A: Datasheet

Algorithm: cognitec_3

Developer: Cognitec Systems GmbH

Submission Date: 2018_10_30

Template size: 2052 bytes

Template time (2.5 percentile): 266 msec

Template time (median): 297 msec

Template time (97.5 percentile): 336 msec

Investigation:

Frontal mugshot ranking 95 (out of 265) –– FNIR(1600000, 0, 1) = 0.0062 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 100 (out of 227) –– FNIR(1600000, 0, 1) = 0.0245 vs. lowest 0.0062 from sensetime_005

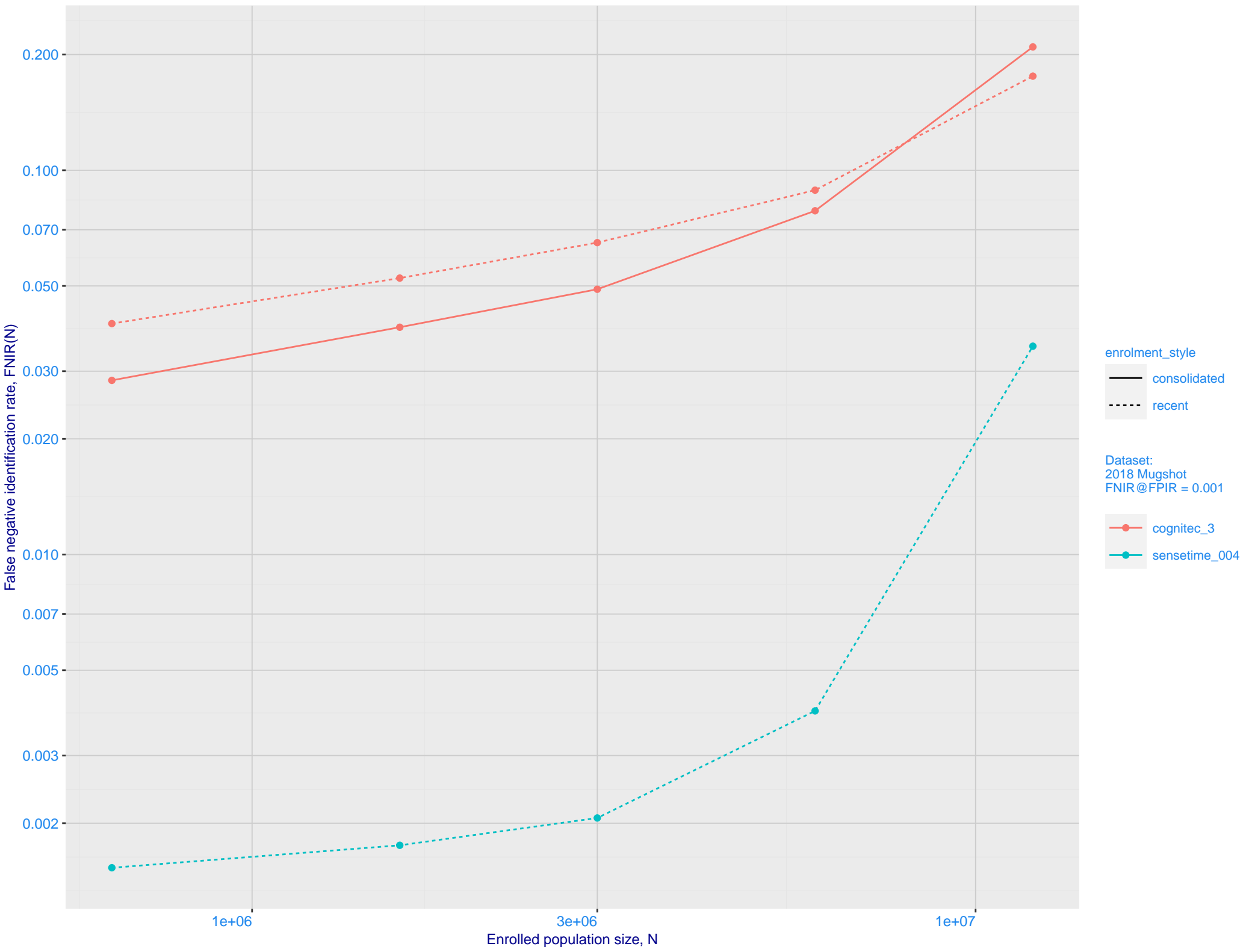Mugshot profile ranking 124 (out of 196) –– FNIR(1600000, 0, 1) = 0.9300 vs. lowest 0.0591 from sensetime_005

Identification:

