A: Datasheet

Algorithm: realnetworks_004

Developer: Realnetworks Inc

Submission Date: 2019_10_17

Template size: 1848 bytes

Template time (2.5 percentile): 168 msec

Template time (median): 172 msec

Template time (97.5 percentile): 254 msec

Investigation:

Frontal mugshot ranking 233 (out of 329) –– FNIR(1600000, 0, 1) = 0.0236 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 214 (out of 291) –– FNIR(1600000, 0, 1) = 0.0593 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 154 (out of 260) –– FNIR(1600000, 0, 1) = 0.7966 vs. lowest 0.0550 from sensetime_006

Immigration visa–border ranking 146 (out of 218) –– FNIR(1600000, 0, 1) = 0.0310 vs. lowest 0.0009 from sensetime_006

Immigration visa–kiosk ranking 147 (out of 215) –– FNIR(1600000, 0, 1) = 0.2134 vs. lowest 0.0487 from cubox_000

Identification:

Frontal mugshot ranking 220 (out of 329) –– FNIR(1600000, T, L+1) = 0.1580, FPIR=0.001000 vs. lowest 0.0017 from nec_005
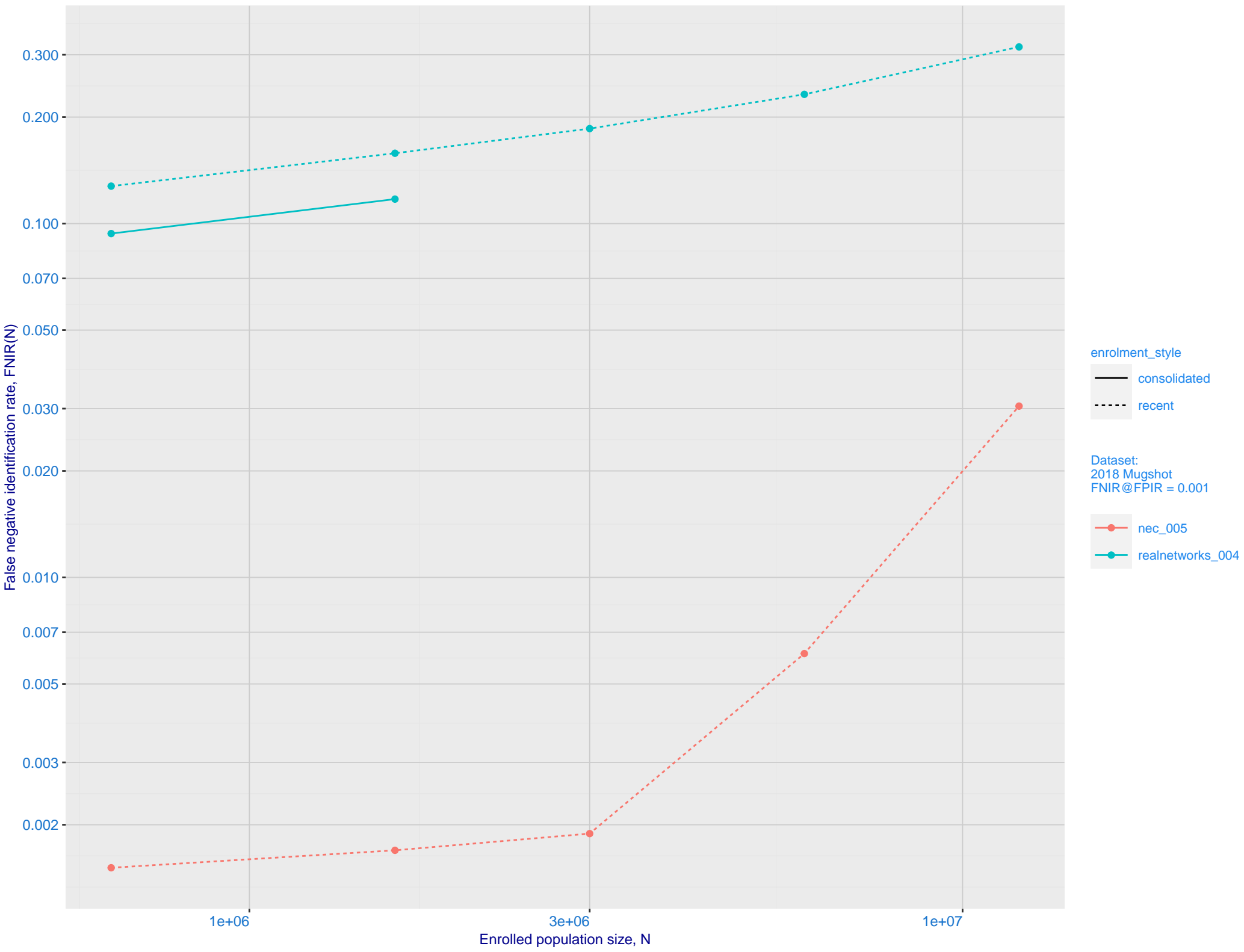
Mugshot webcam ranking 206 (out of 289) –– FNIR(1600000, T, L+1) = 0.2627, FPIR=0.001000 vs. lowest 0.0120 from nec_005

