A: Datasheet

Algorithm: allgovision_002

Developer: AllGoVision

Submission Date: 2023_03_13

Template size: 2048 bytes

Template time (2.5 percentile): 709 msec

Template time (median): 711 msec

Template time (97.5 percentile): 721 msec

Investigation:

Frontal mugshot ranking 215 (out of 399) −− FNIR(1600000, 0, 1) = 0.0067 vs. lowest 0.0008 from intema_001

Mugshot webcam ranking 209 (out of 361) −− FNIR(1600000, 0, 1) = 0.0234 vs. lowest 0.0054 from sensetime_009

Mugshot profile ranking 177 (out of 330) −− FNIR(1600000, 0, 1) = 0.5848 vs. lowest 0.0517 from sensetime_009

Immigration visa−border ranking 168 (out of 288) −− FNIR(1600000, 0, 1) = 0.0083 vs. lowest 0.0006 from cloudwalk_mt_002

Immigration visa−kiosk ranking 160 (out of 233) −− FNIR(1600000, 0, 1) = 0.1220 vs. lowest 0.0387 from cloudwalk_mt_002

Identification:

Frontal mugshot ranking 226 (out of 399) −− FNIR(1600000, T, L+1) = 0.0675, FPIR=0.001000 vs. lowest 0.0011 from idemia_010

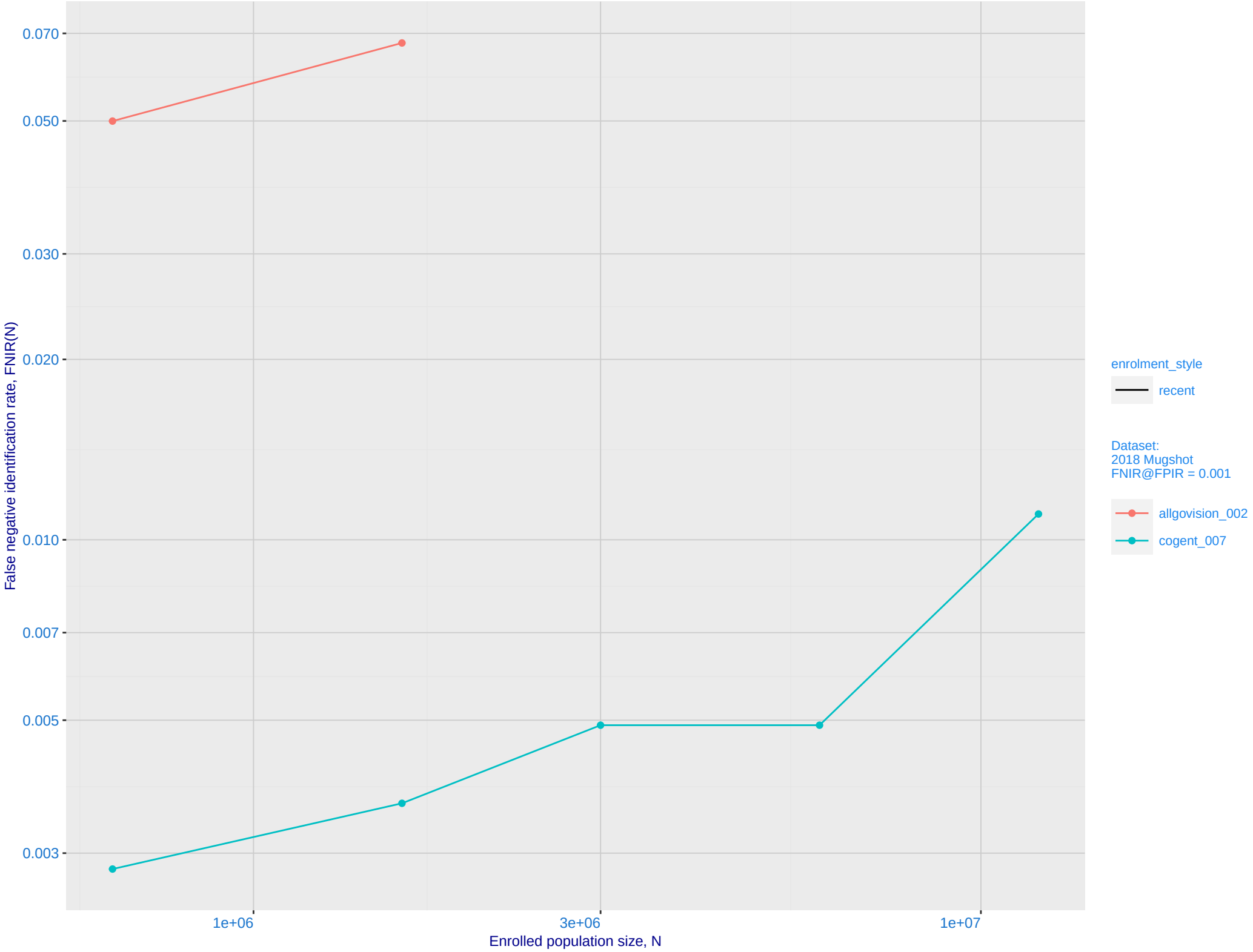
Mugshot webcam ranking 306 (out of 359) −− FNIR(1600000, T, L+1) = 0.5182, FPIR=0.001000 vs. lowest 0.0072 from sensetime_009

Mugshot profile ranking 102 (out of 329) −− FNIR(1600000, T, L+1) = 0.9504, FPIR=0.001000 vs. lowest 0.0634 from cloudwalk_mt_002

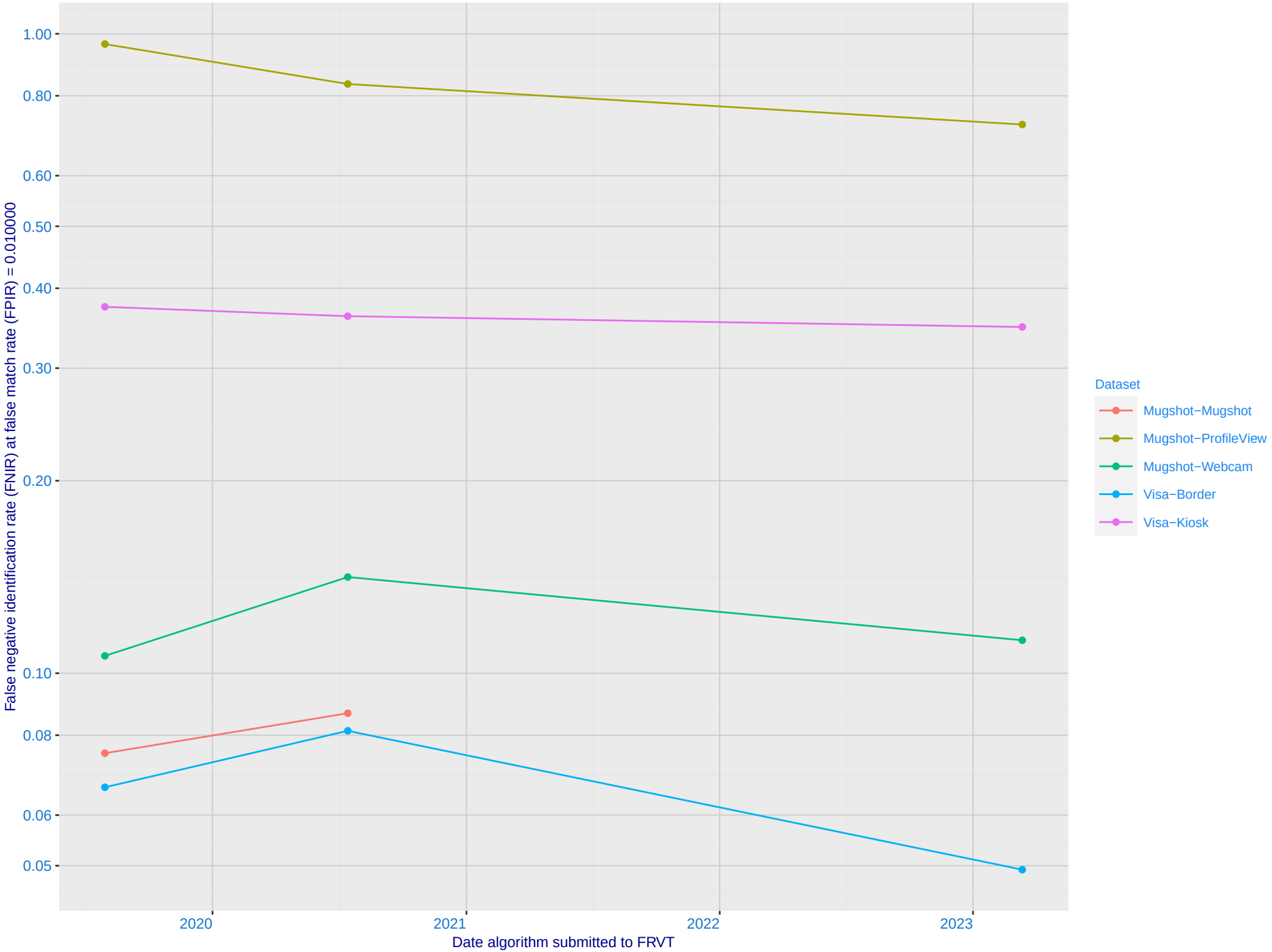
Immigration visa−border ranking 213 (out of 287) −− FNIR(1600000, T, L+1) = 0.2323, FPIR=0.001000 vs. lowest 0.0010 from cloudwalk_mt_002