Frontal mugshot ranking 87 (out of 265) –– FNIR(1600000, T, L+1) = 0.0524, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004
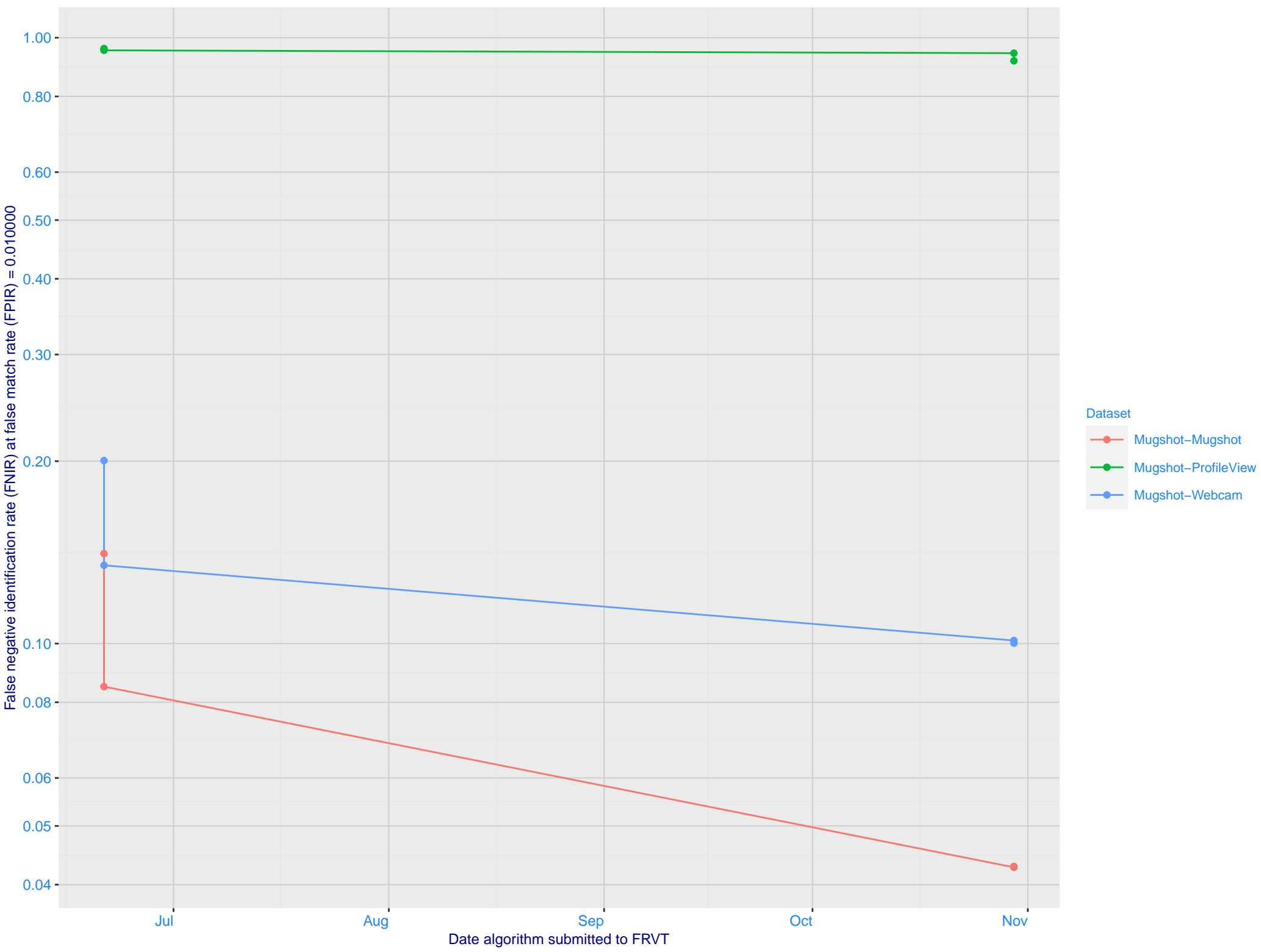
Mugshot webcam ranking 116 (out of 225) –– FNIR(1600000, T, L+1) = 