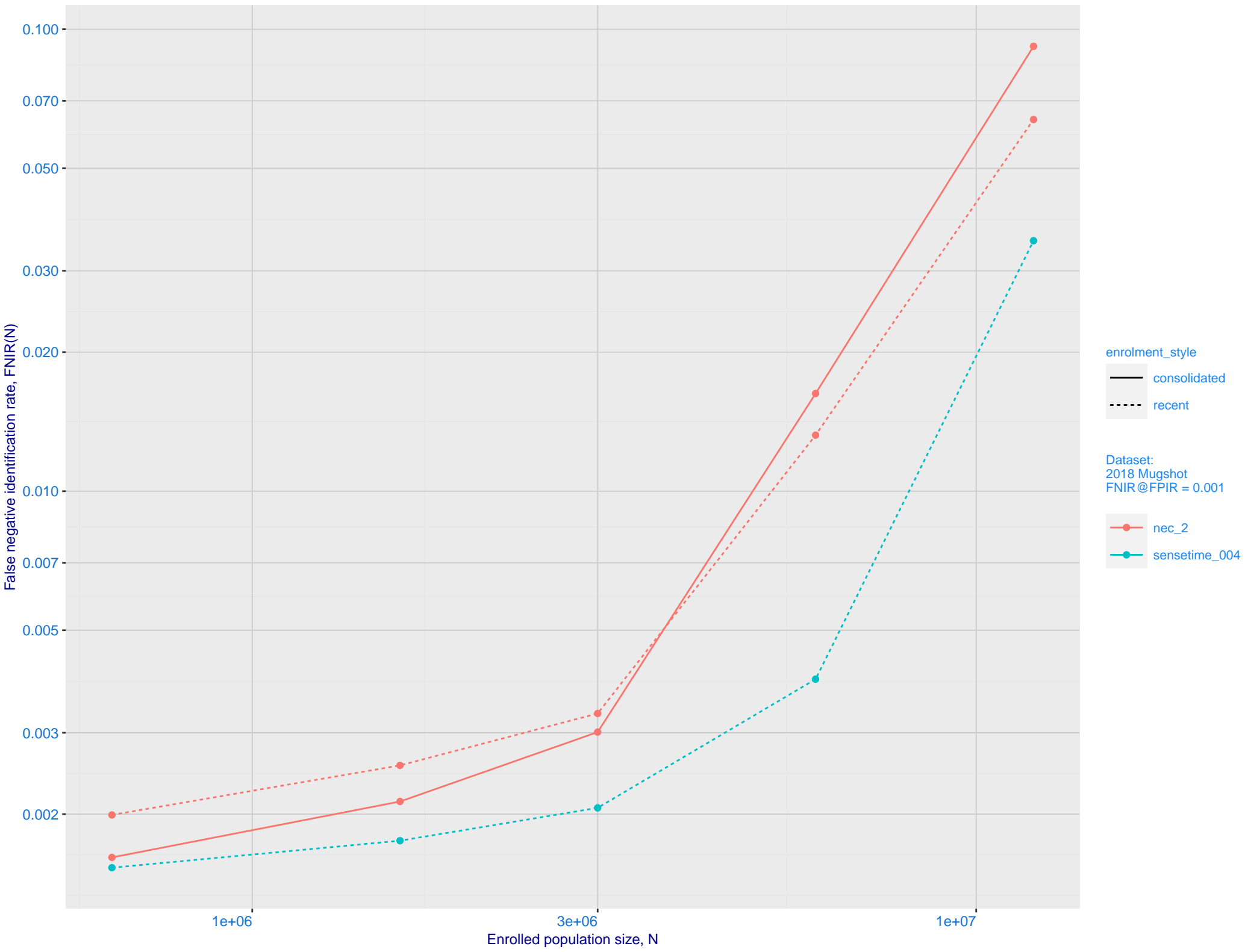
Mugshot webcam ranking 9 (out of 236) -- FNIR(1600000, T, L+1) = 0.0199, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 148 (out of 209) -- FNIR(1600000, T, L+1) = 0.9994, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

