A: Datasheet

Algorithm: revealmedia_000

Developer: [**Developer name**]

Submission Date: 2022_02_02

Investigation:

Frontal mugshot ranking 61 (out of 333) −− FNIR(1600000, 0, 1) = 0.0019 vs. lowest 0.0008 from sensetime_007

Mugshot webcam ranking 30 (out of 295) −− FNIR(1600000, 0, 1) = 0.0097 vs. lowest 0.0056 from sensetime_007

Mugshot profile ranking 61 (out of 264) −− FNIR(1600000, 0, 1) = 0.2747 vs. lowest 0.0521 from sensetime_007

Immigration visa−border ranking 24 (out of 221) −− FNIR(1600000, 0, 1) = 0.0022 vs. lowest 0.0008 from sensetime_007

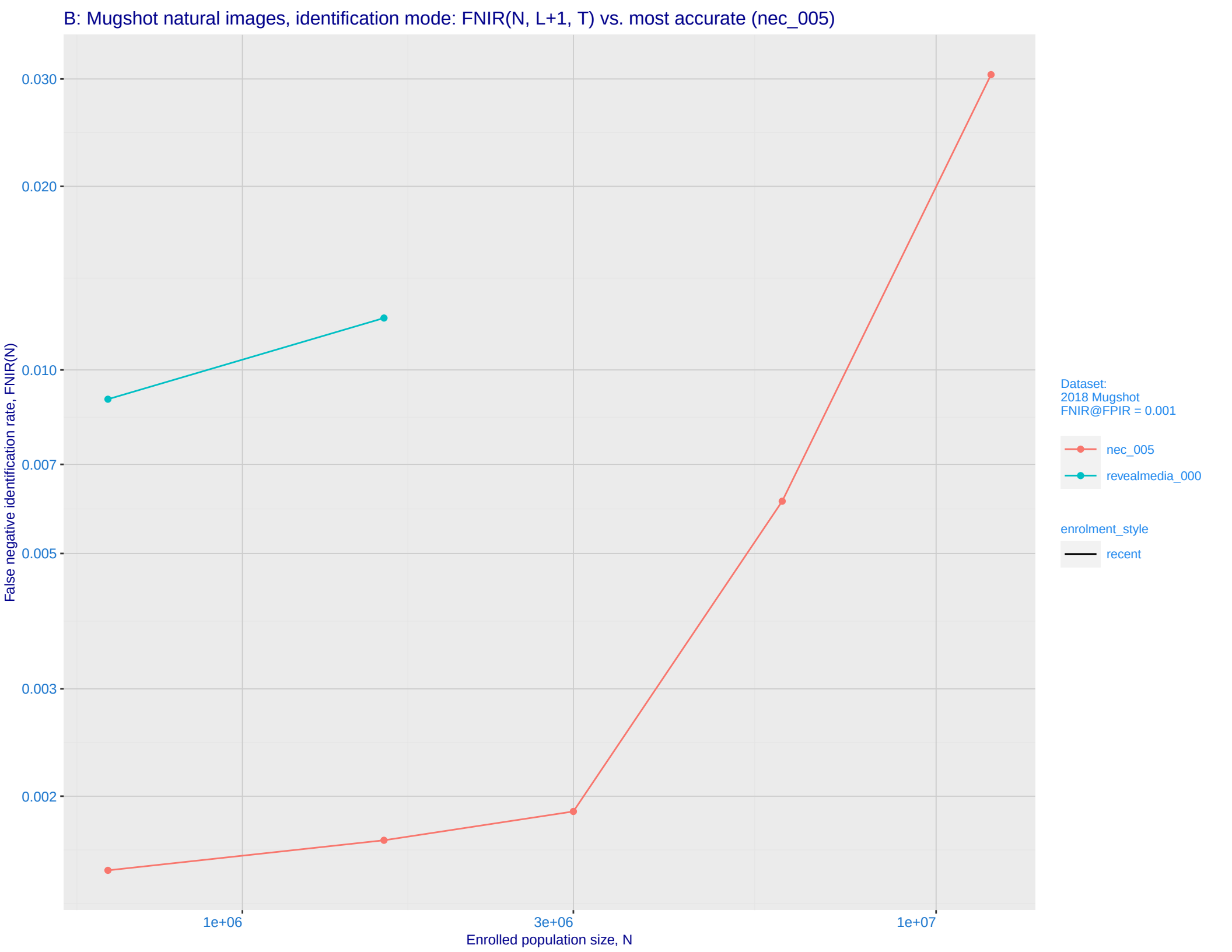
Immigration visa−kiosk ranking 23 (out of 218) −− FNIR(1600000, 0, 1) = 0.0738 vs. lowest 0.0487 from cubox_000

Identification:

