A: Datasheet

Algorithm: vocord_4

Developer: Vocord

Submission Date: 2018_06_30

Template size: 896 bytes

Template time (2.5 percentile): 479 msec

Template time (median): 516 msec

Template time (97.5 percentile): 648 msec

Investigation:

Frontal mugshot ranking 109 (out of 265) −− FNIR(1600000, 0, 1) = 0.0079 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 78 (out of 227) −− FNIR(1600000, 0, 1) = 0.0207 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 91 (out of 196) −− FNIR(1600000, 0, 1) = 0.7916 vs. lowest 0.0591 from sensetime_005

Immigration visa−border ranking 66 (out of 148) −− FNIR(1600000, 0, 1) = 0.0122 vs. lowest 0.0013 from visionlabs_010

Immigration visa−kiosk ranking 48 (out of 145) −− FNIR(1600000, 0, 1) = 0.1270 vs. lowest 0.0568 from hr_000

Identification:

Frontal mugshot ranking 202 (out of 265) −− FNIR(1600000, T, L+1) = 0.3548, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

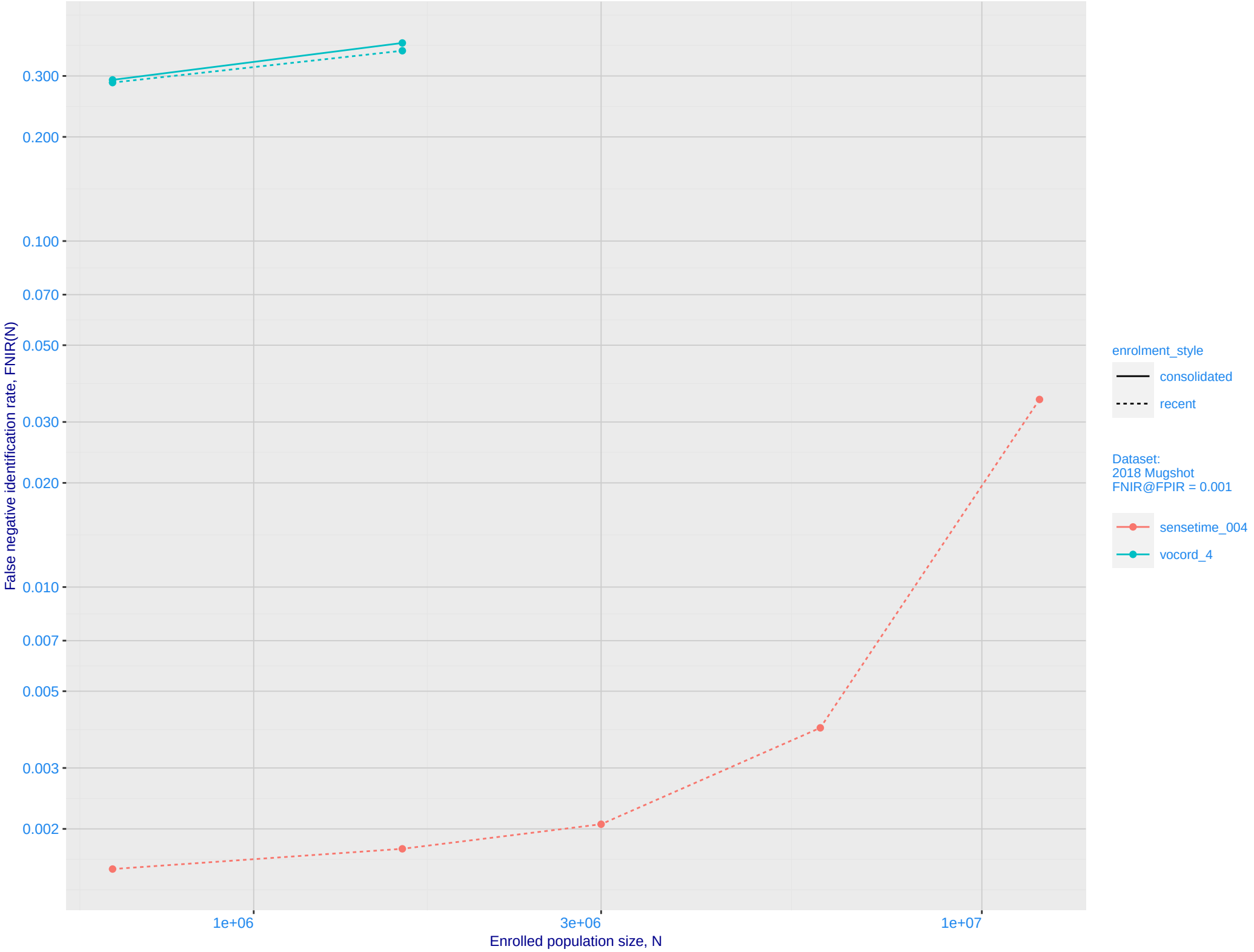
Mugshot webcam ranking 121 (out of 225) −− FNIR(1600000, T, L+1) = 0.1726, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 158 (out of 195) −− FNIR(1600000, T, L+1) = 0.9998, FPIR=0.001000 vs. lowest 0.1331 from hr_000