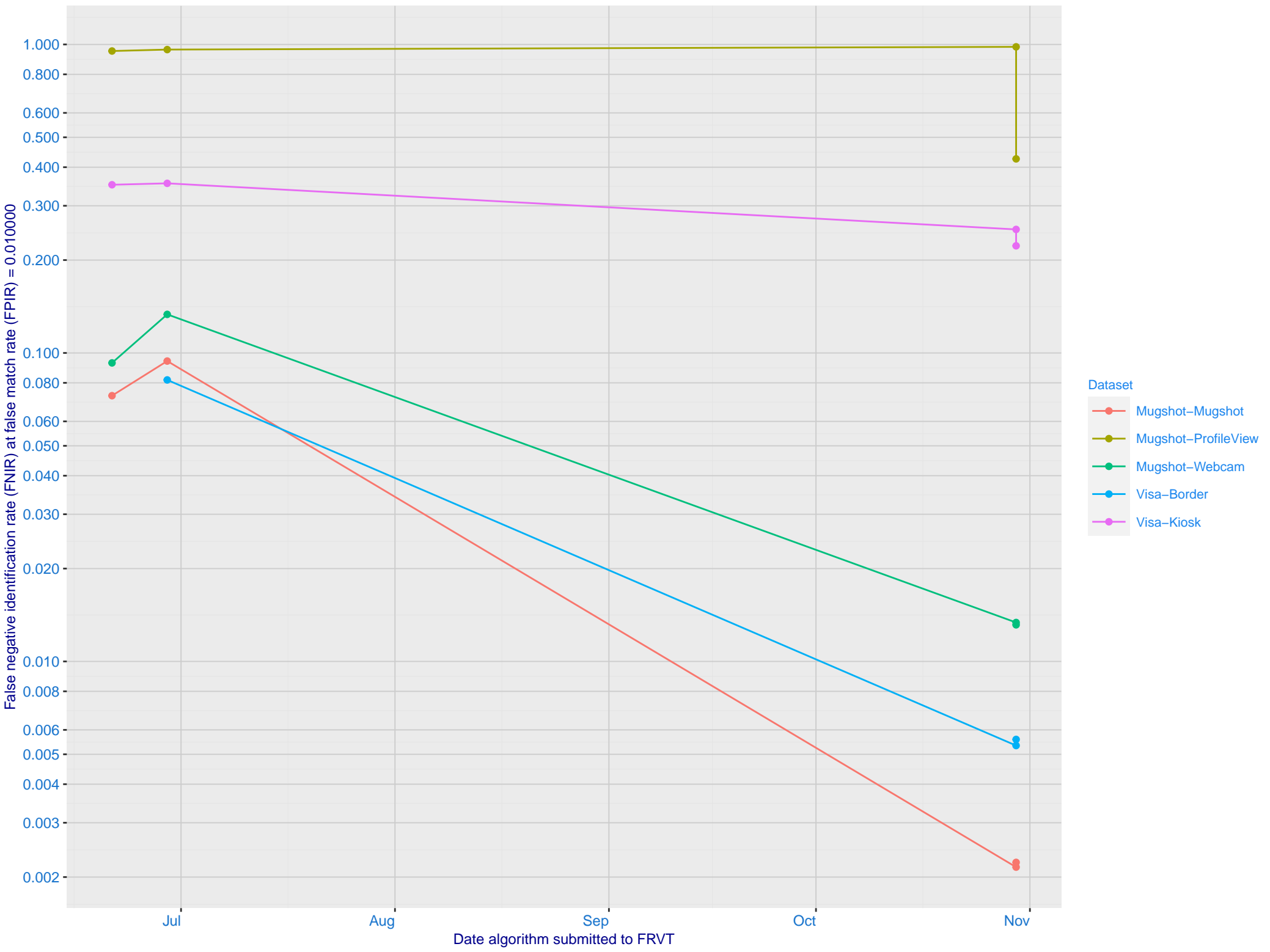
Immigration visa-border ranking 8 (out of 167) -- FNIR(1600000, T, L+1) = 0.0079, FPIR=0.001000 vs. lowest 0.0047 from idemia_008

Immigration visa-kiosk ranking 89 (out of 162) -- FNIR(1600000, T, L+1) = 0.6822, FPIR=0.001000 vs. lowest 0.0996 from cloudwalk_hr_000

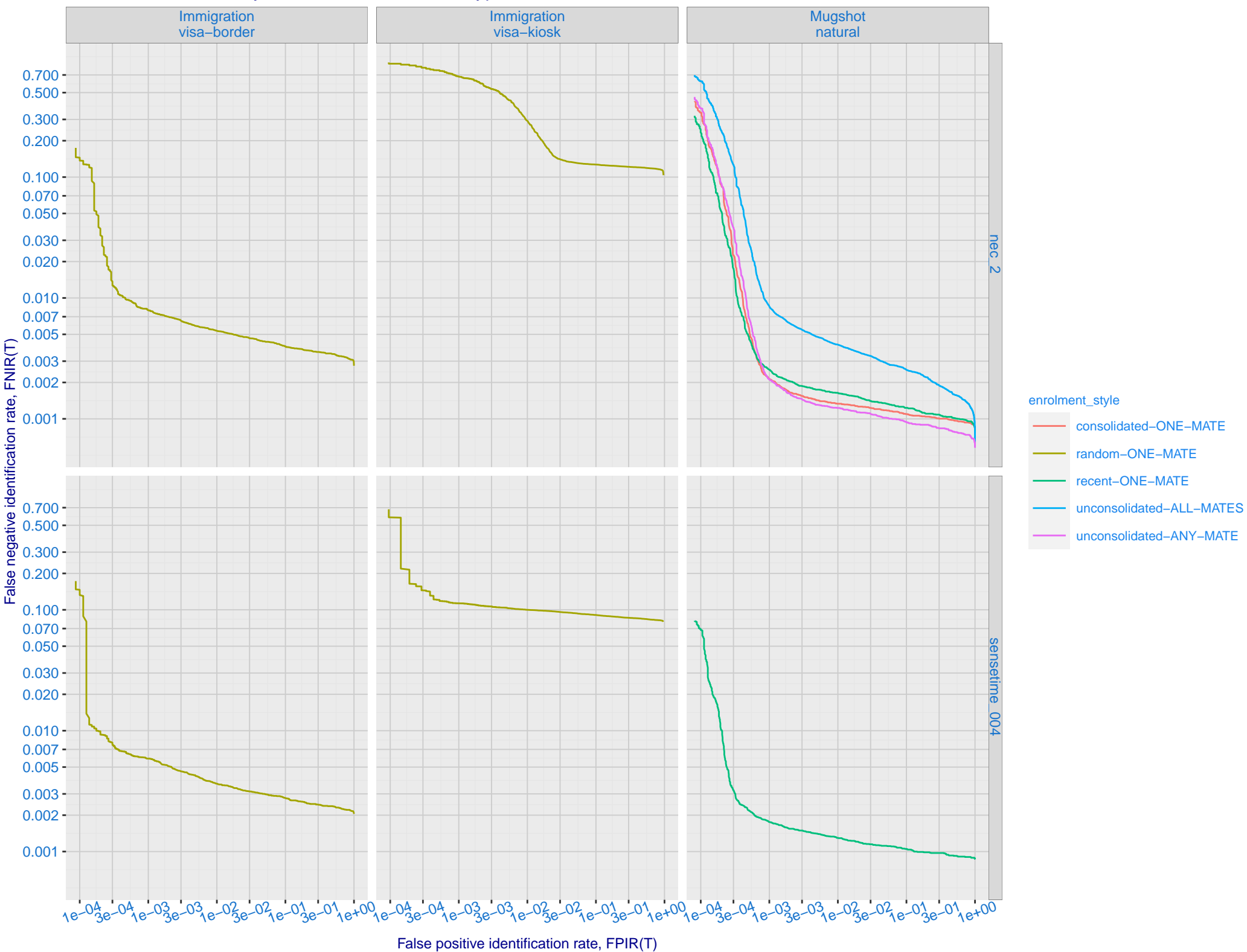
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (sensetime_004)



