NISTIR 8280

Ongoing Face Recognition Vendor Test (FRVT)

Part 3: Demographic Effects

Annex 10 : Cross age false match rates with visa photos

This document is an annex of NIST Interagency Report 8280:
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1 Overview

This annex includes figures that shows false match rates across different age groups. Each page contains one figure corresponding to one algorithm. Each figure shows two heatmaps, each showing a matrix of values. The value in column j is the FMR obtained when images of persons in age group j are compared with images of other subjects in age group i.

2 Data

The images are the compressed visa portraits described in Annex 3.

The total number of images is 243 023. The total number of persons is 223 052. The total number of comparisons is just over 4.4 billion (4 454 571 492) produced by cross-comparison of image-disjoint sets.

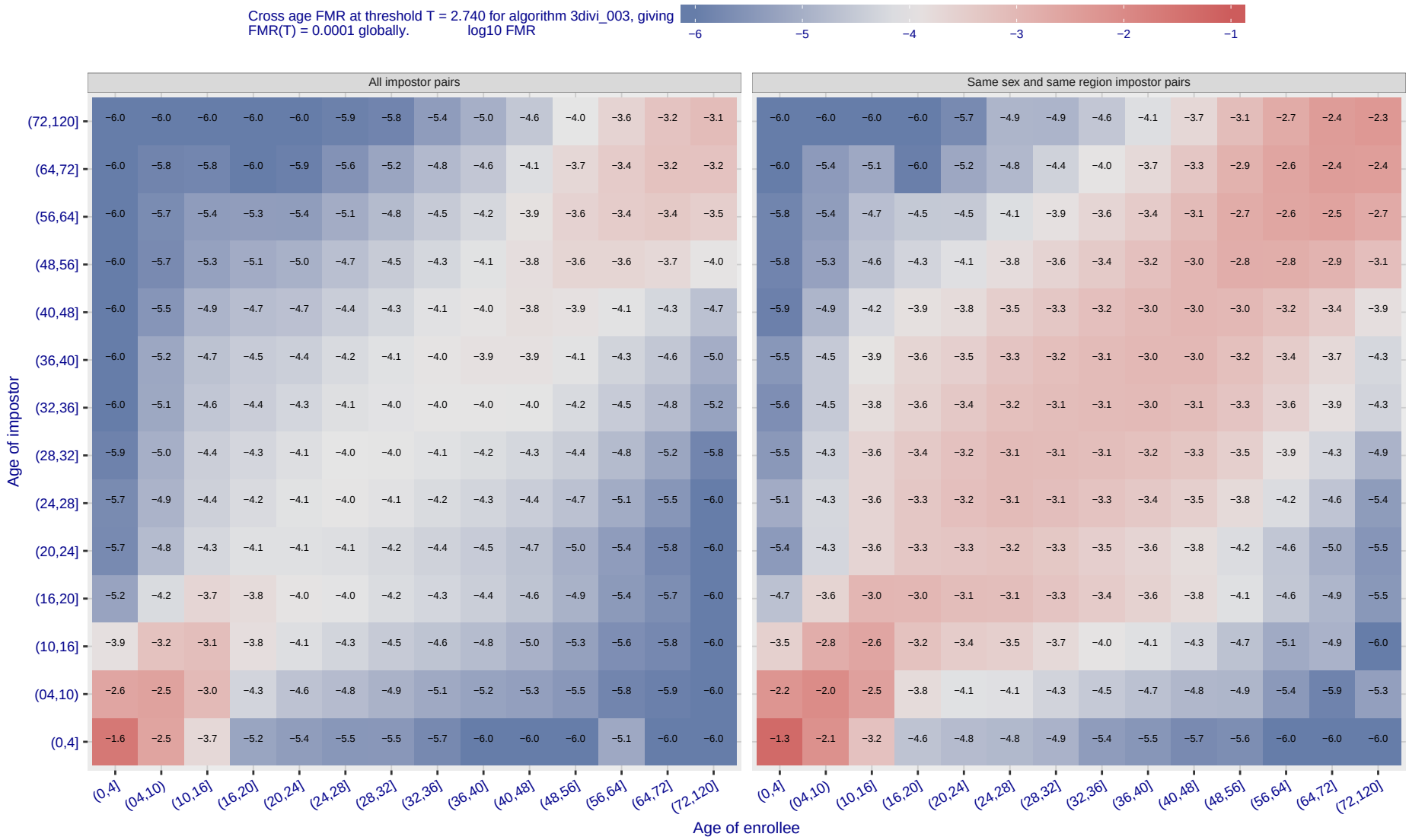
3 Fixed Threshold

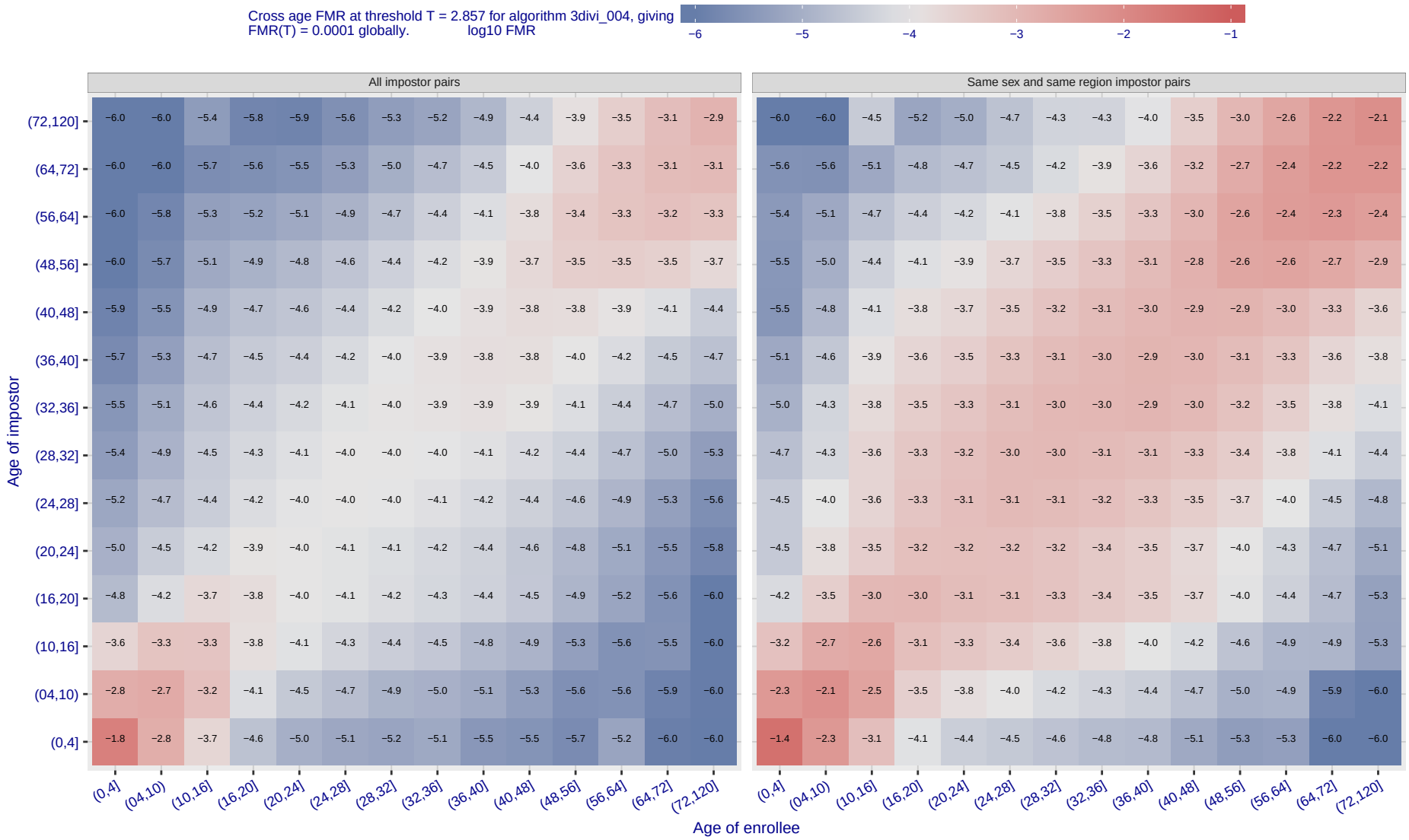
A false match is declared if the comparison score is equal to, or exceeds, a threshold. This same value applies to all comparisons in all cells. The threshold value could be any value germane to that comparison algroithm. The threshold value was taken over all comparisons of these images as the lowest value for which FMR $leq 0.0001$.

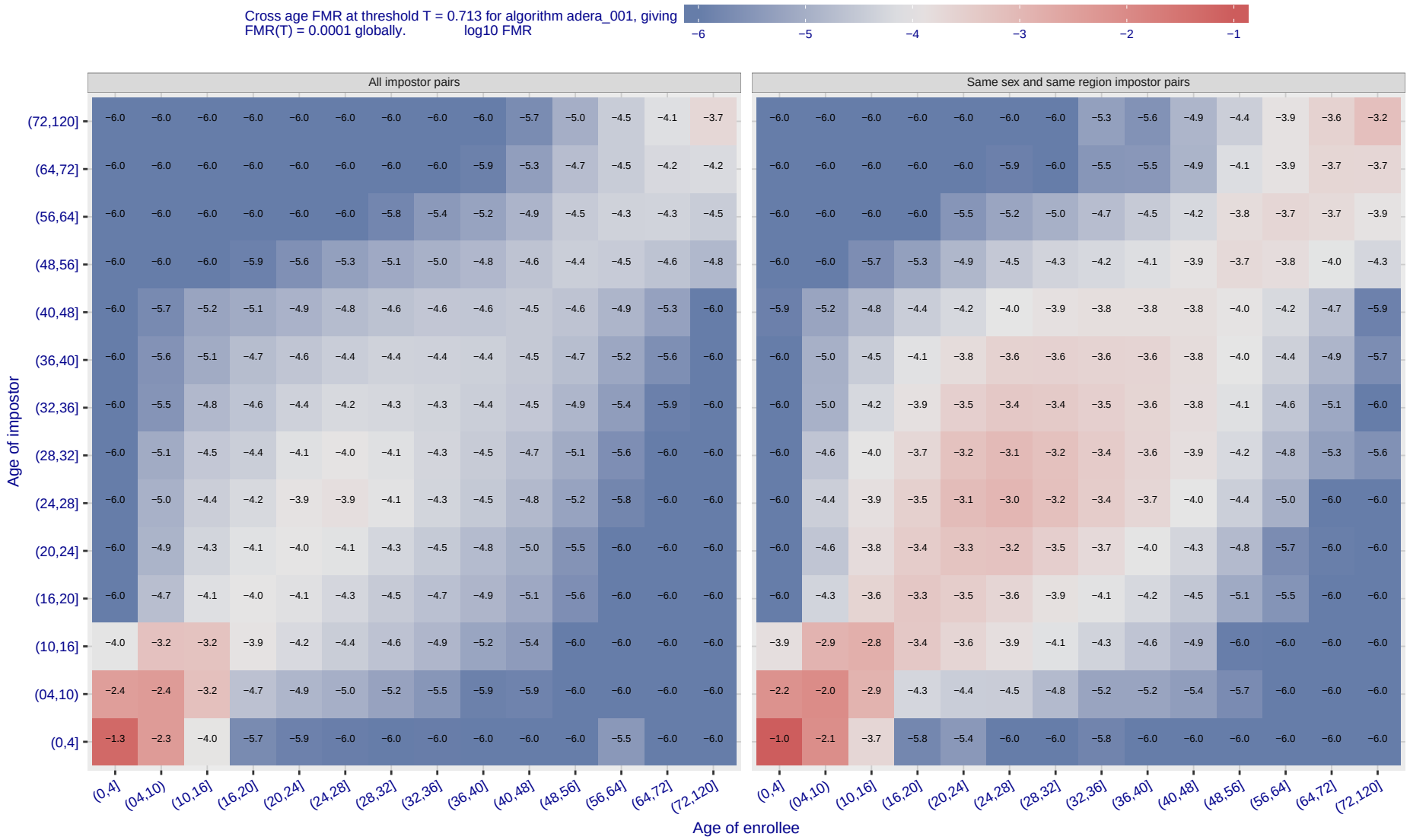
4 Plot

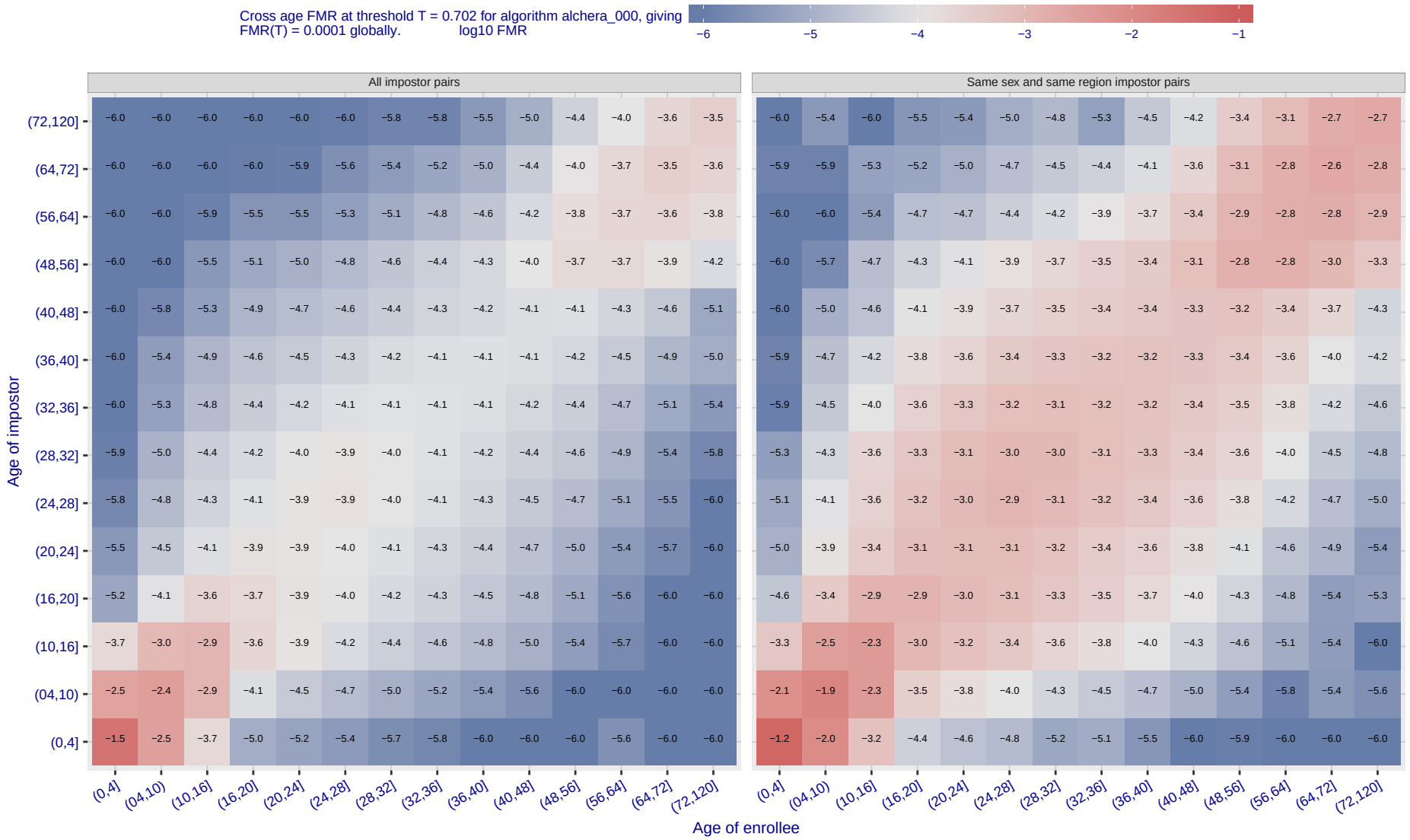
The plot shows cross-age false match rate as follows.