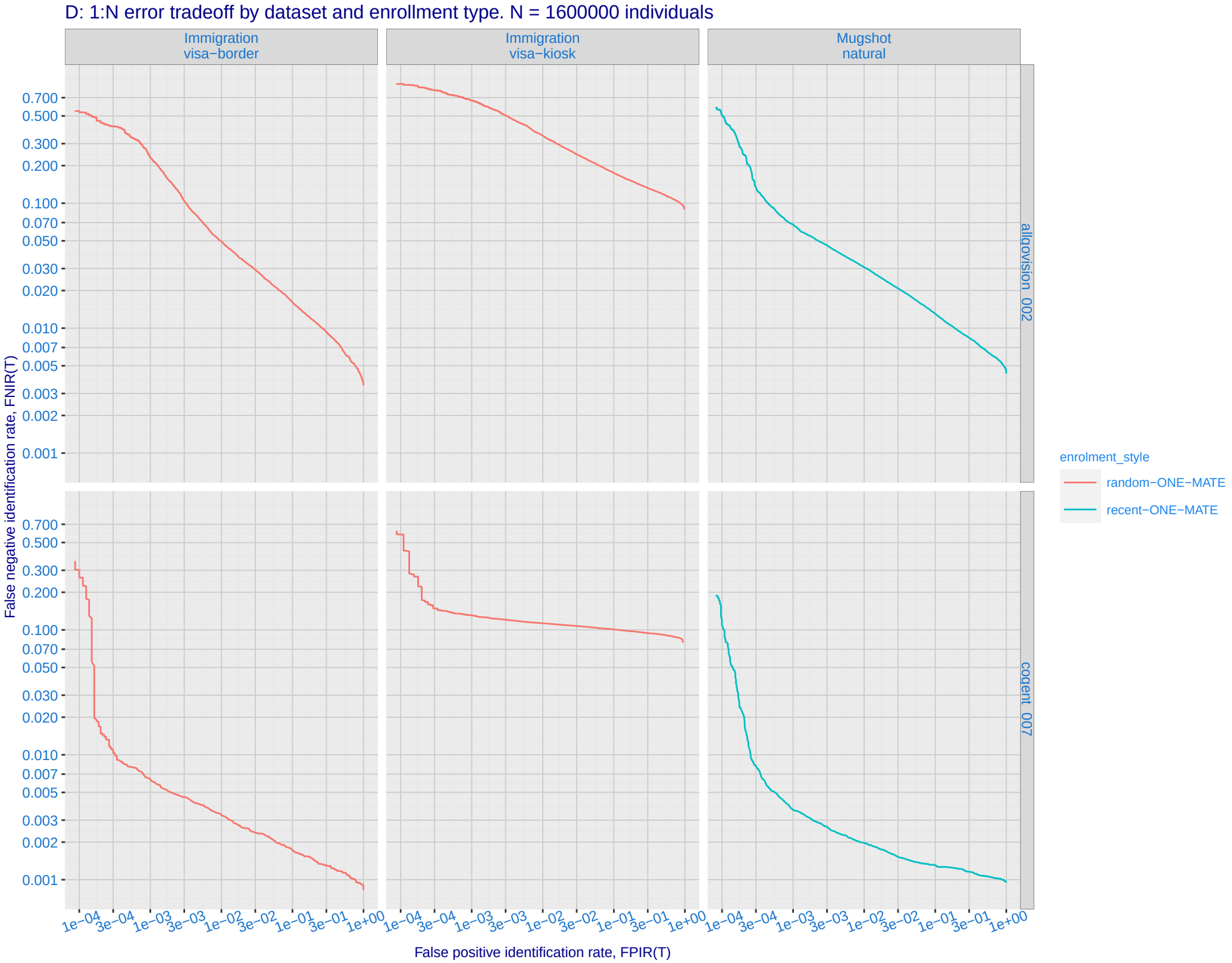
Immigration visa−kiosk ranking 170 (out of 233) −− FNIR(1600000, T, L+1) = 0.6656, FPIR=0.001000 vs. lowest 0.0517 from cloudwalk_mt_002

B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (cogent_007)