0.1623, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 164 (out of 195) –– FNIR(1600000, T, L+1) = 0.9999, FPIR=0.001000 vs. lowest 0.1331 from hr_000
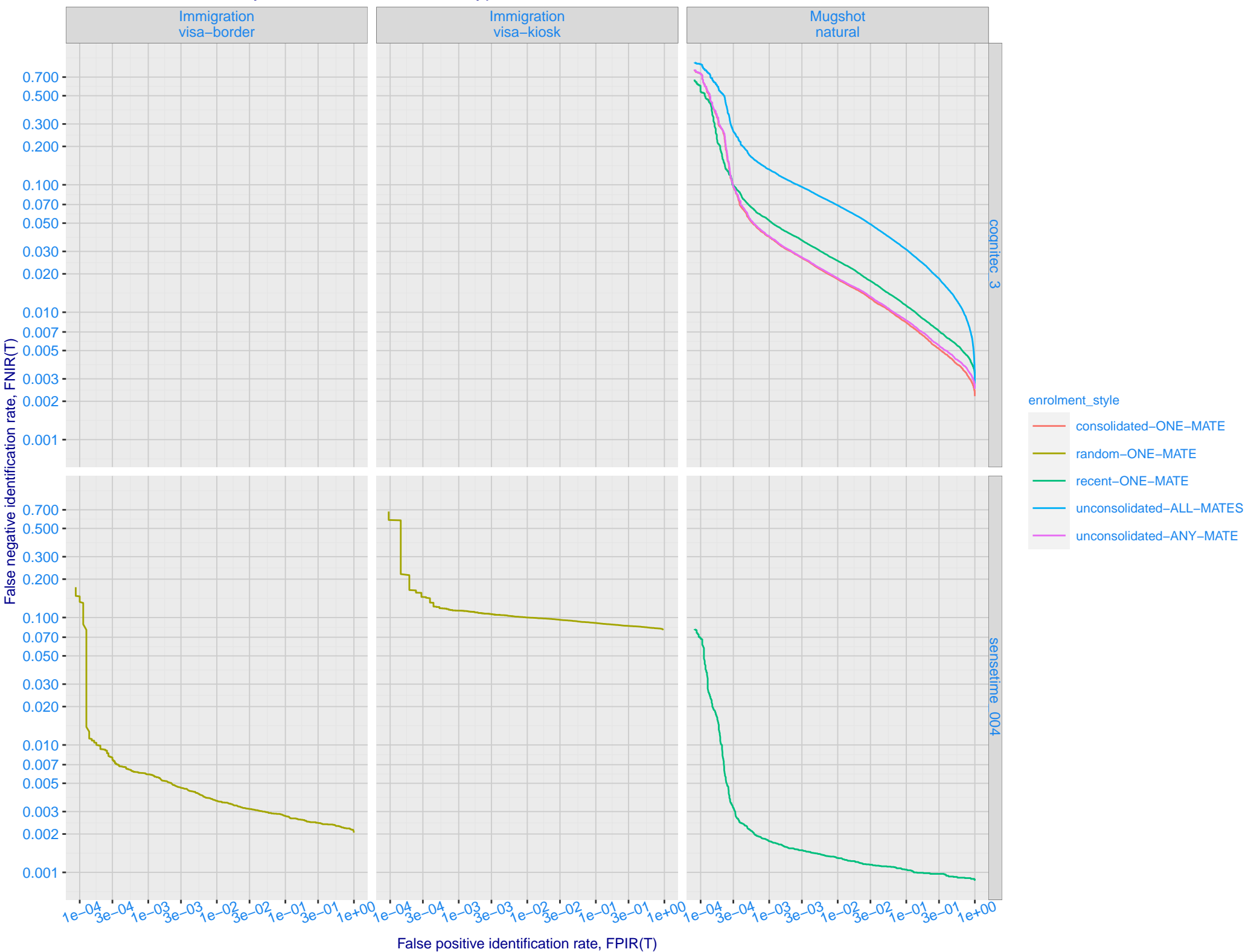
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (sensetime_004)
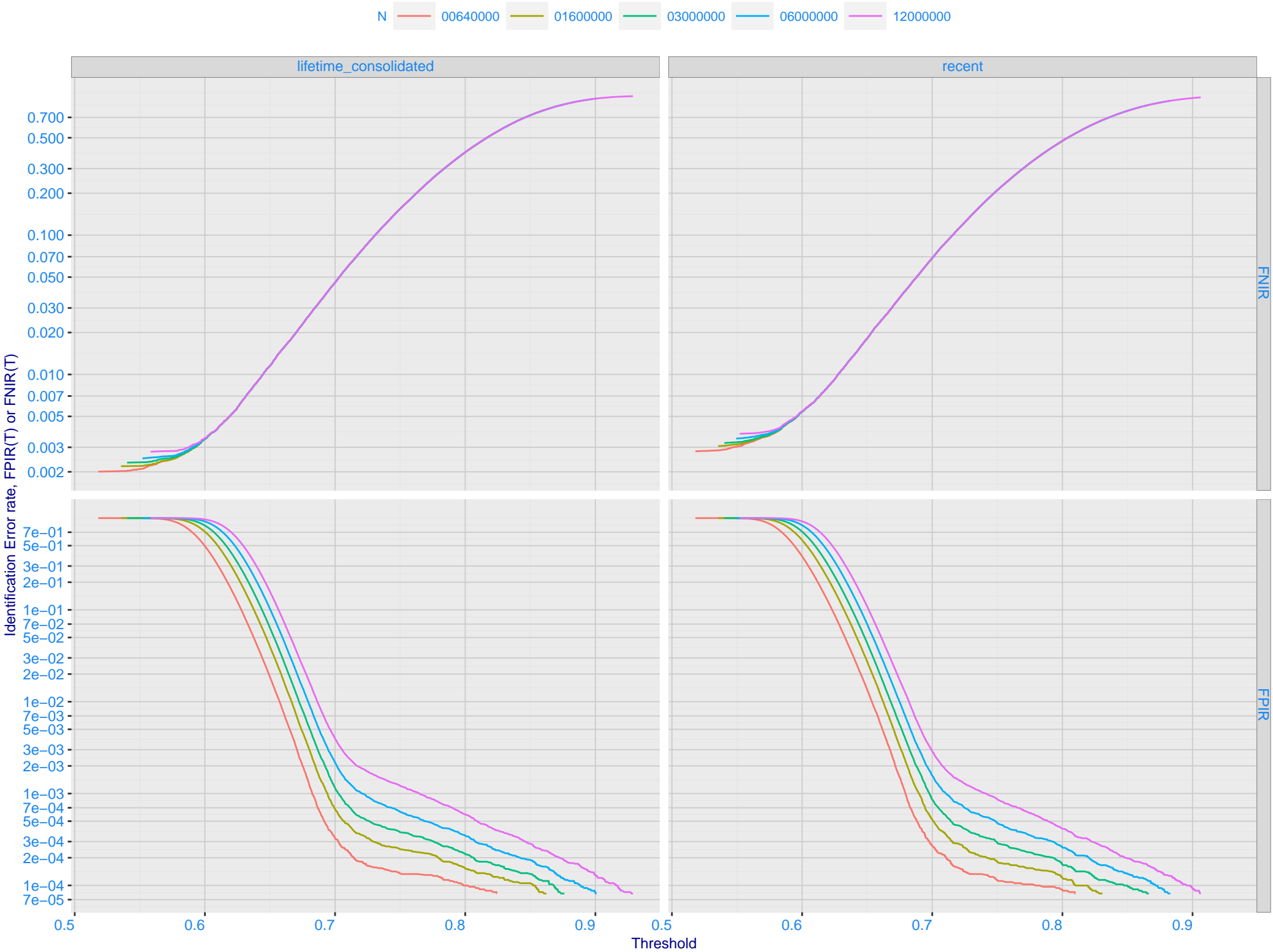