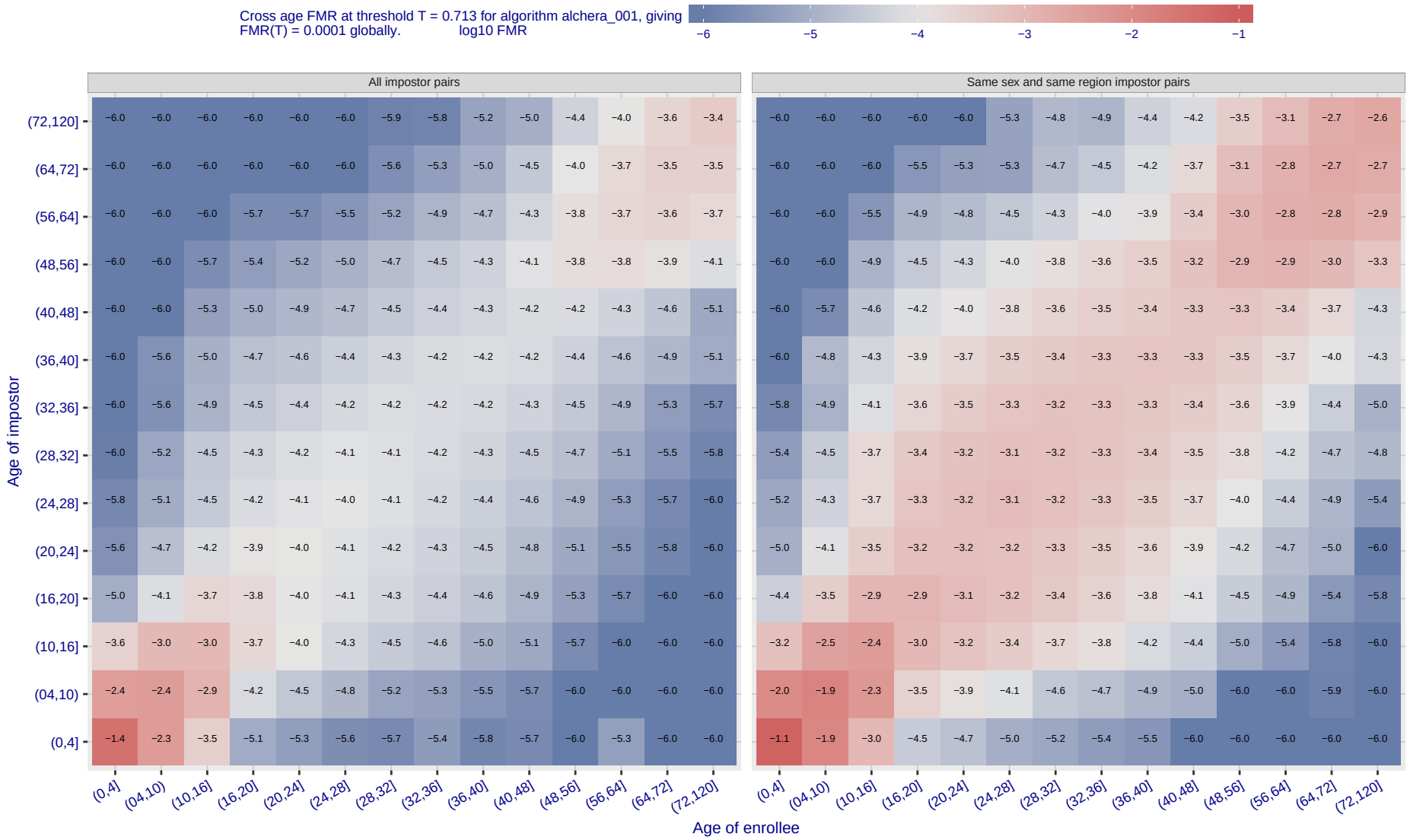
- ▷ 0 - The six columns shows for six countries selected to span global regions and because the dataset contains many images from those countries.
- ▷ 1 - In the top row, the various heatmaps correspond to comparison of women with women from the specific country.
- ▷ 2 - The bottom row likewise shows men with men false match rates.
- ▷ 3 - Any given cell restricts impostors to have the same sex and country of origin, and individuals from age group i and j drawn from the following list: $(12-20]$, $(20-35]$, $(35-50]$, $(50-65]$, and $(65-99]$.
- ▷ 4 - The countries are sorted left-to-right in increasing order of maximum FMR measured in the two panels (male-male, and female-female).
- ▷ 5 - The name of the algorithm is included in the legend.
- ▷ 6 - The threshold value and the nominal FMR value that it corresponds to, are likewise, recorded in the legend. The FMR is nominal in the sense that it was computed over impostor comparisons made in a separate, domestic, dataset (Annex 1).