Mugshot profile ranking 180 (out of 259) –– FNIR(1600000, T, L+1) = 0.9993, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000
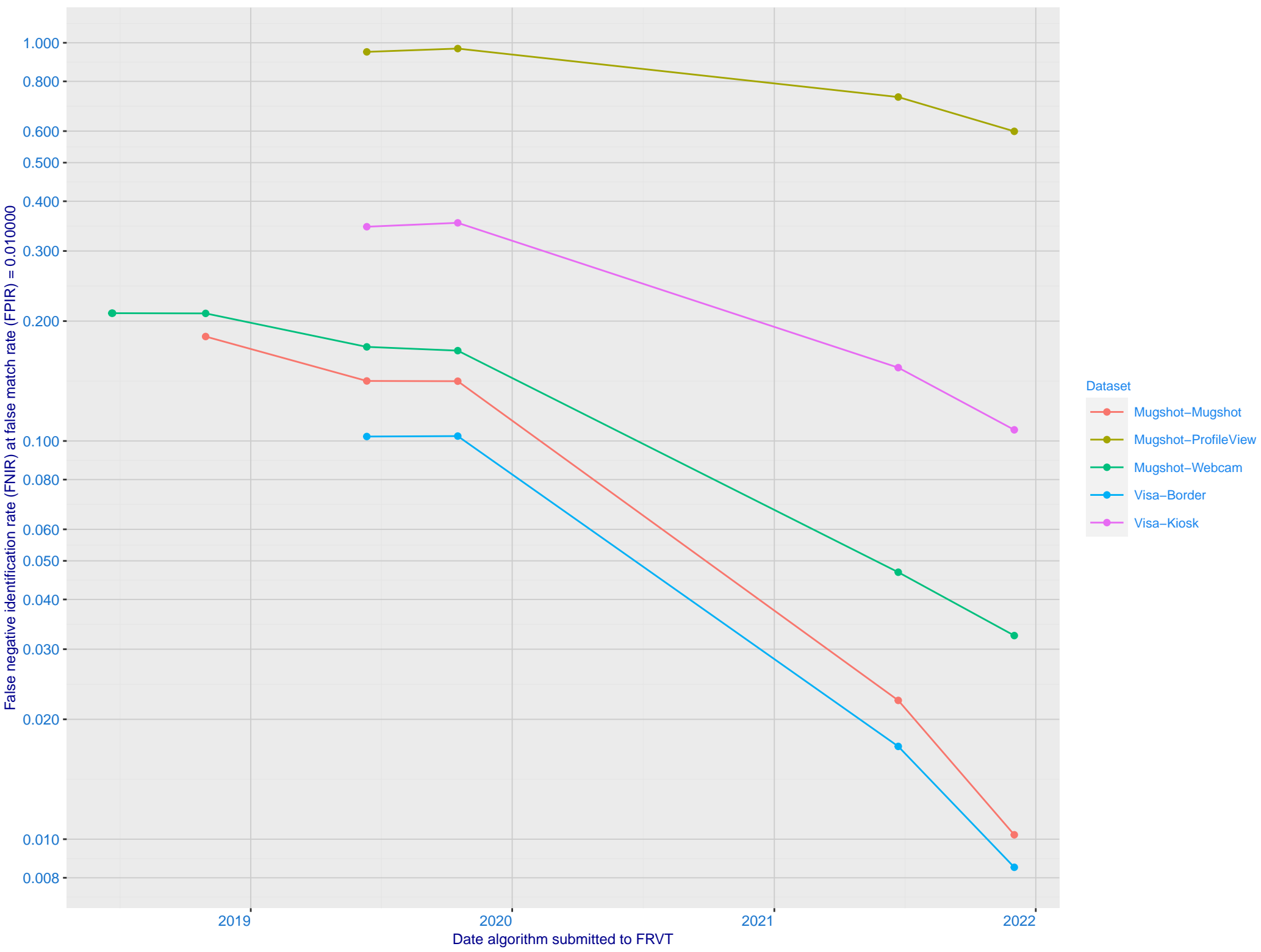
Immigration visa–border ranking 142 (out of 217) –– FNIR(1600000, T, L+1) = 0.1703, FPIR=0.001000 vs. lowest 0.0032 from paravision_009