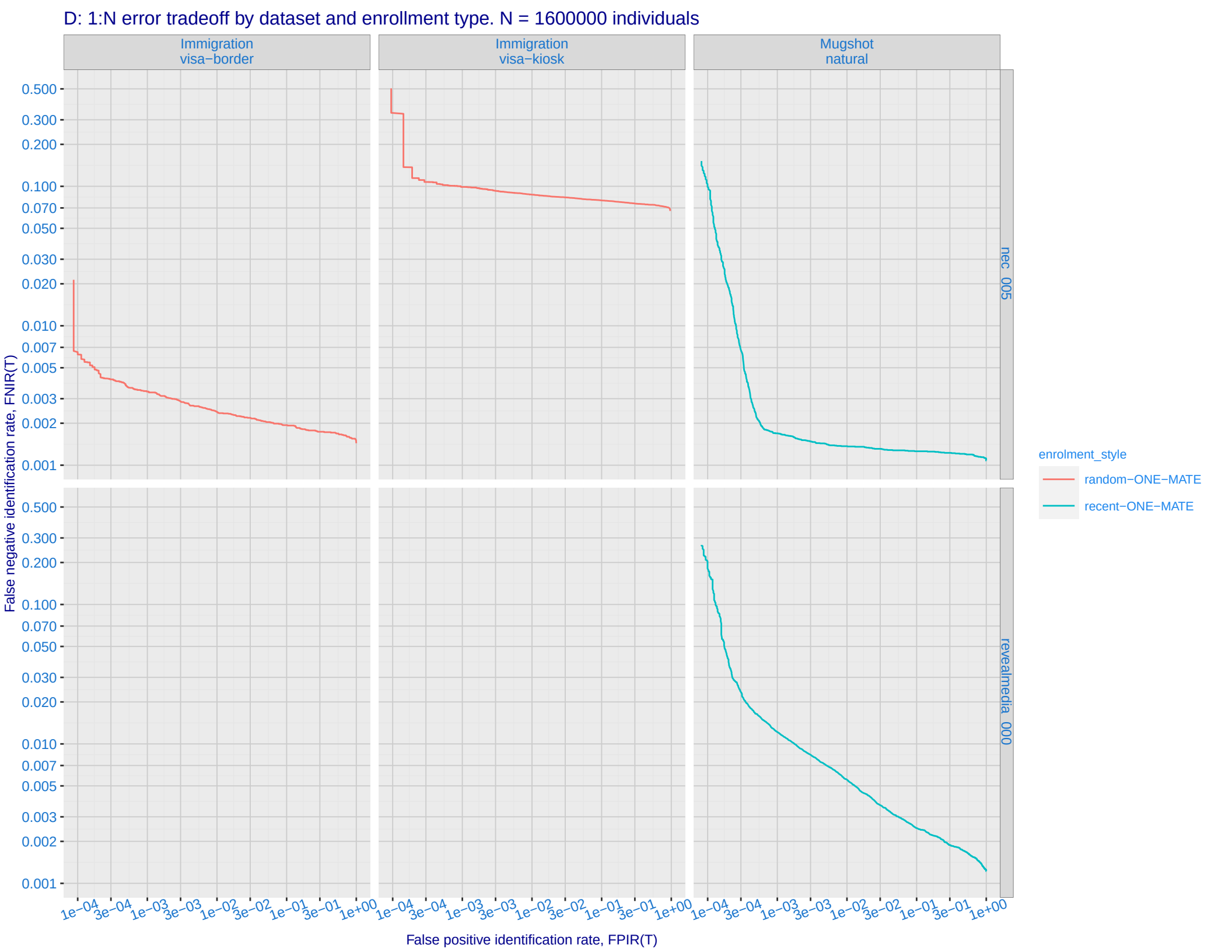
Frontal mugshot ranking 49 (out of 333) −− FNIR(1600000, T, L+1) = 0.0122, FPIR=0.001000 vs. lowest 0.0014 from sensetime_007