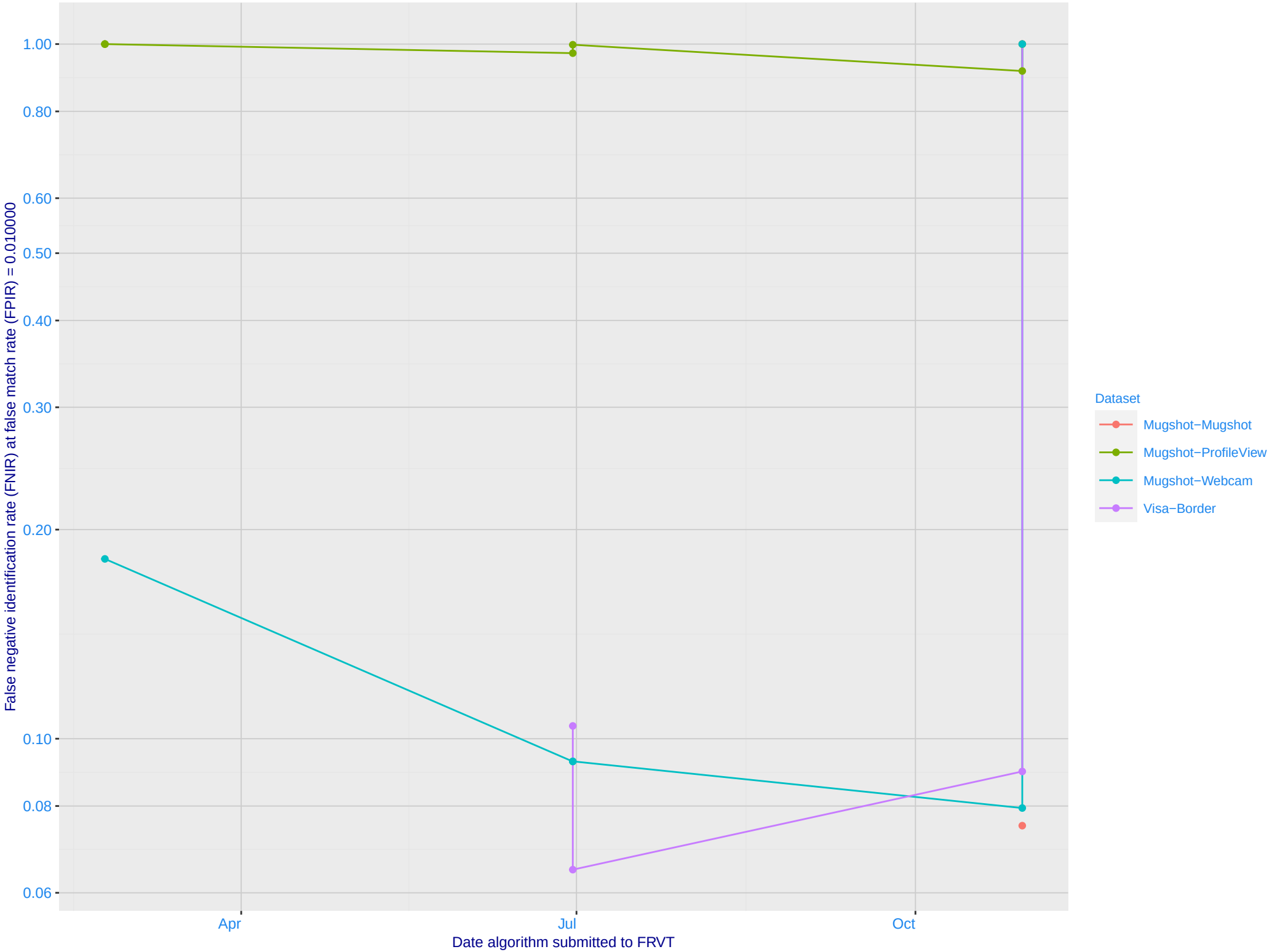
Immigration visa−border ranking 86 (out of 146) −− FNIR(1600000, T, L+1) = 0.1943, FPIR=0.001000 vs. lowest 0.0049 from hr_000

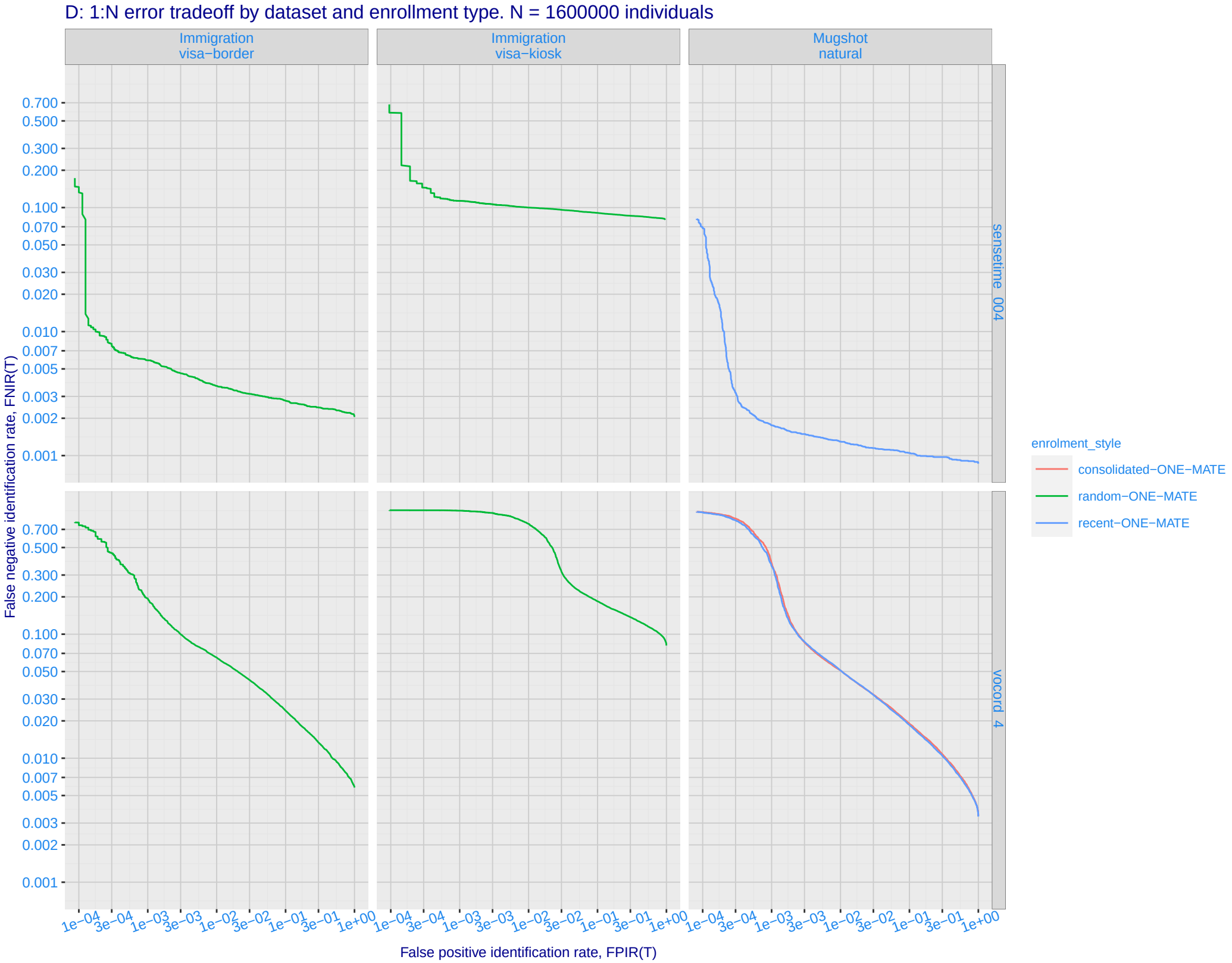
Immigration visa−kiosk ranking 123 (out of 141) −− FNIR(1600000, T, L+1) = 0.9911, FPIR=0.001000 vs. lowest 0.0996 from hr_000