Immigration visa–kiosk ranking 125 (out of 212) –– FNIR(1600000, T, L+1) = 0.6202, FPIR=0.001000 vs. lowest 0.0728 from paravision_009
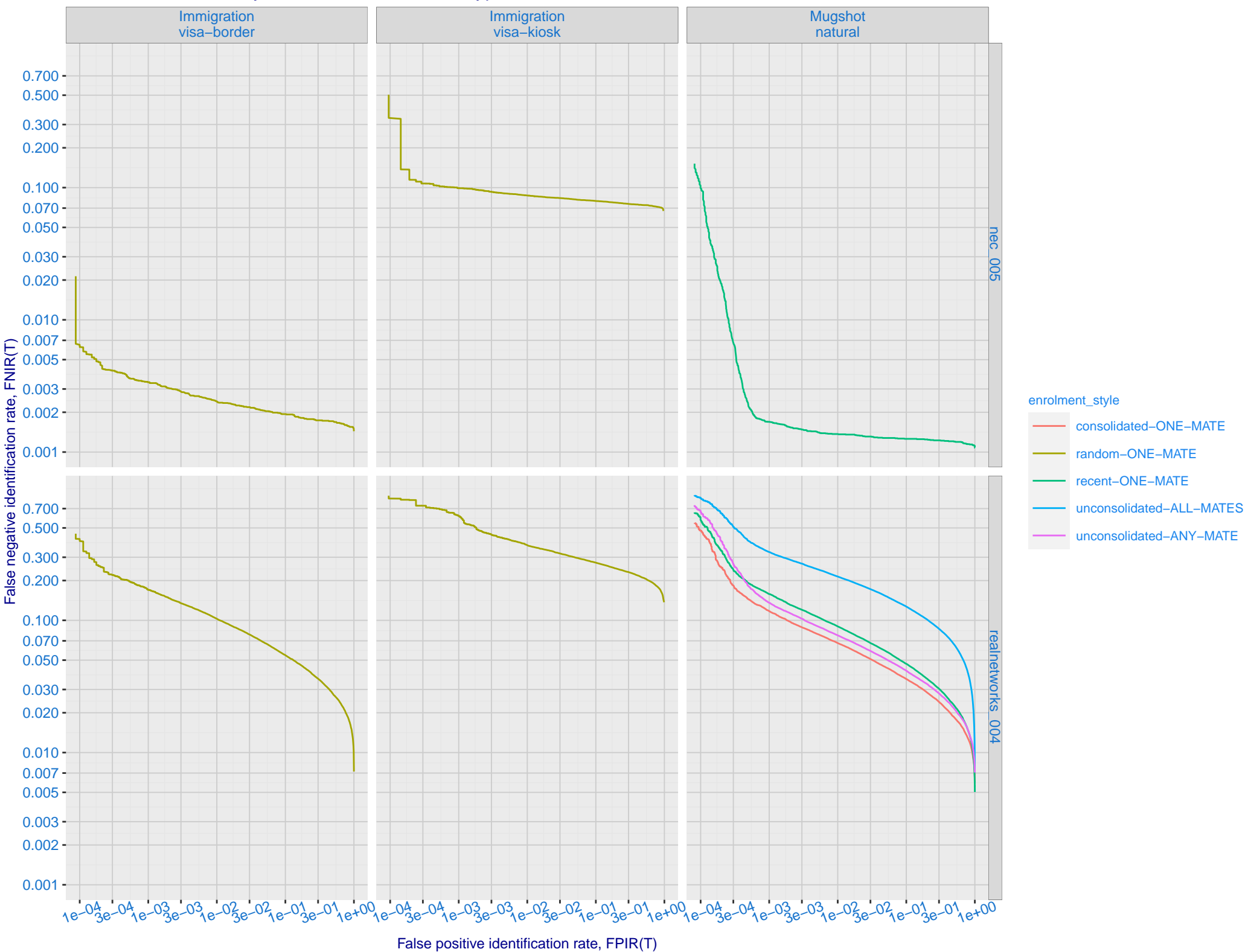