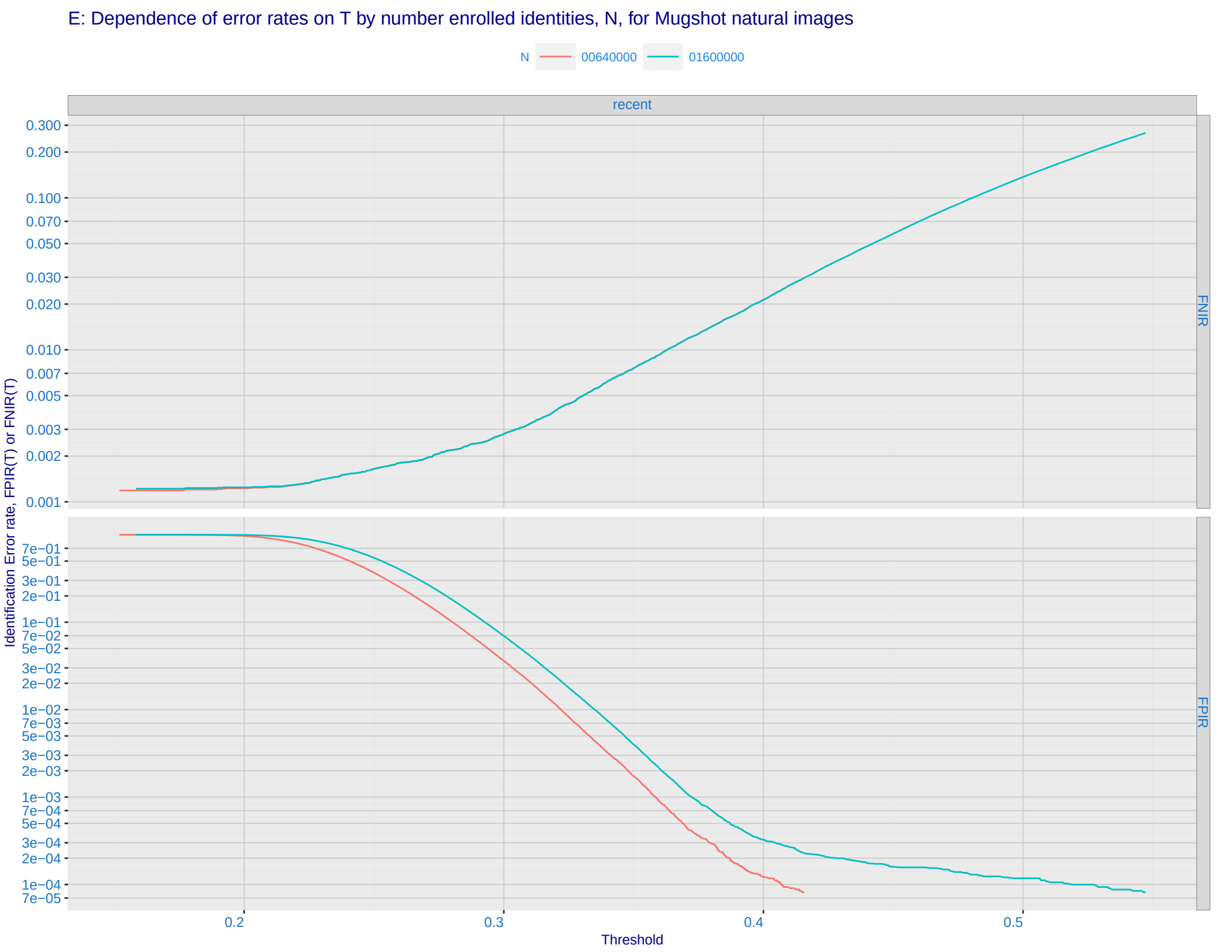
Mugshot webcam ranking 46 (out of 293) −− FNIR(1600000, T, L+1) = 0.0421, FPIR=0.001000 vs. lowest 0.0093 from sensetime_007

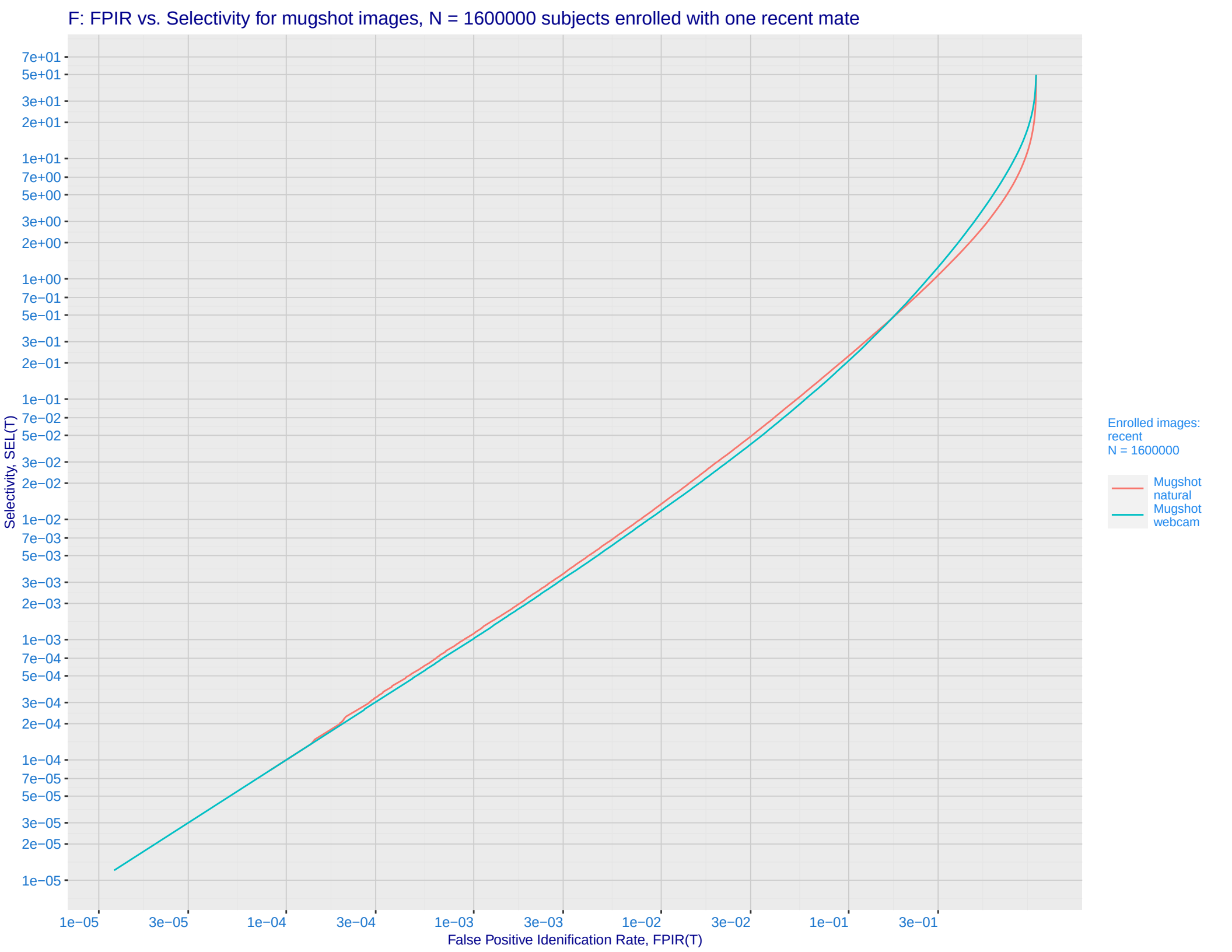
Mugshot profile ranking 35 (out of 263) −− FNIR(1600000, T, L+1) = 0.6816, FPIR=0.001000 vs. lowest 0.1093 from cloudwalk_mt_000