C: Evolution of accuracy for COGNITEC algorithms on three datasets 2018 – present
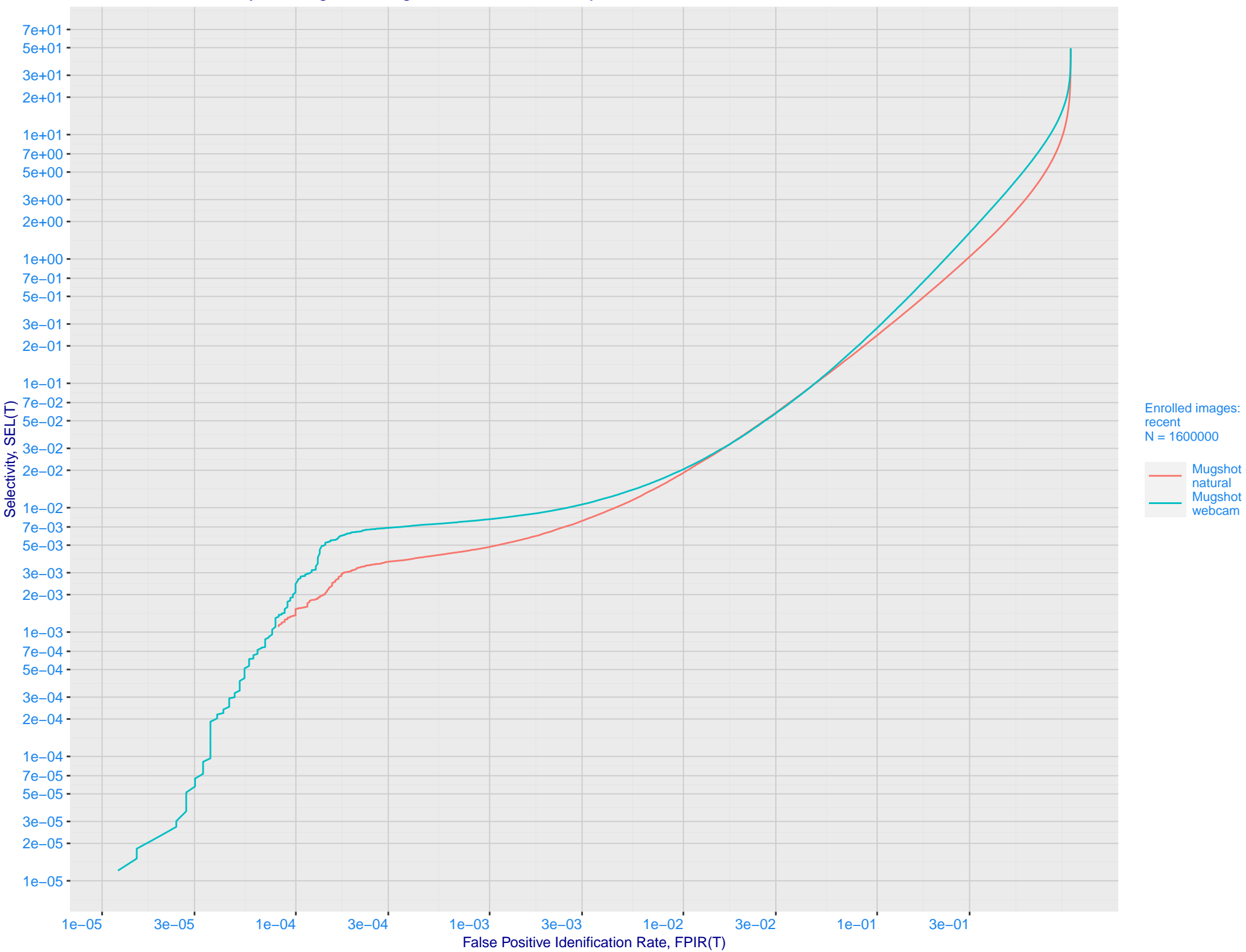
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals
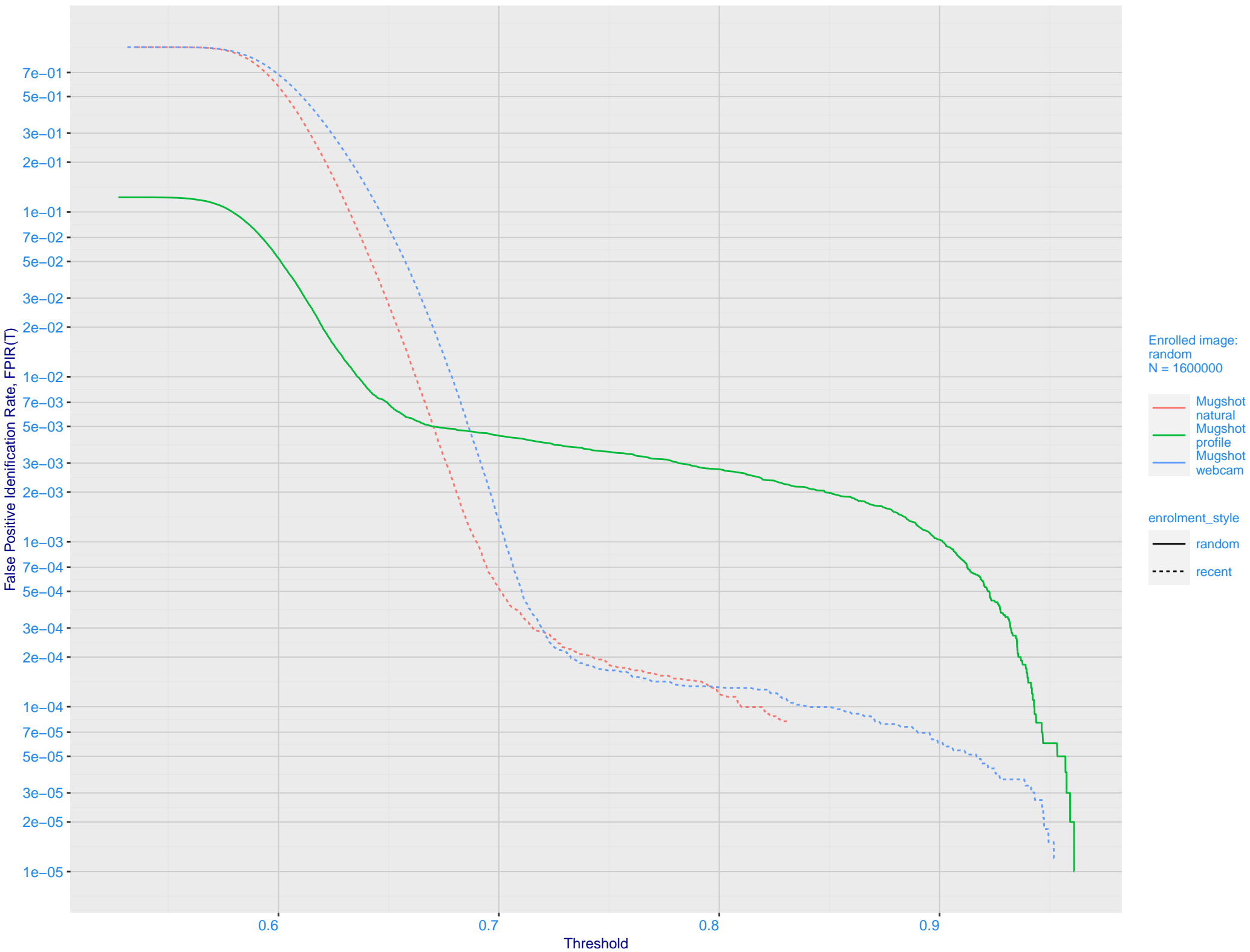
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images