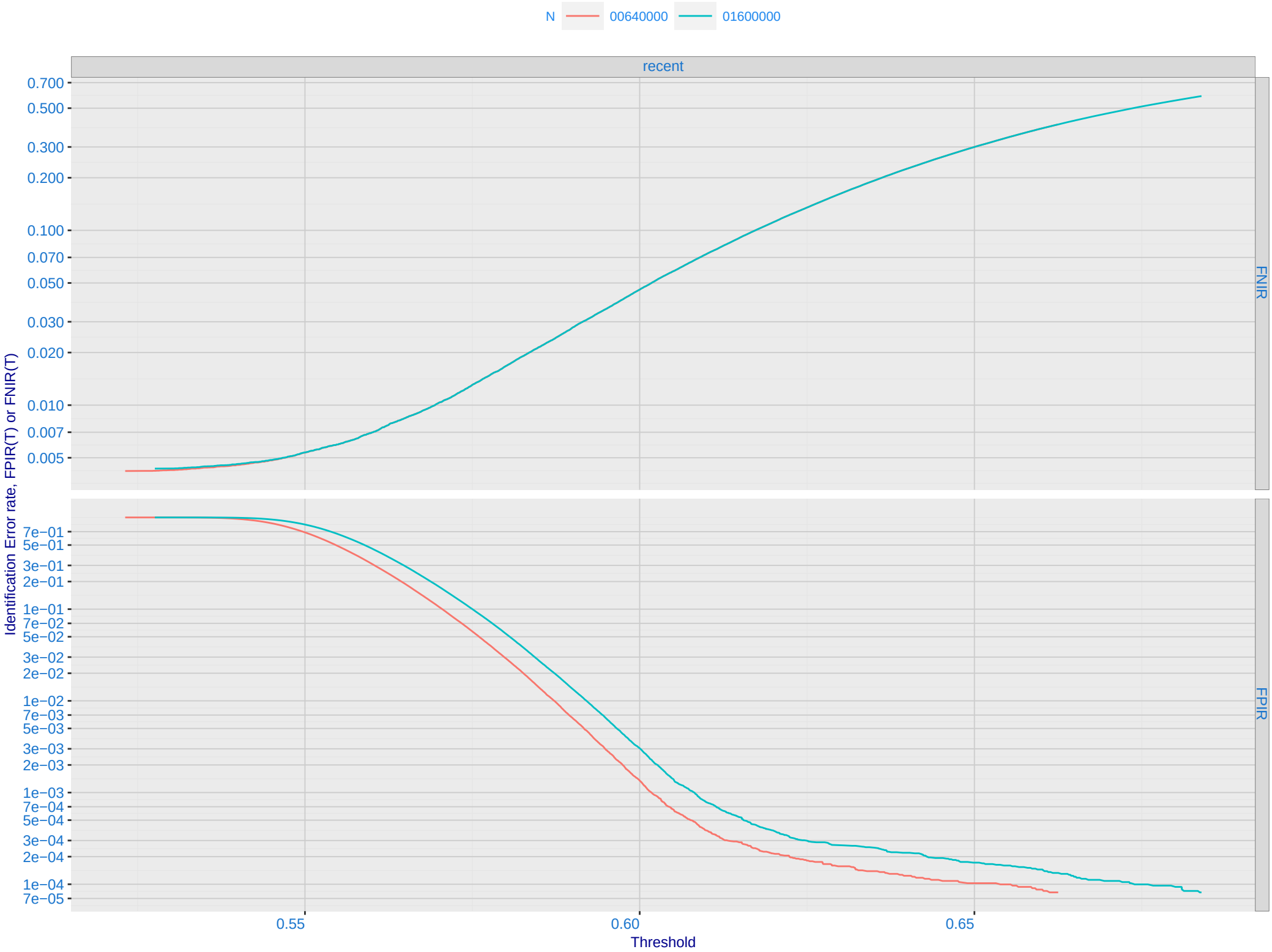


C: Evolution of accuracy for ALLGOVISION algorithms on three datasets 2018 − present