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

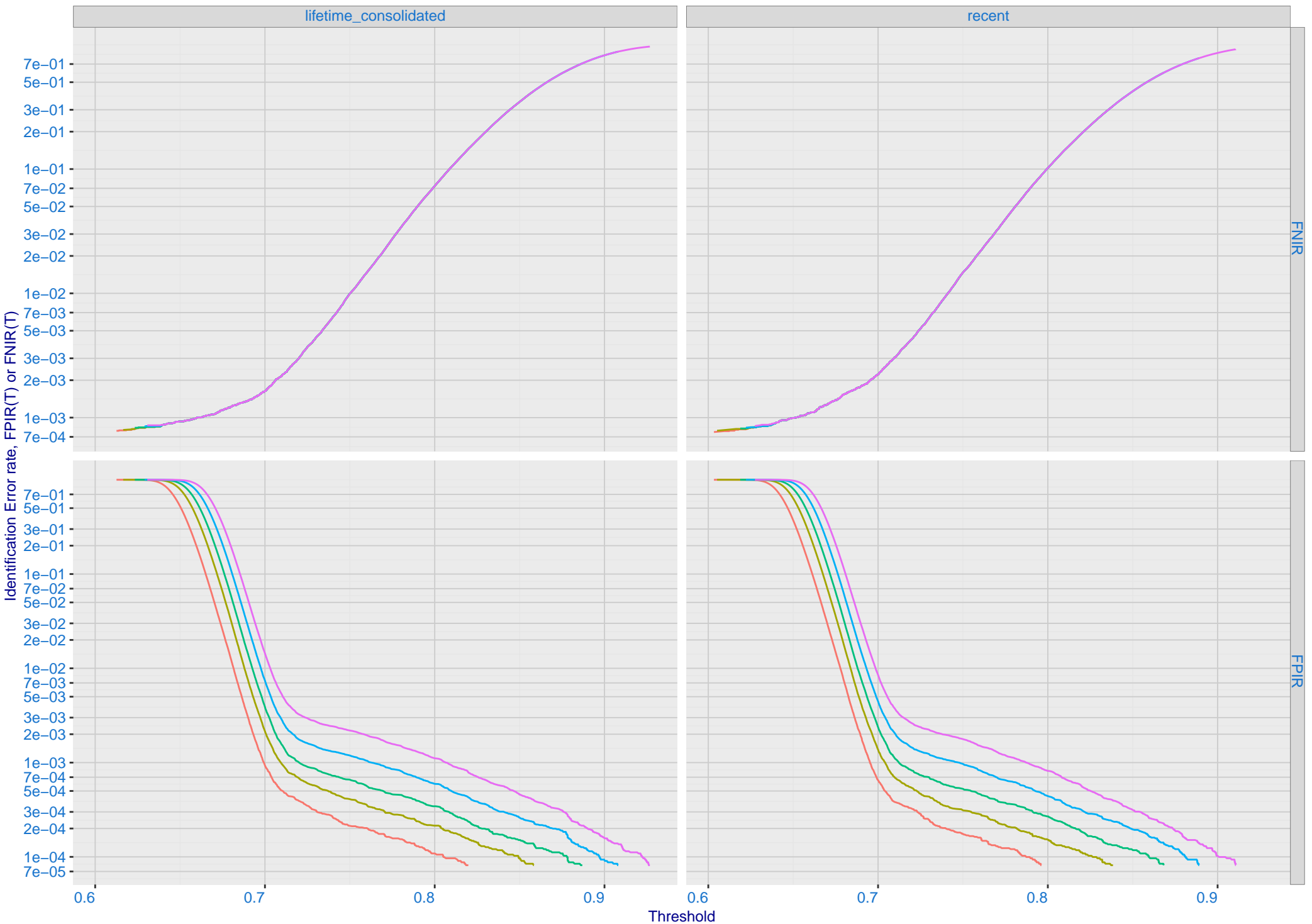


D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals