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

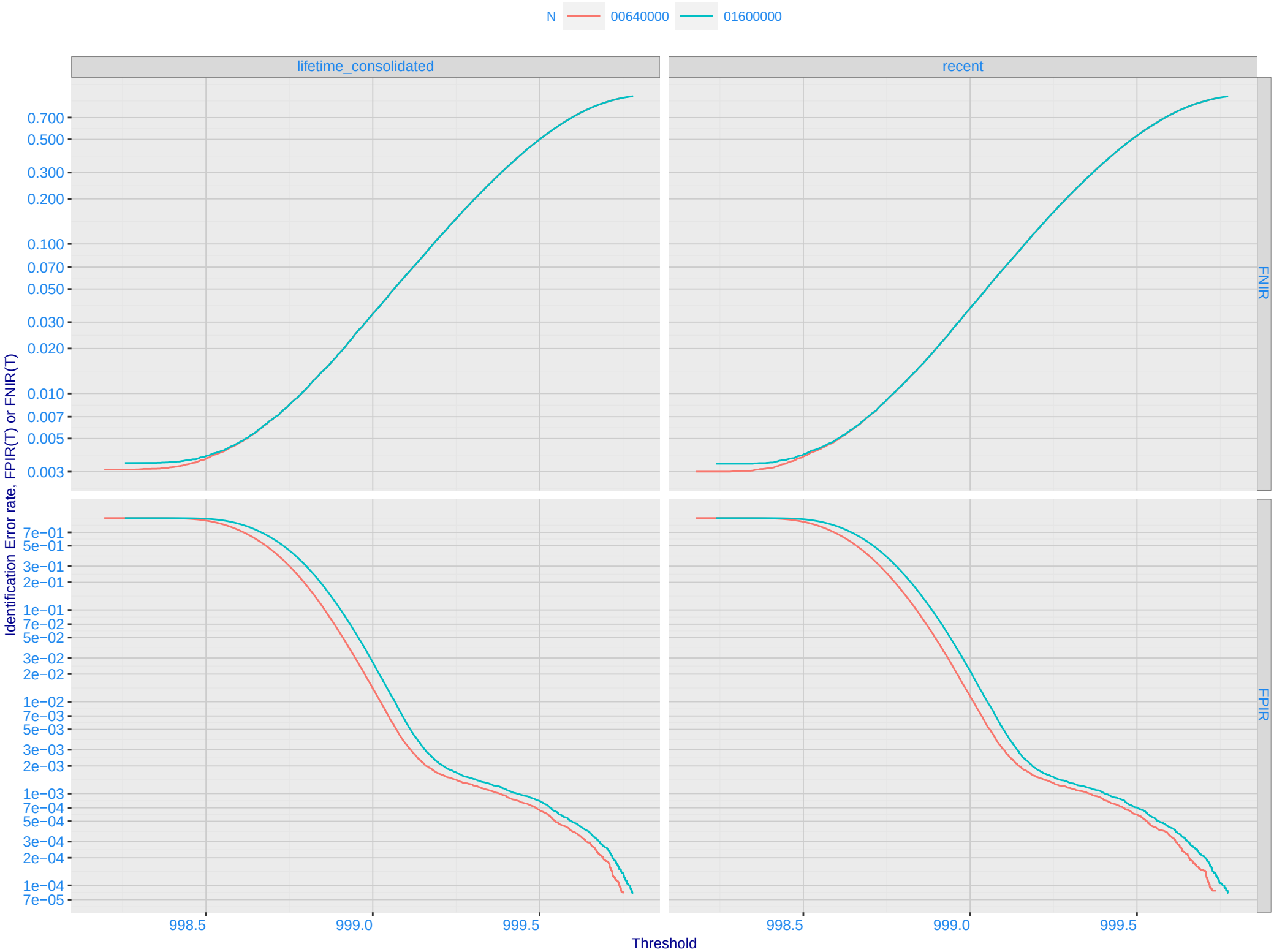


C: Evolution of accuracy for VOCORD algorithms on three datasets 2018 − present

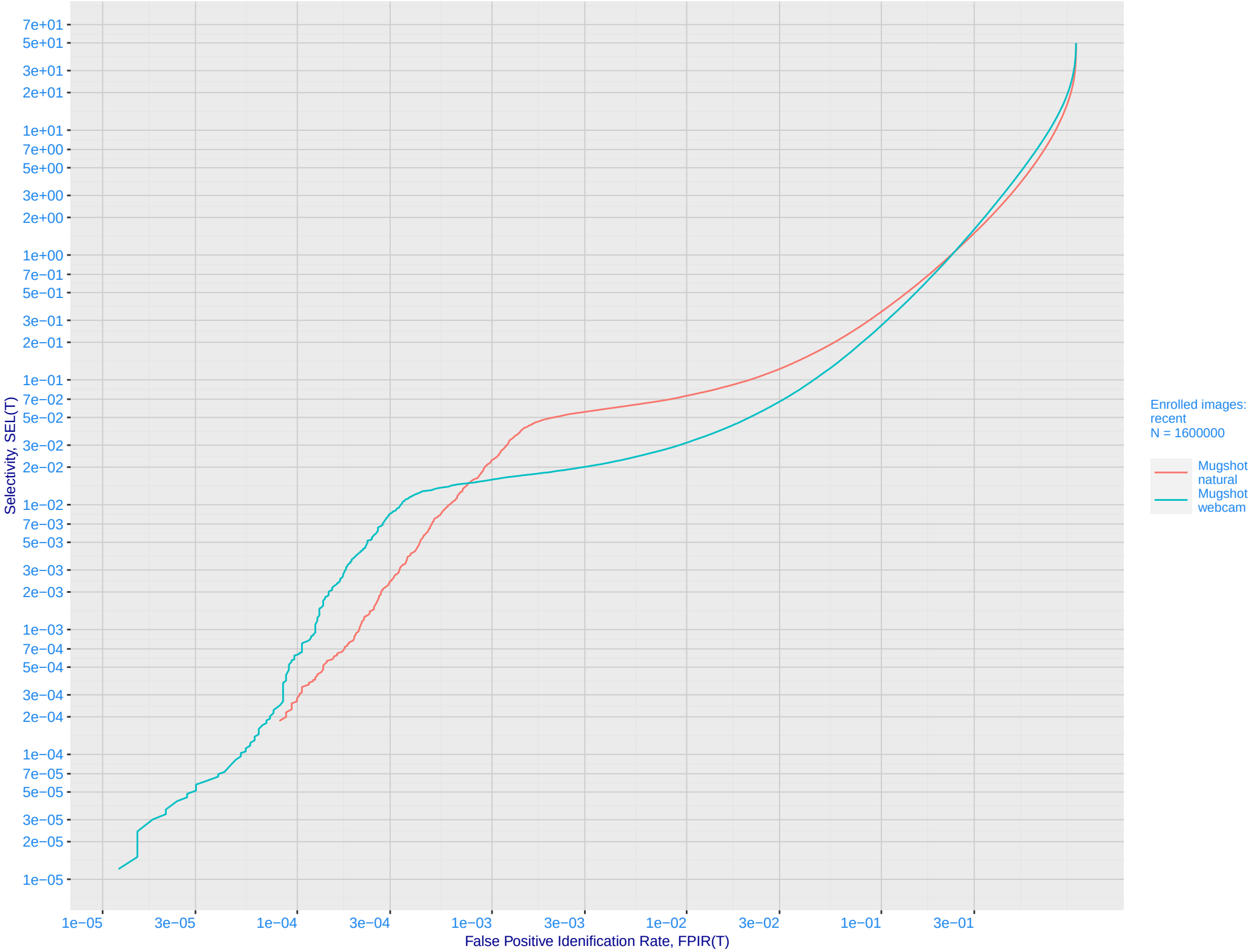



D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals
Immigration visa−border
Immigration visa−kiosk
Mugshot natural
sensetime_004
vocord_4
False negative identification rate, FNIR(T)
False positive identification rate, FPIR(T)
0.700
0.500
0.300
0.200
0.100
0.070
0.050
0.030
0.020
0.010
0.007
0.005
0.003
0.002
0.001
1e−04
3e−04
1e−03
3e−03
1e−02
3e−02
1e−01
3e−01
1e+00
enrolment_style
consolidated−ONE−MATE
random−ONE−MATE
recent−ONE−MATE