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (nec_005)
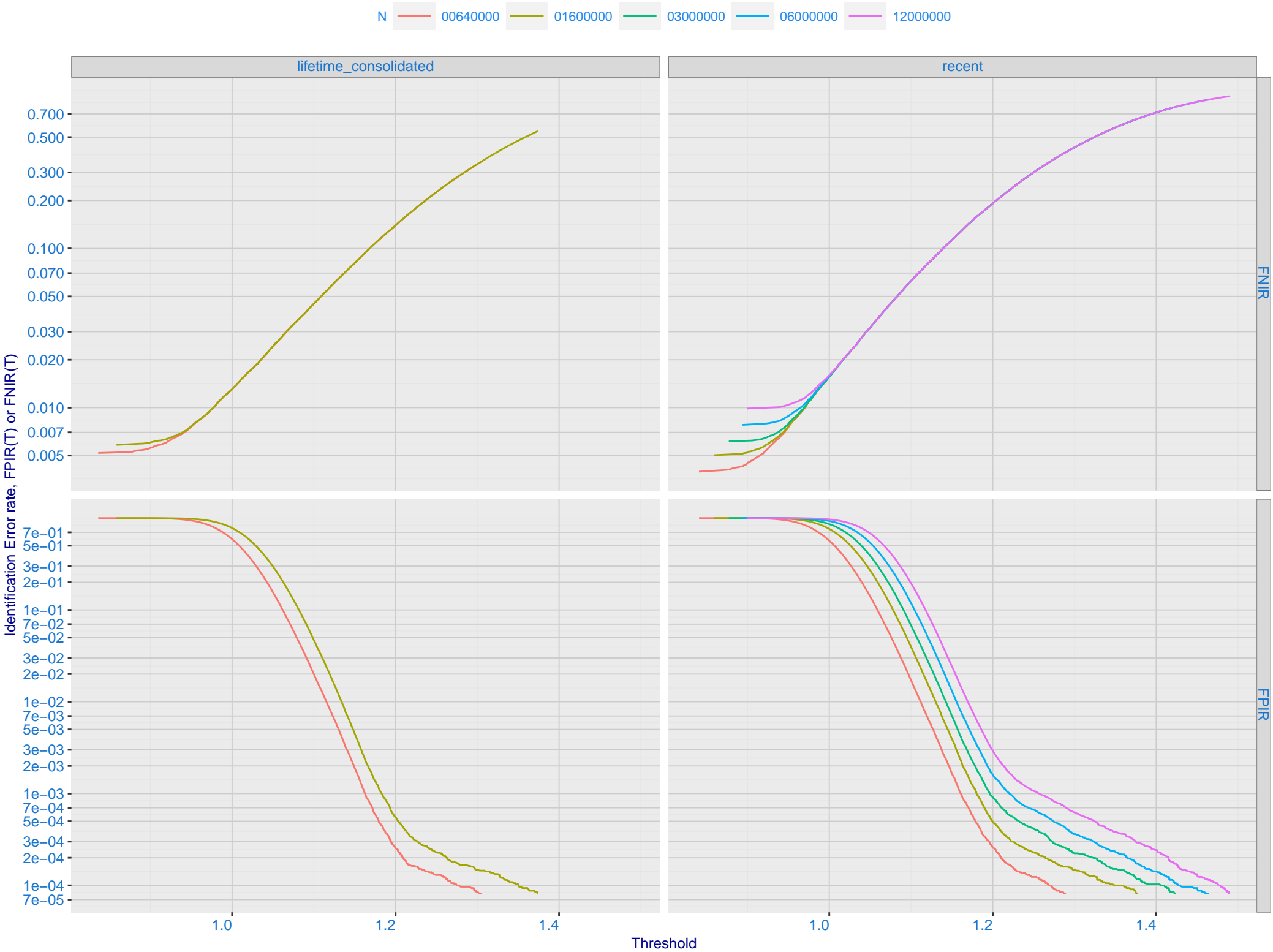
C: Evolution of accuracy for REALNETWORKS algorithms on