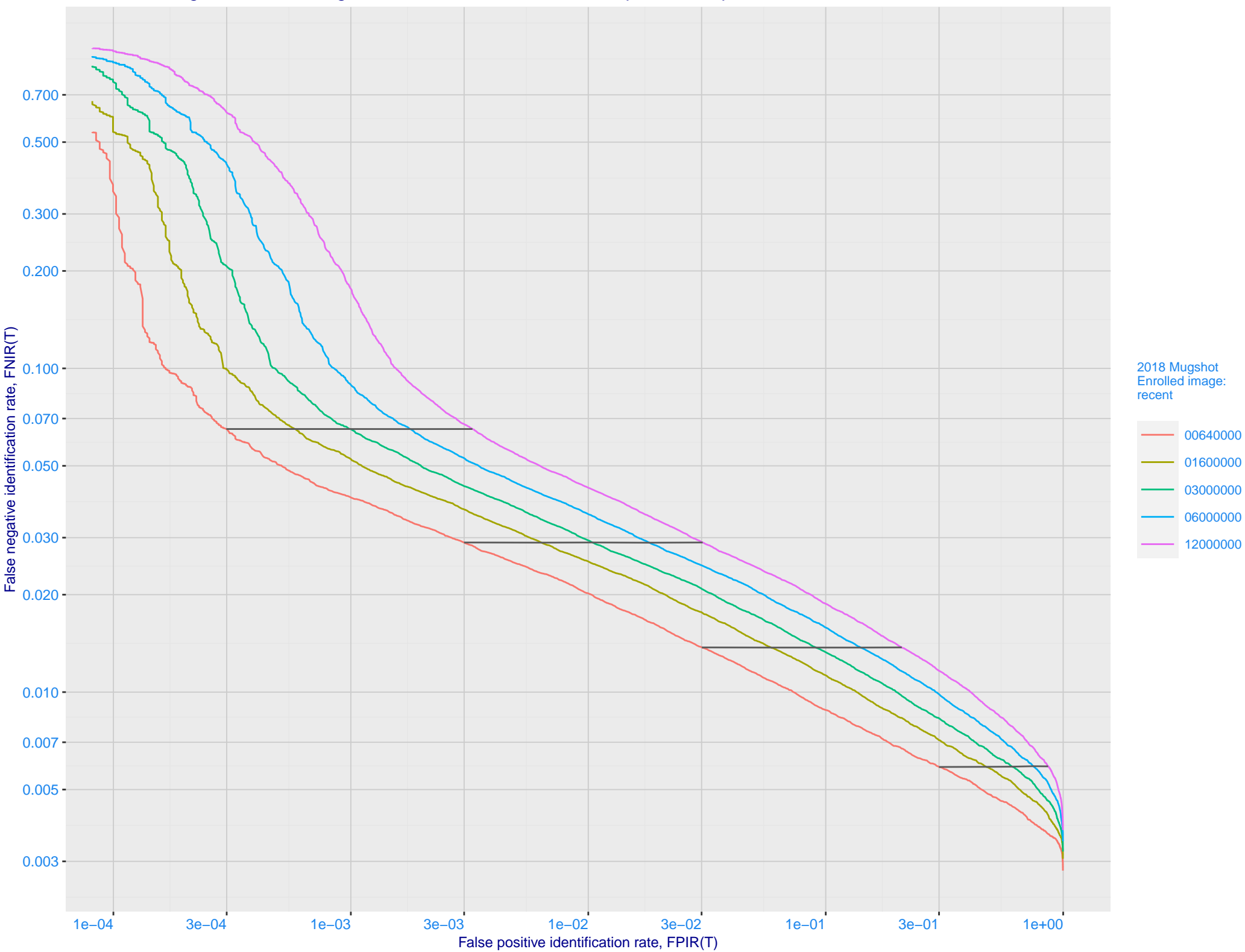
F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate
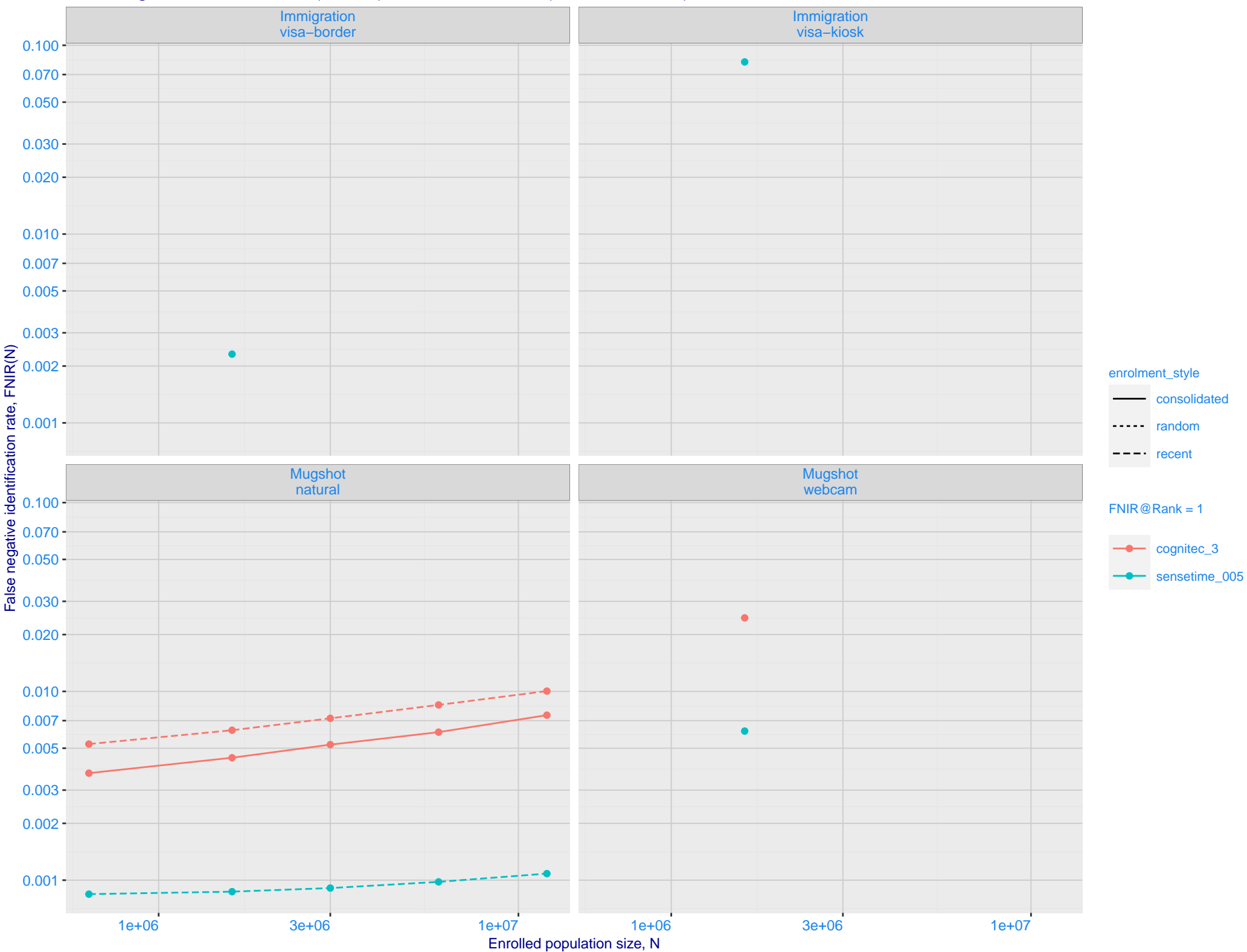
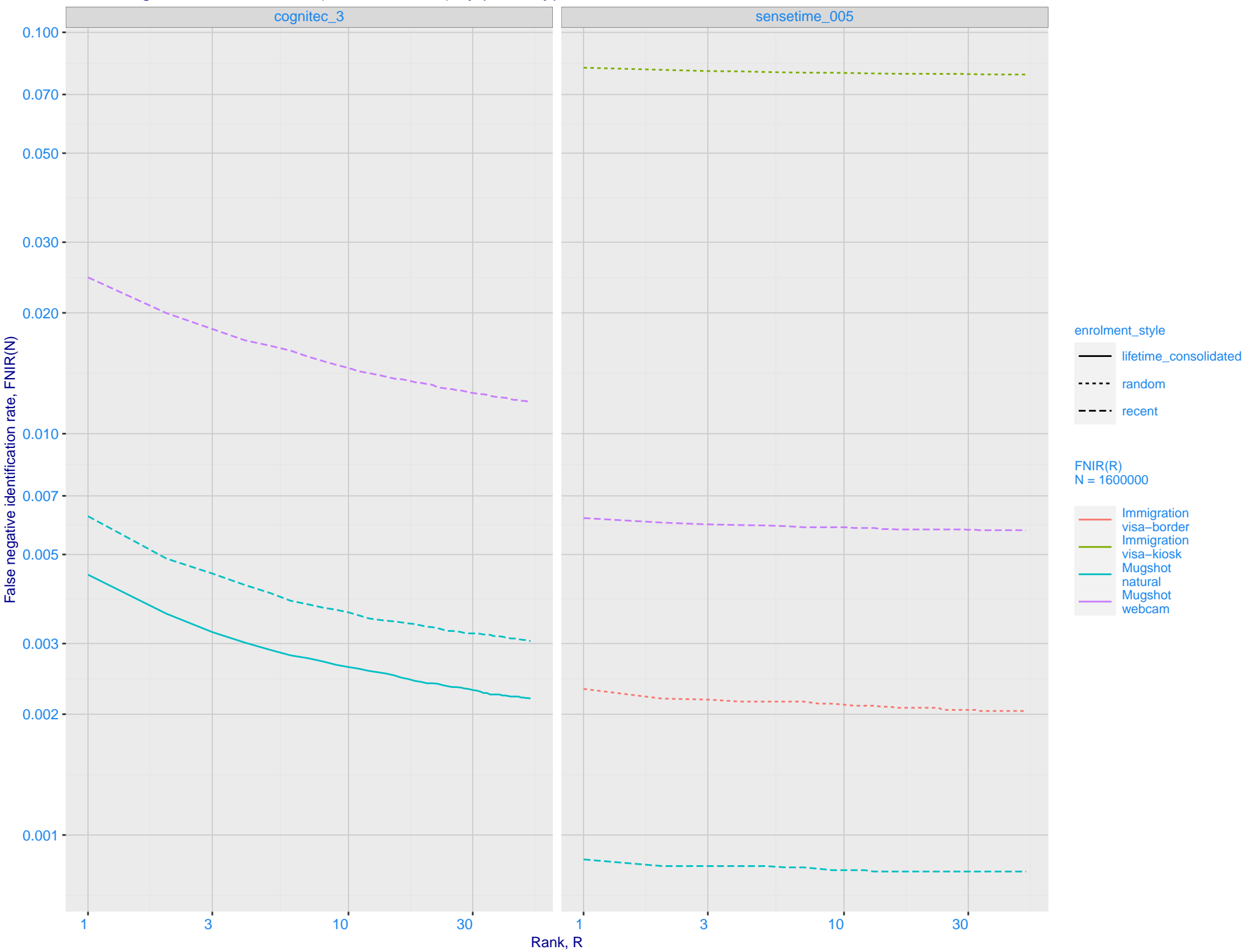G: FPIR dependence on T by probe type for N = 1600000 subjects