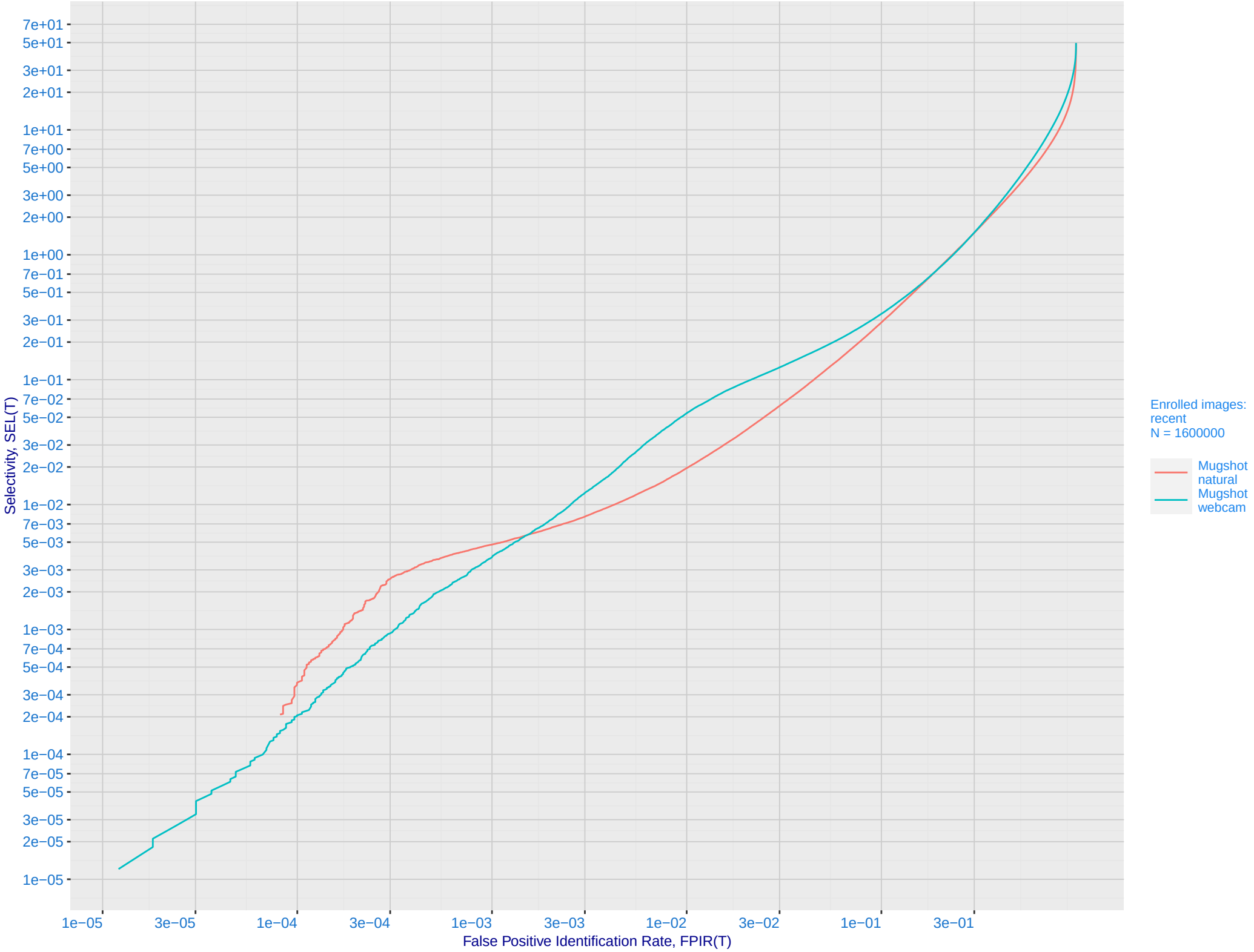


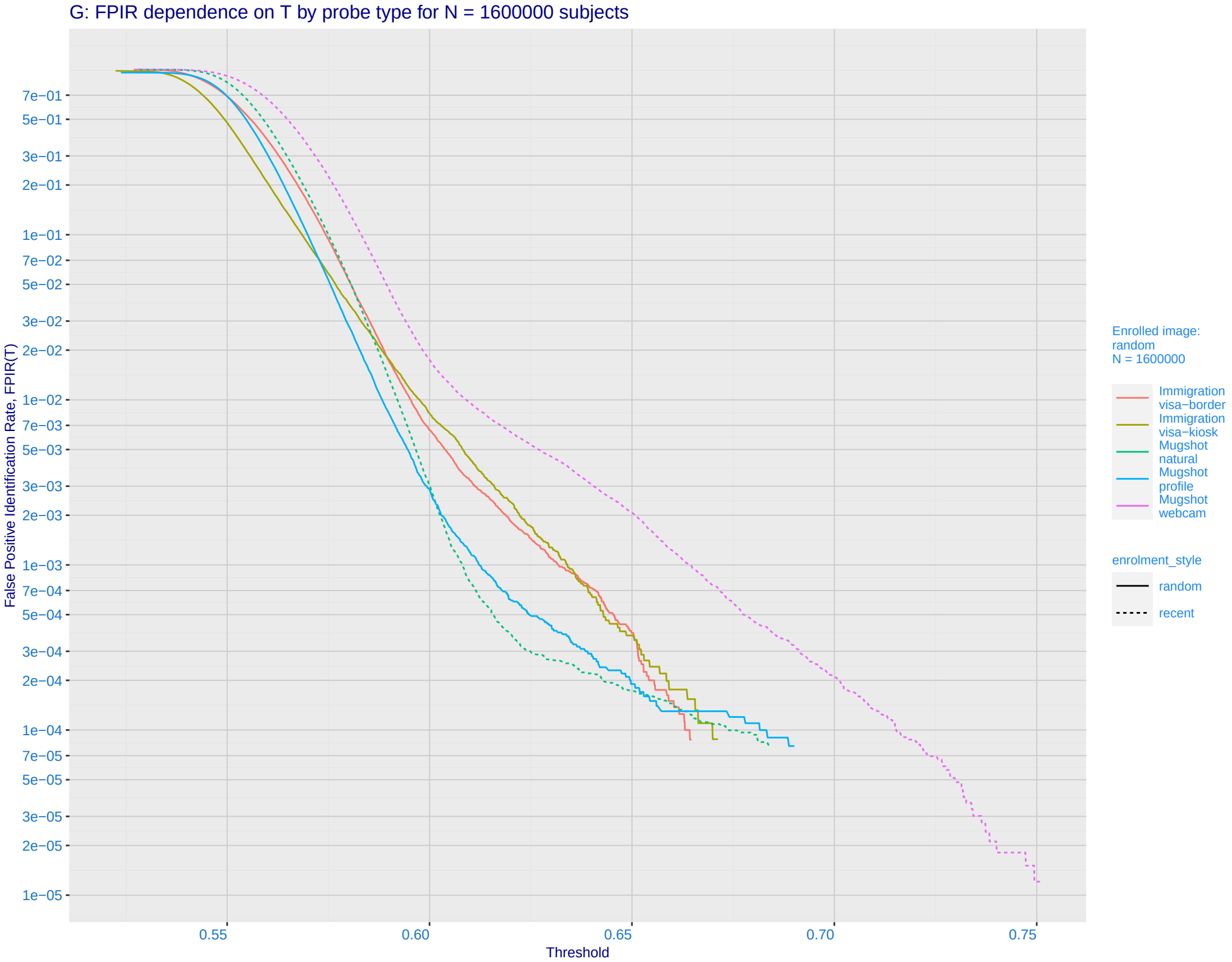

D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals
Immigration visa−border
Immigration visa−kiosk
Mugshot natural
allgovision_002
cogent_007
False negative identification rate, FNIR(T)
False positive identification rate, FPIR(T)
0.700
0.500
0.300
0.200
0.100
0.070
0.050
0.030
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
random−ONE−MATE
recent−ONE−MATE