three datasets 2018 – present
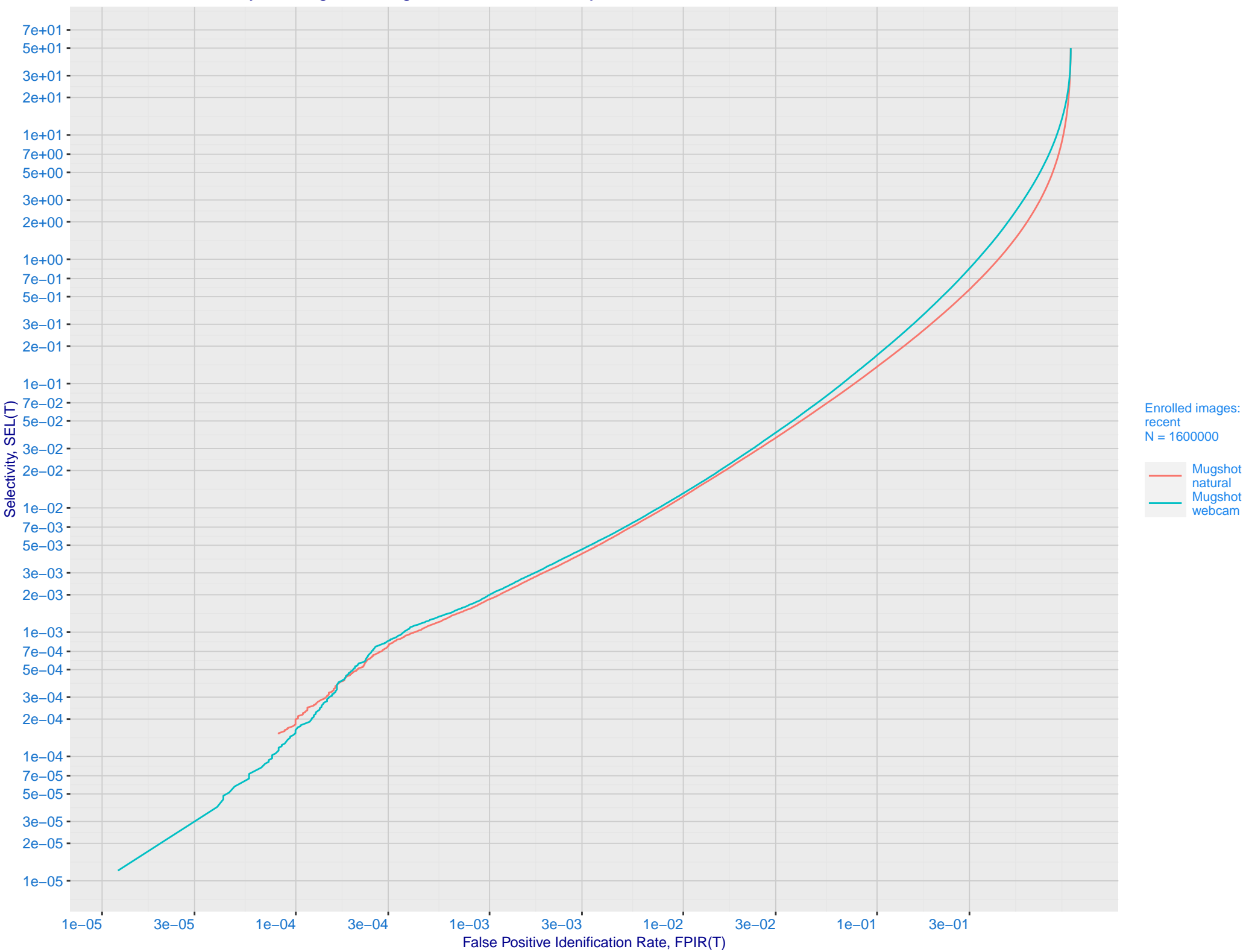
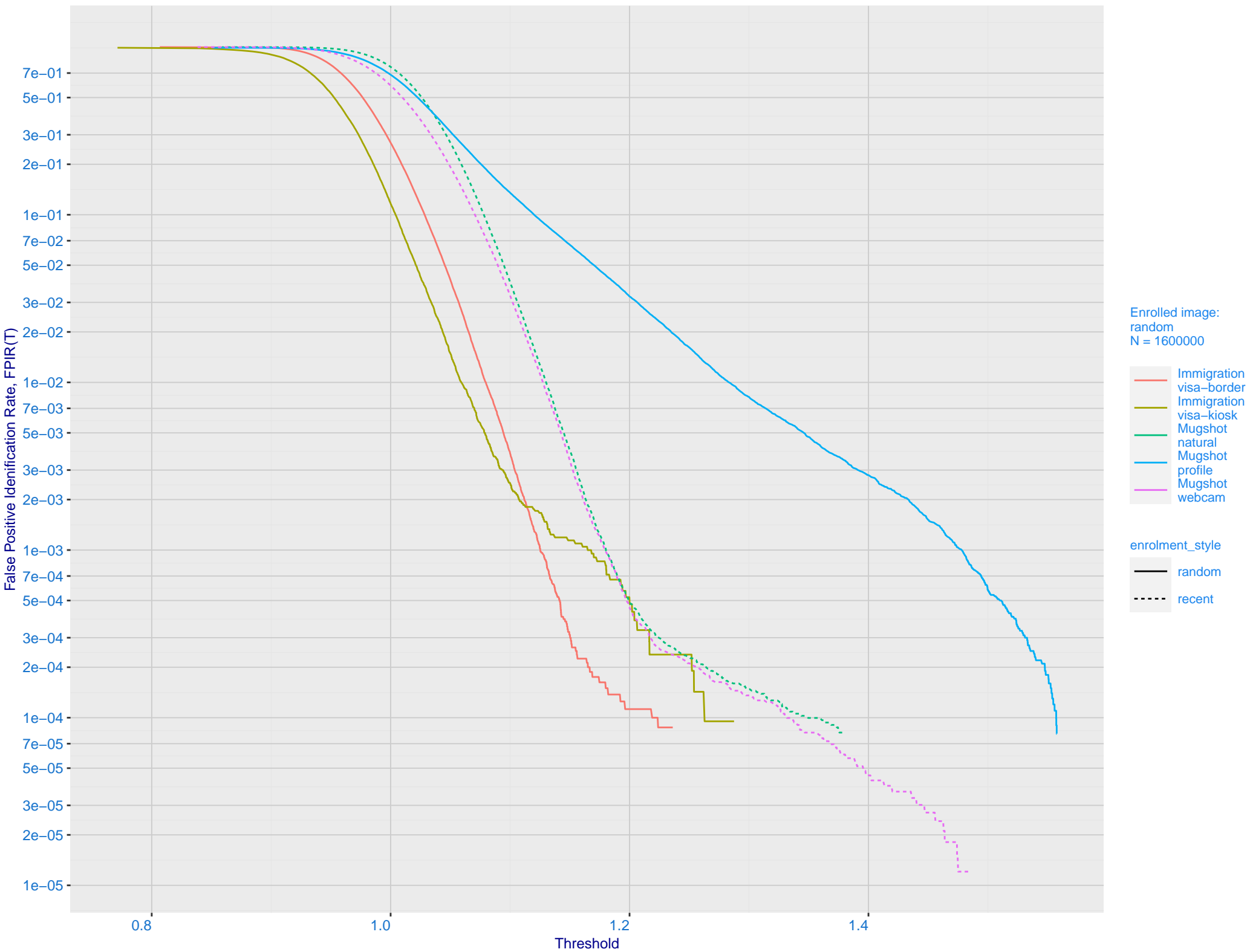D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals

E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images
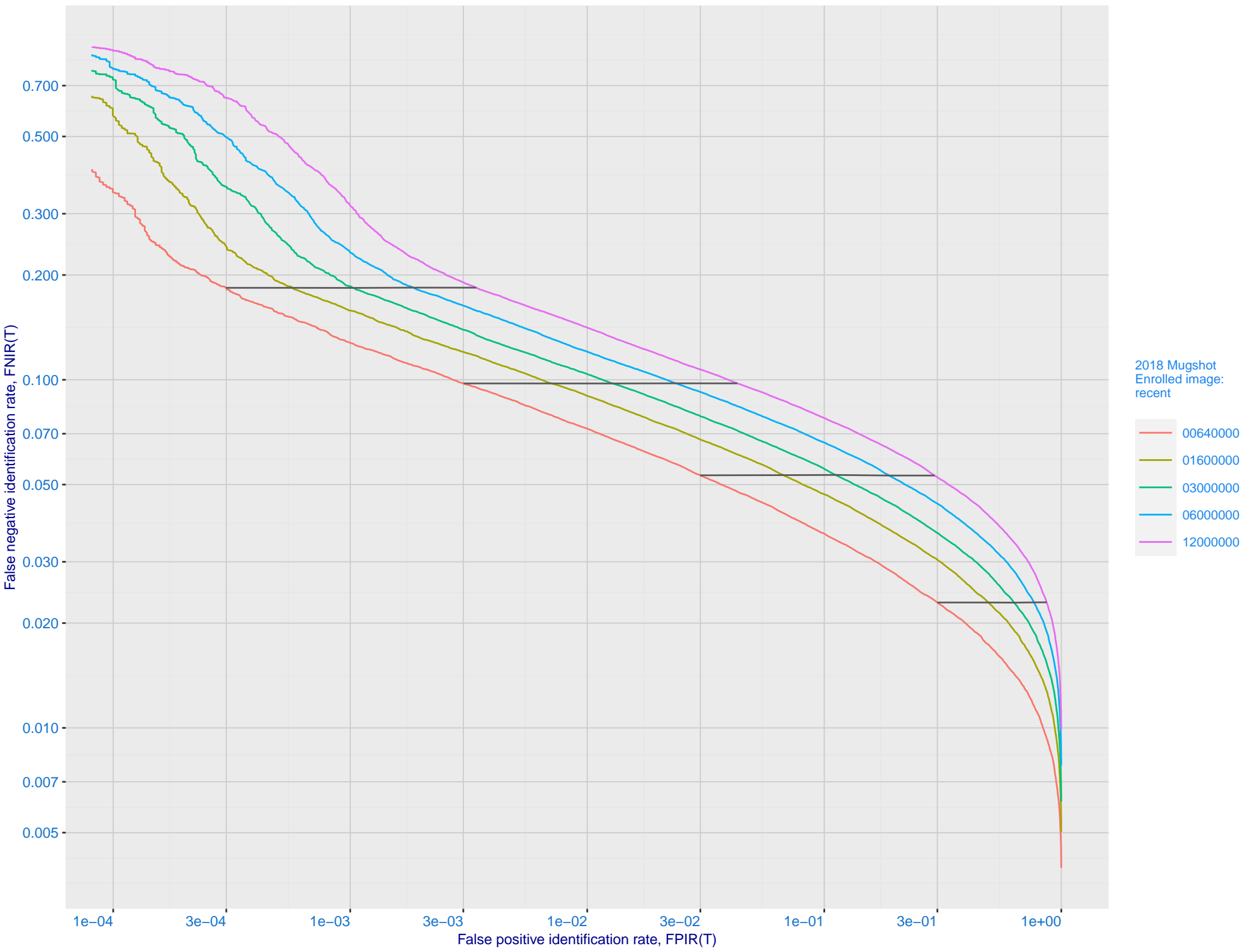
F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate
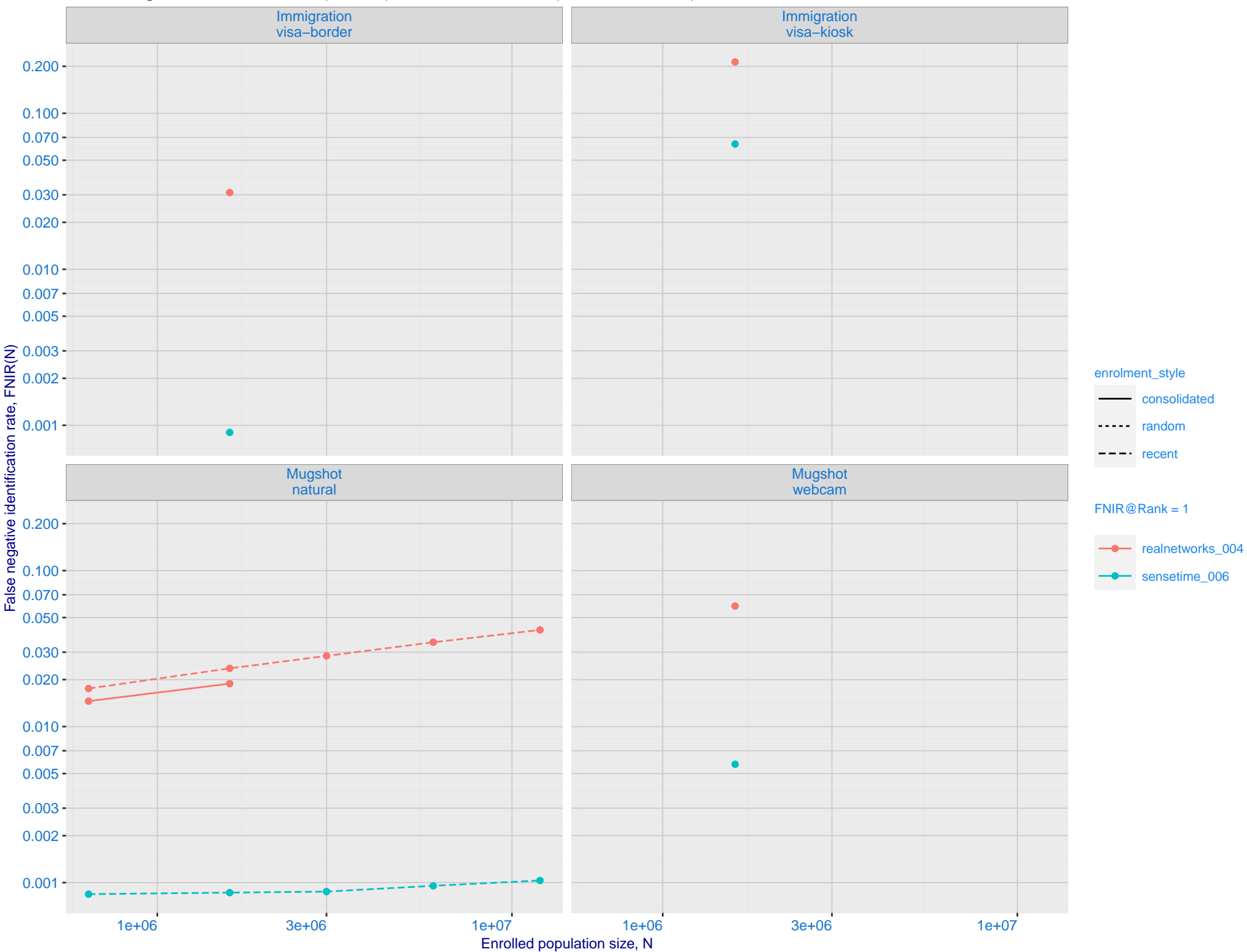
G: FPIR dependence on T by probe type for N = 1600000 subjects