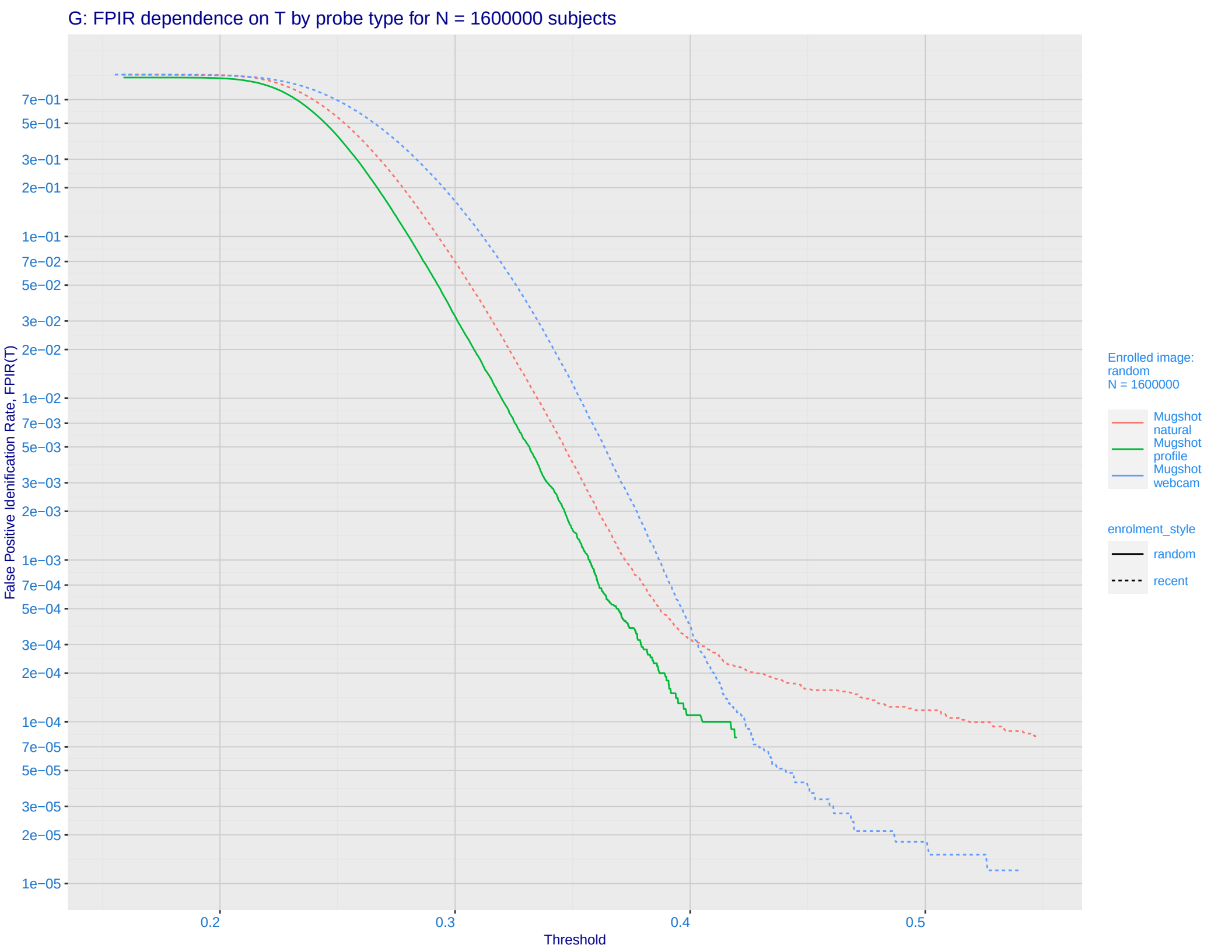

B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (nec_005)
False negative identification rate, FNIR(N)
0.030
0.020
0.010
0.007
0.005
0.003
0.002
1e+06
3e+06
1e+07
Enrolled population size, N