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

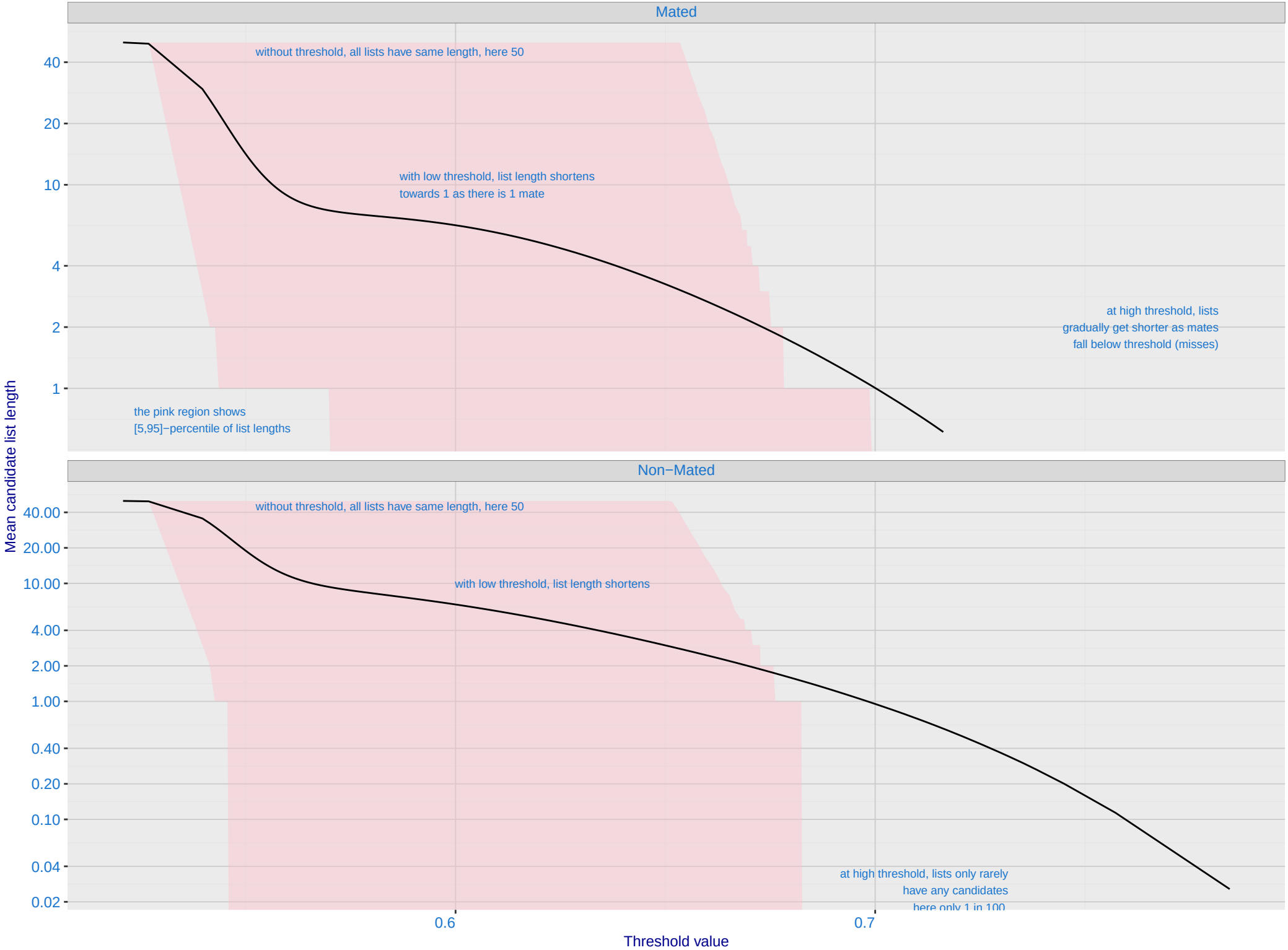


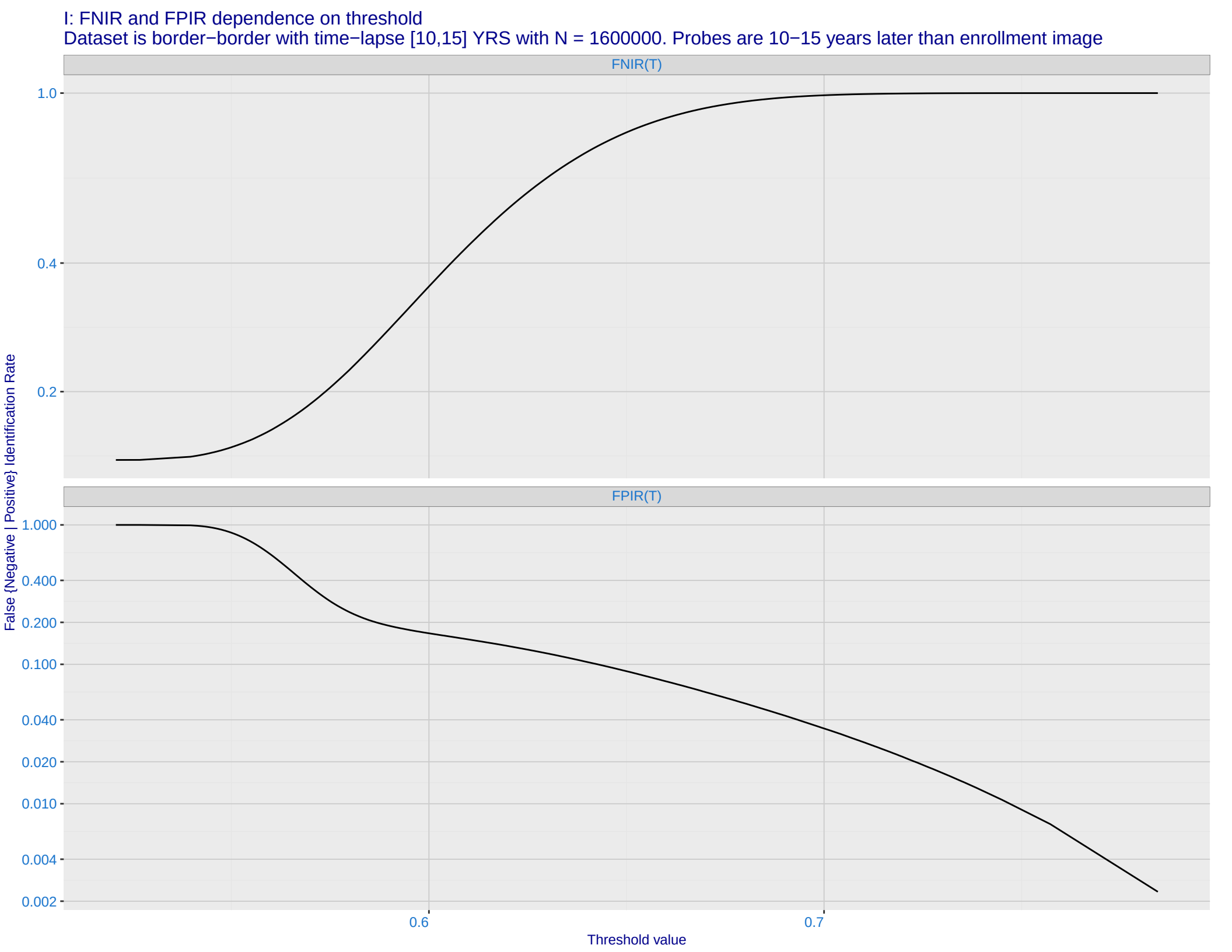
F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate



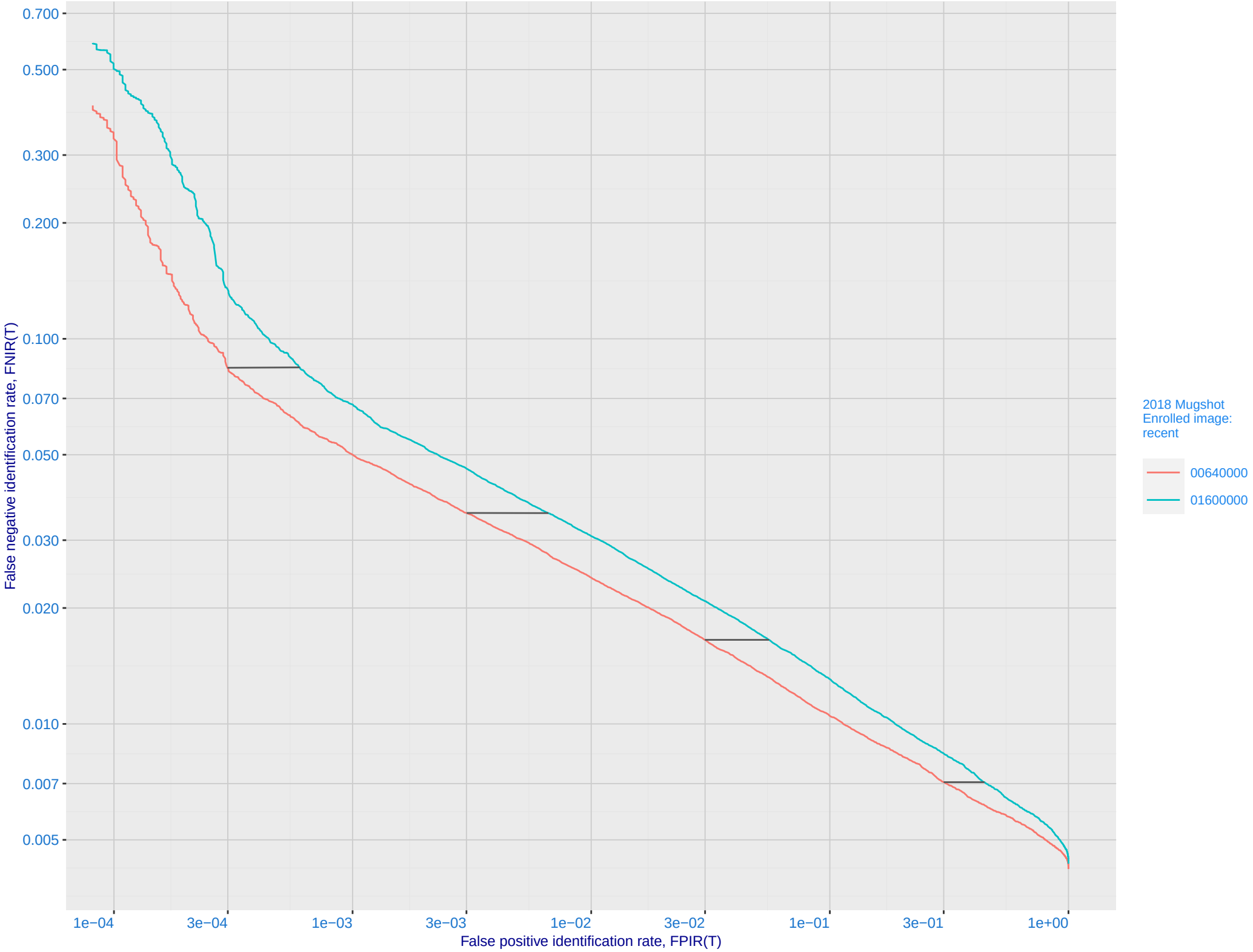

G: FPIR dependence on T by probe type for N = 1600000 subjects
False Positive Identification Rate, FPIR(T)
7e−01
5e−01
3e−01
2e−01
1e−01
7e−02
5e−02
3e−02
2e−02
1e−02
7e−03
5e−03
3e−03
2e−03
1e−03
7e−04
5e−04
3e−04
2e−04
1e−04
7e−05
5e−05
3e−05
2e−05
1e−05
0.55
0.60
0.65
0.70
0.75
Threshold
Enrolled image:
random
N = 1600000
Immigration visa−border
Immigration visa−kiosk
Mugshot natural
Mugshot profile
Mugshot webcam
enrolment_style
random
recent