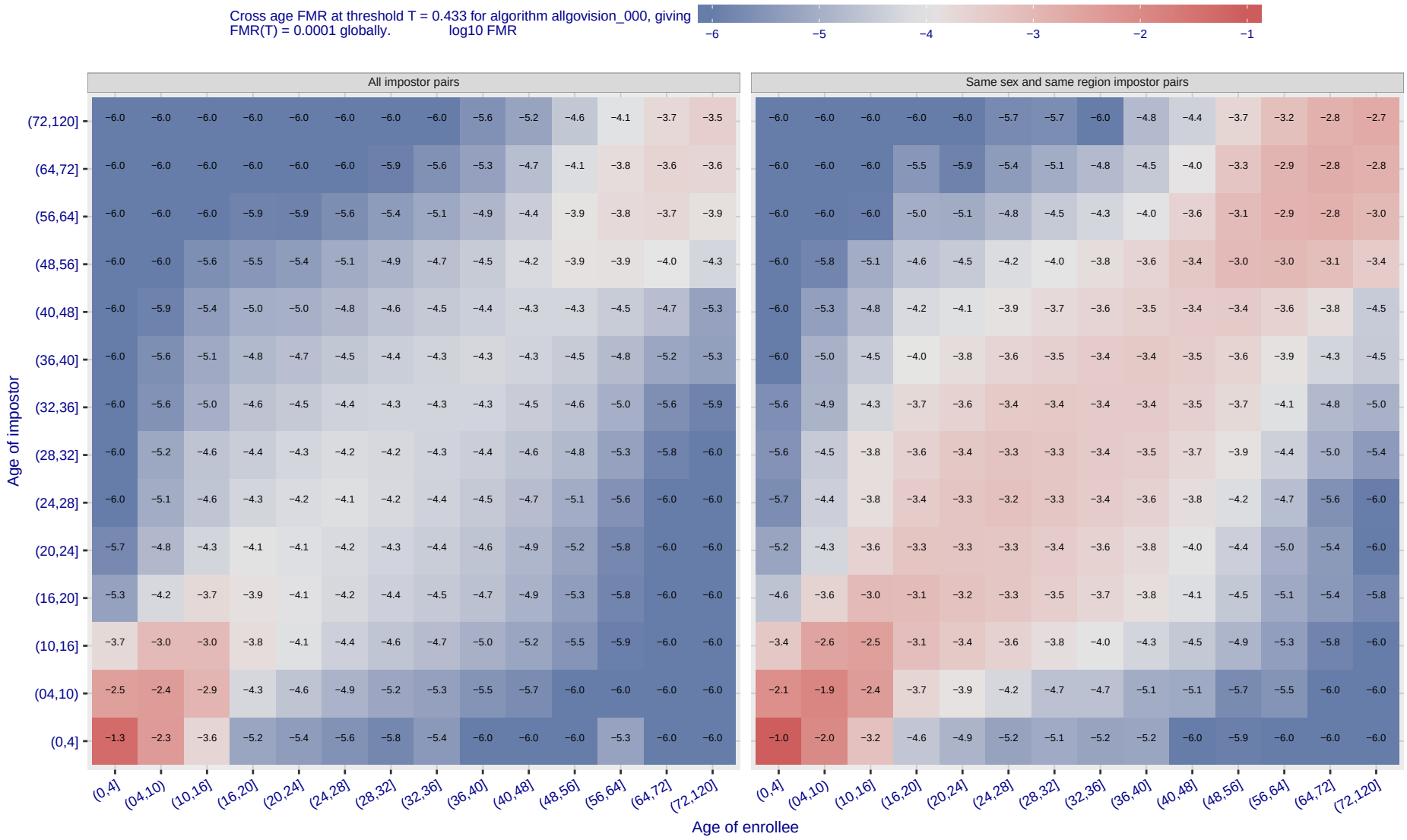


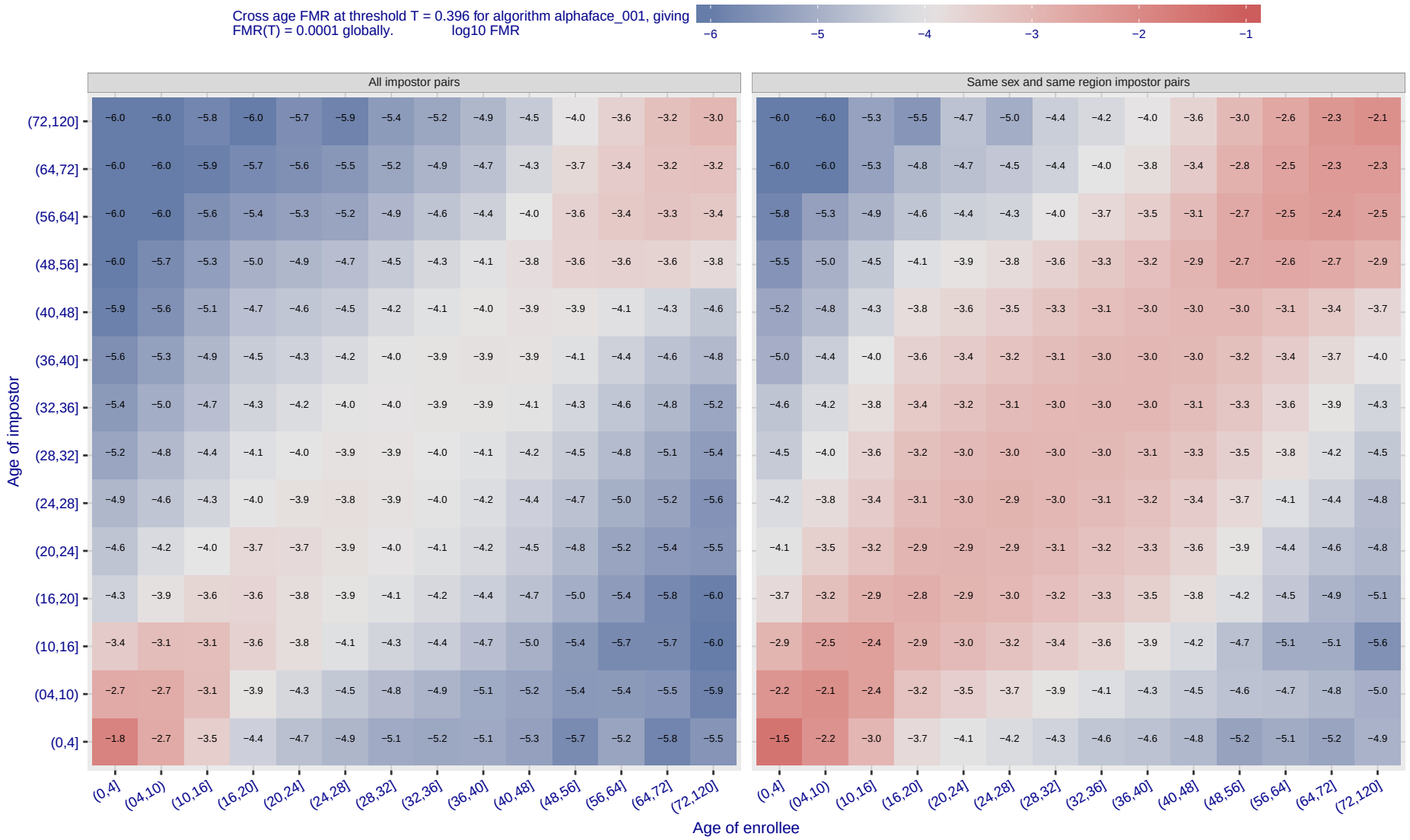


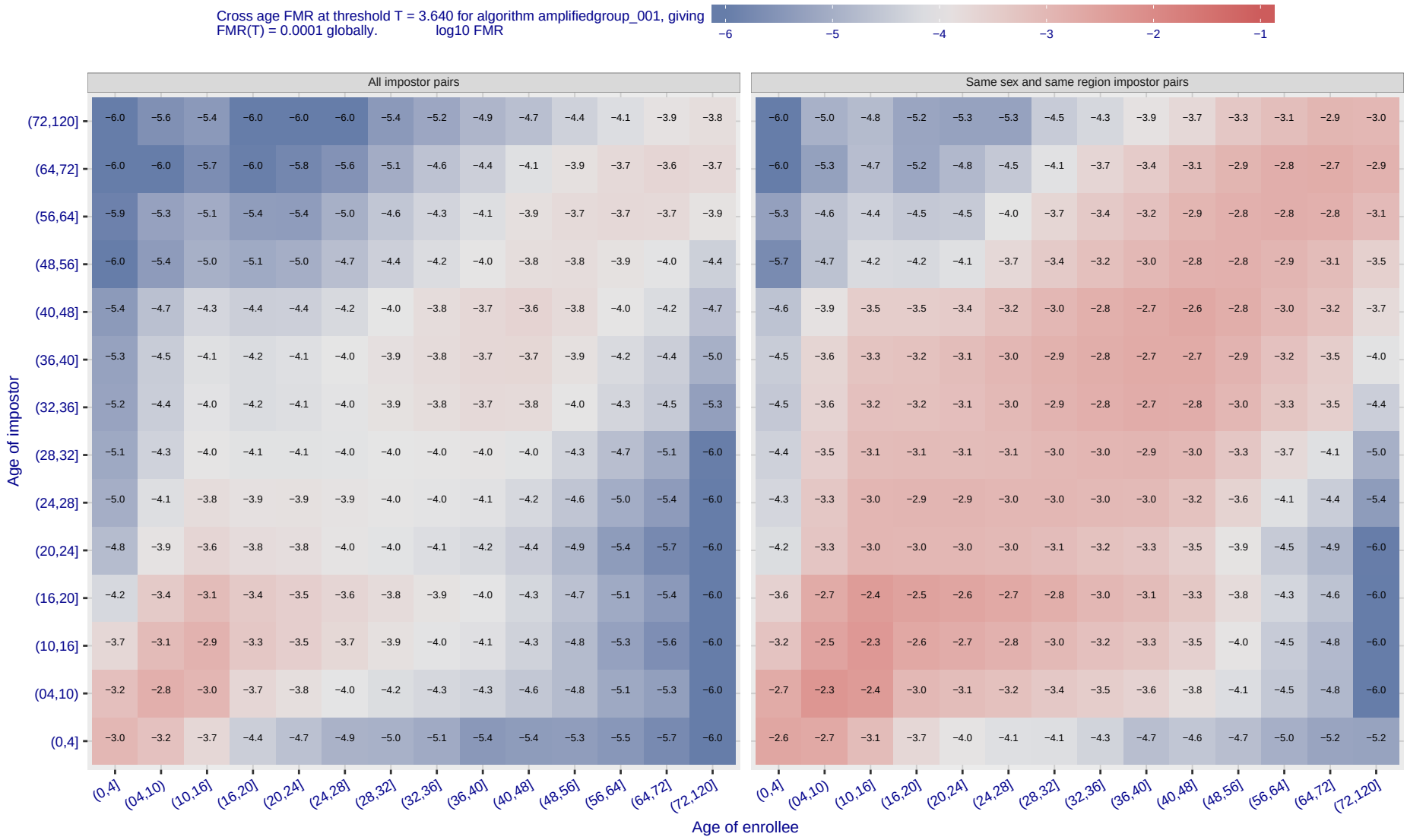


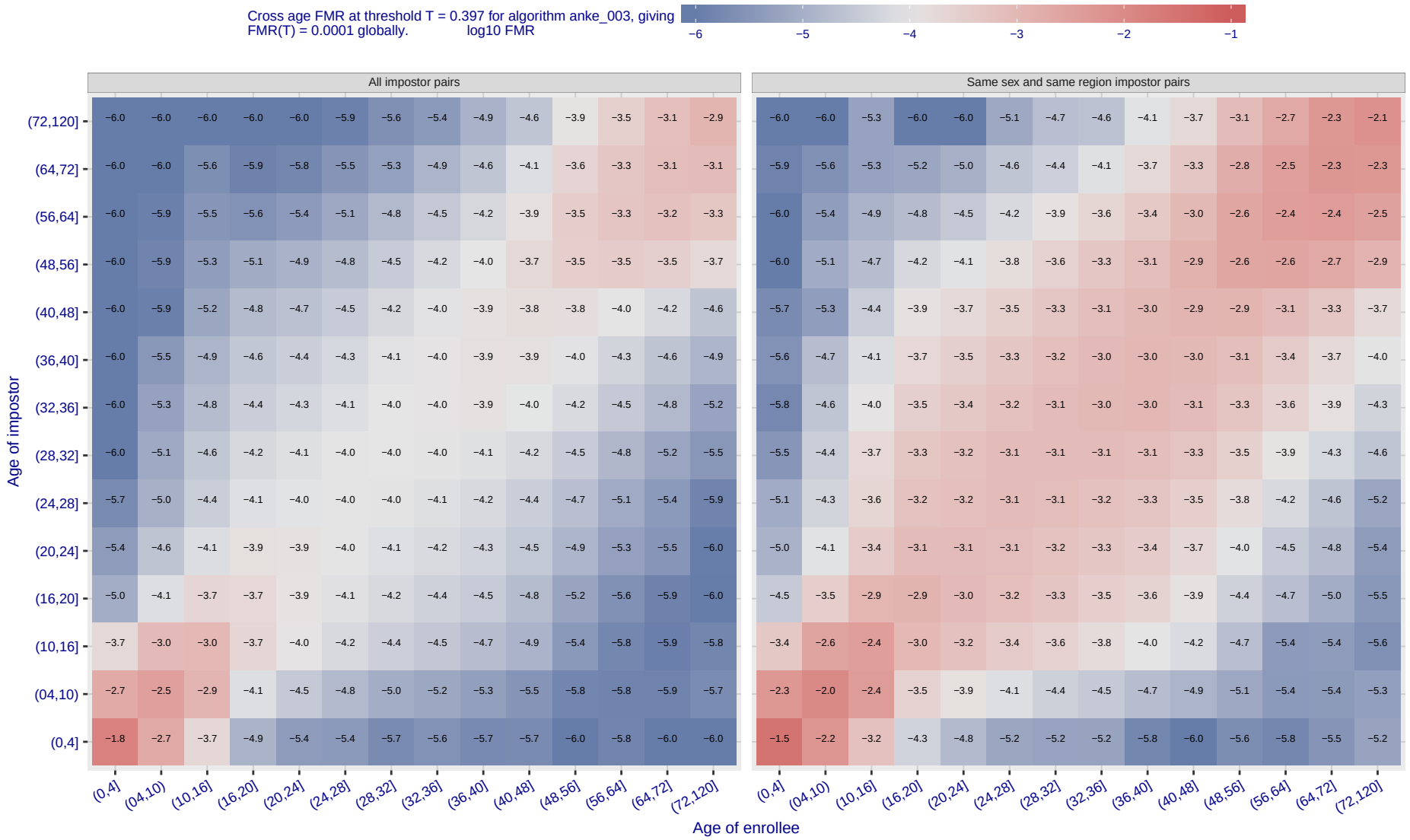


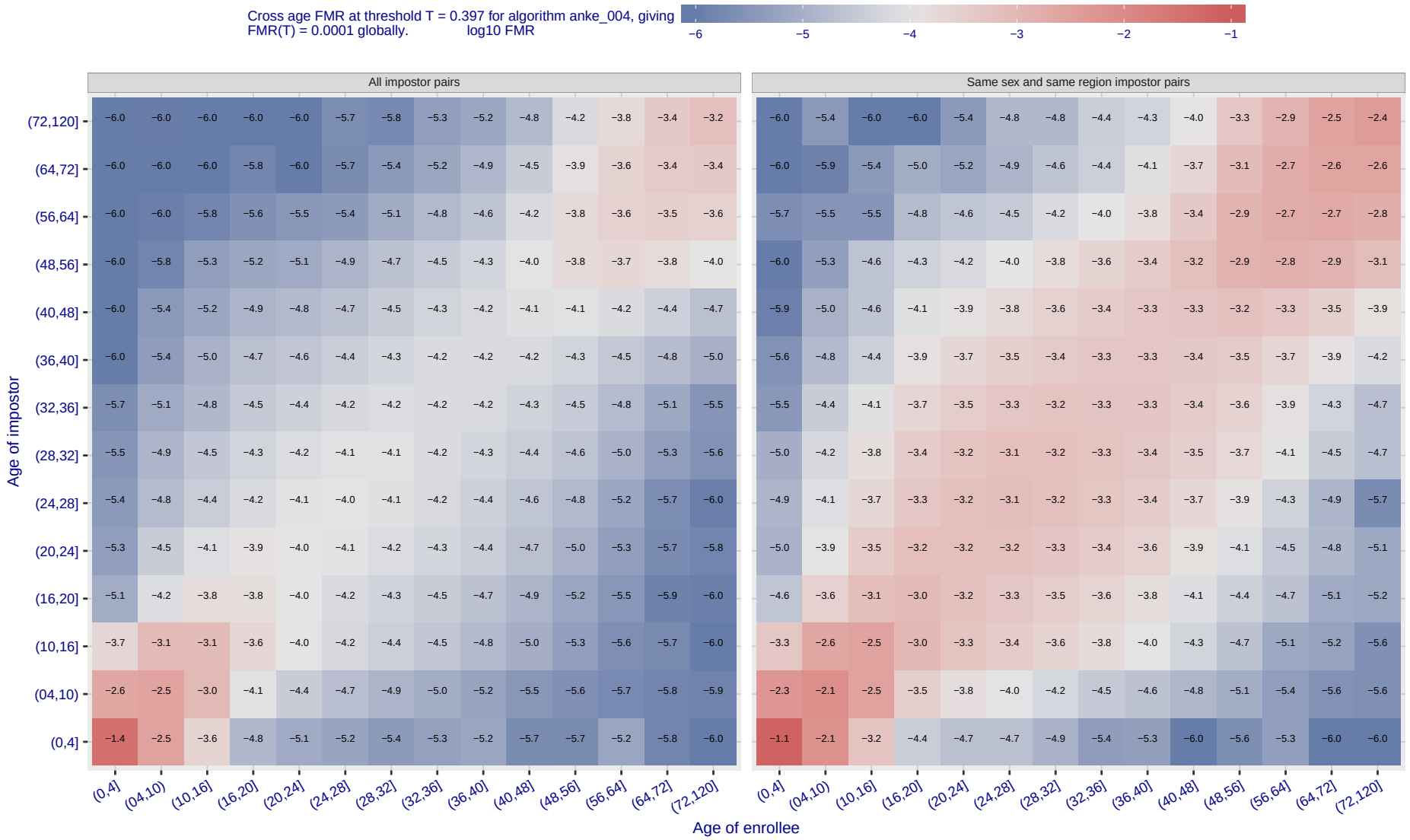