Threshold

False Positive Idenification Rate, FPIR(T)

Enrolled image:
random
N = 1600000

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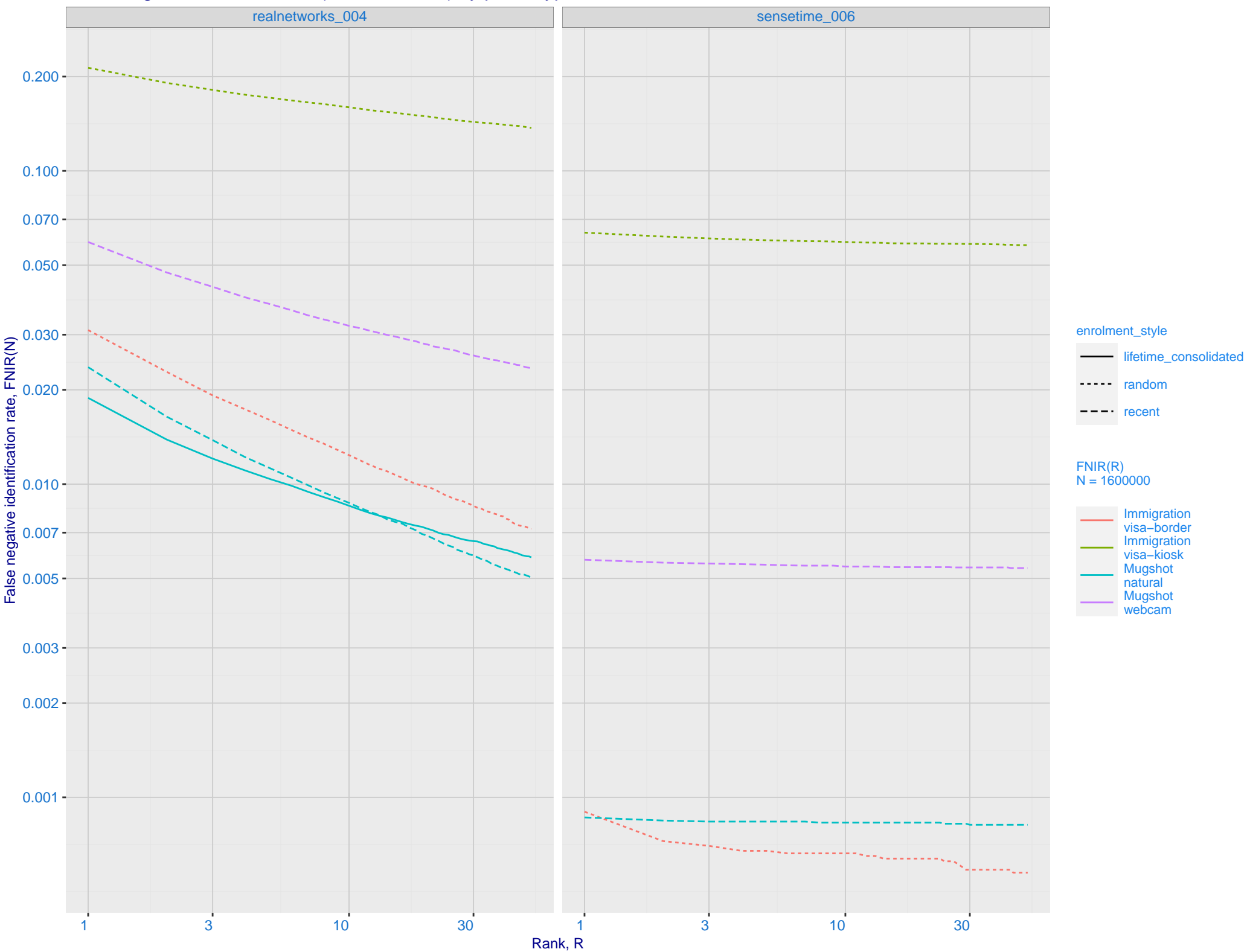Mugshot
webcam

enrolment_style

random

recent

J: DET for Mugshot natural images and various N. Links connect points of equal threshold.
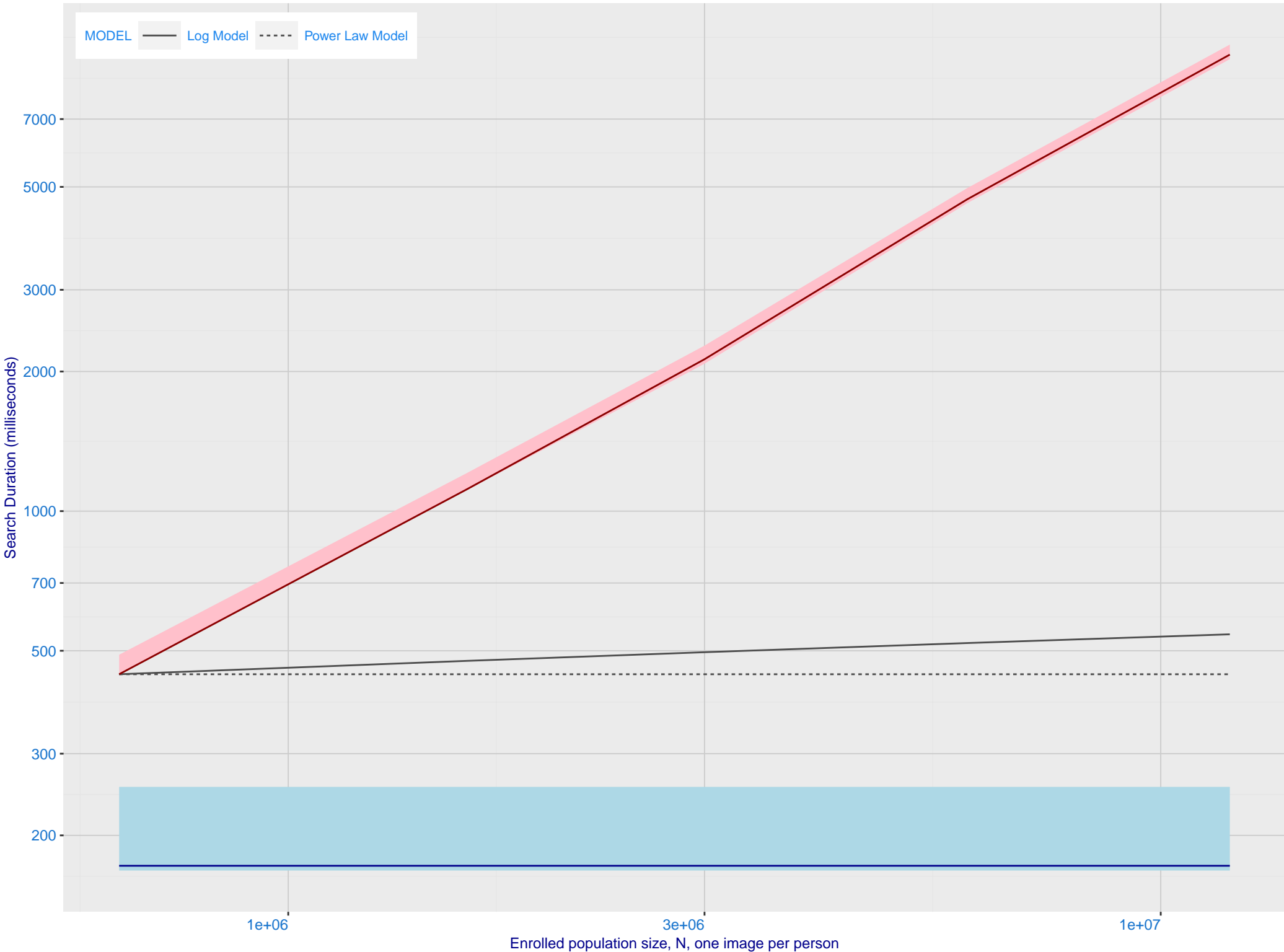
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006)