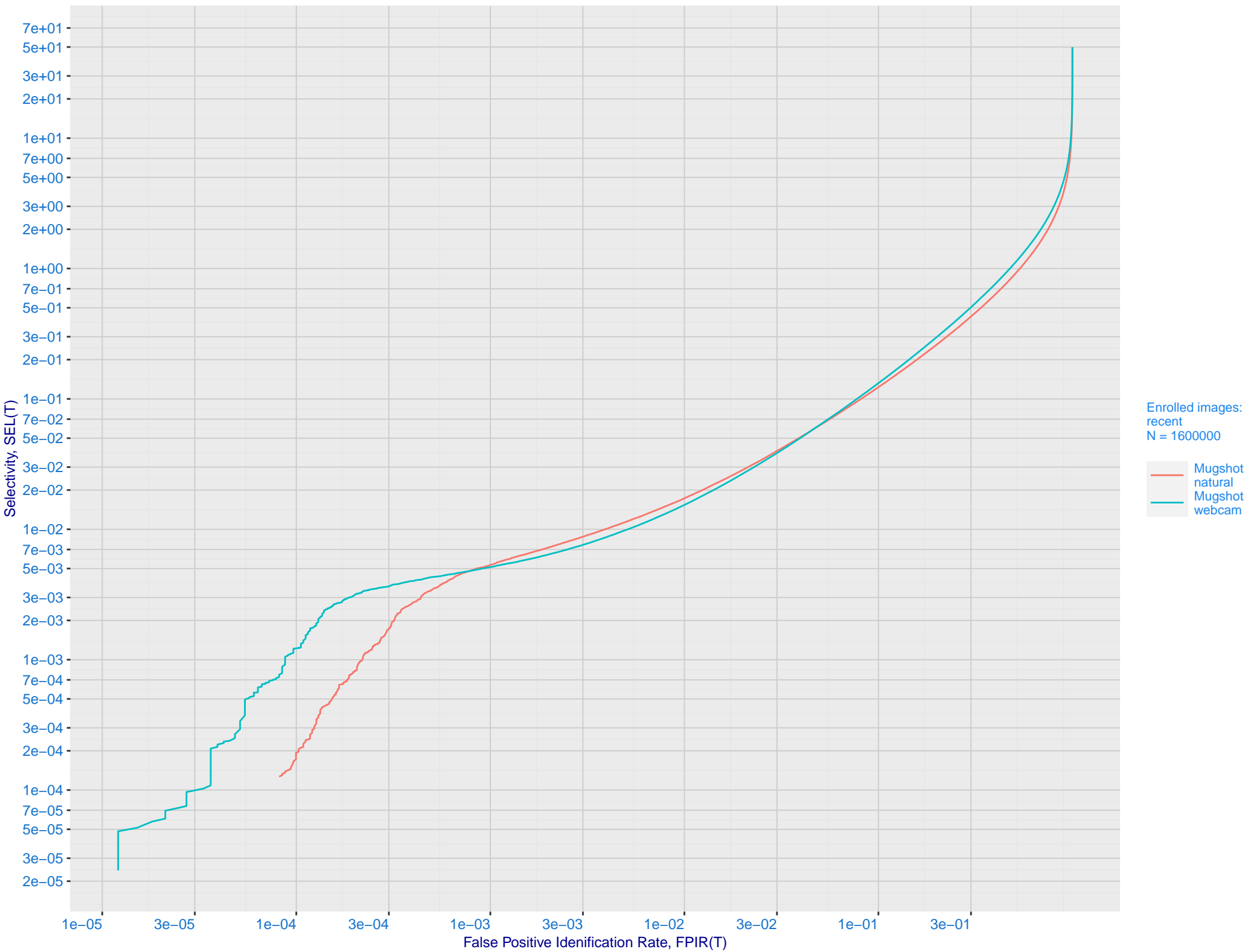


E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images

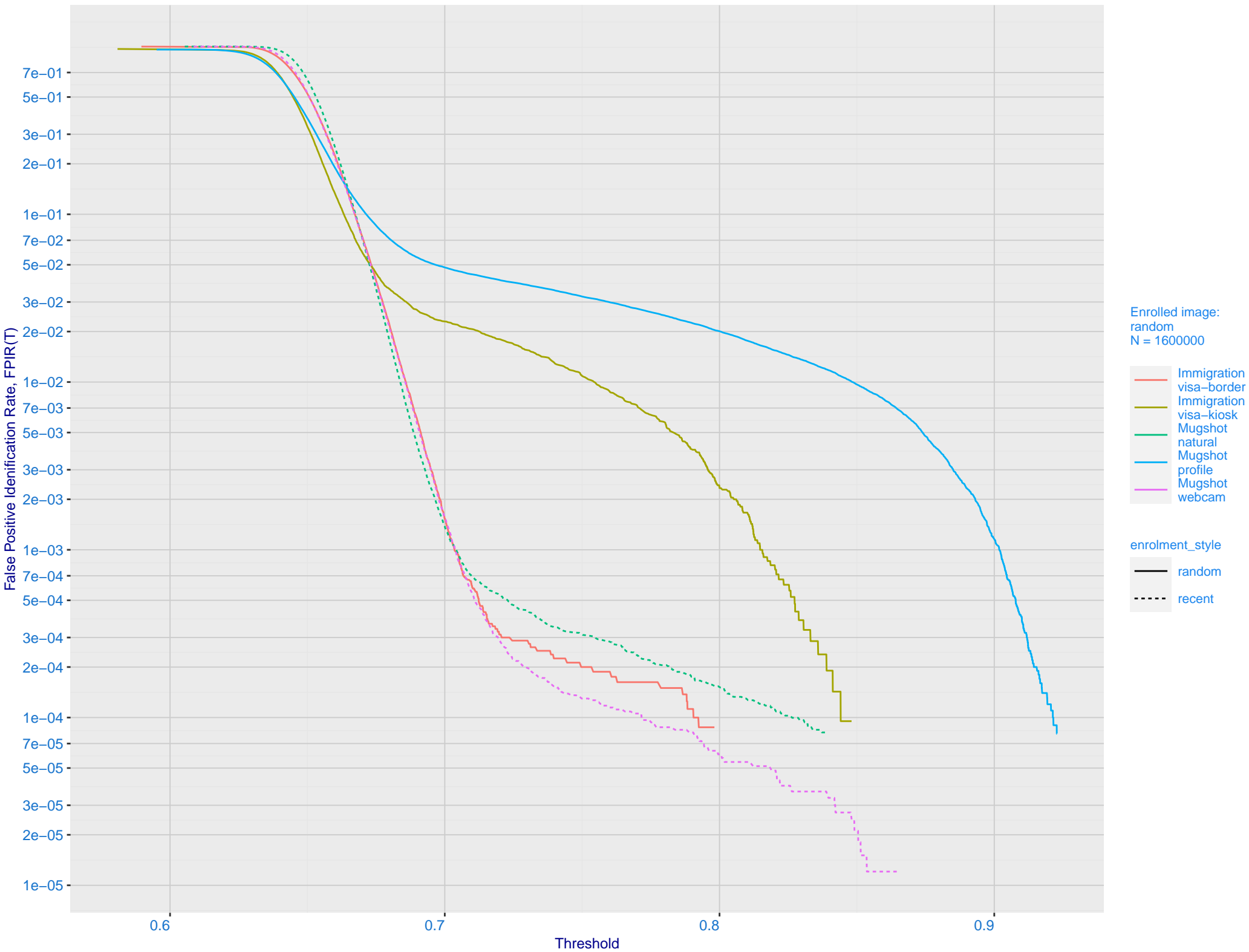
N 00640000 01600000 03000000 06000000 12000000