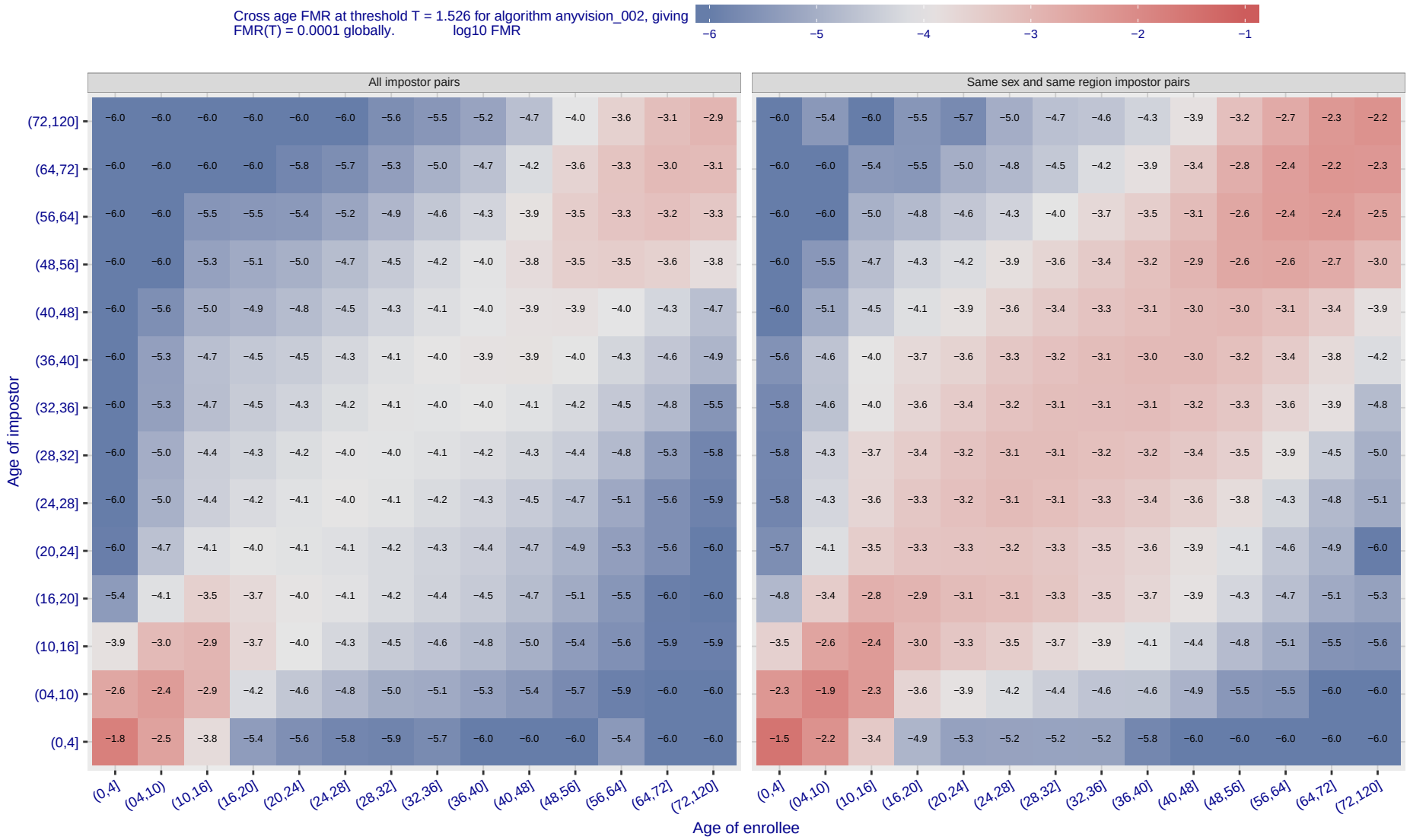


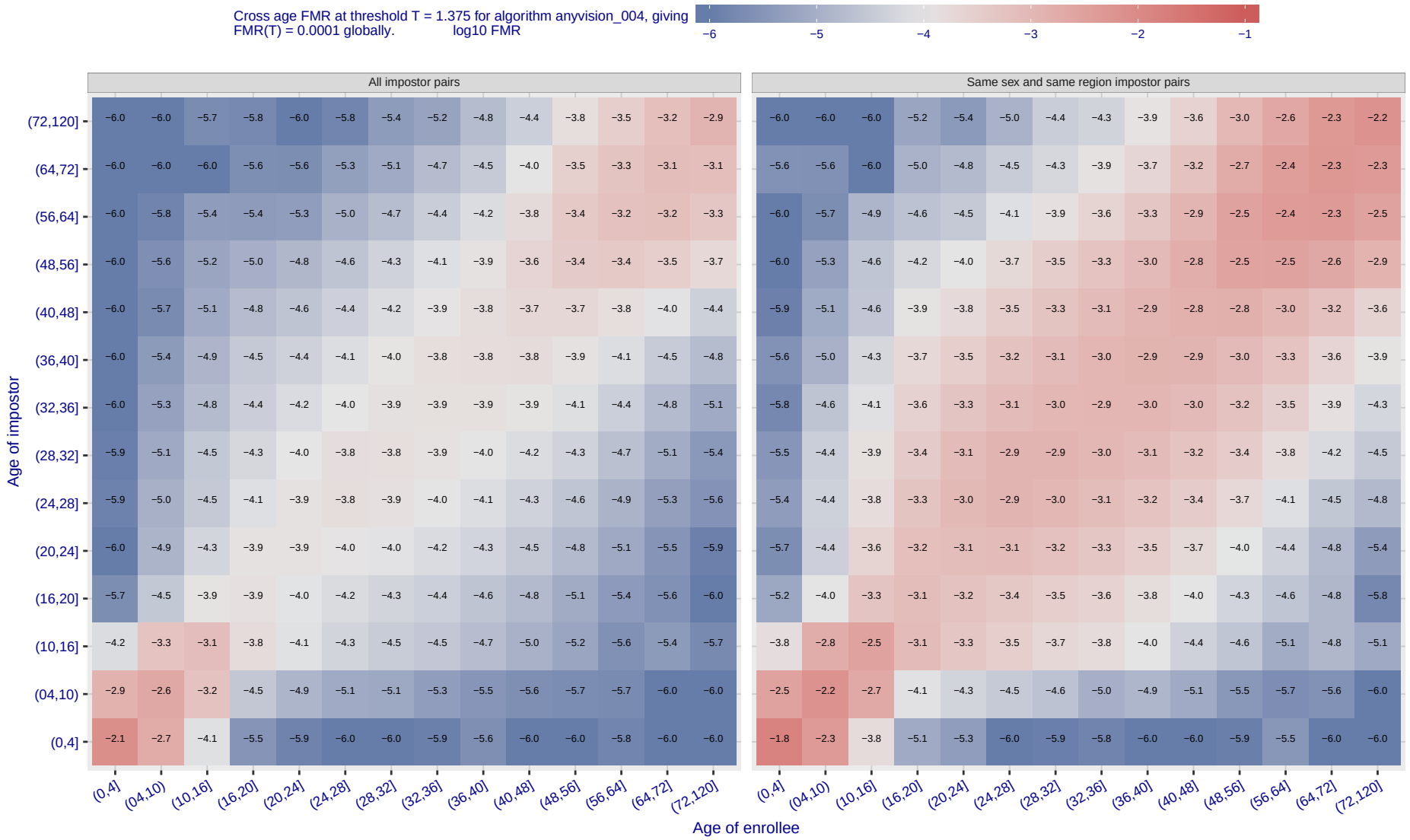


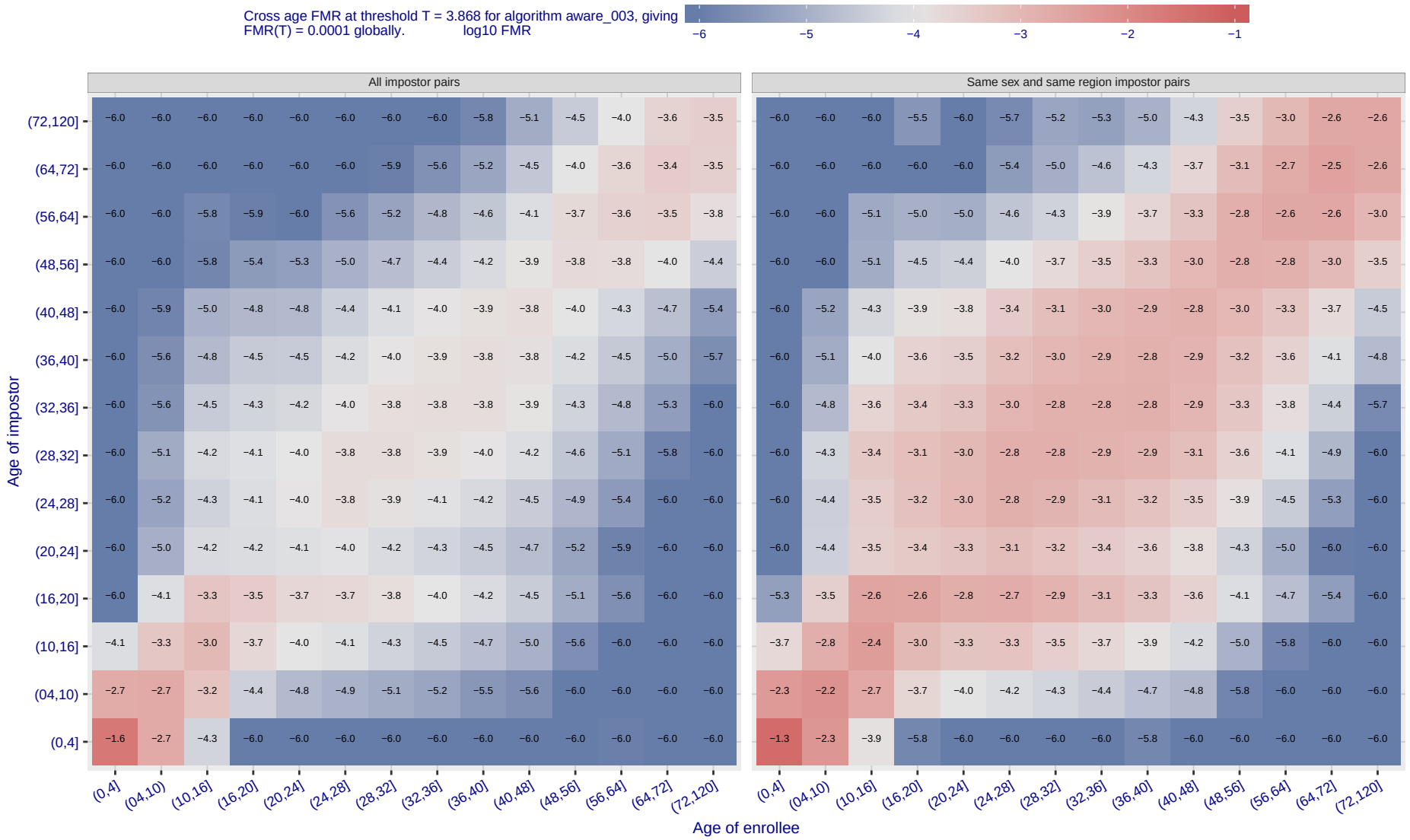


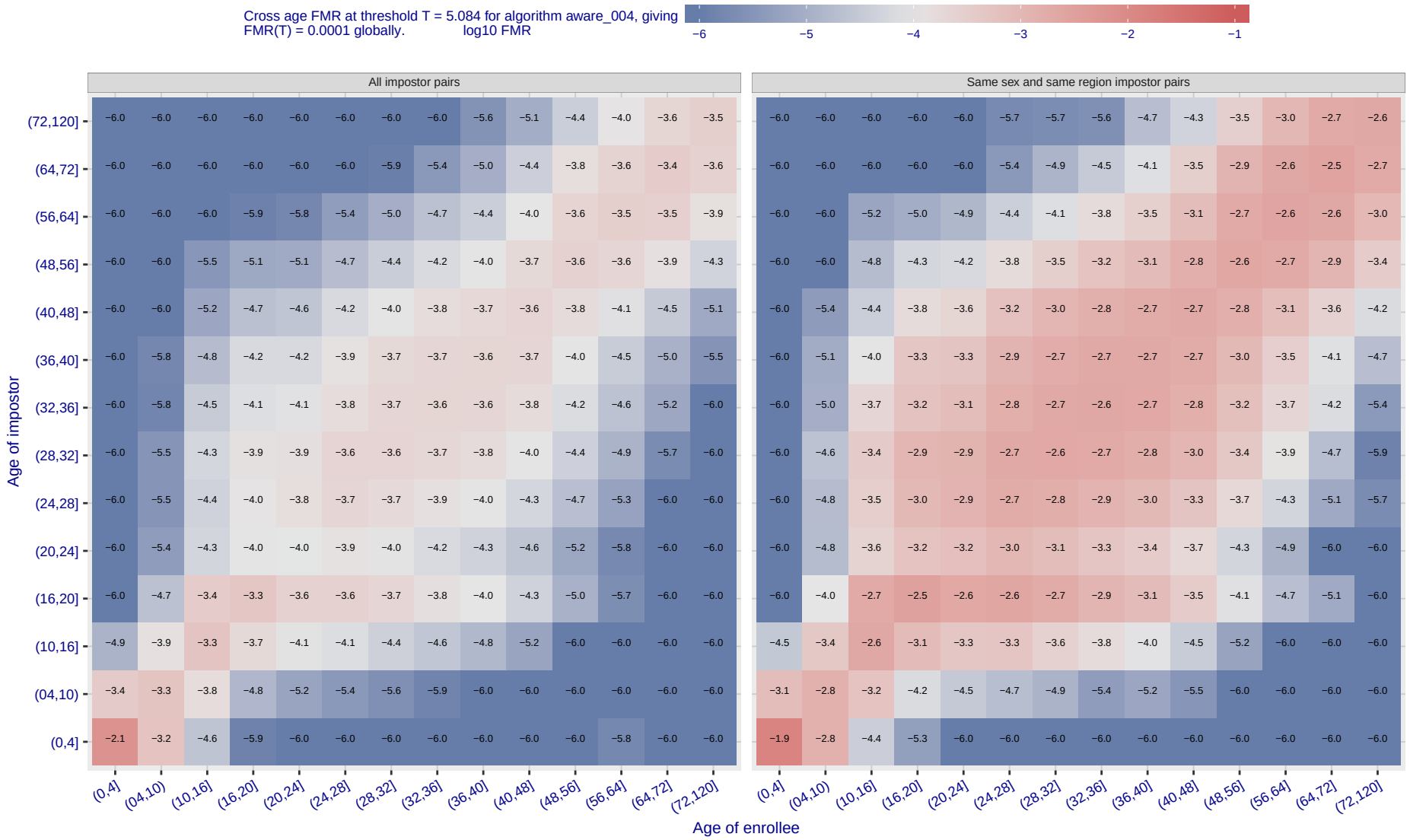


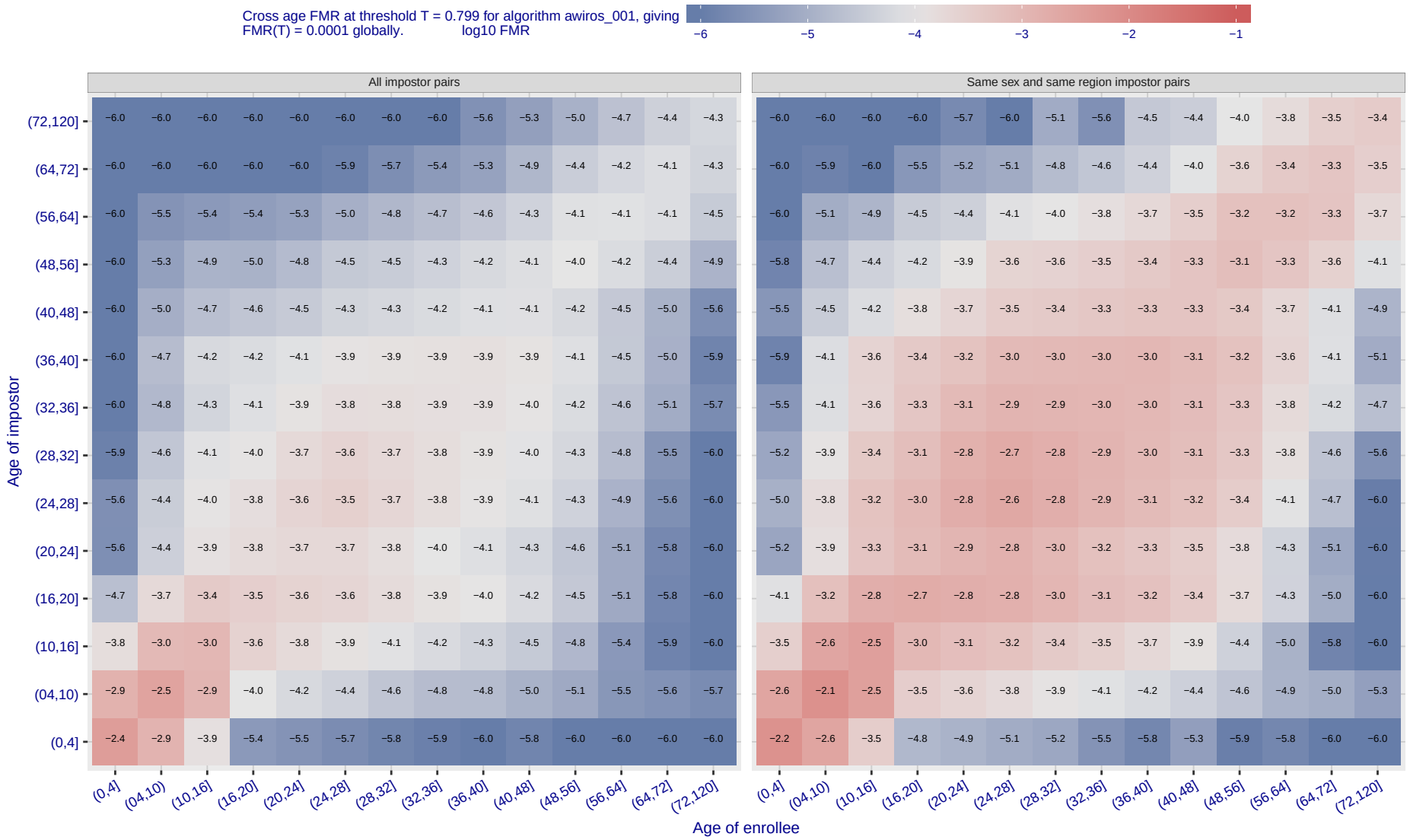


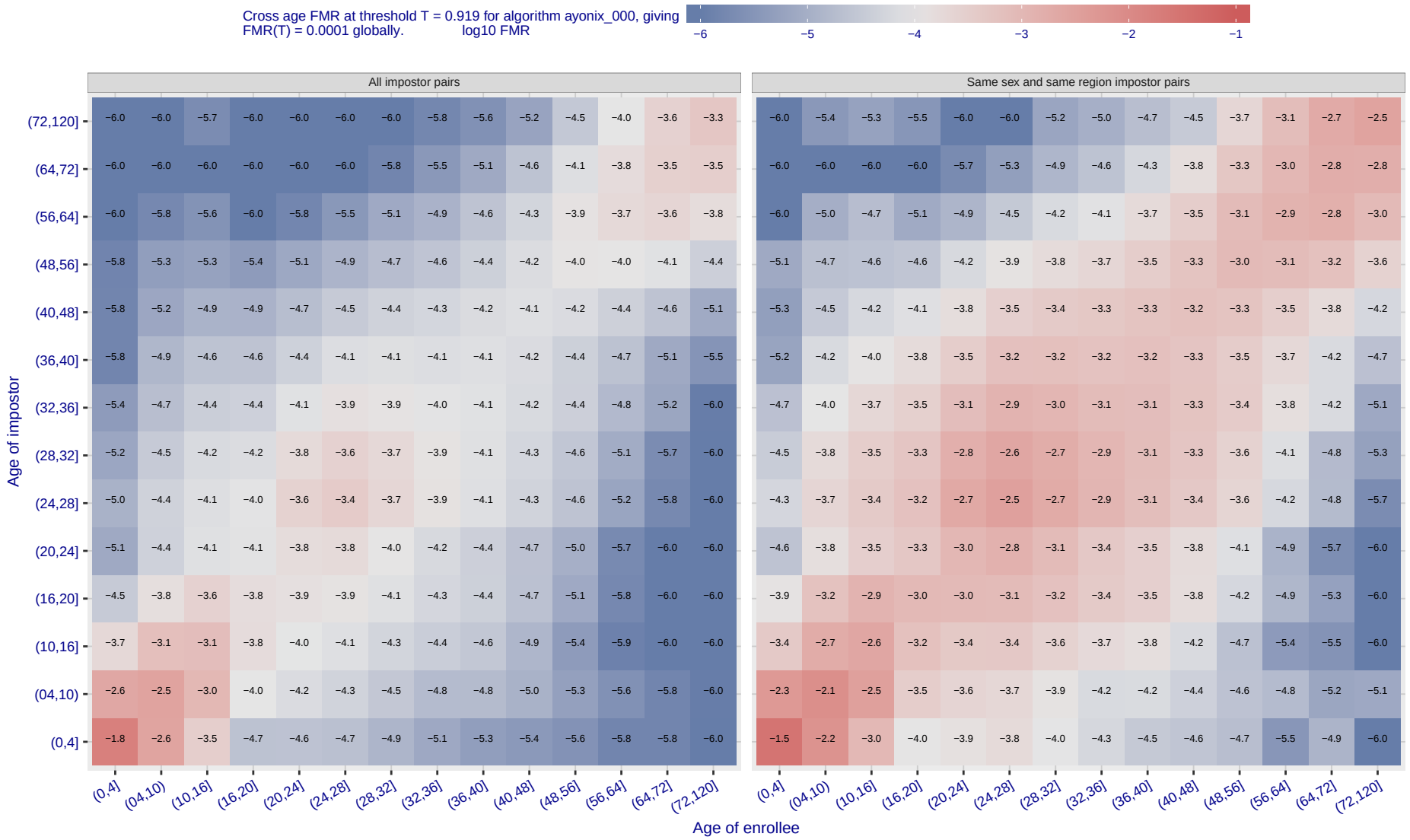