Dataset:
2018 Mugshot
FNIR@FPIR = 0.001
nec_005
revealmedia_000
enrolment_style
recent

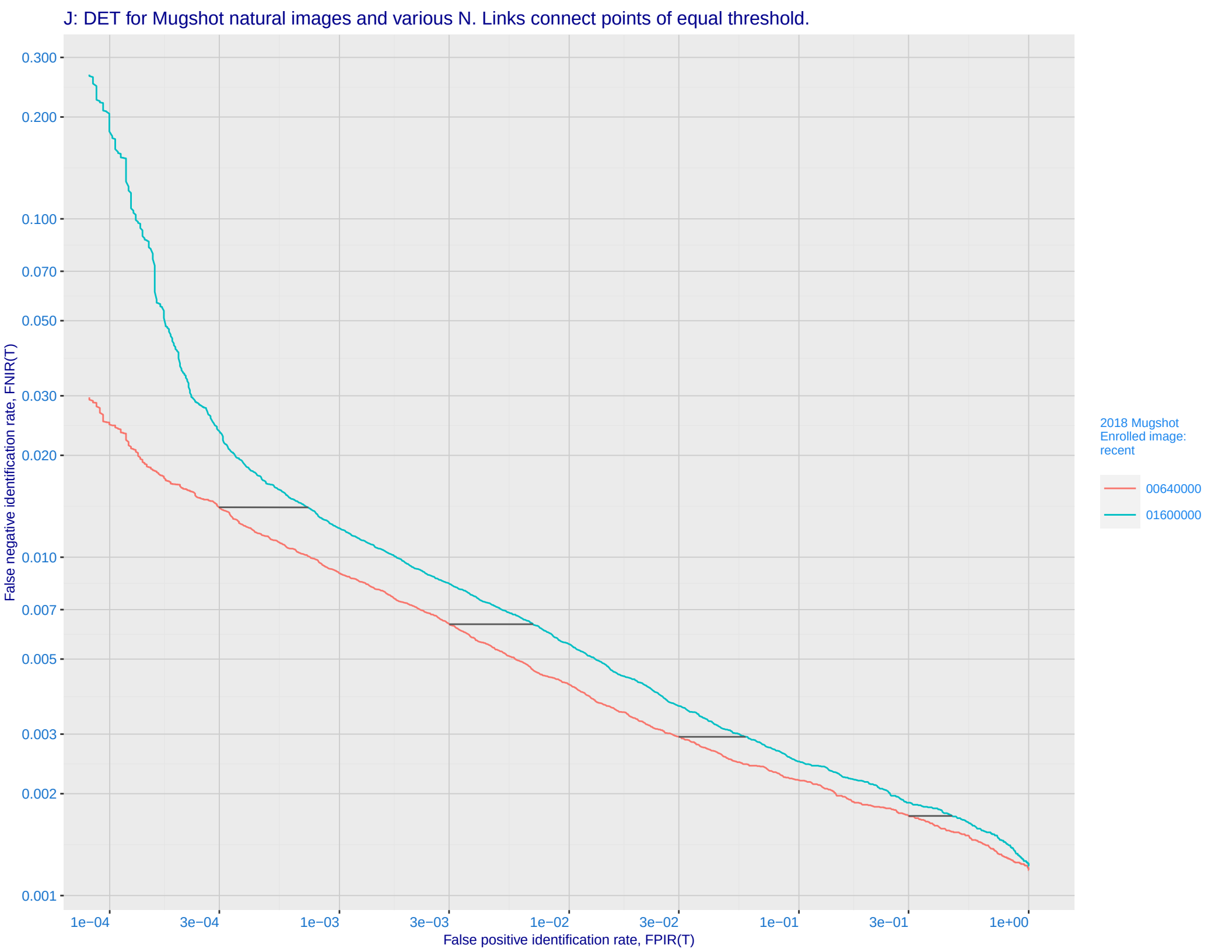
C: Evolution of accuracy for REVEALMEDIA algorithms on three datasets 2018 − present