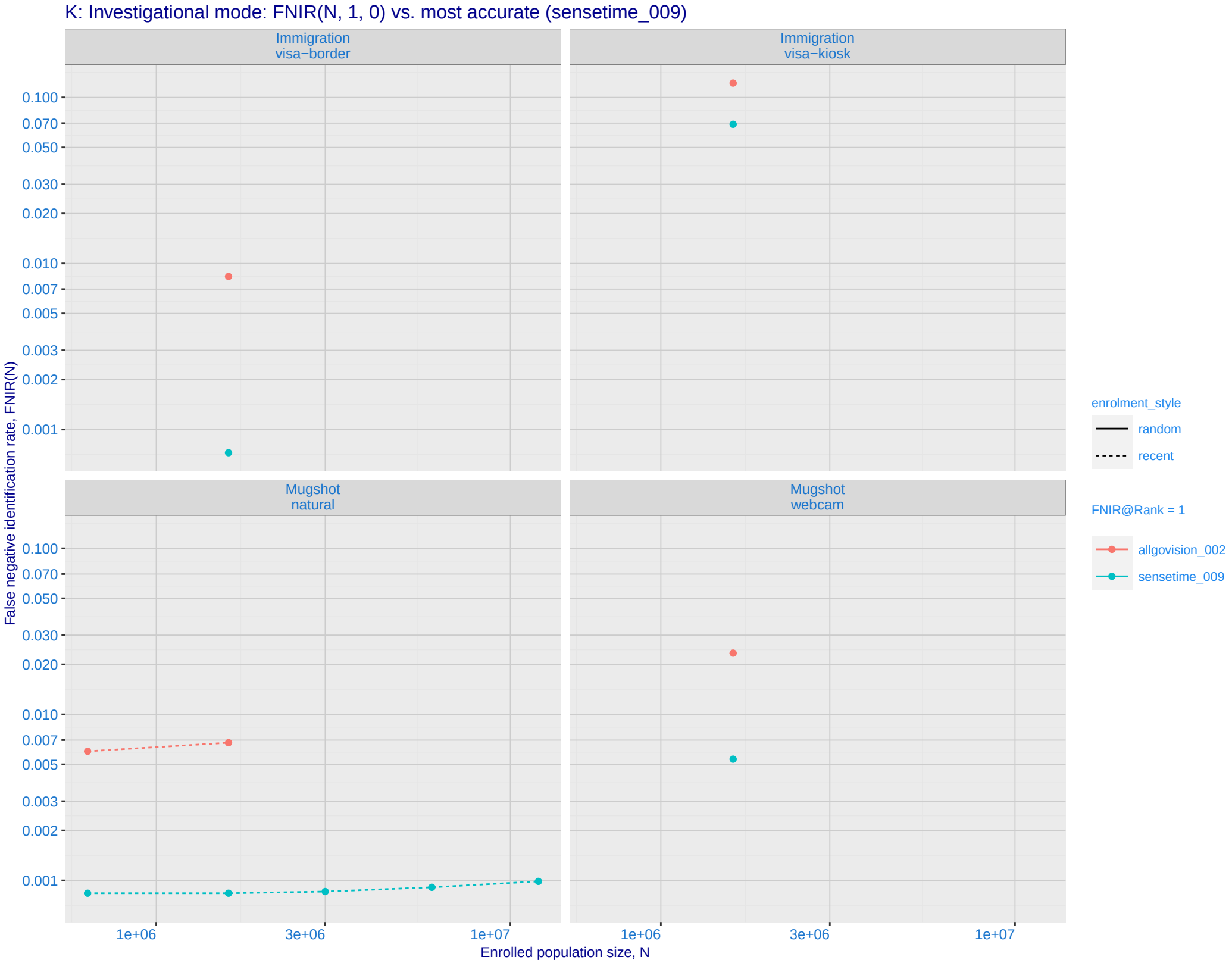
H: Reduced length candidate lists for human review
Dataset is border−border with time−lapse [10,15] YRS with N = 1600000. Probes are 10−15 years later than enrollment image

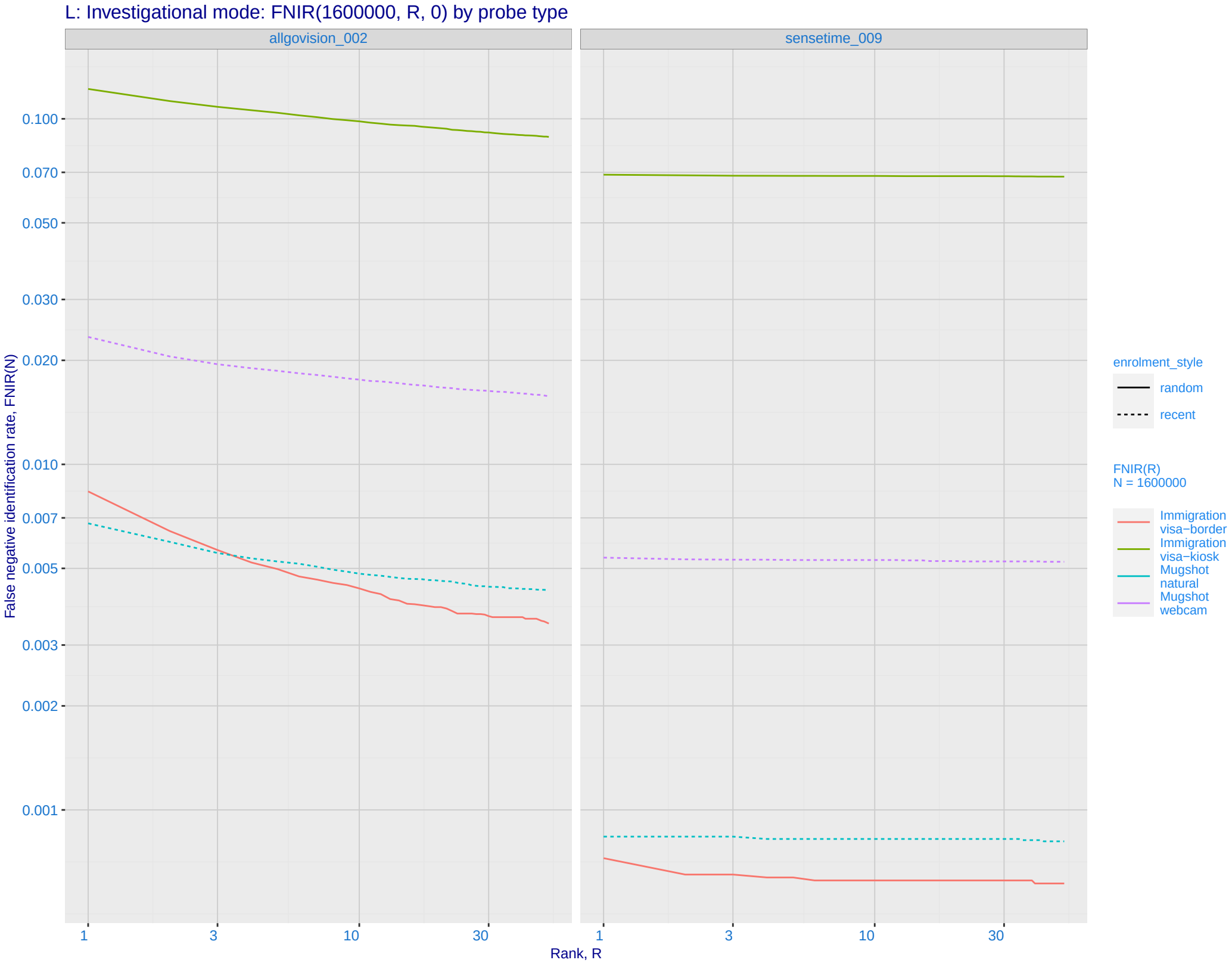



I: FNIR and FPIR dependence on threshold
Dataset is border−border with time−lapse [10,15] YRS with N = 1600000. Probes are 10−15 years later than enrollment image
FNIR(T)
1.0
0.4
0.2
FPIR(T)
1.000
0.400
0.200
0.100
0.040
0.020
0.010
0.004
0.002
False {Negative | Positive} Identification Rate
0.6
0.7
Threshold value