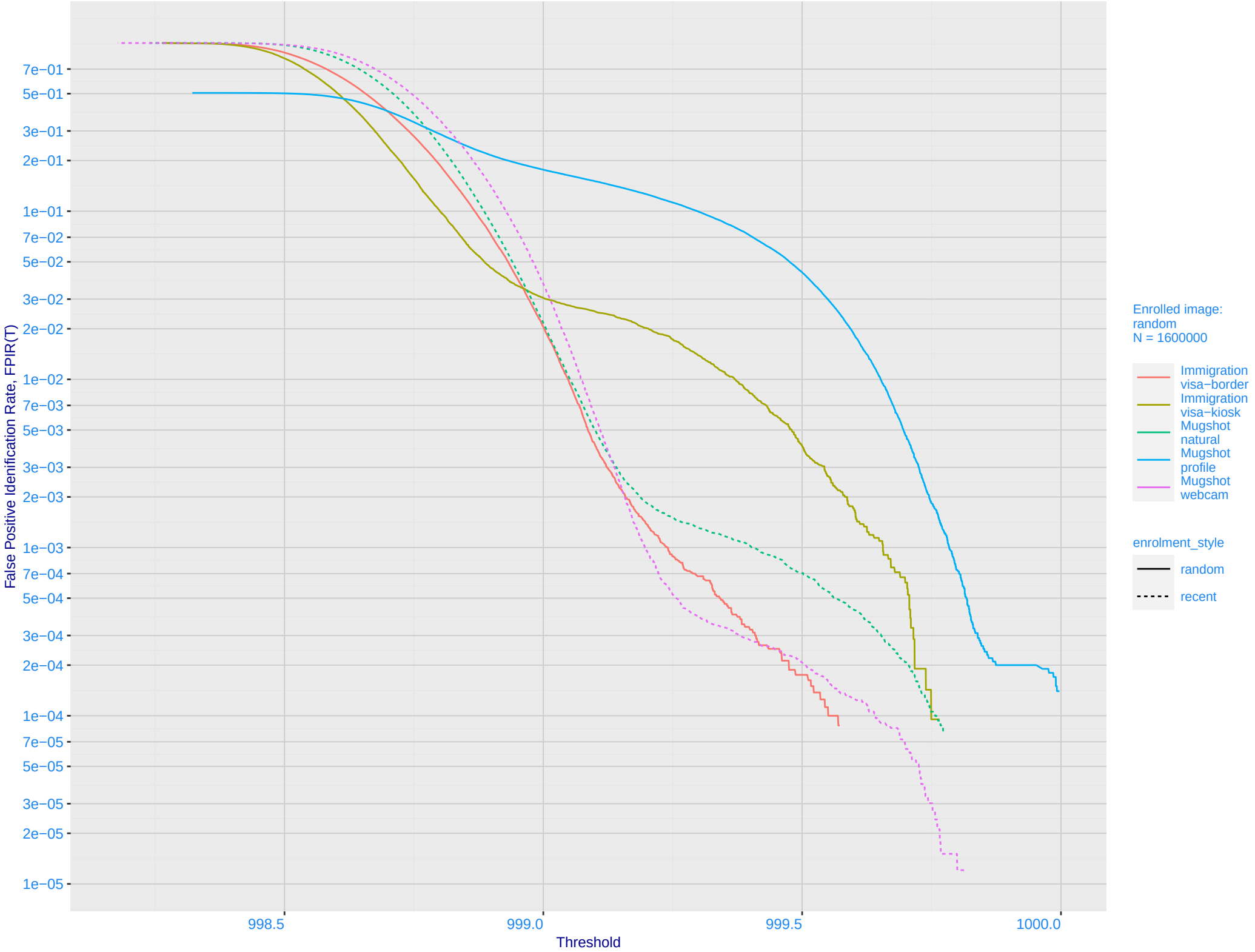
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



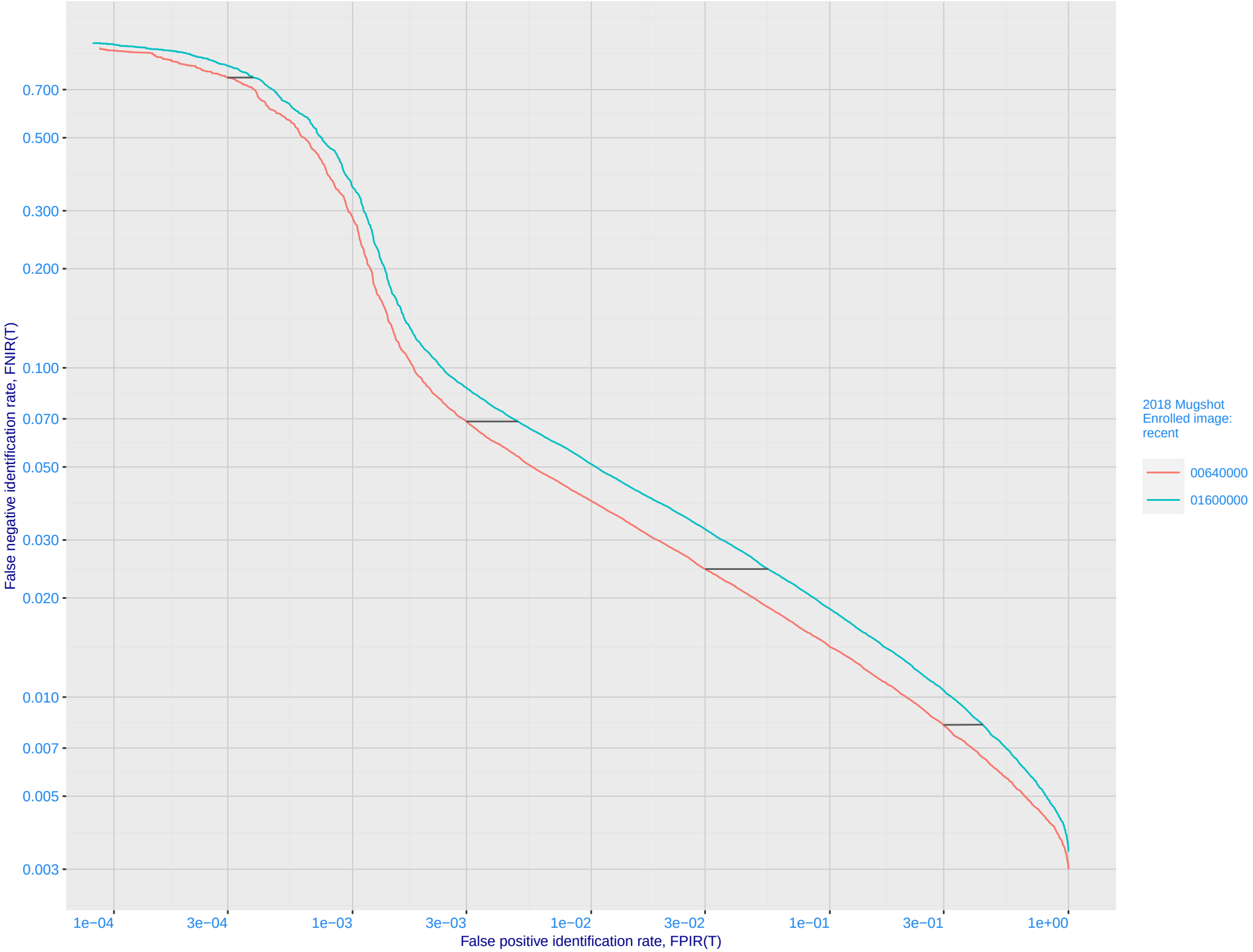
F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate