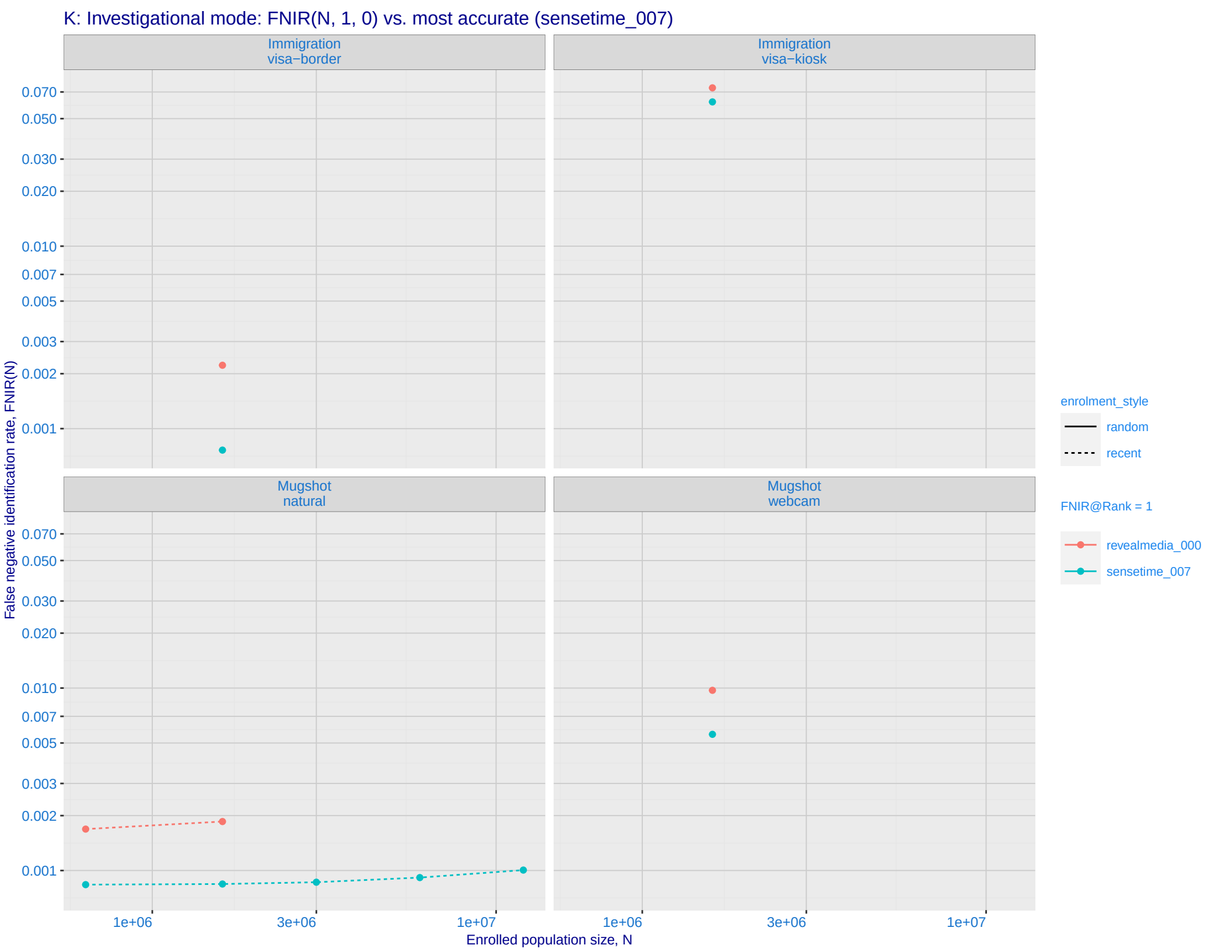

D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals
Immigration visa−border
Immigration visa−kiosk
Mugshot natural
nec_005
revealmedia_000
False negative identification rate, FNIR(T)
0.500
0.300
0.200
0.100
0.070
0.050
0.030
0.020
0.010
0.007
0.005
0.003
0.002
0.001
1e−04
3e−04
1e−03
3e−03
1e−02
3e−02
1e−01
3e−01
1e+00
False positive identification rate, FPIR(T)
enrolment_style
random−ONE−MATE
recent−ONE−MATE