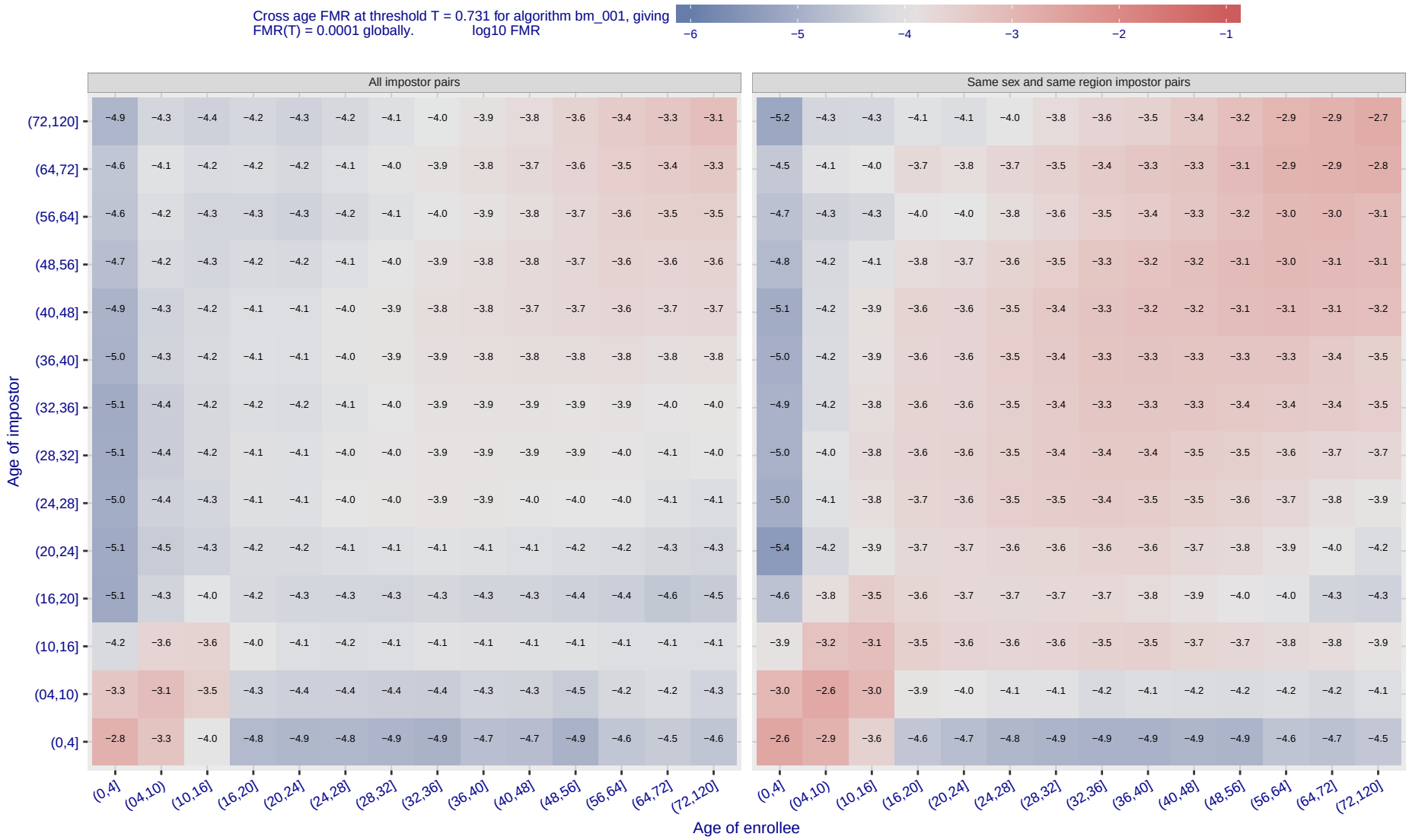


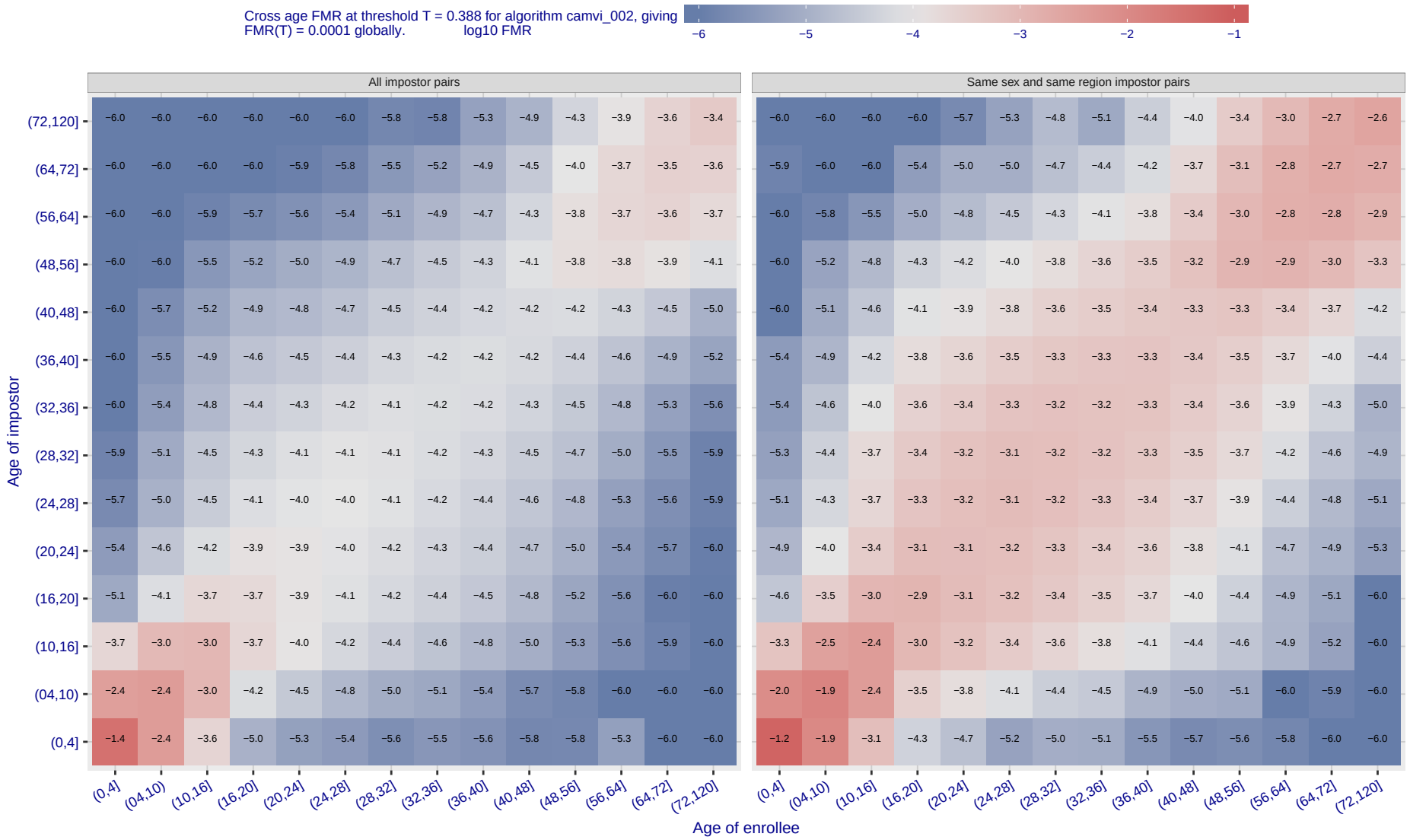


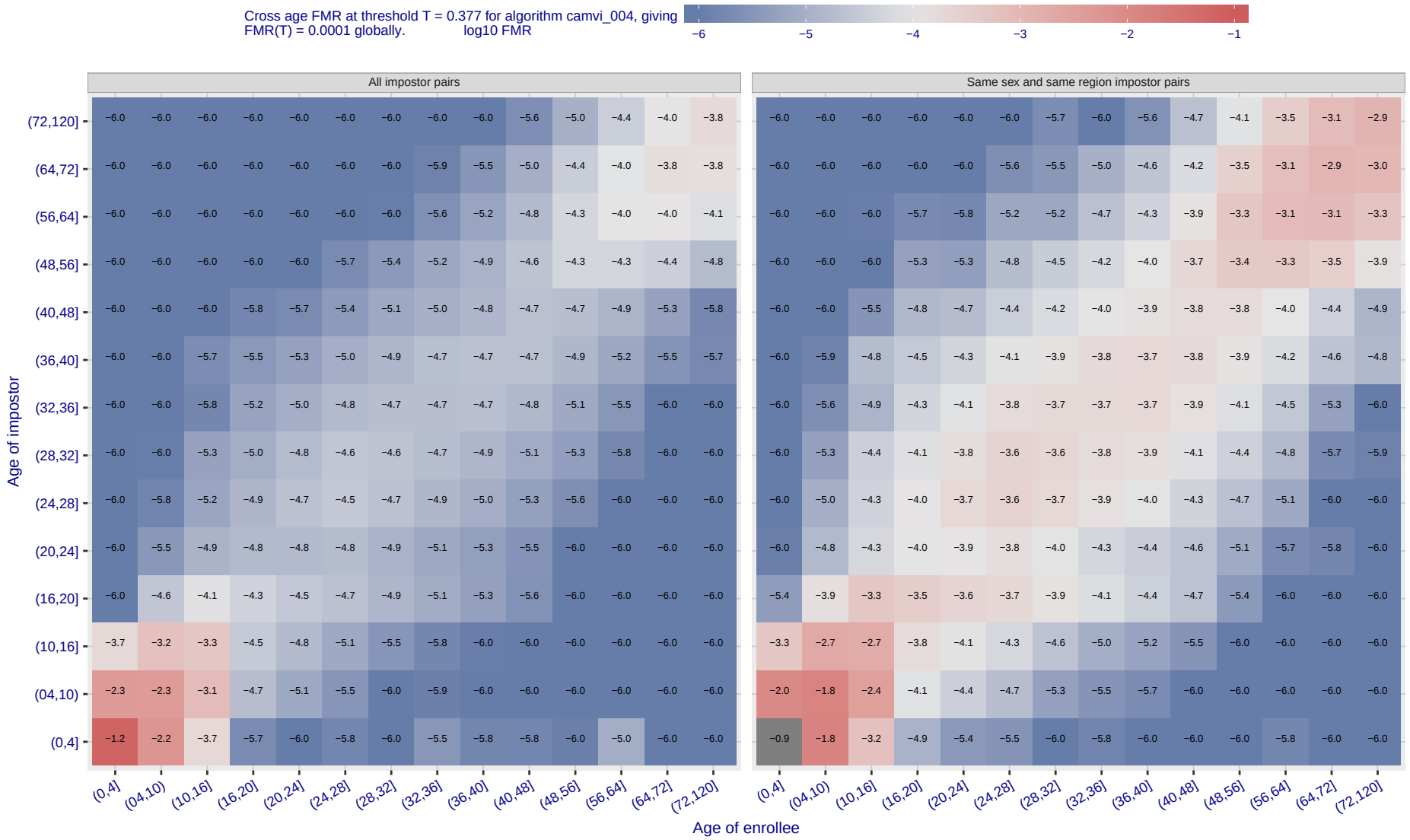


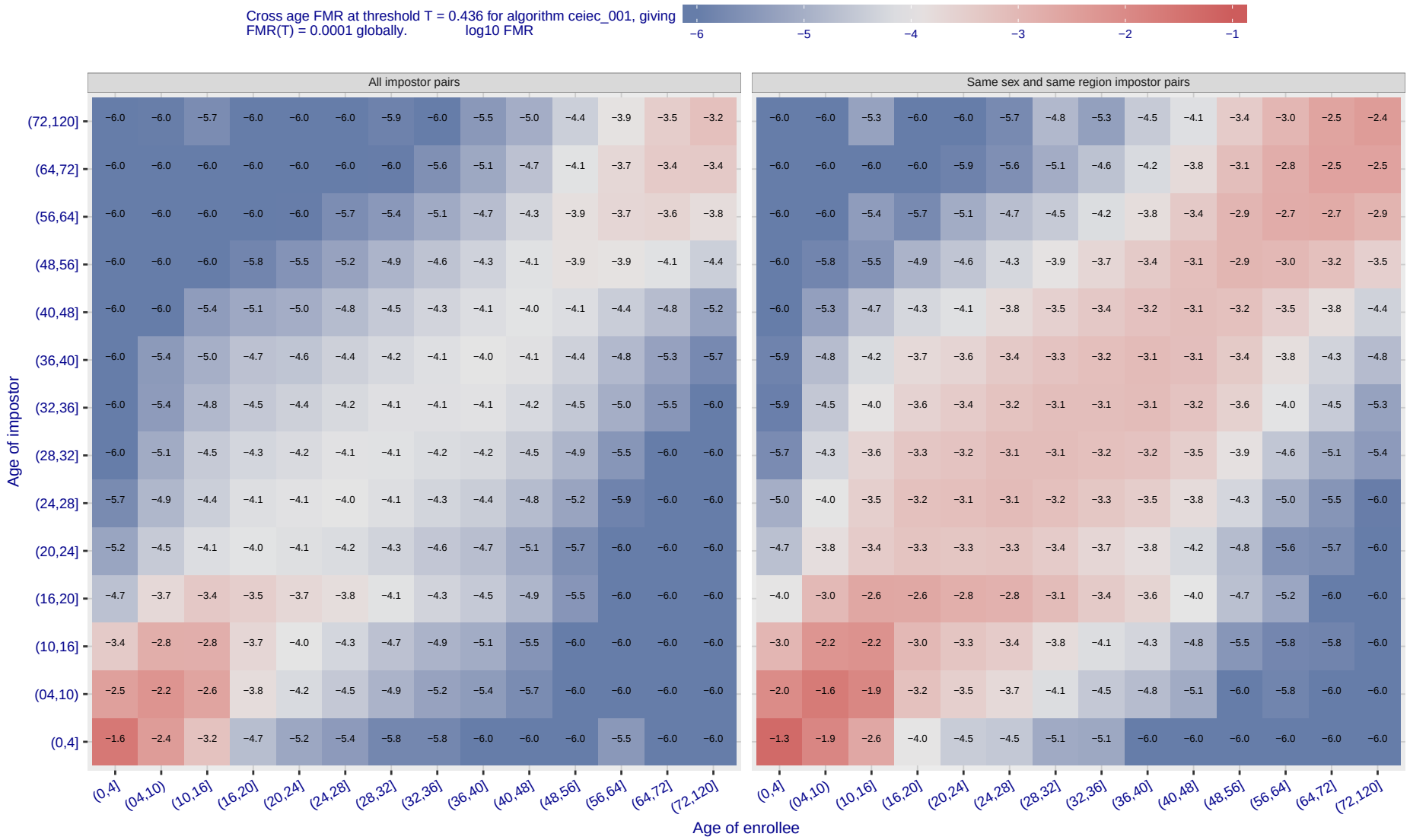


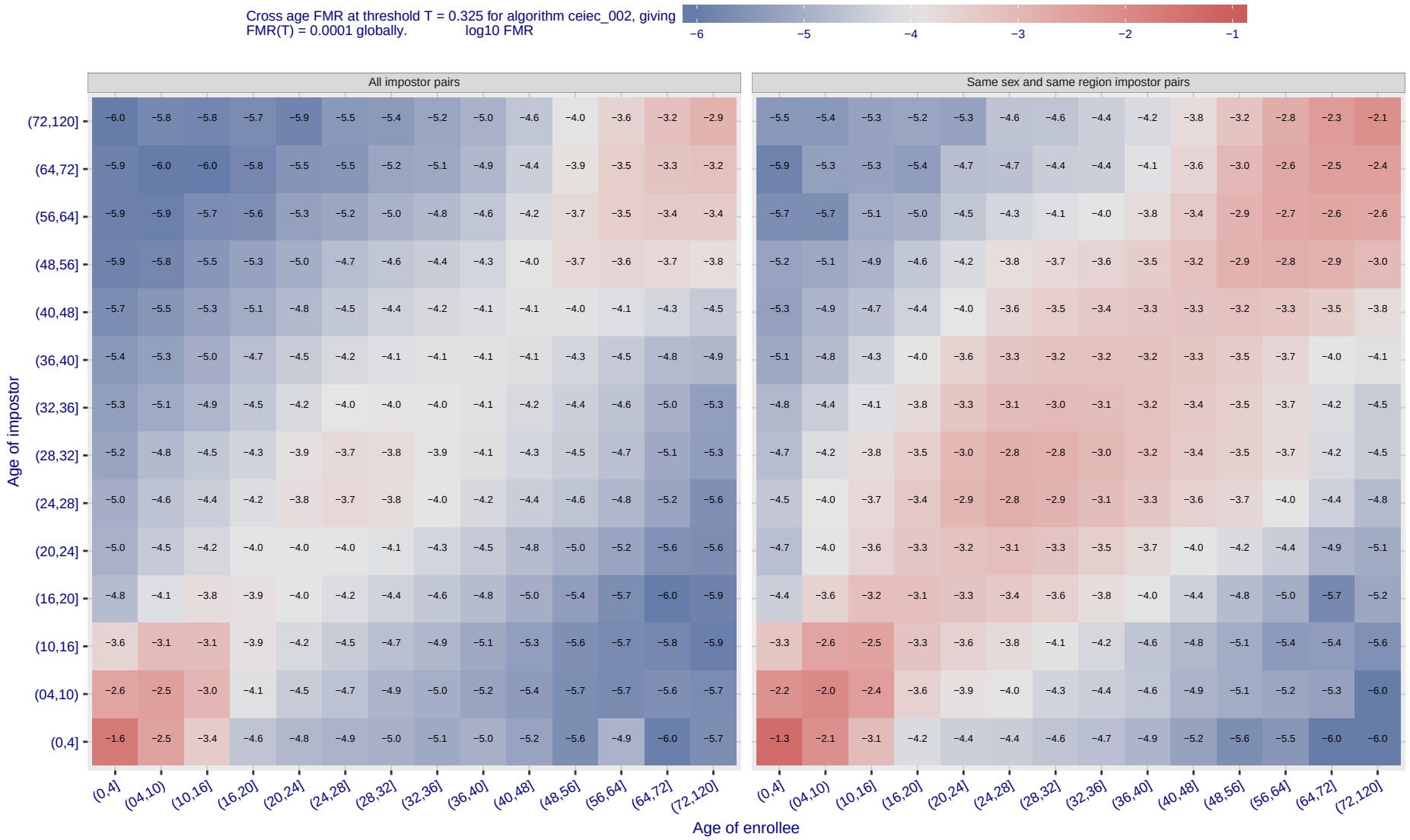