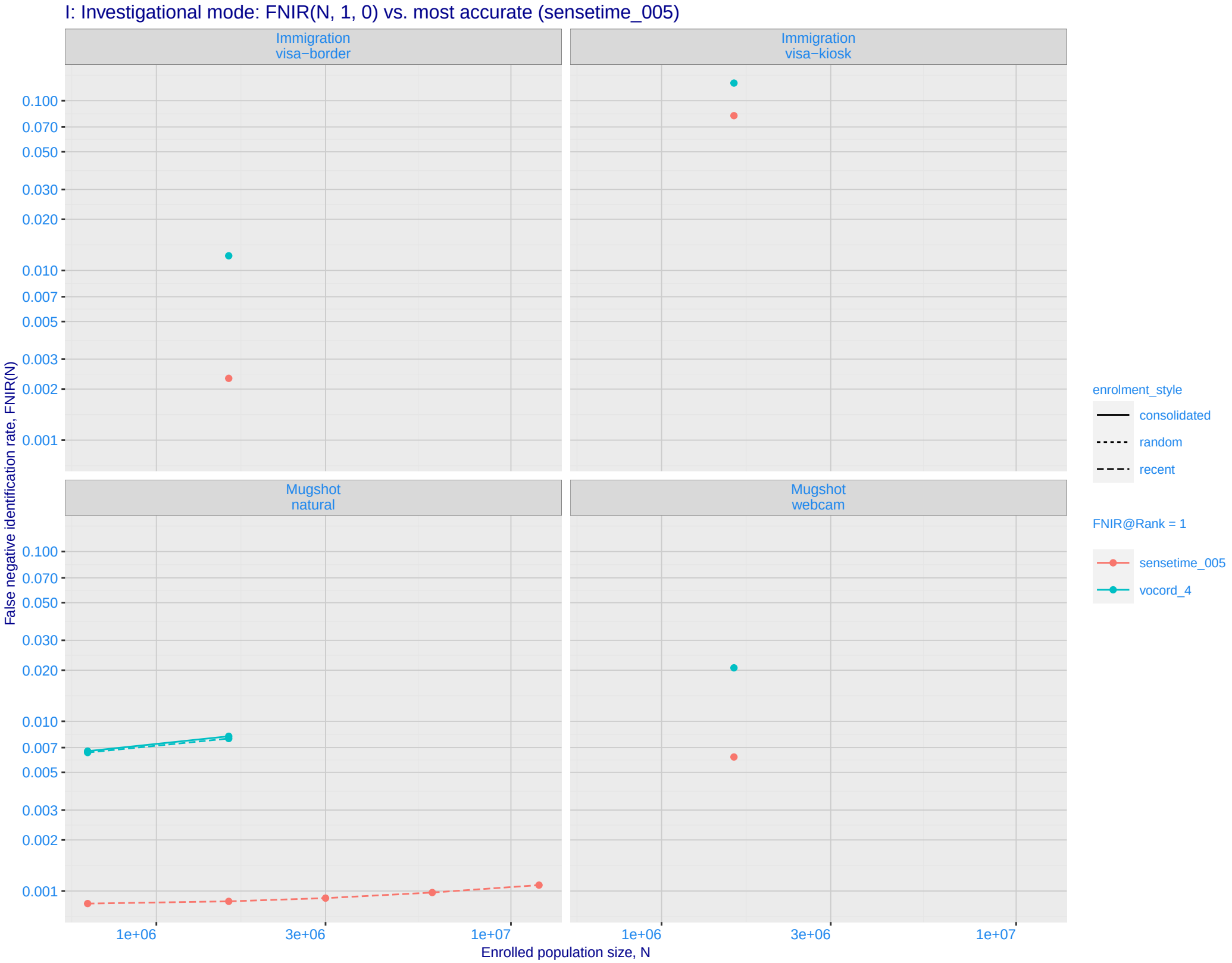


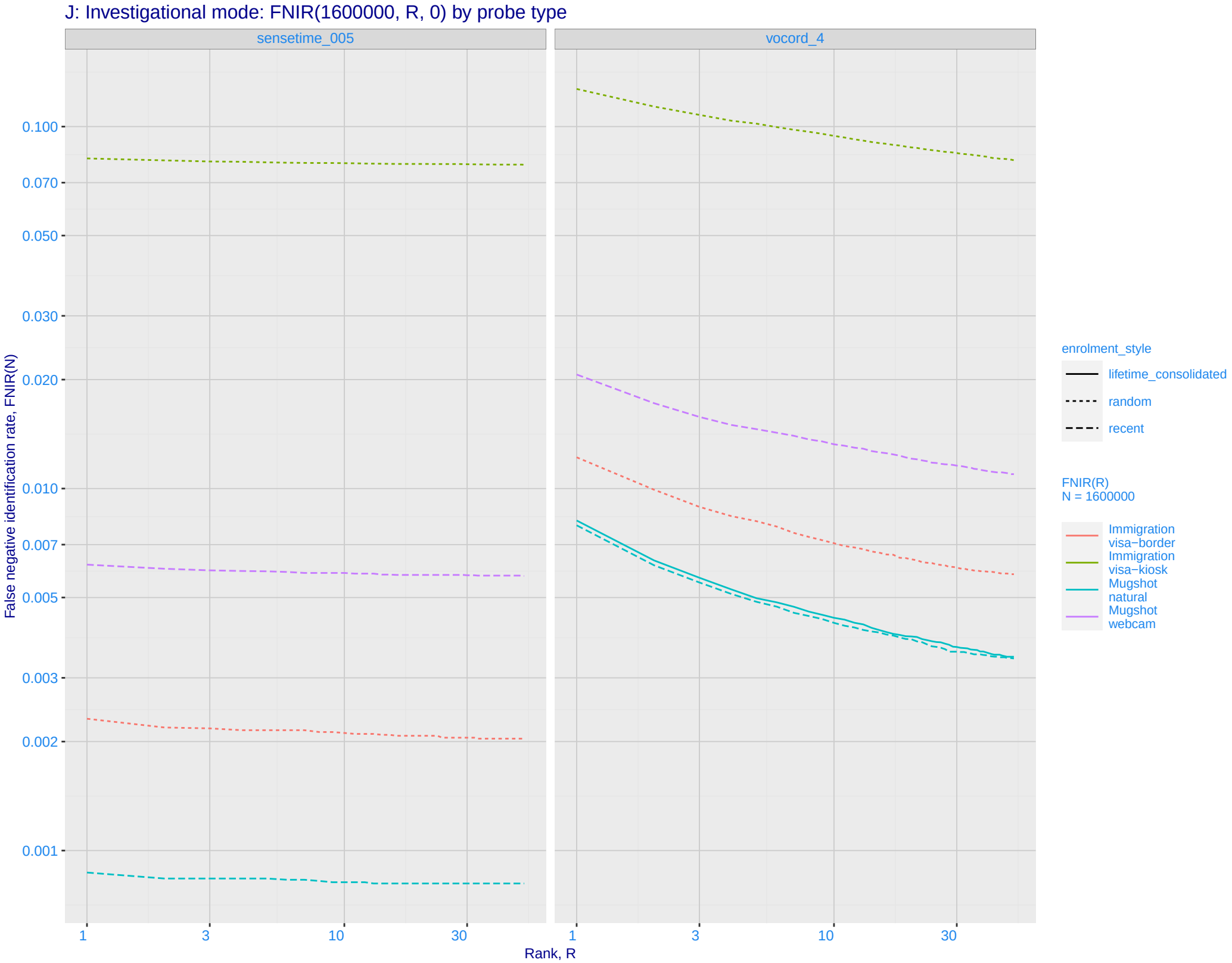
G: FPIR dependence on T by probe type for N = 1600000 subjects