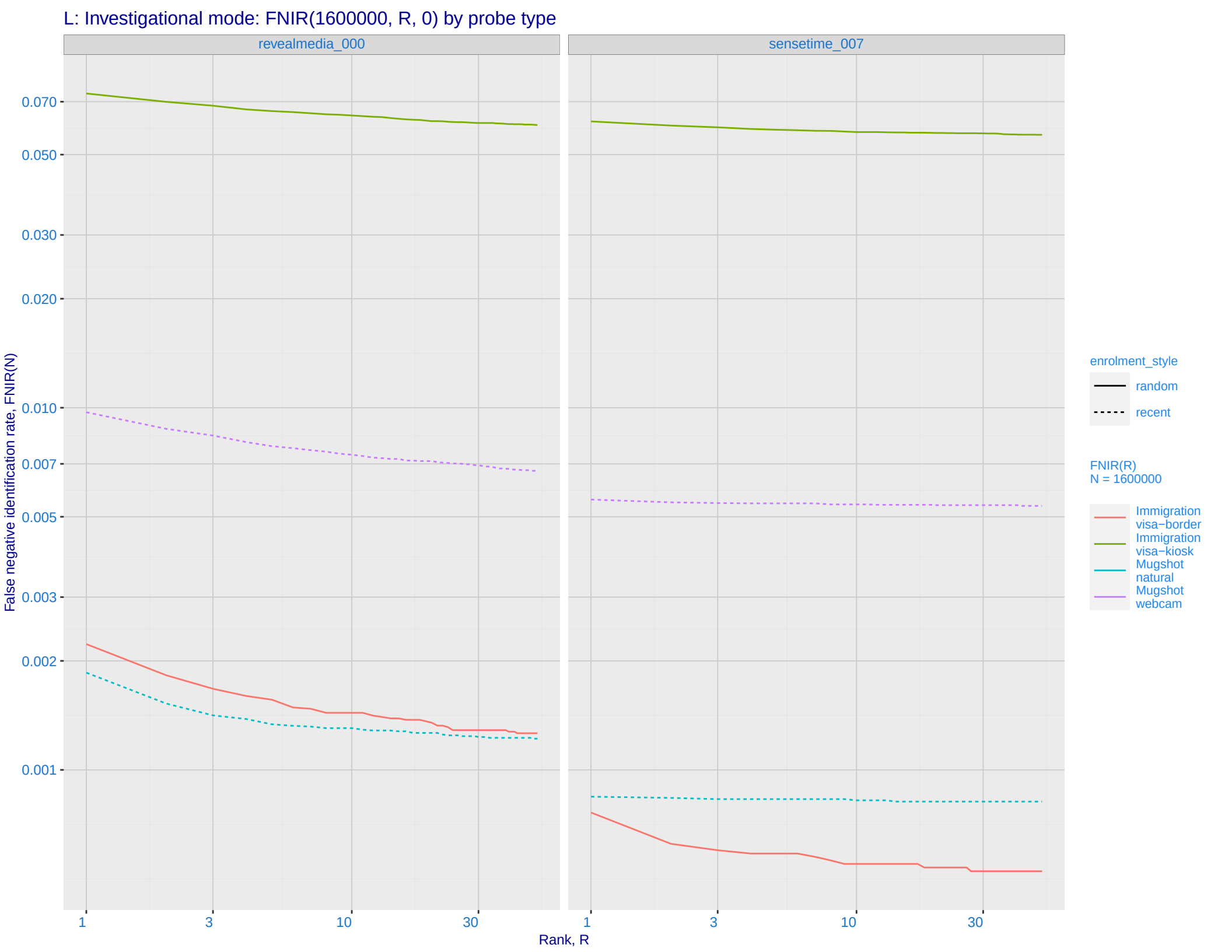

E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images
N
00640000
01600000
recent
FNIR
FPIR
Identification Error rate, FPIR(T) or FNIR(T)
0.300
0.200
0.100
0.070
0.050
0.030
0.020
0.010
0.007
0.005
0.003
0.002
0.001
7e−01
5e−01
3e−01
2e−01
1e−01
7e−02
5e−02
3e−02
2e−02
1e−02
7e−03
5e−03
3e−03
2e−03
1e−03
7e−04
5e−04
3e−04
2e−04
1e−04
7e−05
0.2
0.3
0.4
0.5
Threshold


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate
Selectivity, SEL(T)
7e+01
5e+01
3e+01
2e+01
1e+01
7e+00
5e+00
3e+00
2e+00
1e+00
7e−01
5e−01
3e−01
2e−01
1e−01
7e−02
5e−02
3e−02
2e−02
1e−02
7e−03
5e−03
3e−03
2e−03
1e−03
7e−04
5e−04
3e−04
2e−04
1e−04
7e−05
5e−05
3e−05
2e−05
1e−05
1e−05
3e−05
1e−04
3e−04
1e−03
3e−03
1e−02
3e−02
1e−01
3e−01
False Positive Idenification Rate, FPIR(T)
Enrolled images:
recent
N = 1600000
Mugshot
natural
Mugshot
webcam