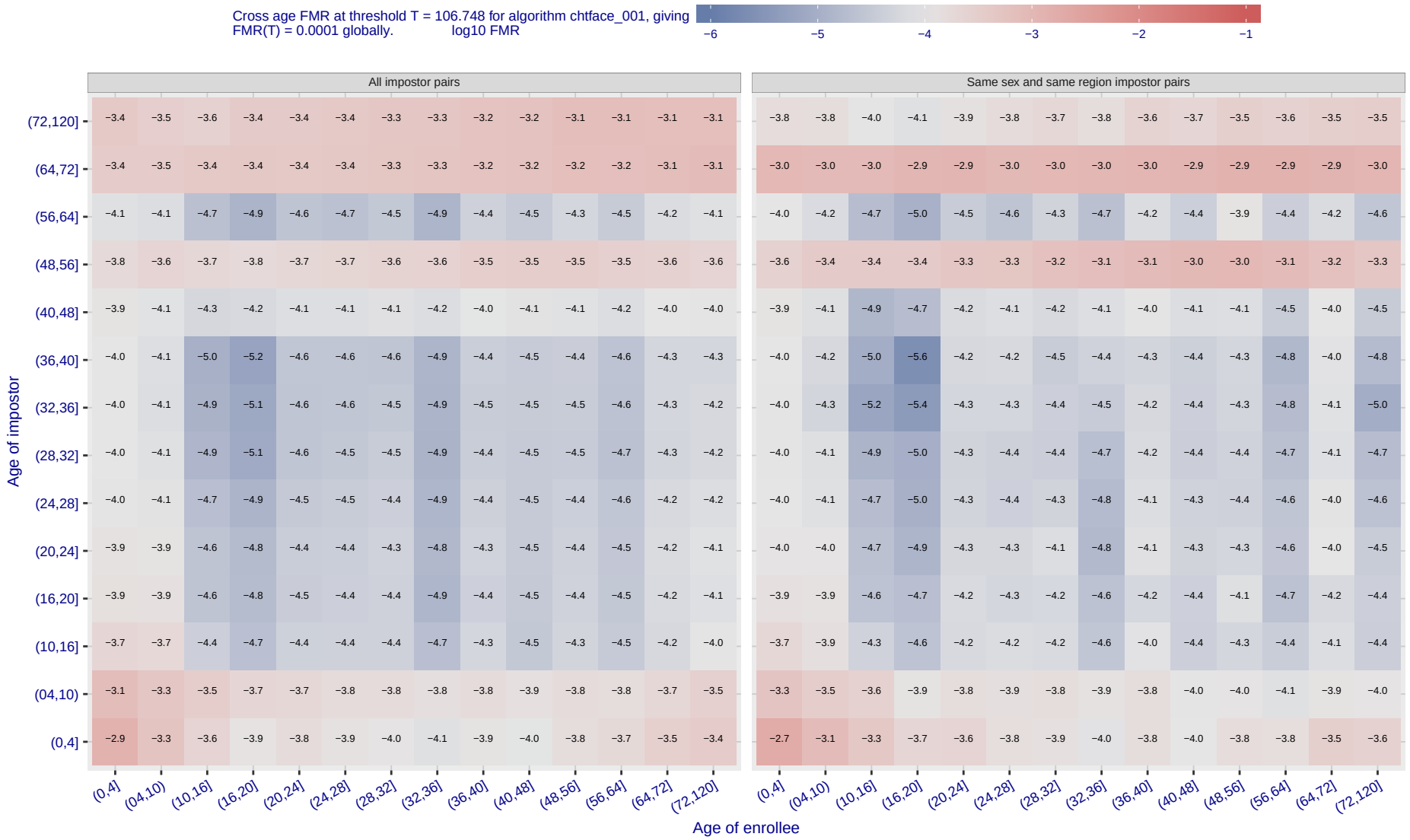


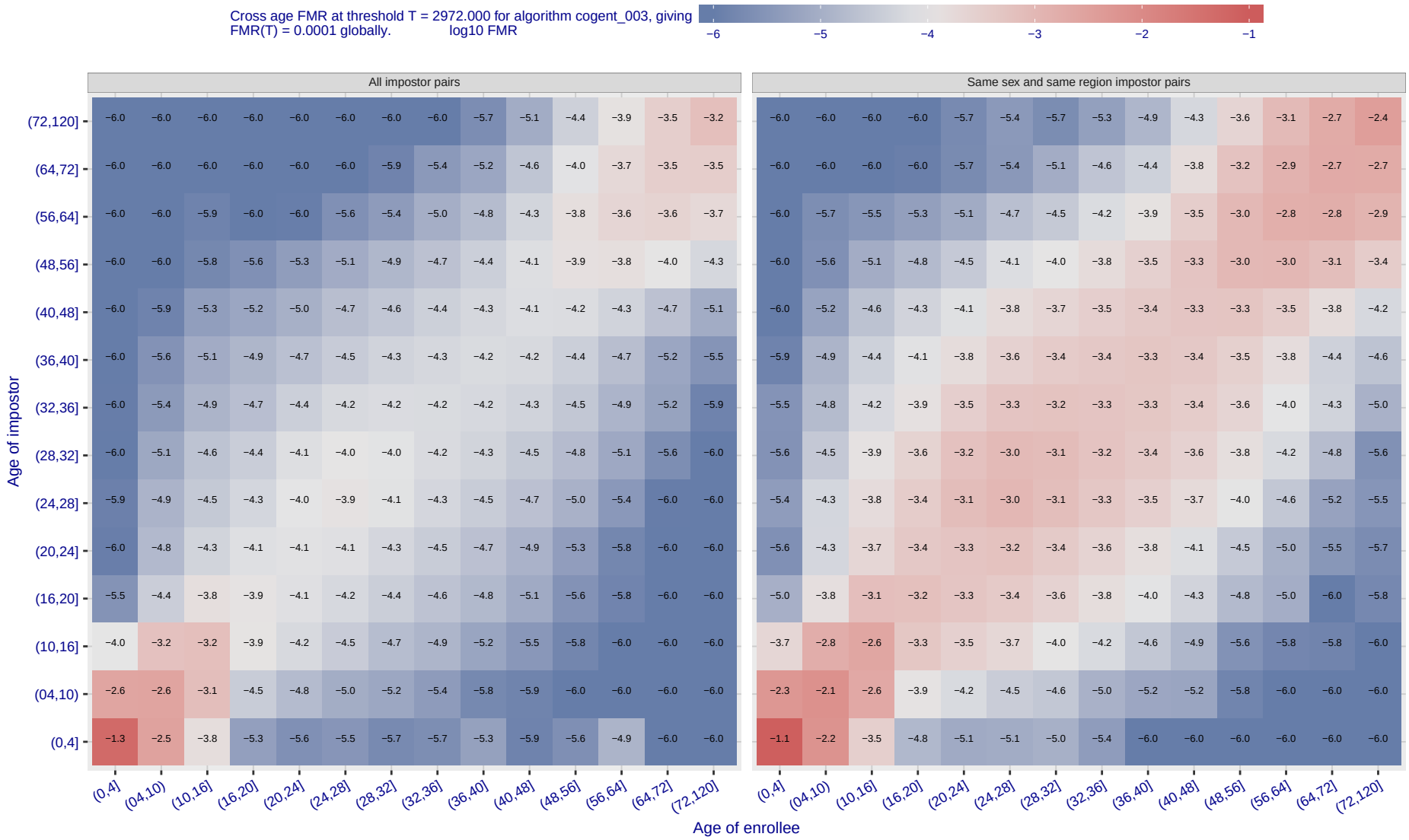


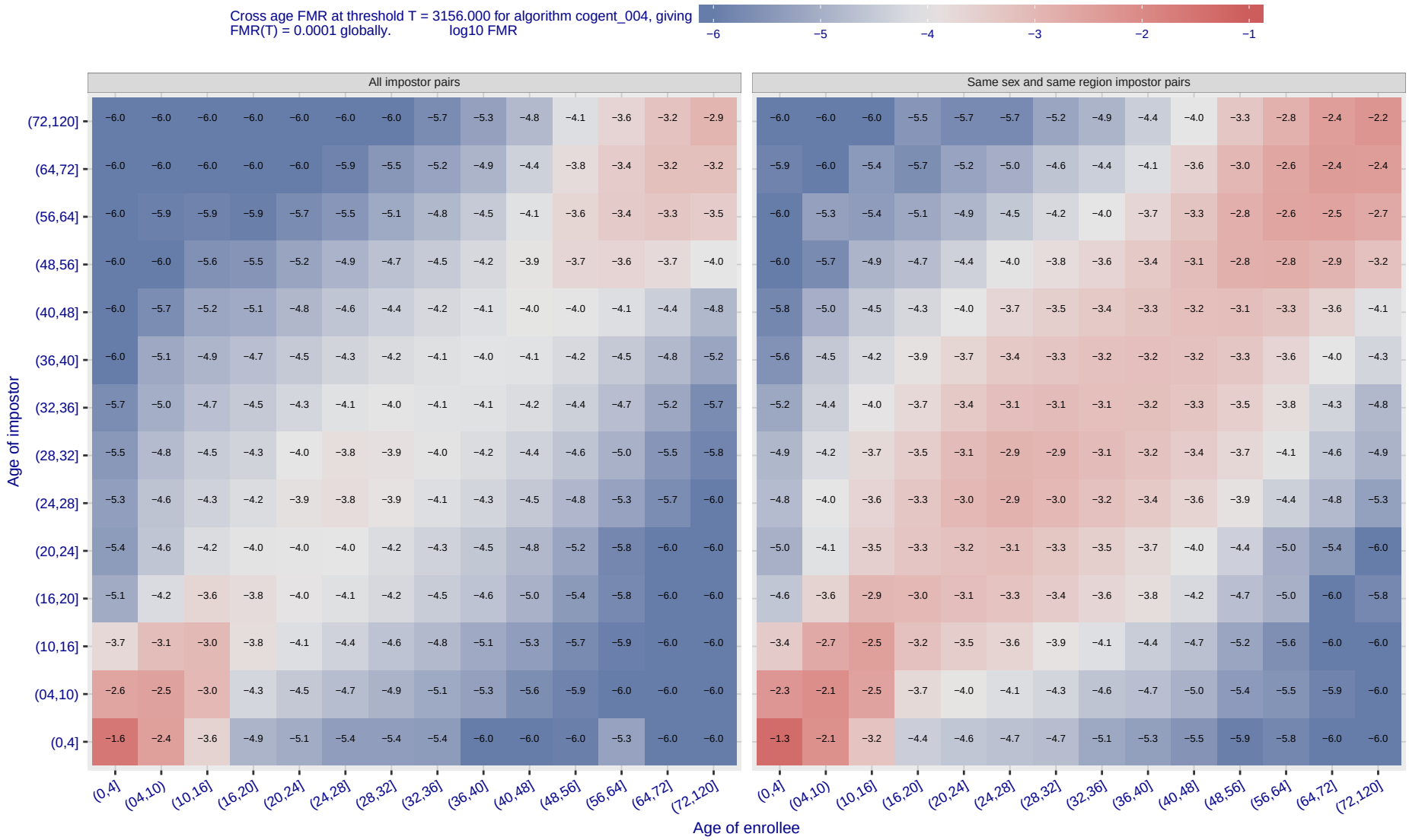


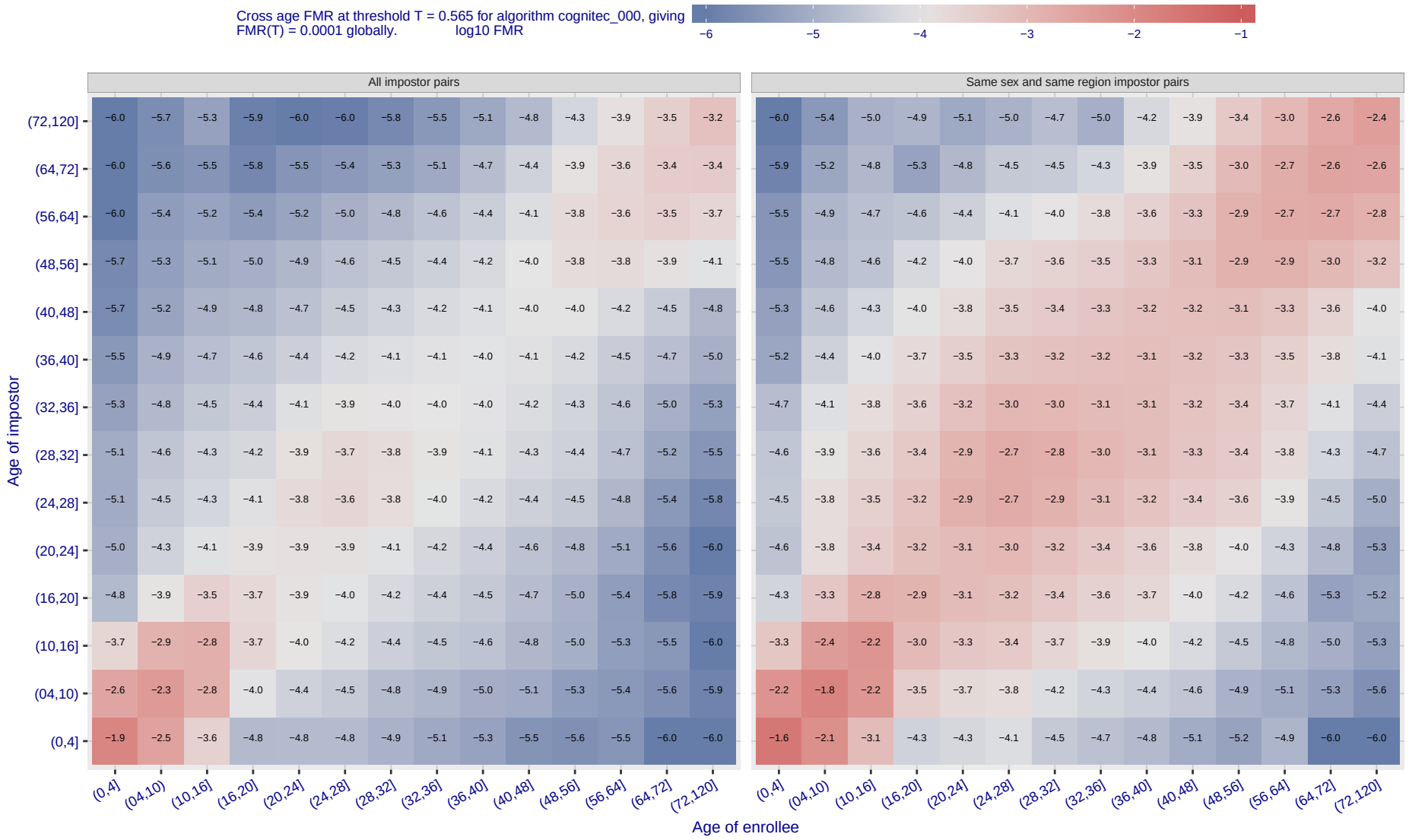


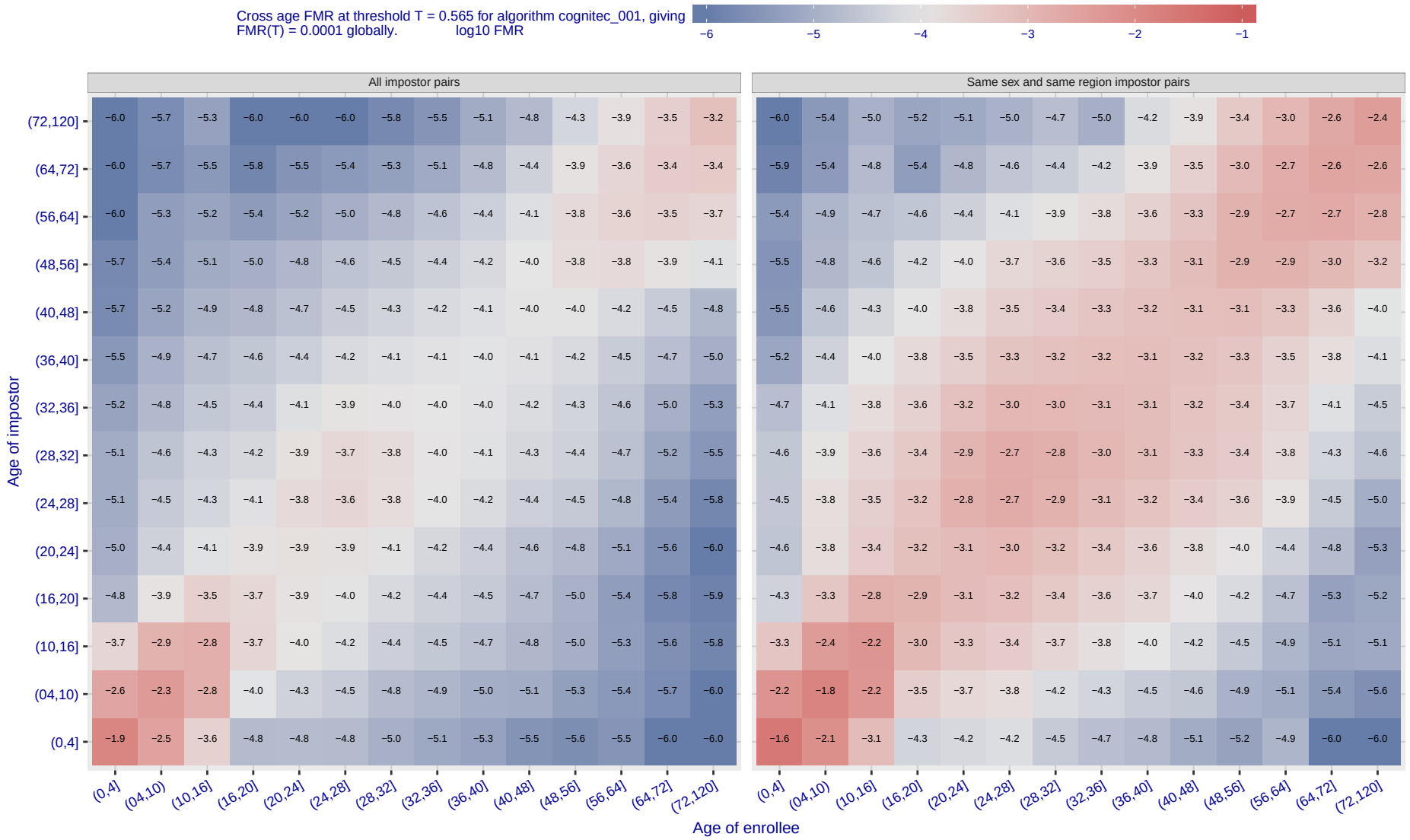