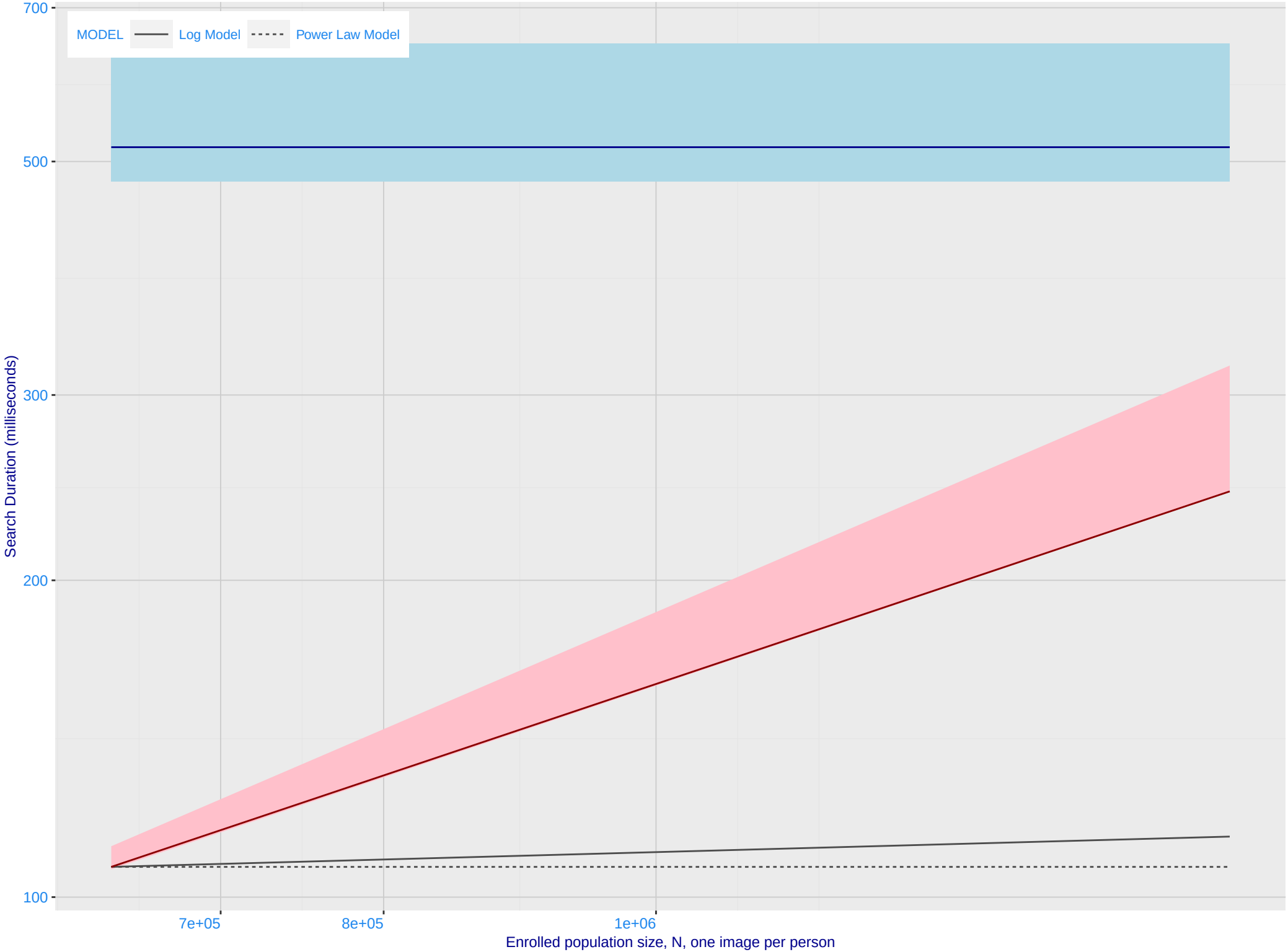
H: DET for Mugshot natural images and various N. Links connect points of equal threshold.