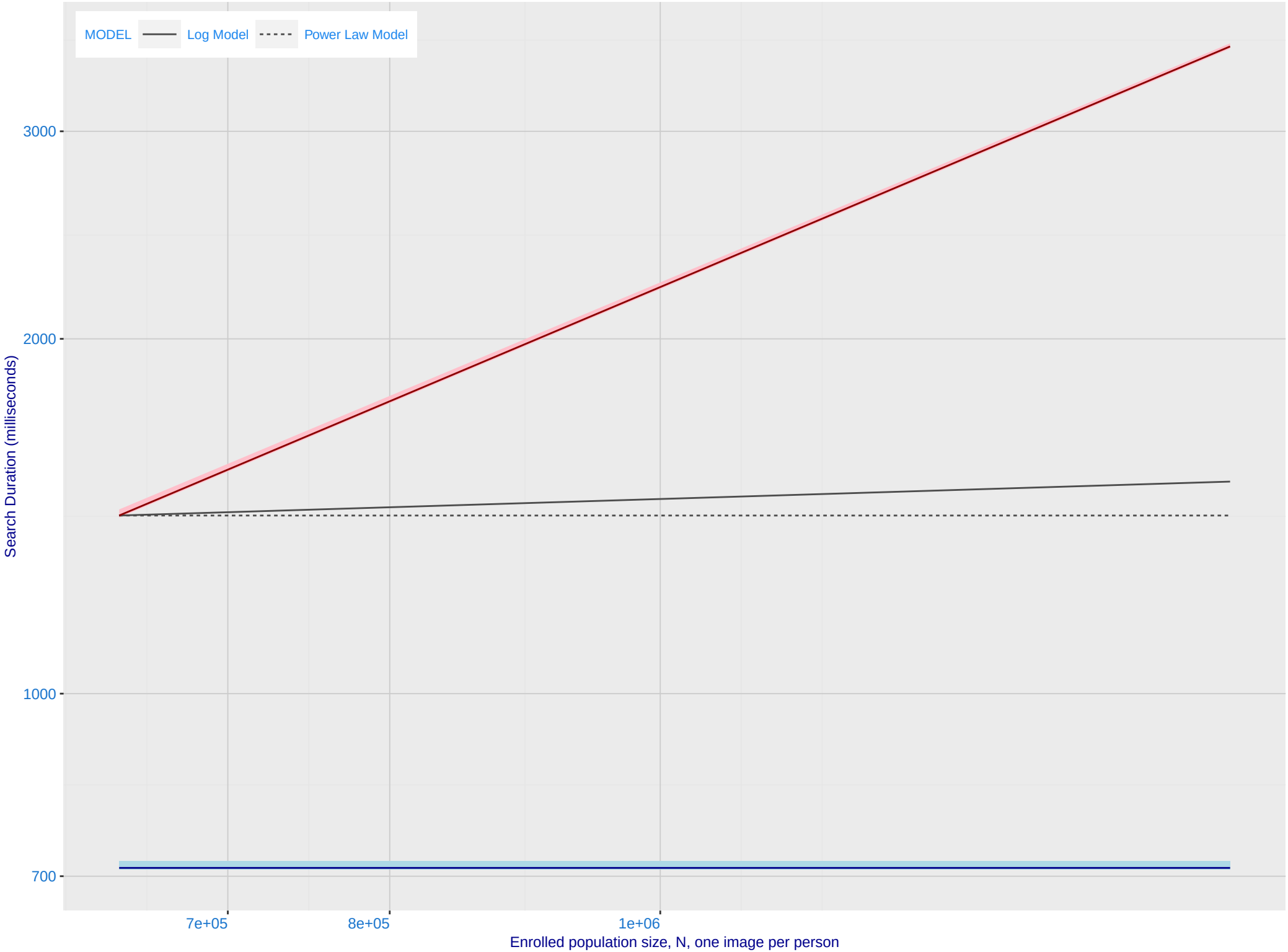
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.



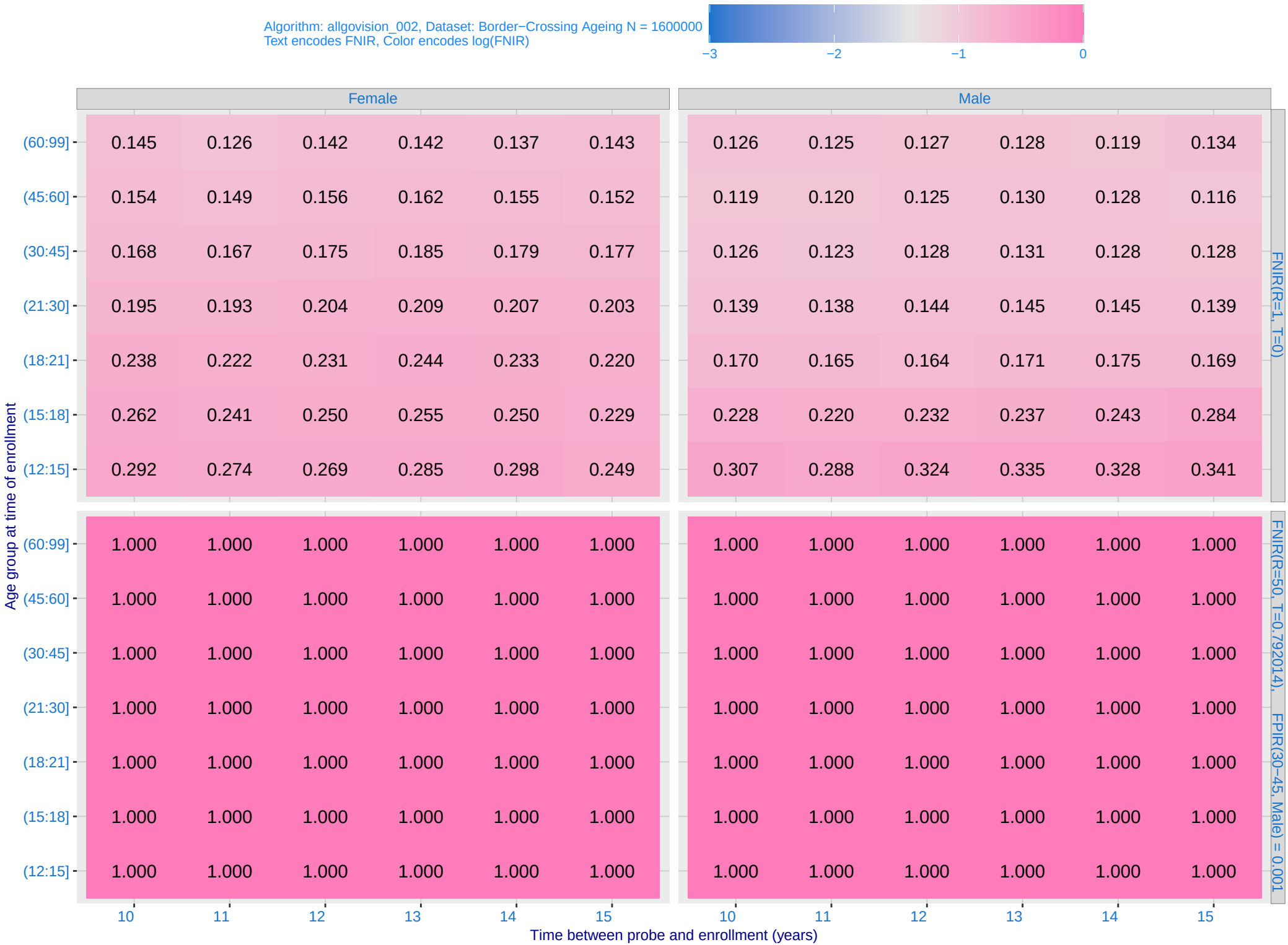

K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_009)
Immigration visa−border
Immigration visa−kiosk
Mugshot natural
Mugshot webcam
False negative identification rate, FNIR(N)
0.100
0.070
0.050
0.030
0.020
0.010
0.007
0.005
0.003
0.002
0.001
1e+06
3e+06
1e+07
Enrolled population size, N
enrolment_style
random
recent
FNIR@Rank = 1
allgovision_002
sensetime_009


L: Investigational mode: FNIR(1600000, R, 0) by probe type
allgovision_002
sensetime_009
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
random
recent
FNIR(R)
N = 1600000
Immigration visa−border
Immigration visa−kiosk
Mugshot natural
Mugshot webcam