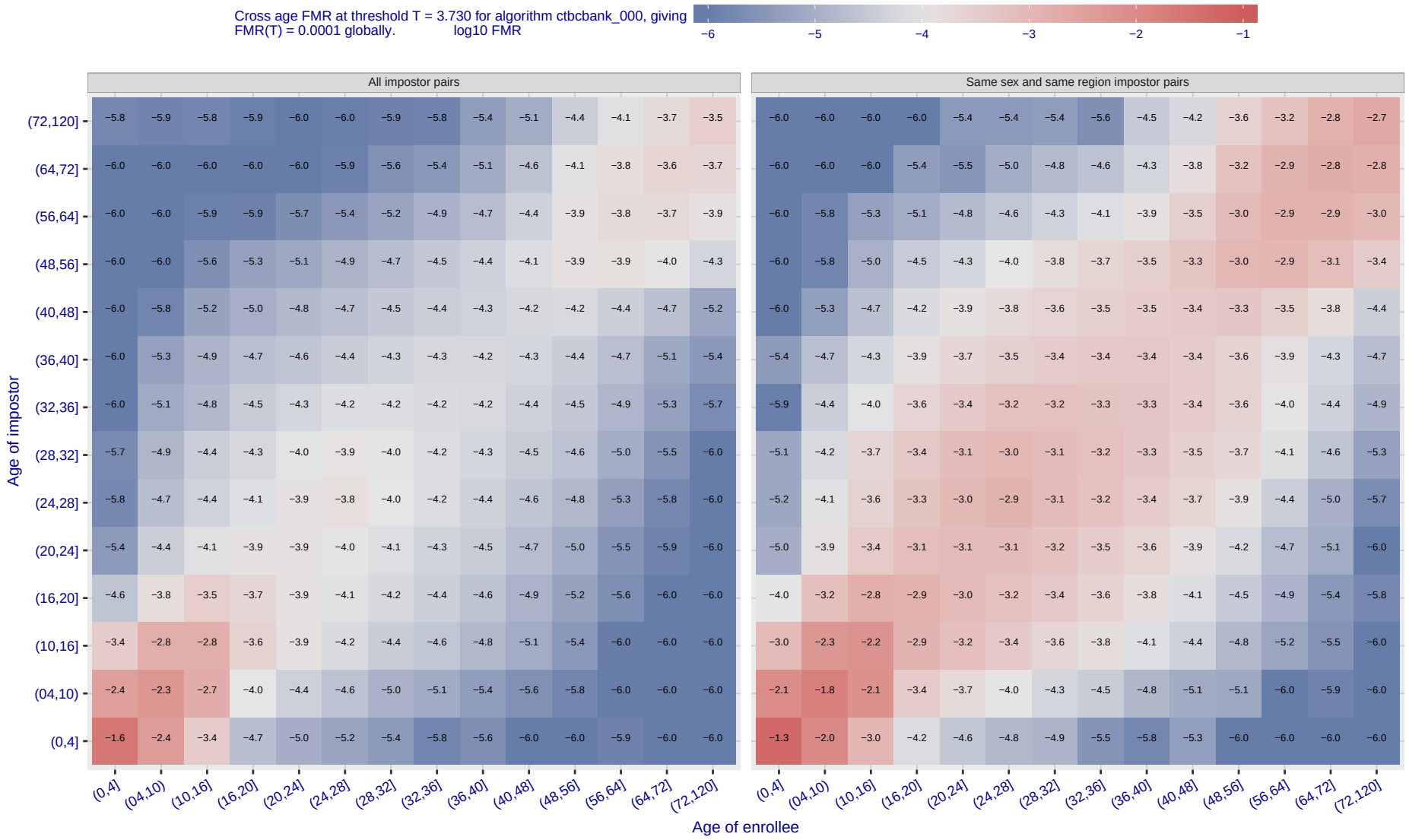


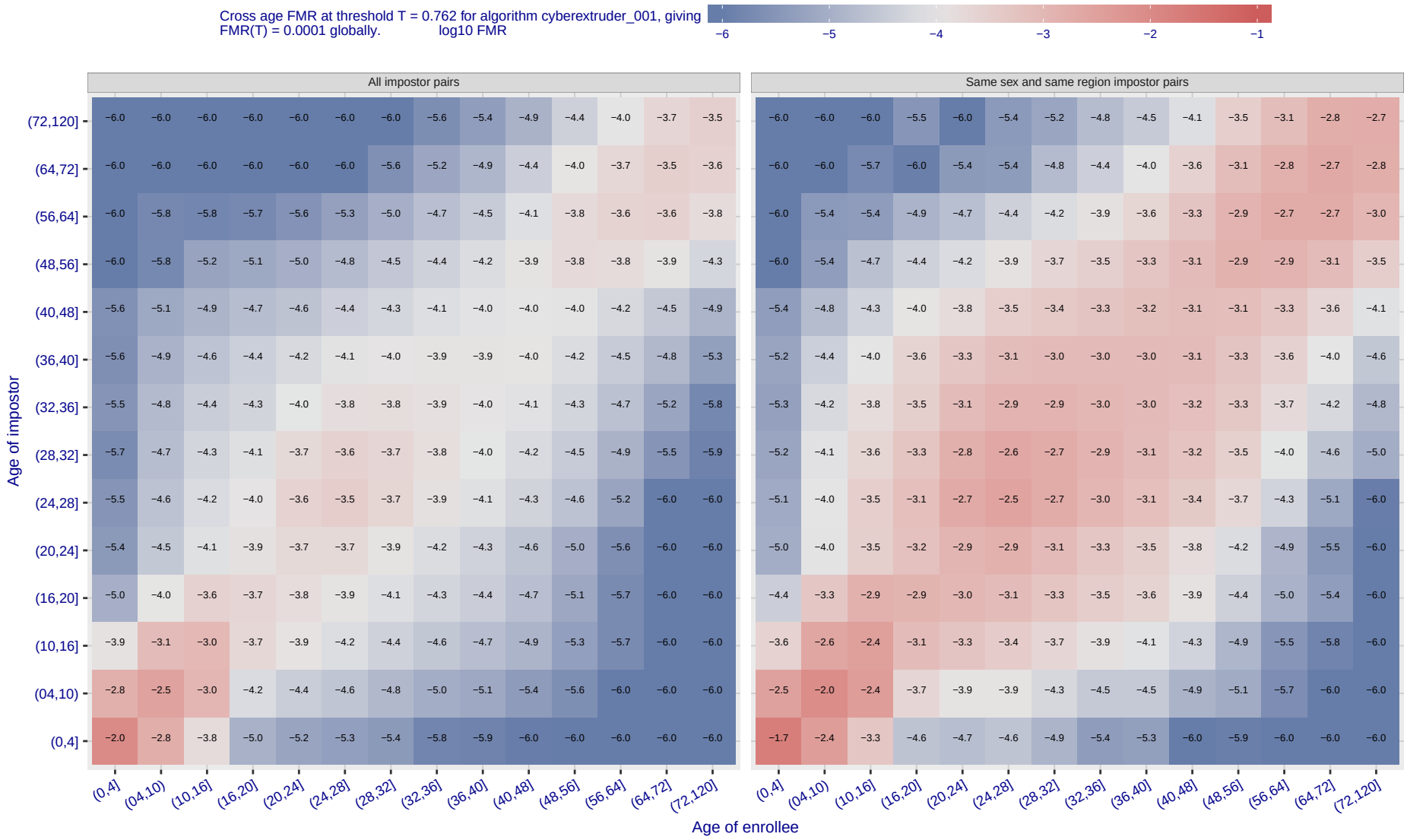


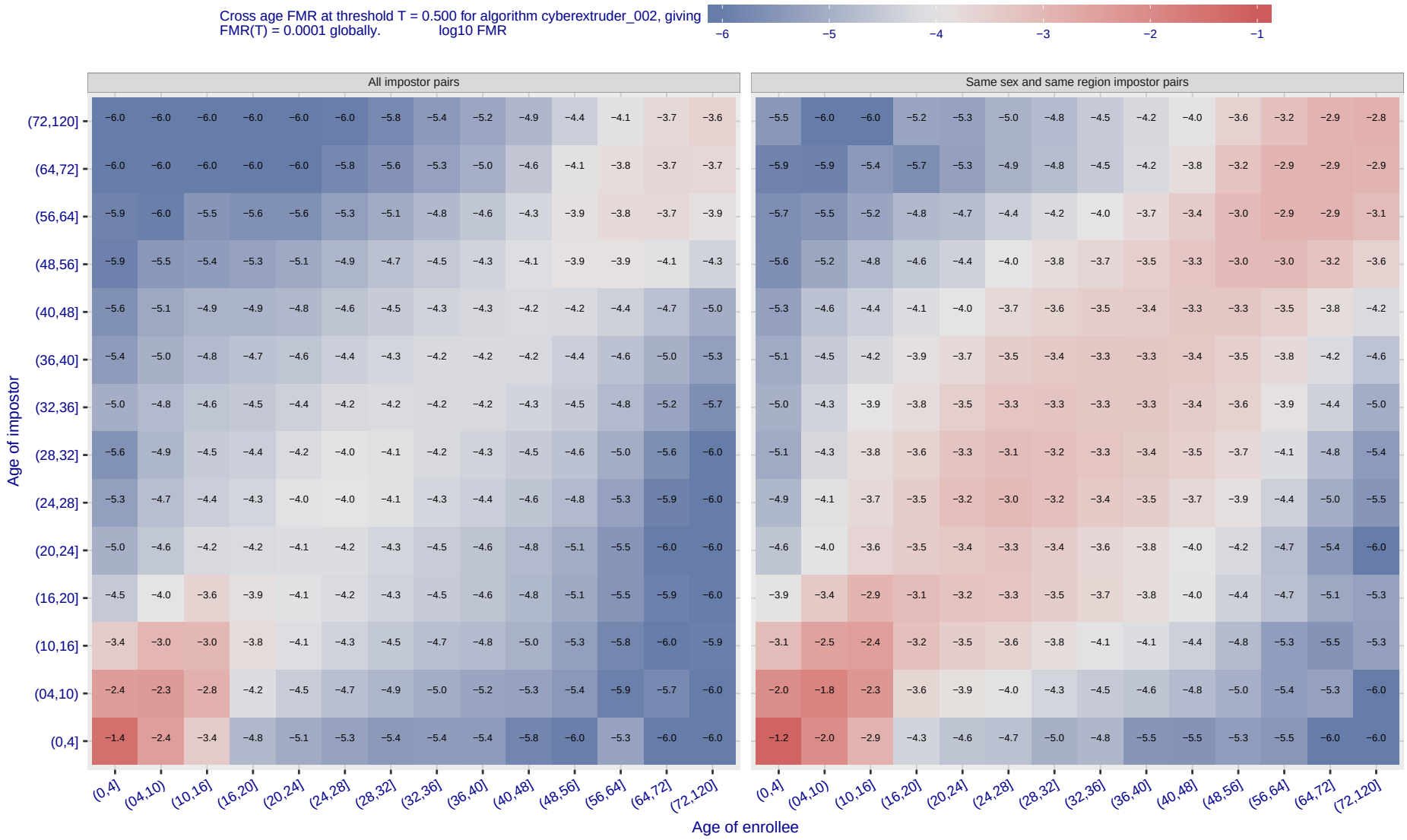


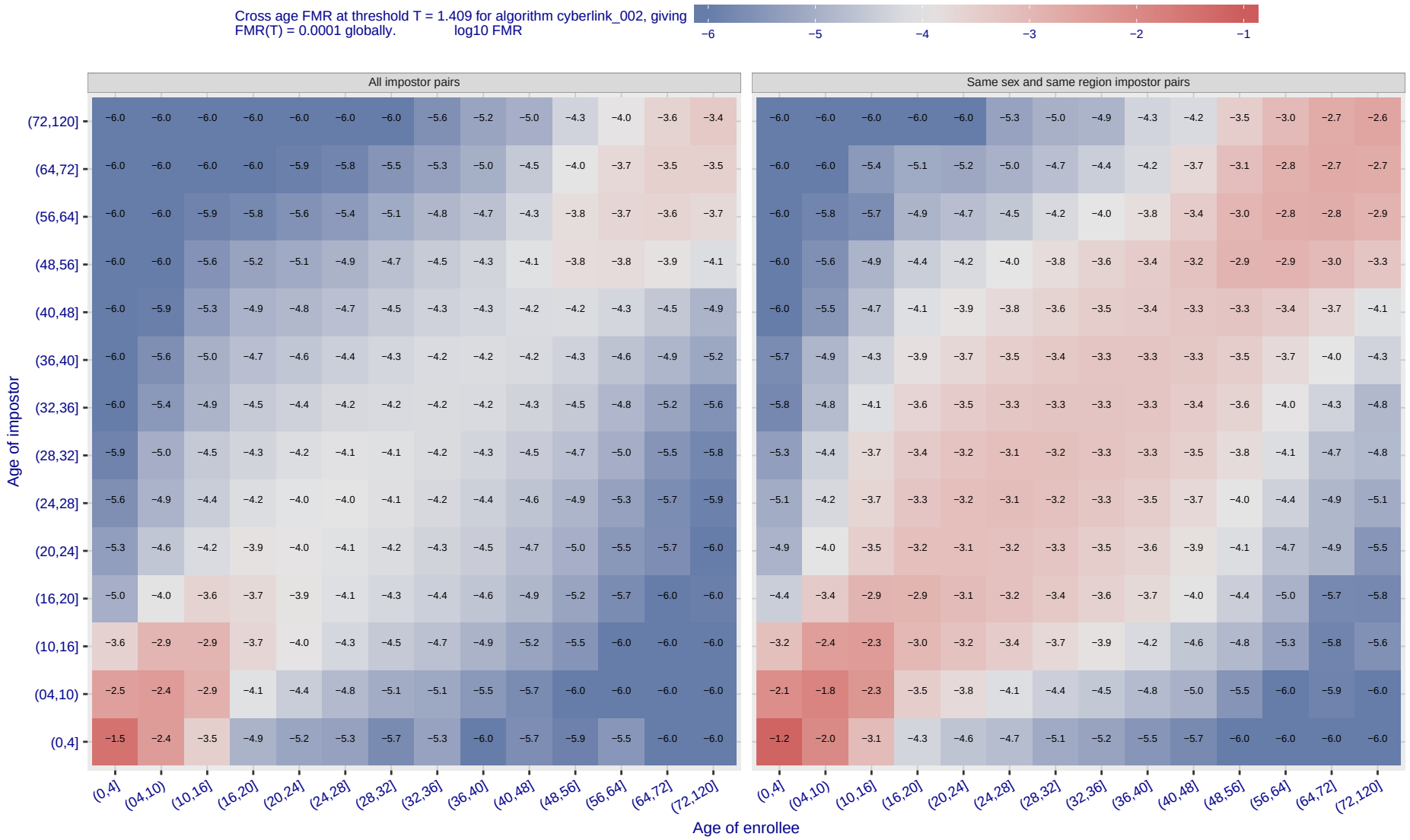


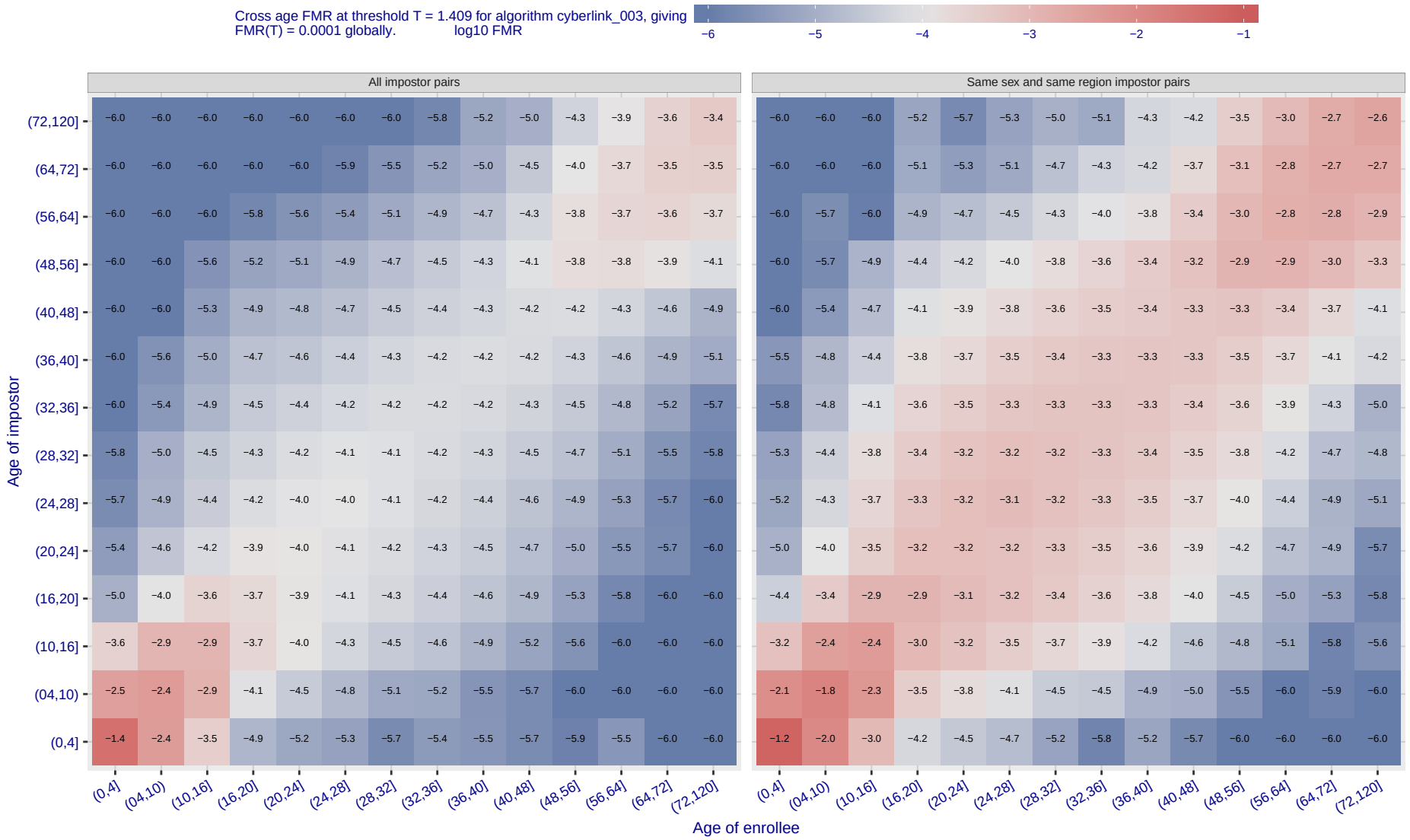


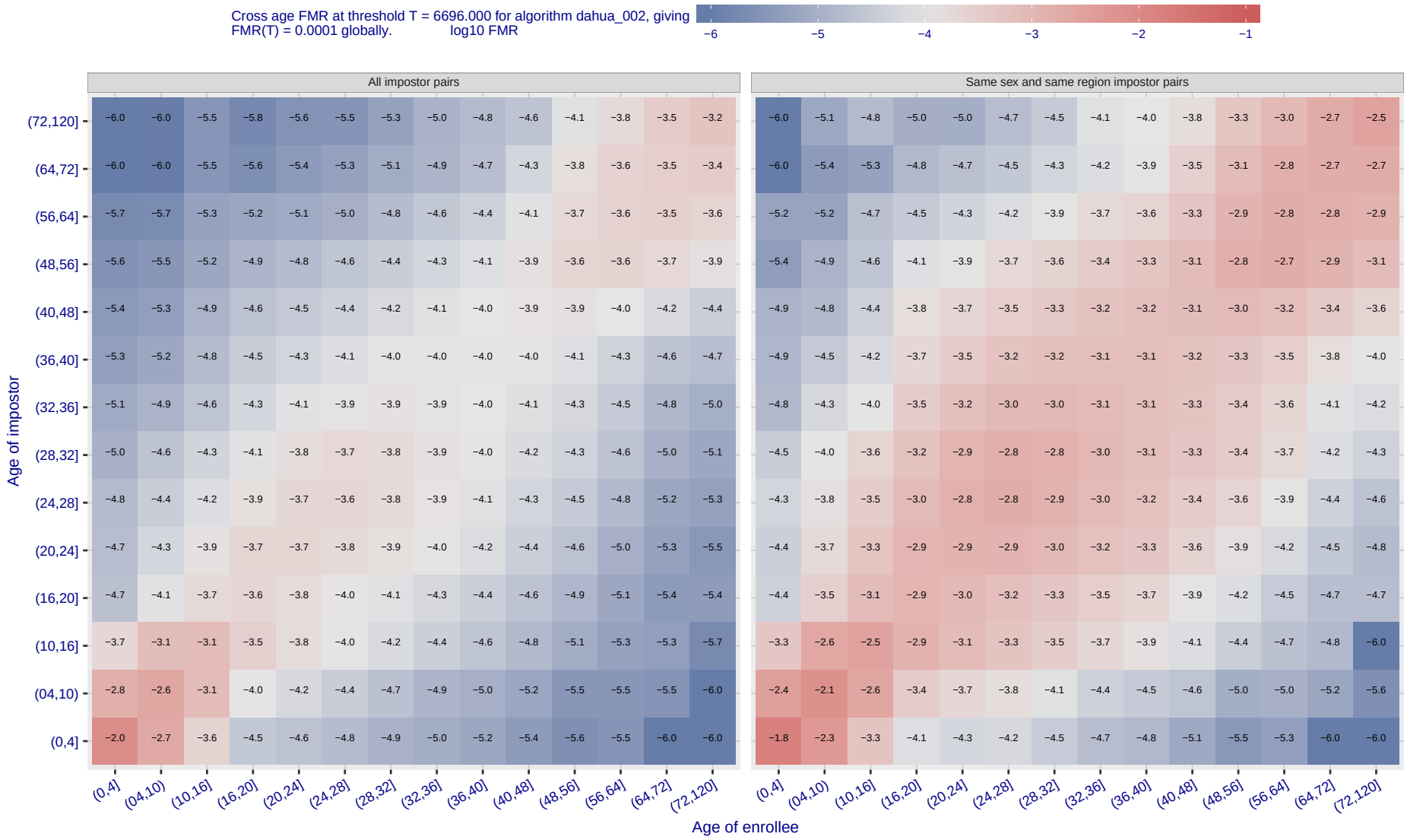