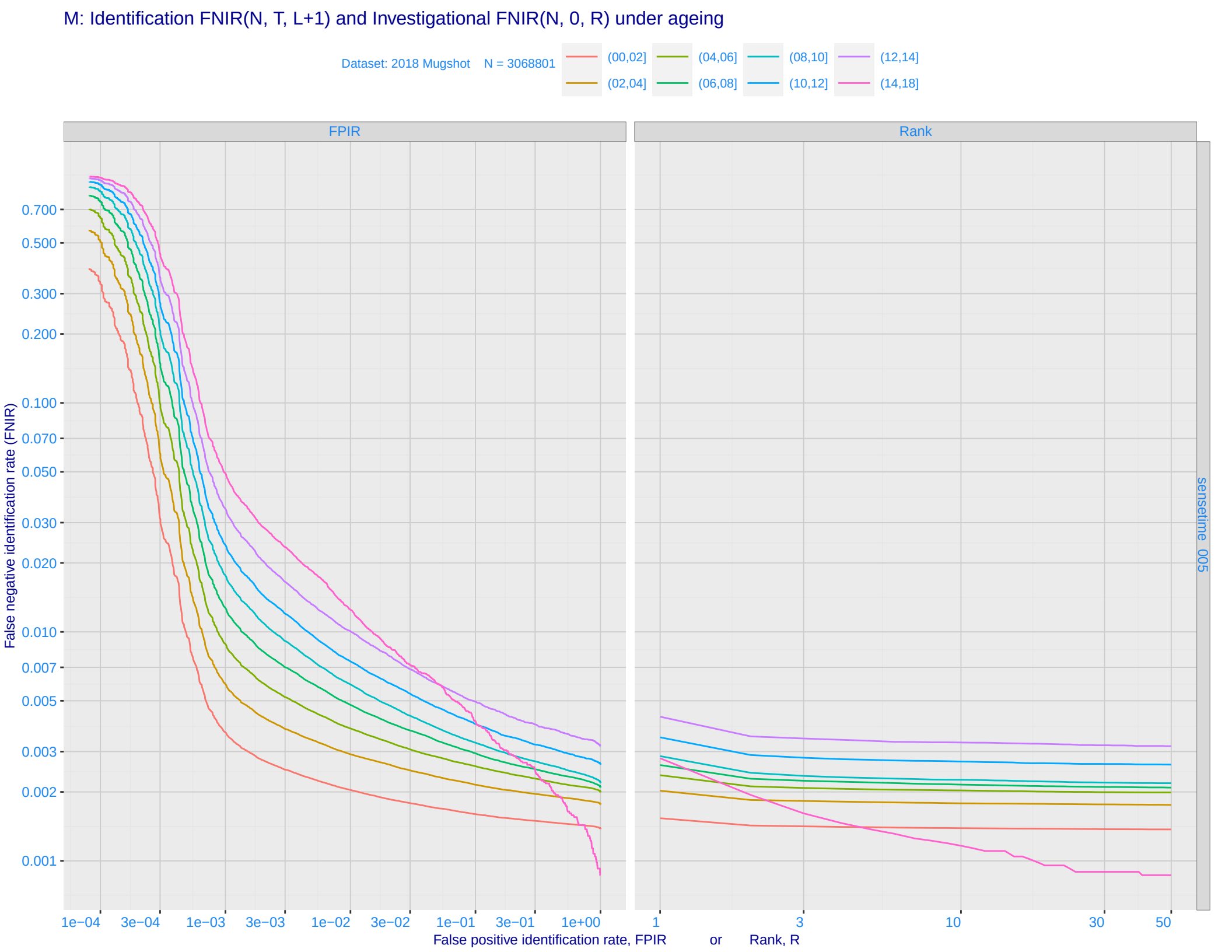



I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005)
Immigration visa−border
Immigration visa−kiosk
Mugshot natural
Mugshot webcam
False negative identification rate, FNIR(N)
0.100
0.070
0.050
0.030
0.020
0.010
0.007
0.005
0.003
0.002
0.001
1e+06
3e+06
1e+07
Enrolled population size, N
enrolment_style
consolidated
random
recent
FNIR@Rank = 1
sensetime_005
vocord_4


J: Investigational mode: FNIR(1600000, R, 0) by probe type
sensetime_005
vocord_4
False negative identification rate, FNIR(N)
0.100
0.070
0.050
0.030
0.020
0.010
0.007
0.005
0.003
0.002
0.001
1
3
10
30
Rank, R
enrolment_style
lifetime_consolidated
random
recent
FNIR(R)
N = 1600000
Immigration visa−border
Immigration visa−kiosk
Mugshot natural
Mugshot webcam

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




M: Identification FNIR(N, T, L+1) and Investigational FNIR(N, 0, R) under ageing
Dataset: 2018 Mugshot N = 3068801
(00,02]
(02,04]
(04,06]
(06,08]
(08,10]
(10,12]
(12,14]
(14,18]
FPIR
Rank
sensetime_005
False negative identification rate (FNIR)
0.700
0.500
0.300
0.200
0.100
0.070
0.050
0.030
0.020
0.010
0.007
0.005
0.003
0.002
0.001
1e−04
3e−04
1e−03
3e−03
1e−02
3e−02
1e−01
3e−01
1e+00
1
3
10
30
50
False positive identification rate, FPIR or Rank, R