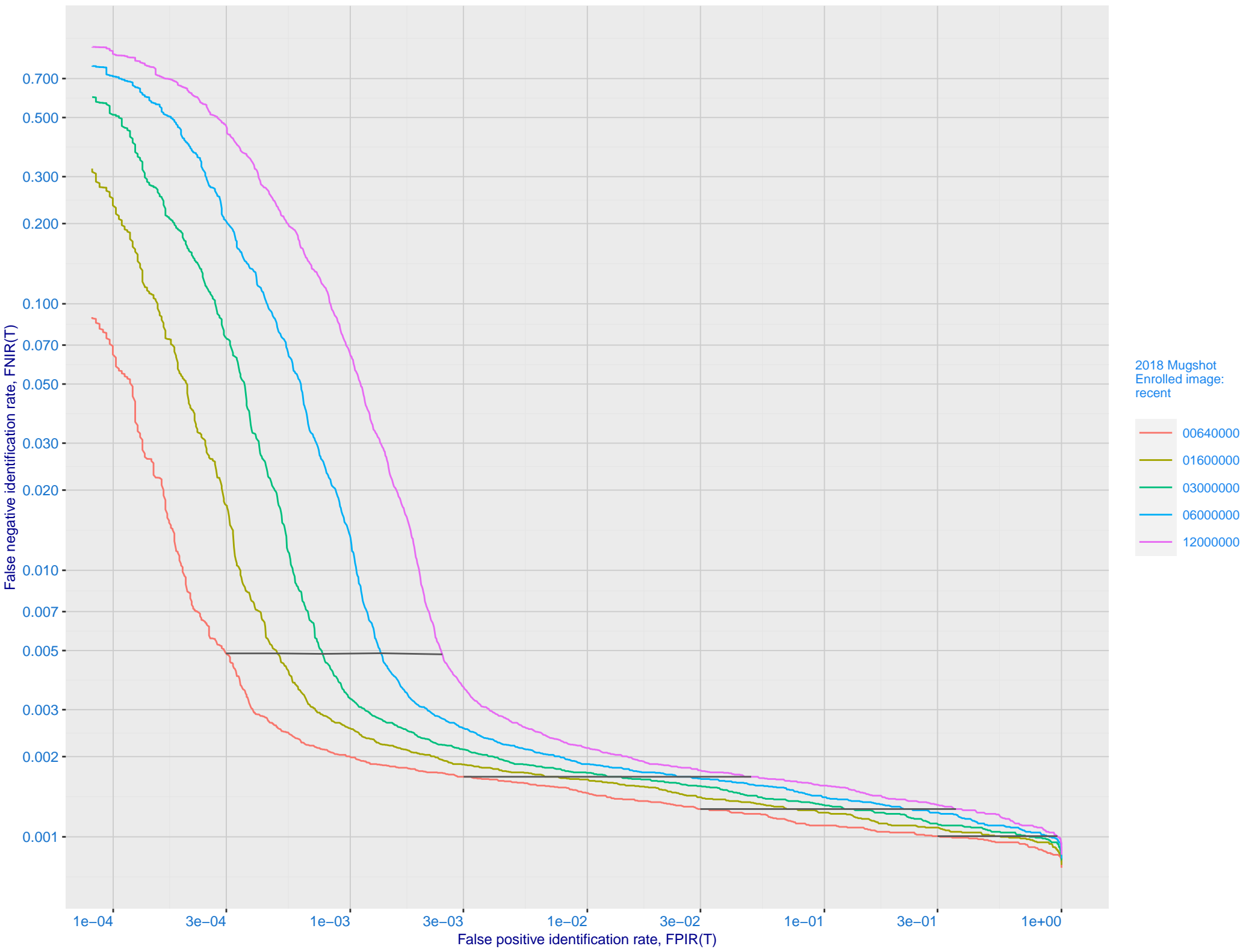
F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate



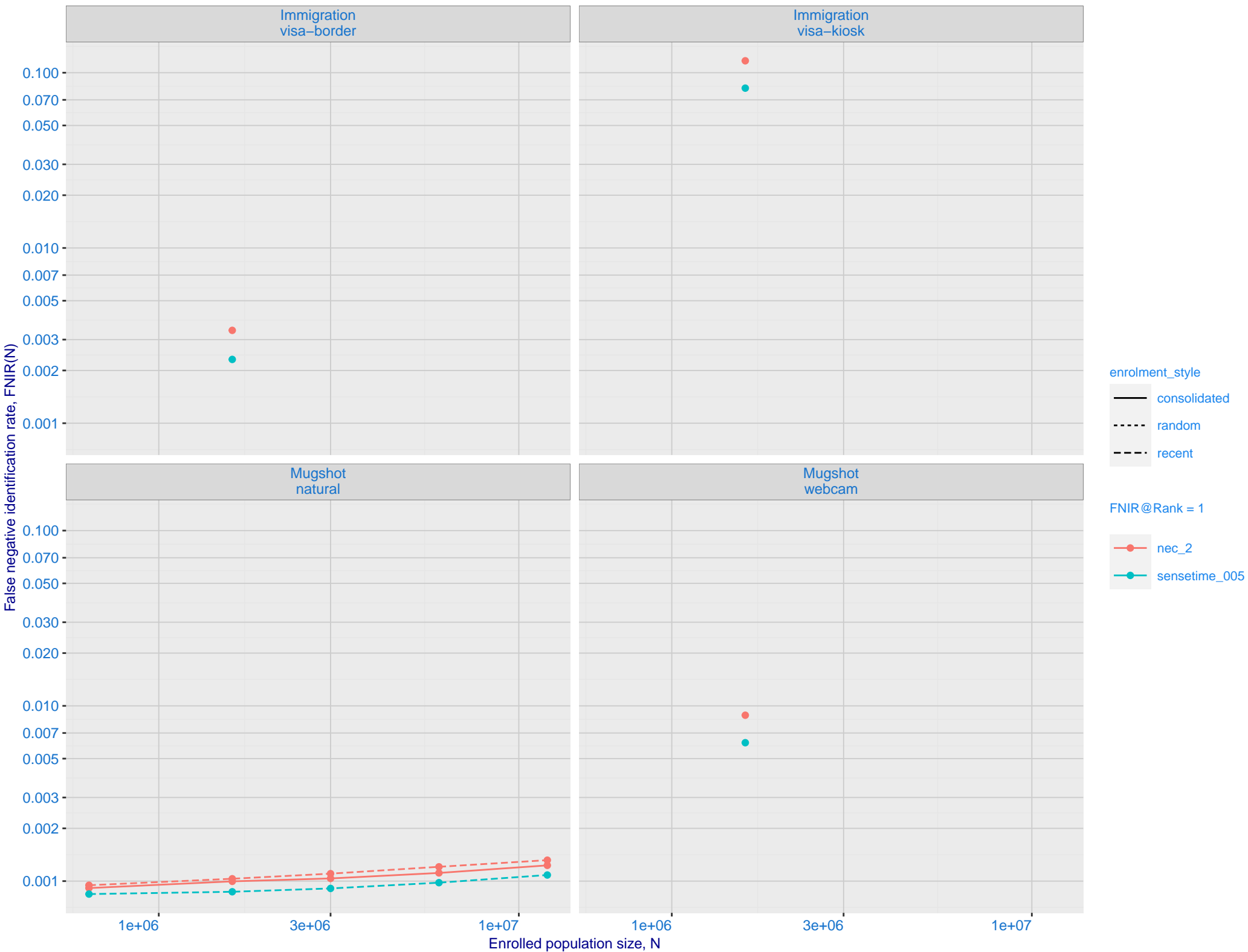
G: FPIR dependence on T by probe type for N = 1600000 subjects