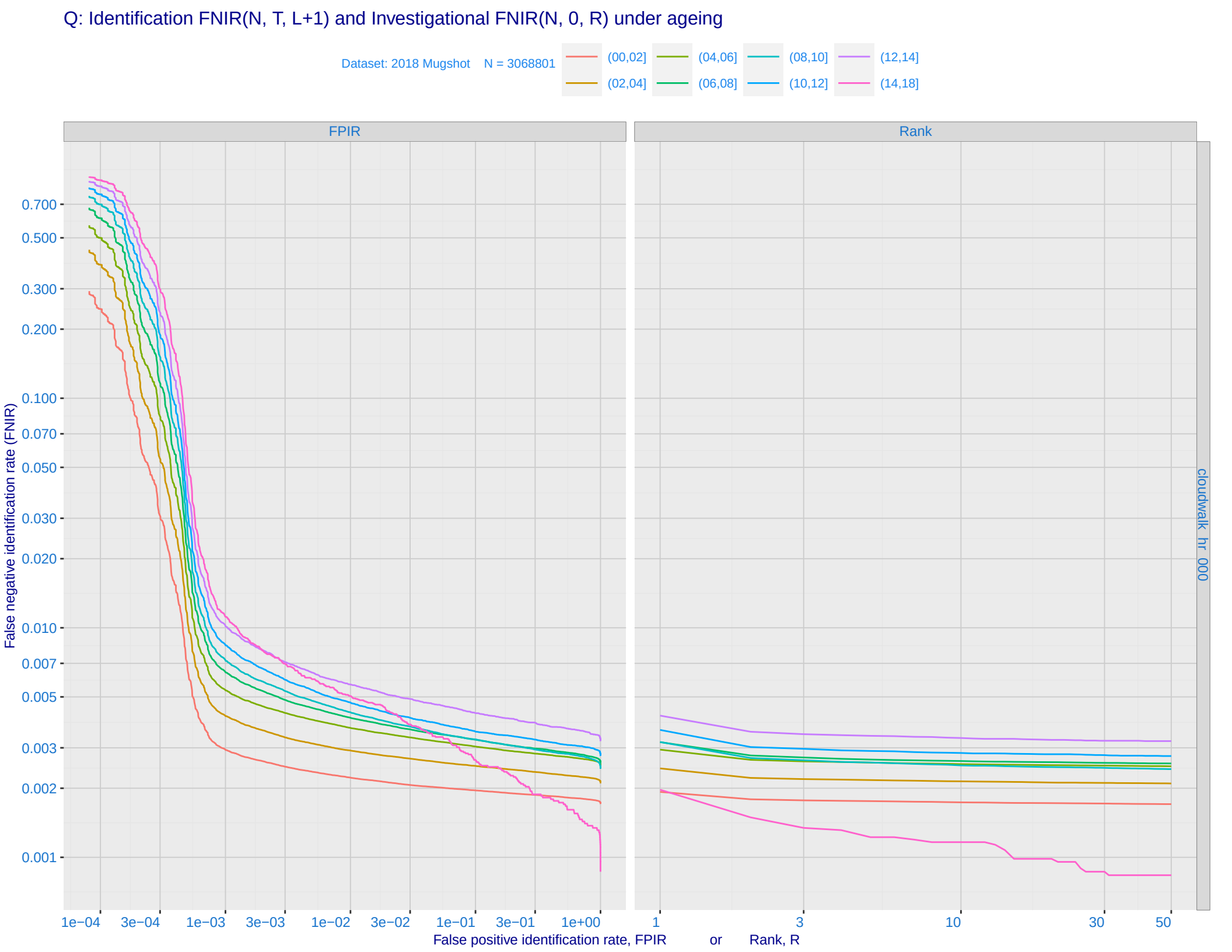

G: FPIR dependence on T by probe type for N = 1600000 subjects
False Positive Idenification Rate, FPIR(T)
7e−01
5e−01
3e−01
2e−01
1e−01
7e−02
5e−02
3e−02
2e−02
1e−02
7e−03
5e−03
3e−03
2e−03
1e−03
7e−04
5e−04
3e−04
2e−04
1e−04
7e−05
5e−05
3e−05
2e−05
1e−05
0.2
0.3
0.4
0.5
Threshold
Enrolled image:
random
N = 1600000
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.
False negative identification rate, FNIR(T)
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
False positive identification rate, FPIR(T)
2018 Mugshot
Enrolled image:
recent
00640000
01600000


K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_007)
Immigration
visa−border
Immigration
visa−kiosk
Mugshot
natural
Mugshot
webcam
False negative identification rate, FNIR(N)
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
random
recent
FNIR@Rank = 1
revealmedia_000
sensetime_007


L: Investigational mode: FNIR(1600000, R, 0) by probe type
revealmedia_000
sensetime_007
False negative identification rate, FNIR(N)
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
random
recent
FNIR(R)
N = 1600000
Immigration visa−border
Immigration visa−kiosk
Mugshot natural
Mugshot webcam

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]
(02,04]
(04,06]
(06,08]
(08,10]
(10,12]
(12,14]
(14,18]
FPIR
Rank
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
cloudwalk hr 000