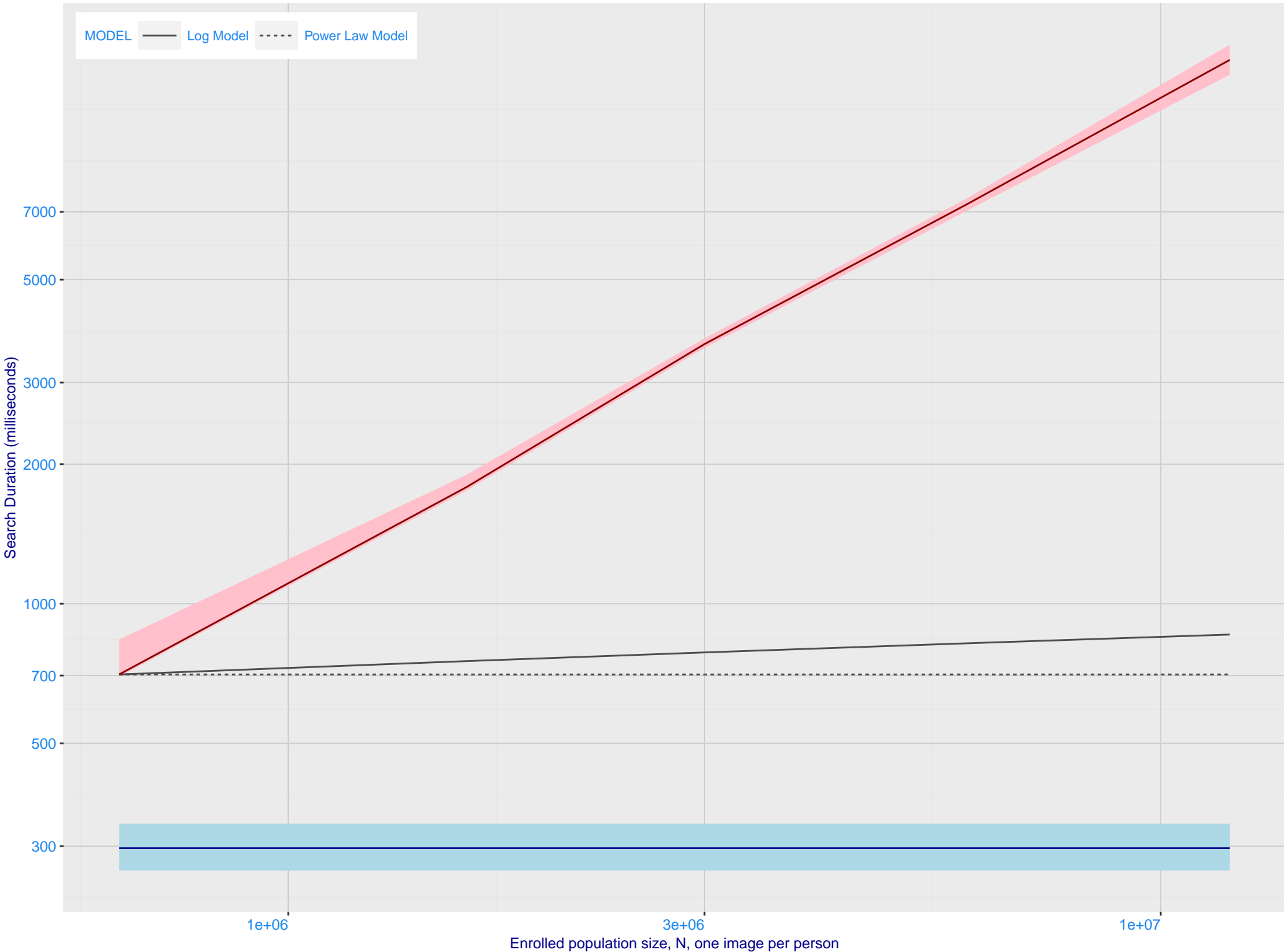H: DET for Mugshot natural images and various N. Links connect points of equal threshold.