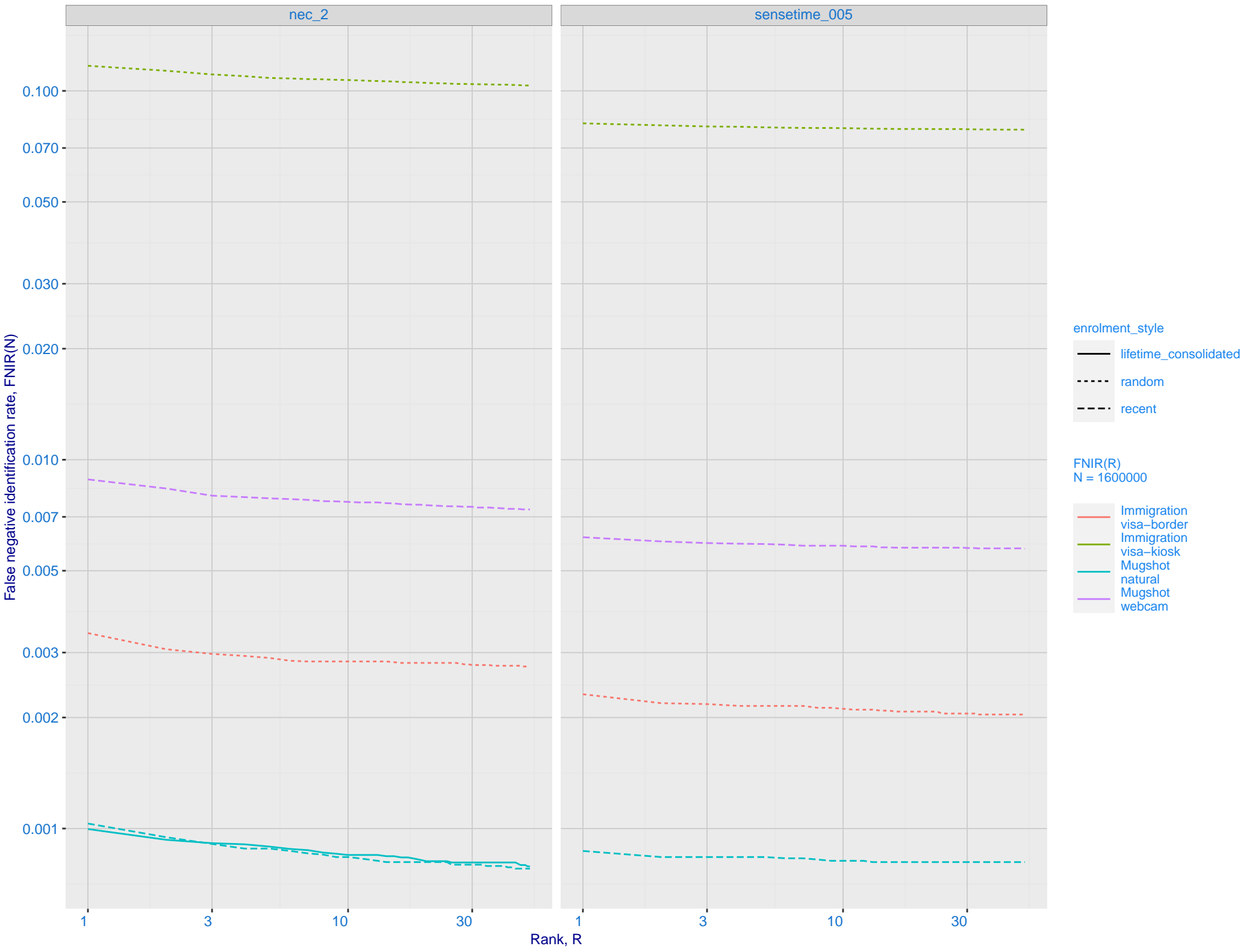
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.