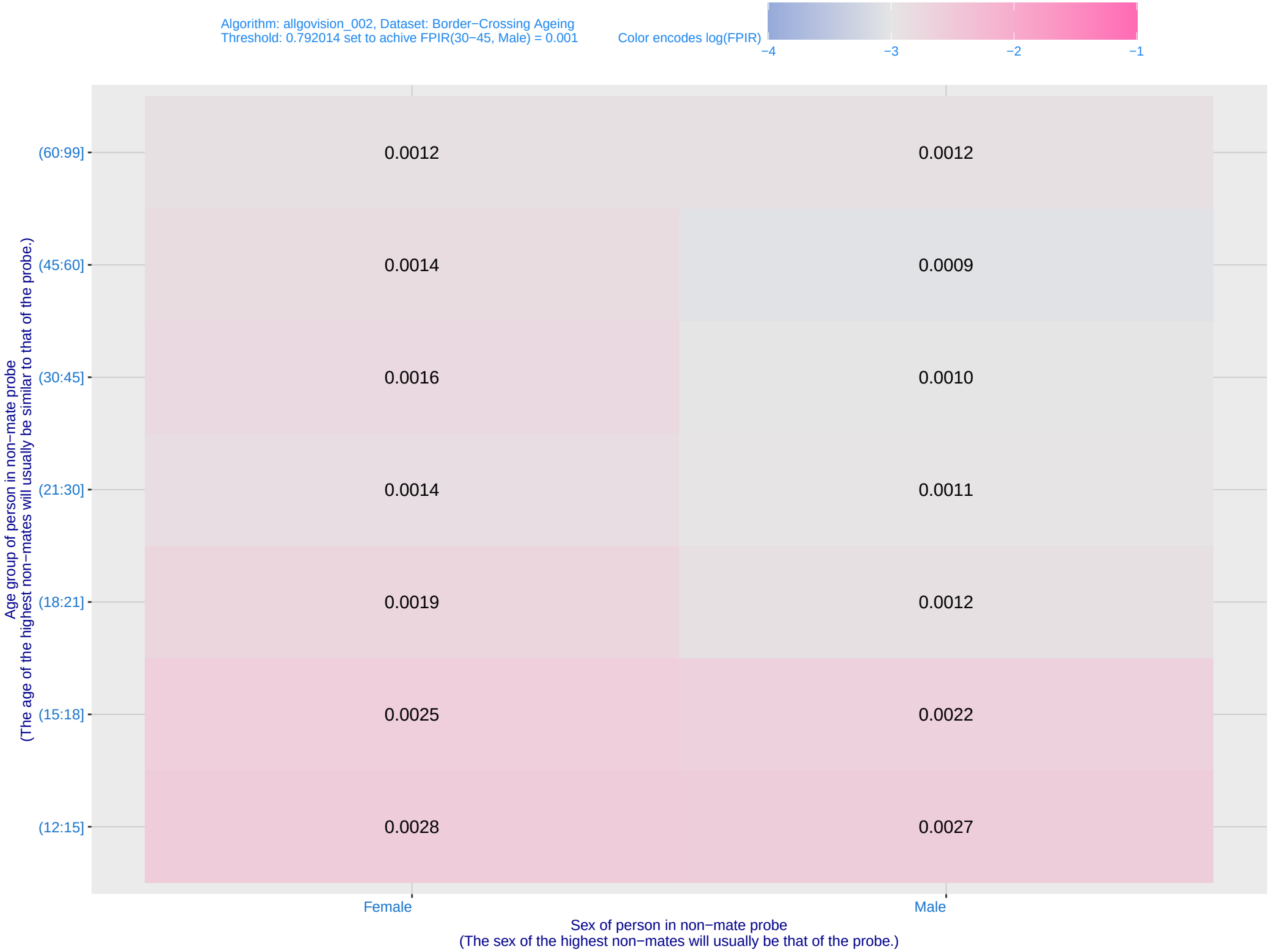
M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements.
The template generation time is independent of N. The log and power−law models are fit to the first two (N,T) observations

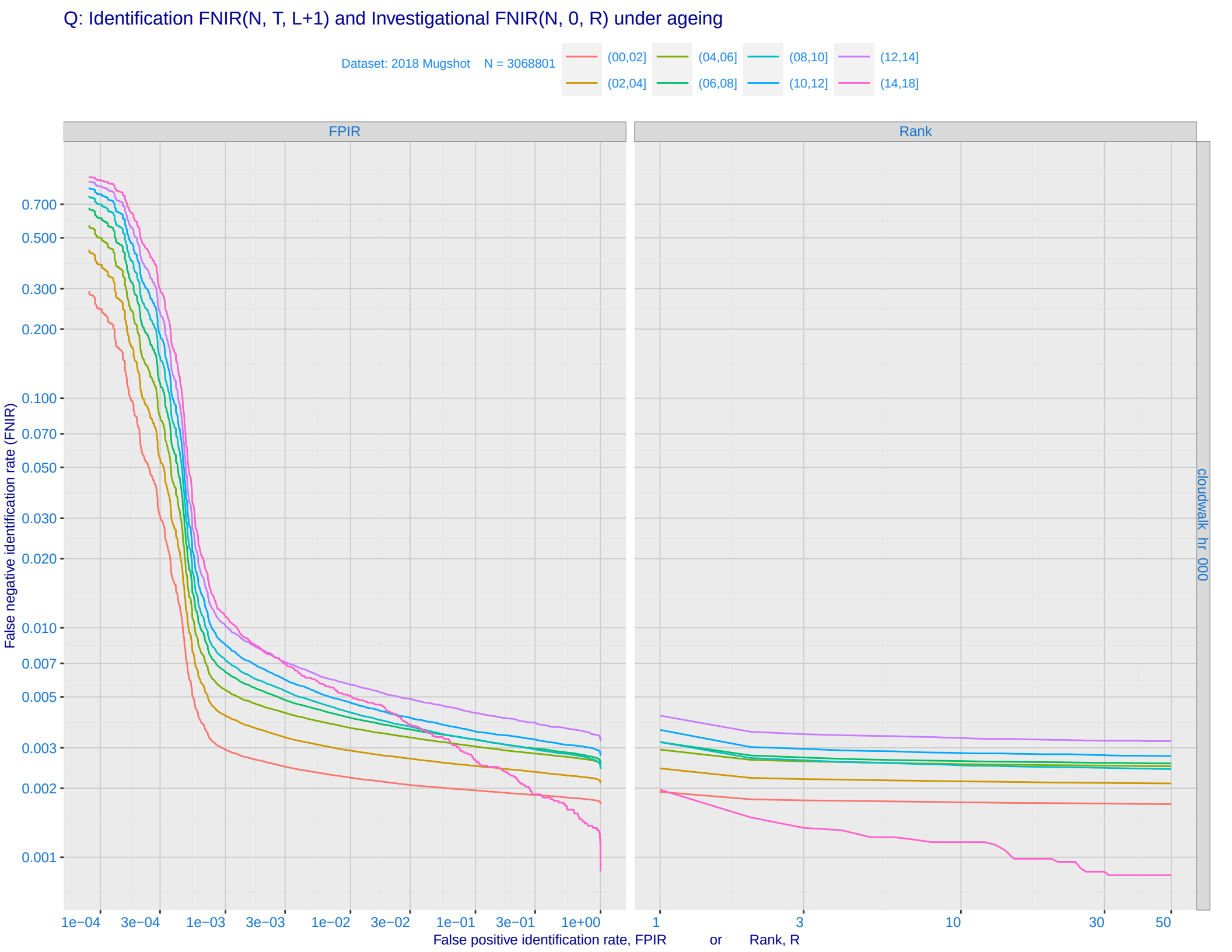


O: FNIR(T, N = 1.6 million) by sex, age and time−lapse. The top row gives investigational rank−1 miss rates.
The bottom panels give high threshold for more lights−out identification with low FPIR.



P: FPIR(N = 1.6 million) by sex and age. It is typical for false positive identification rates to be higher in women except in their teens.




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
cloudwalk_hr_000
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