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

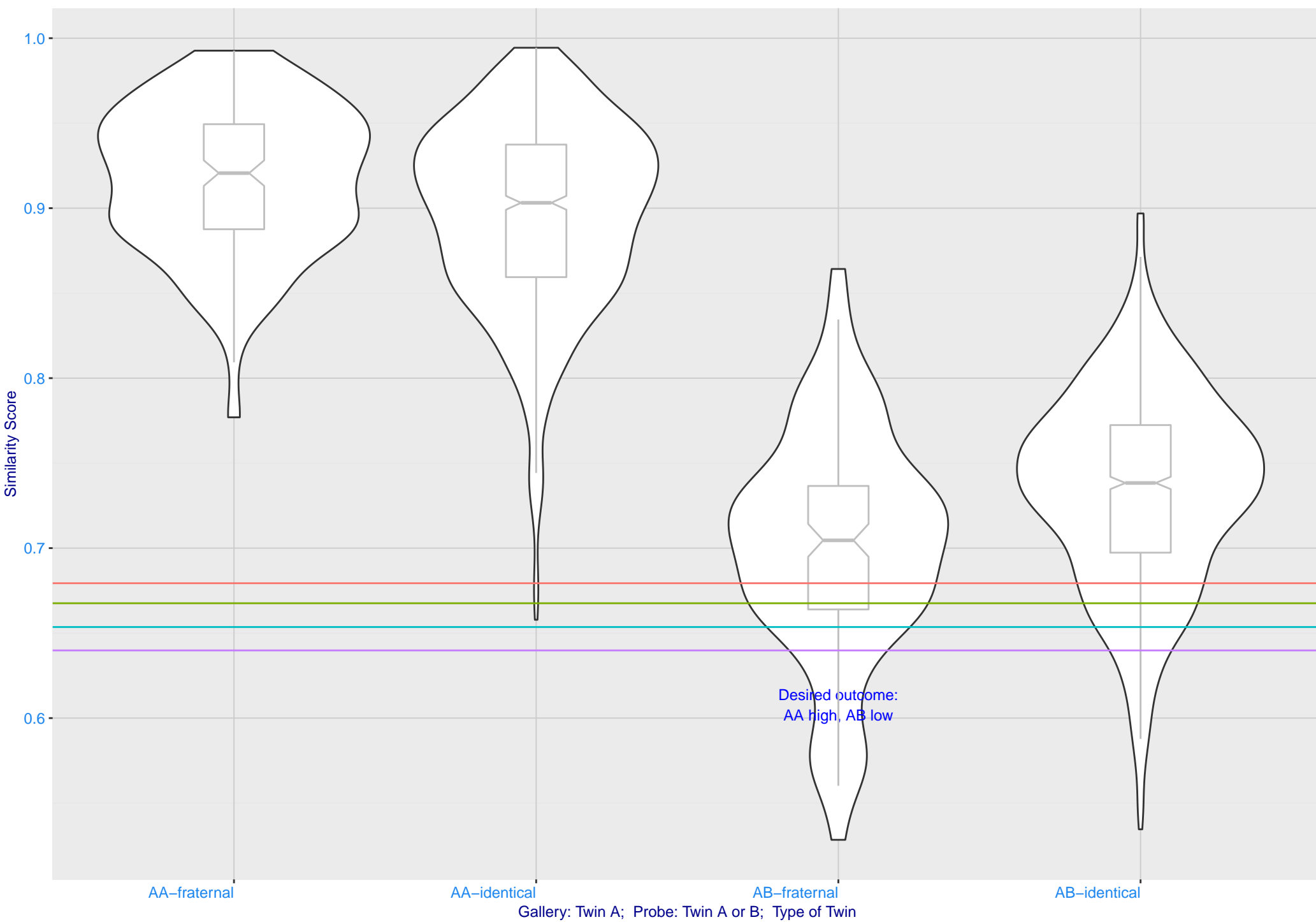J: Investigational mode: FNIR(1600000, R, 0) by probe type