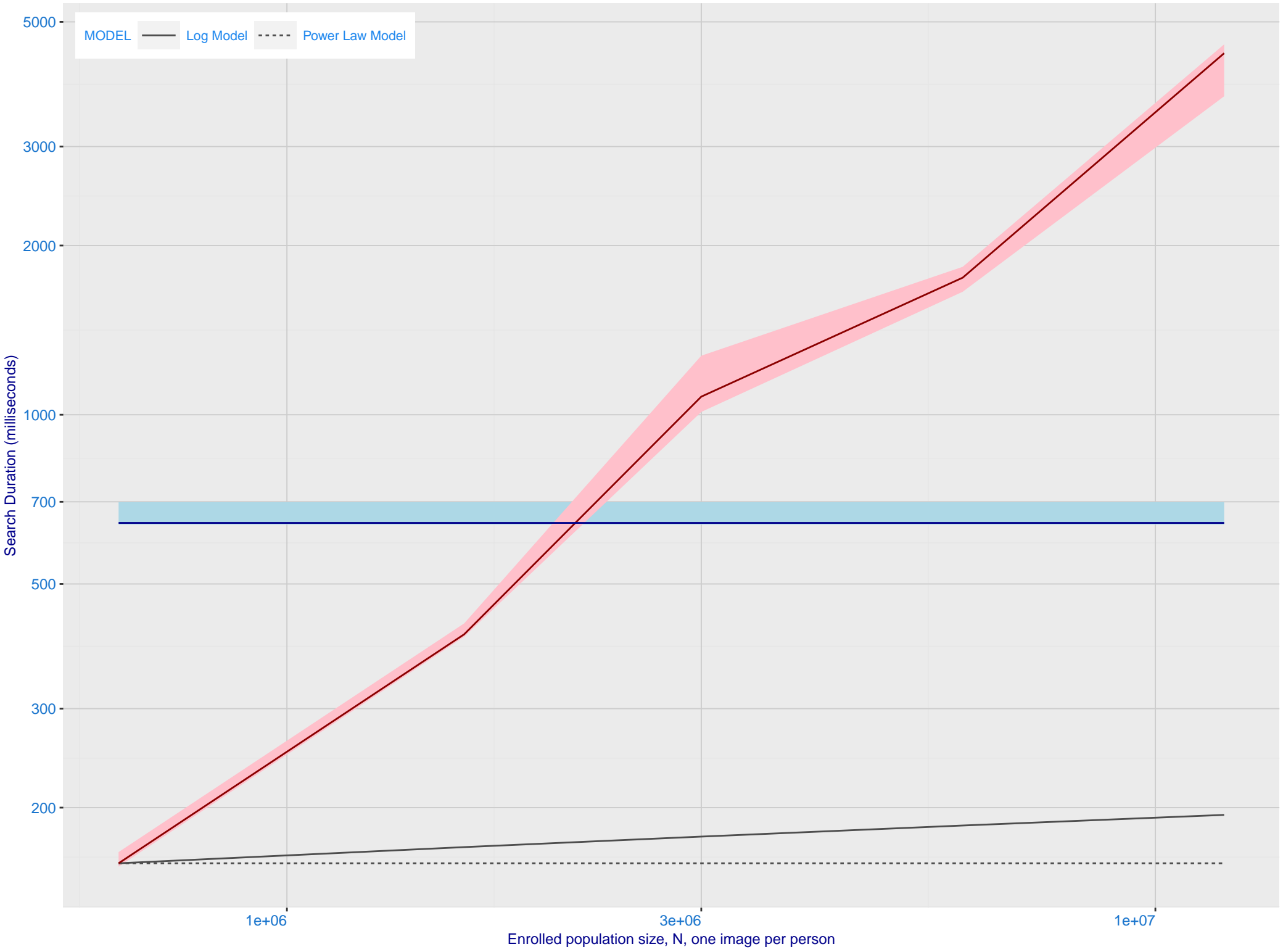
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005)