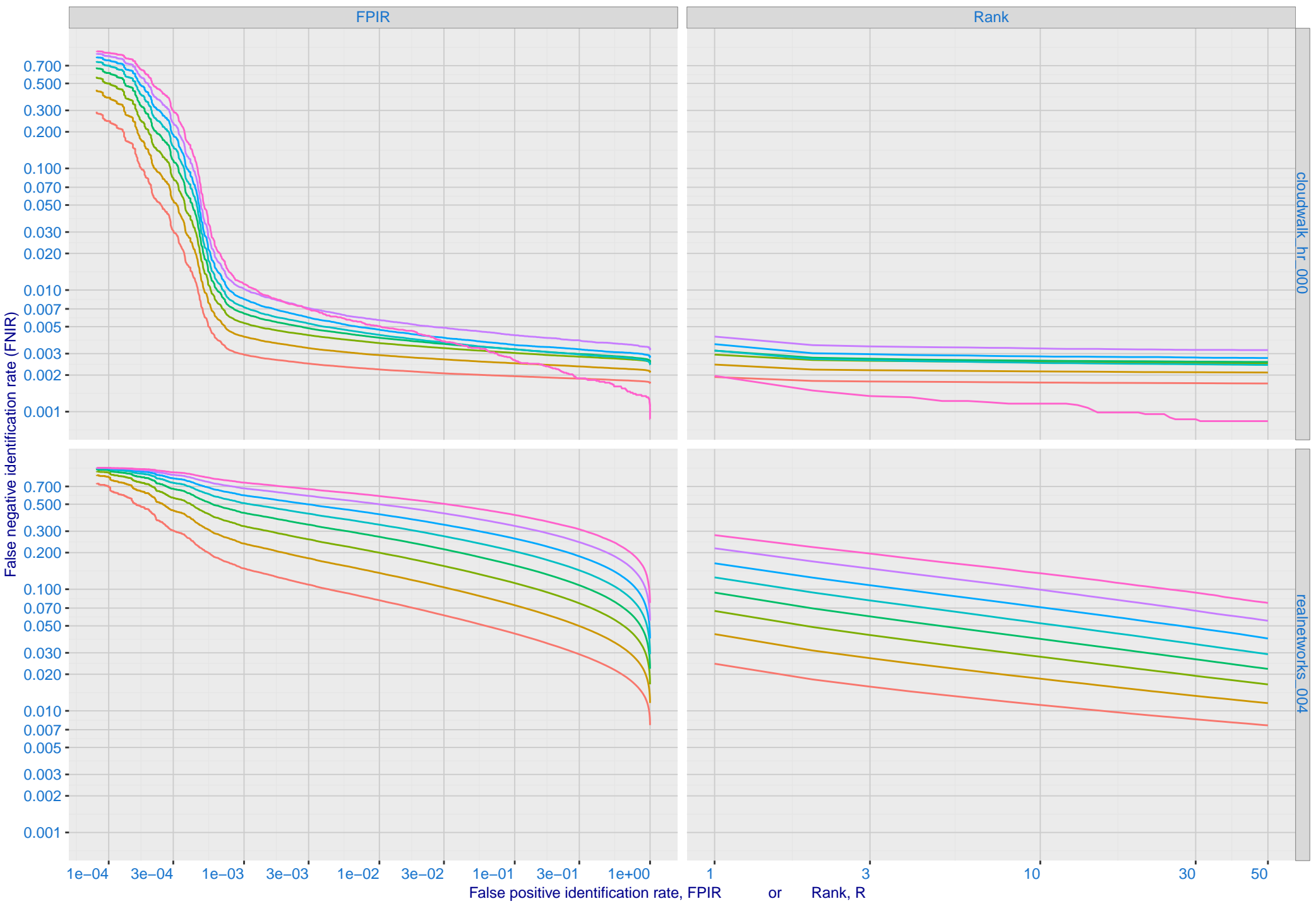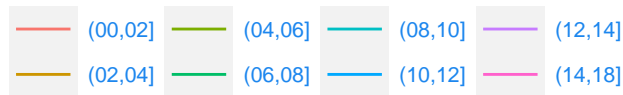L: Investigational mode: FNIR(1600000, R, 0) by probe type

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

(00,02]   (04,06]   (08,10]   (12,14]
(02,04]   (06,08]   (10,12]   (14,18]

R: Decline of genuine scores with ageing, with some eventually dropping below typical thresholds shown by the horizontal lines