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
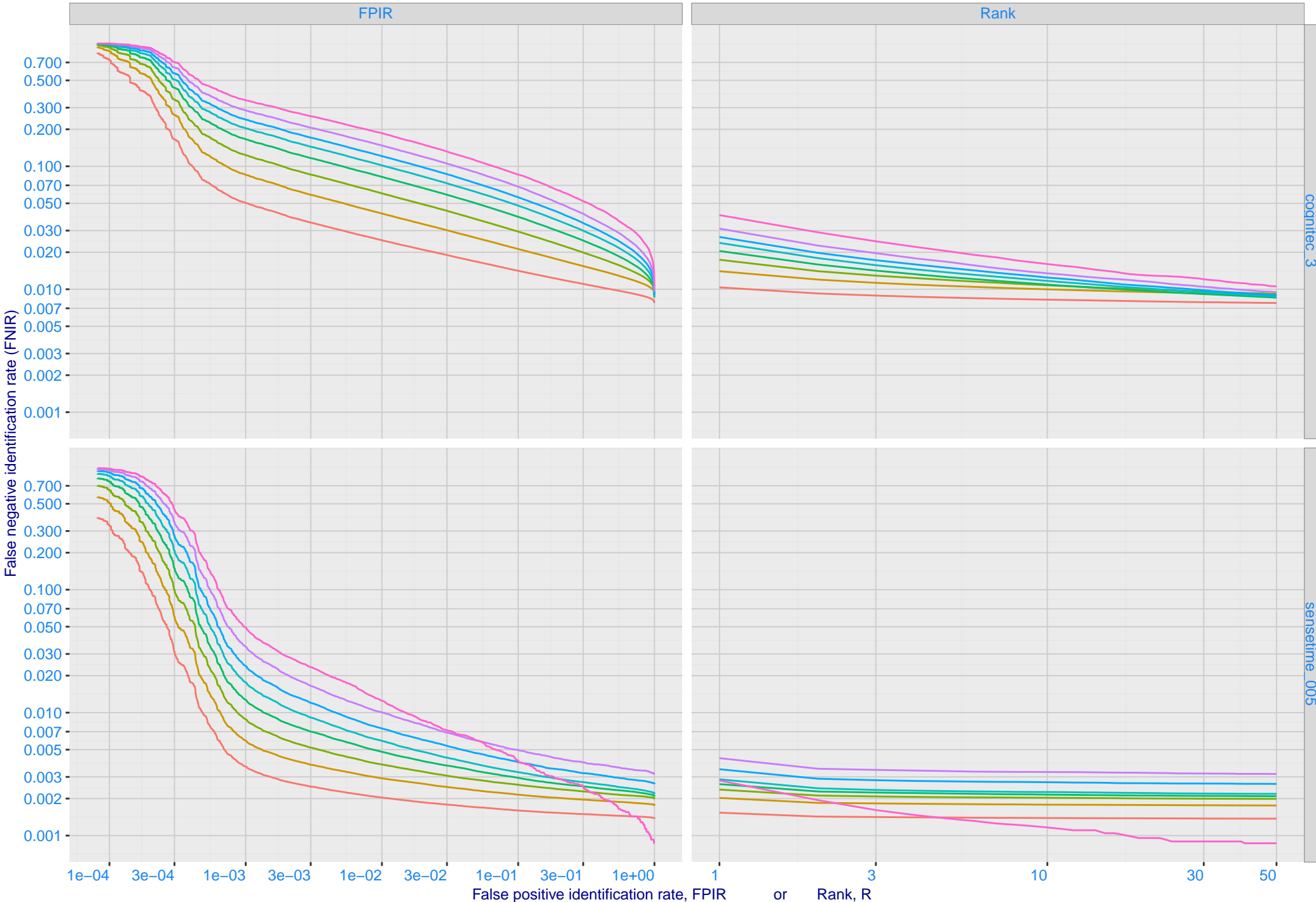
MODEL ——— Log Model ········ Power Law Model

Search Duration (milliseconds)

7000

5000

3000

2000

1000

700

500

300

1e+06   3e+06   1e+07

Enrolled population size, N, one image per person

Solo–Twin and Twin–Twin similarity scores

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

Similarity Score

1.0
0.9
0.8
0.7
0.6

Desired outcome:
AA high, AB low

AA–fraternal   AA–identical   AB–fraternal   AB–identical

Gallery: Twin A; Probe: Twin A or B; Type of Twin

M: Identification FNIR(N, T, L+1) and Investigational FNIR(N, 0, R) under ageing

N: Decline of genuine scores with ageing