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

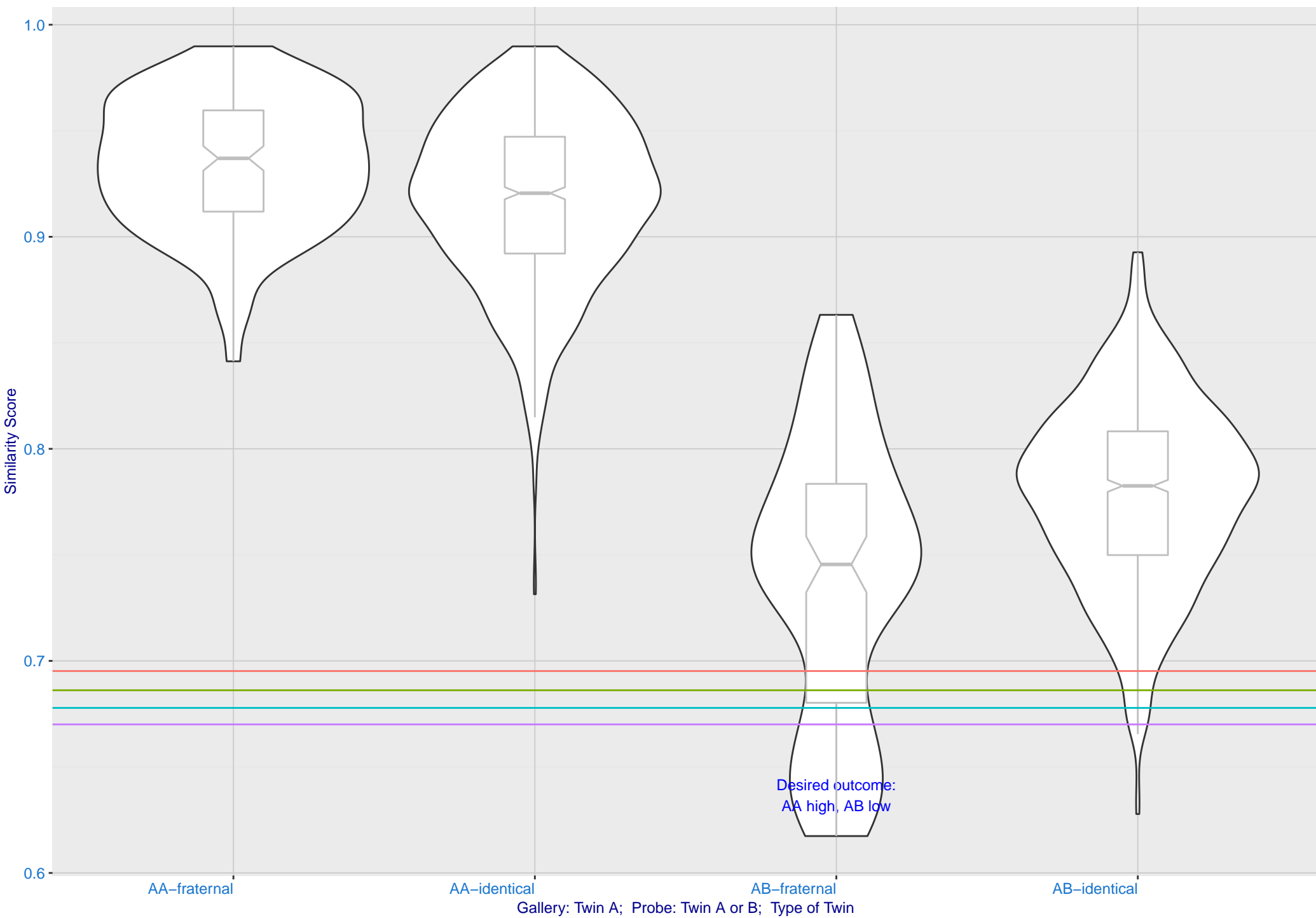


M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power-law models are fit to the first two (N,T) observations



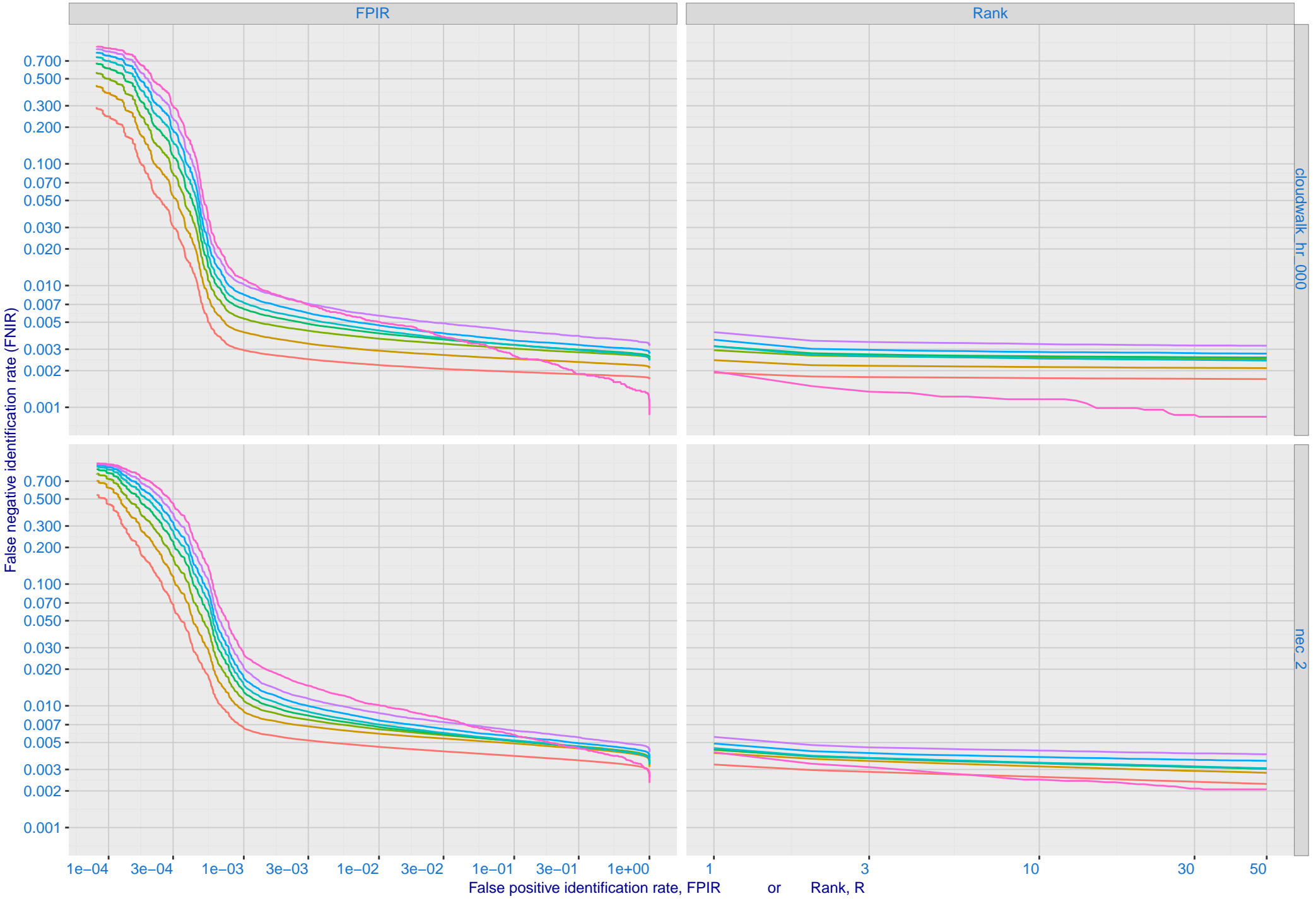
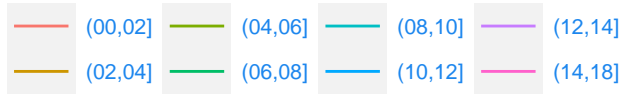
N: Solo-Twin and Twin-Twin similarity scores

TVAL — FPIR = 0.001 — FPIR = 0.003 — FPIR = 0.010 — FPIR = 0.030



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