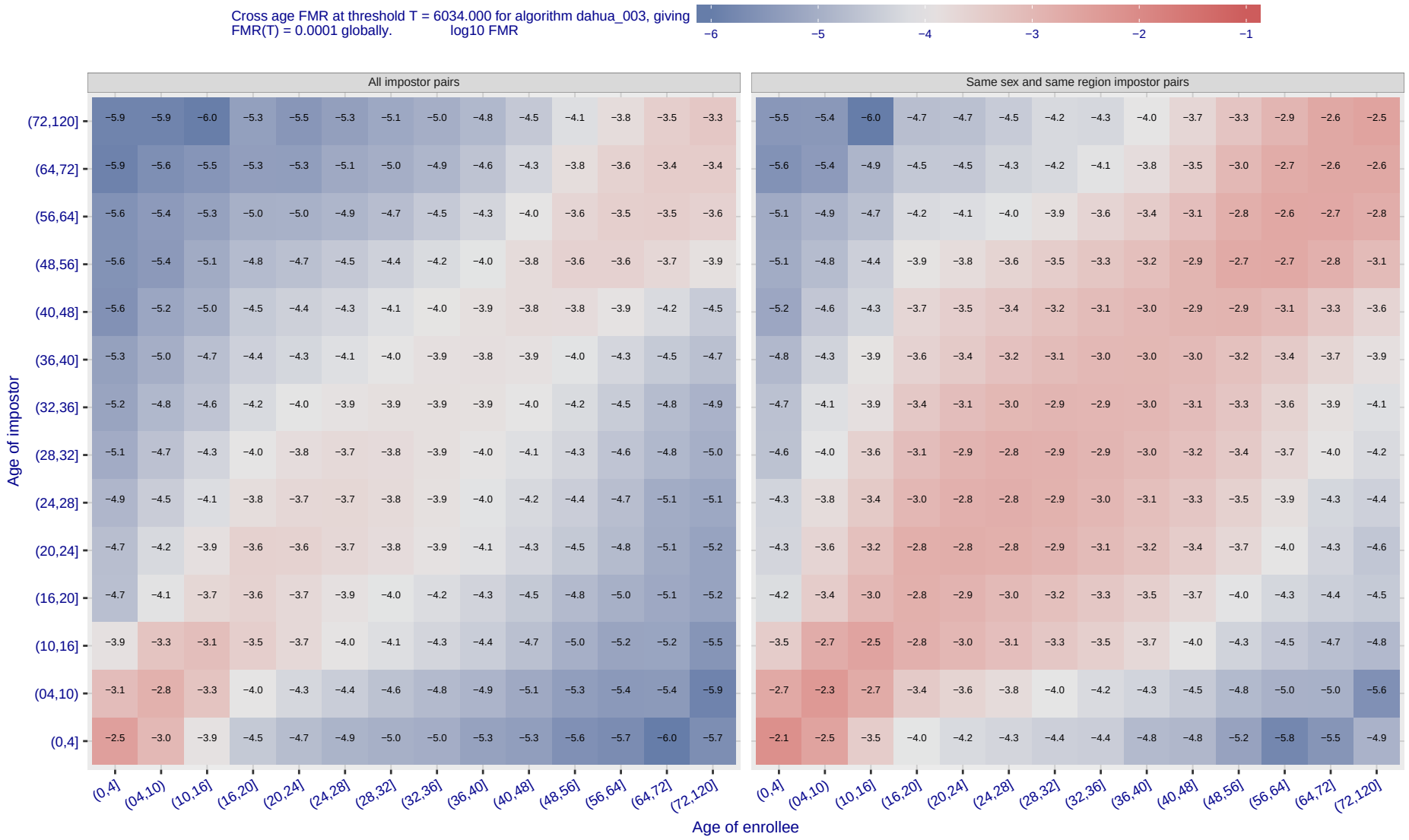


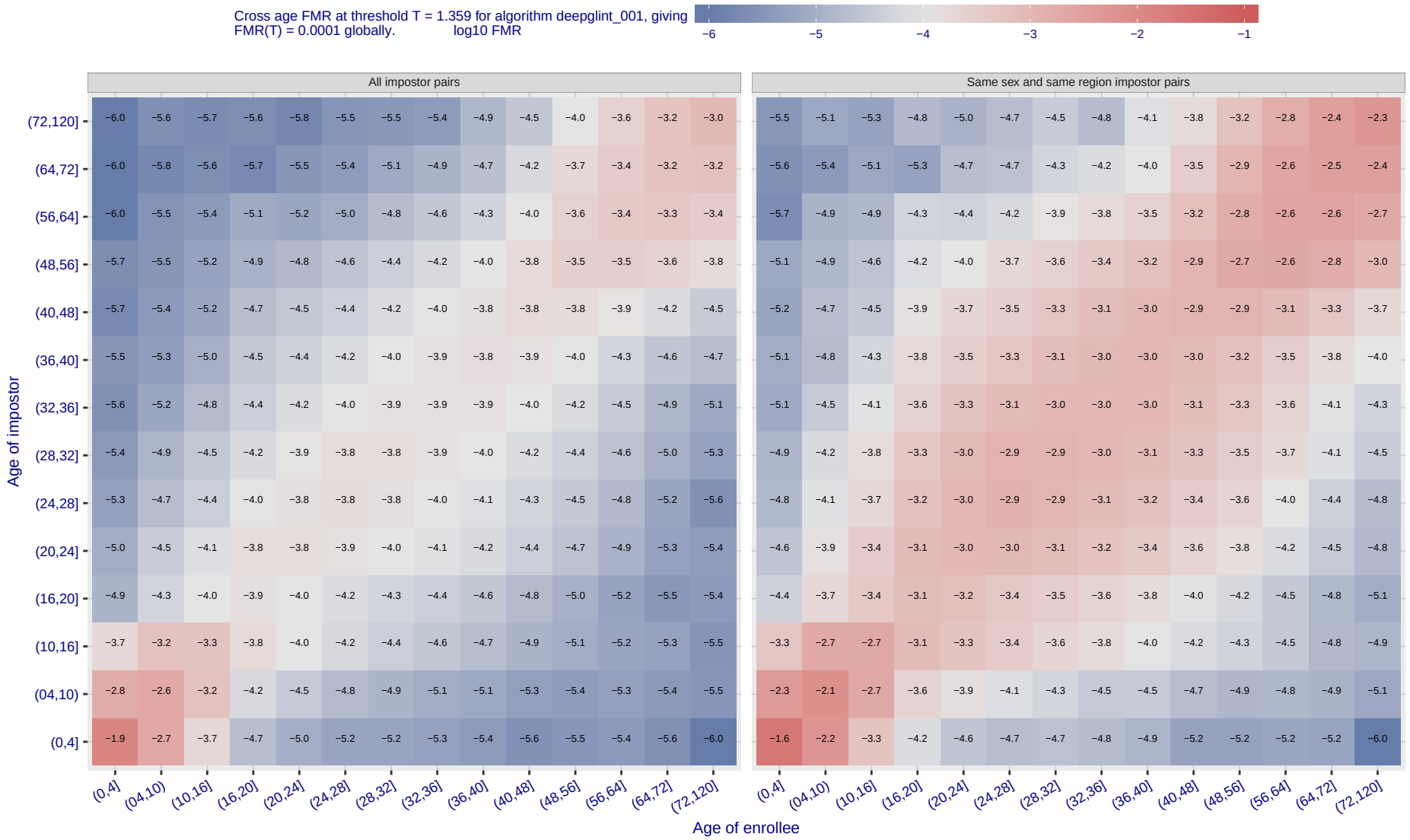


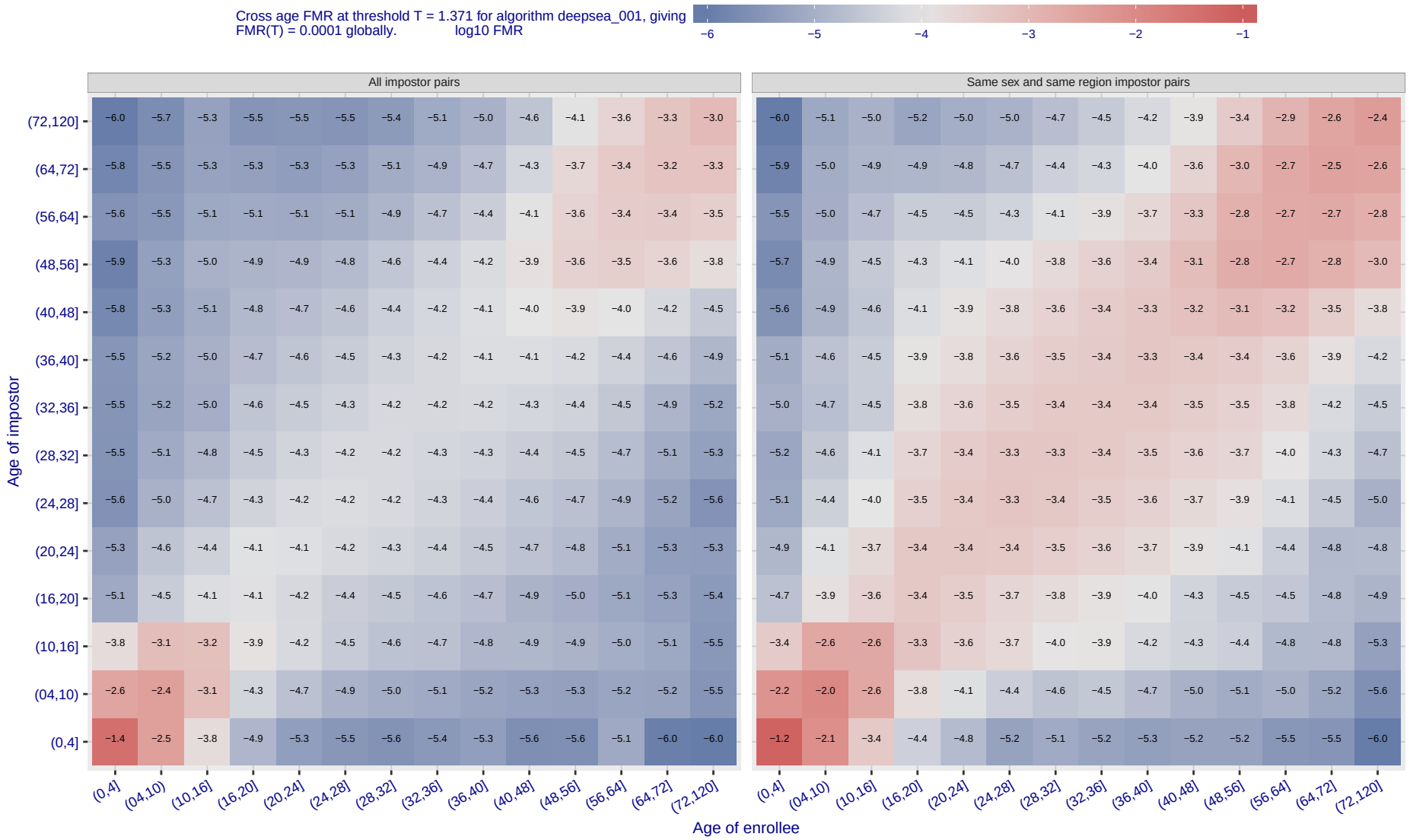


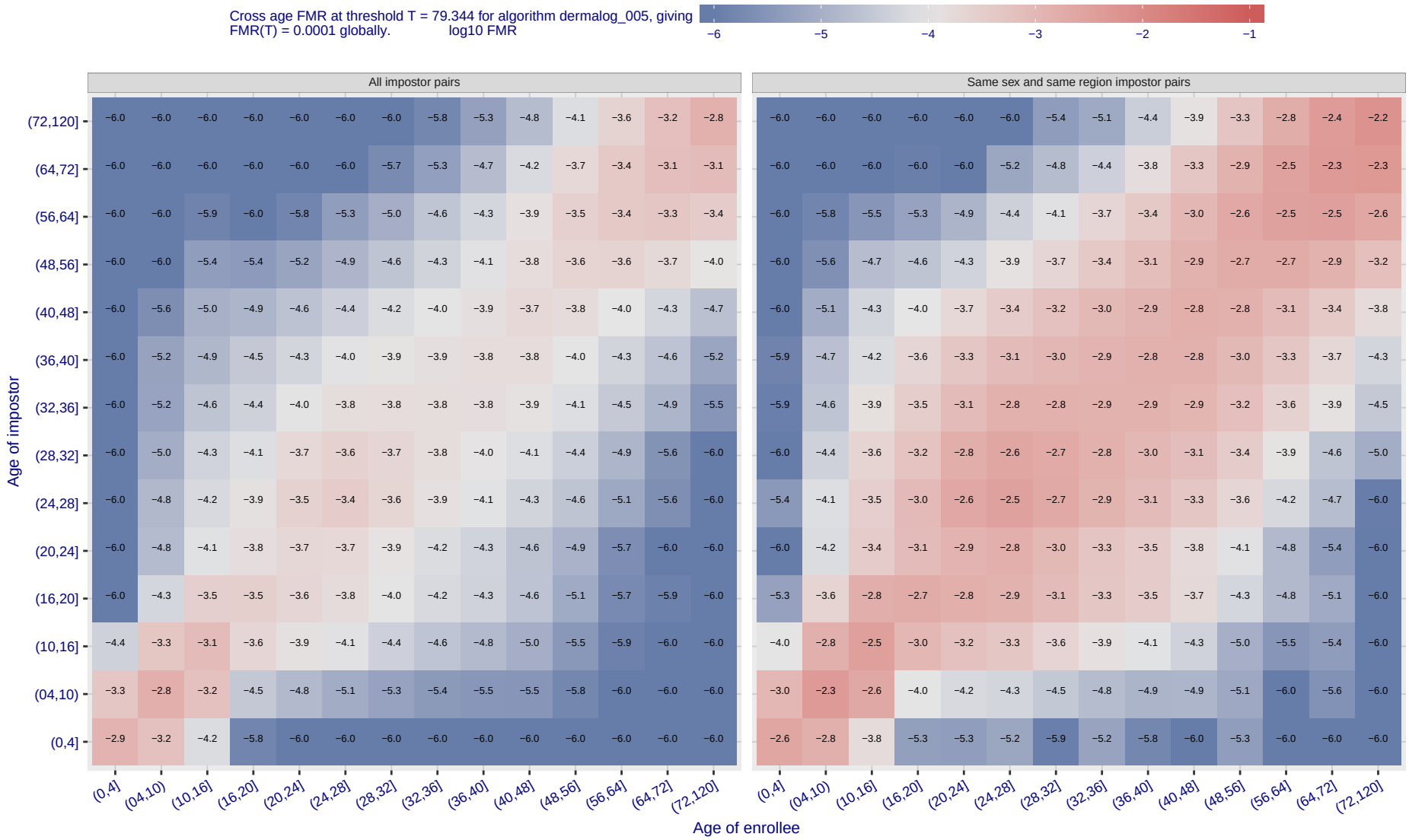


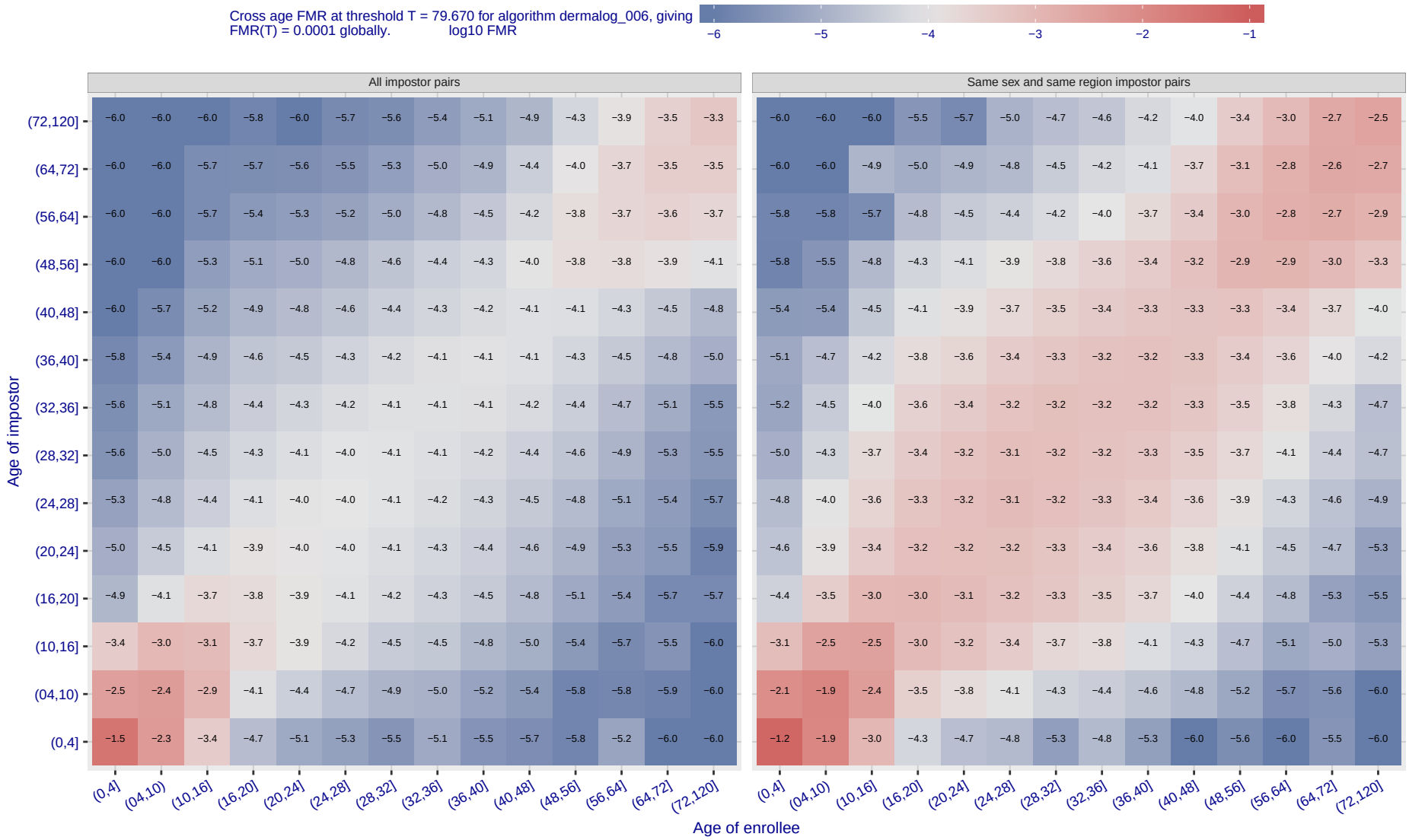


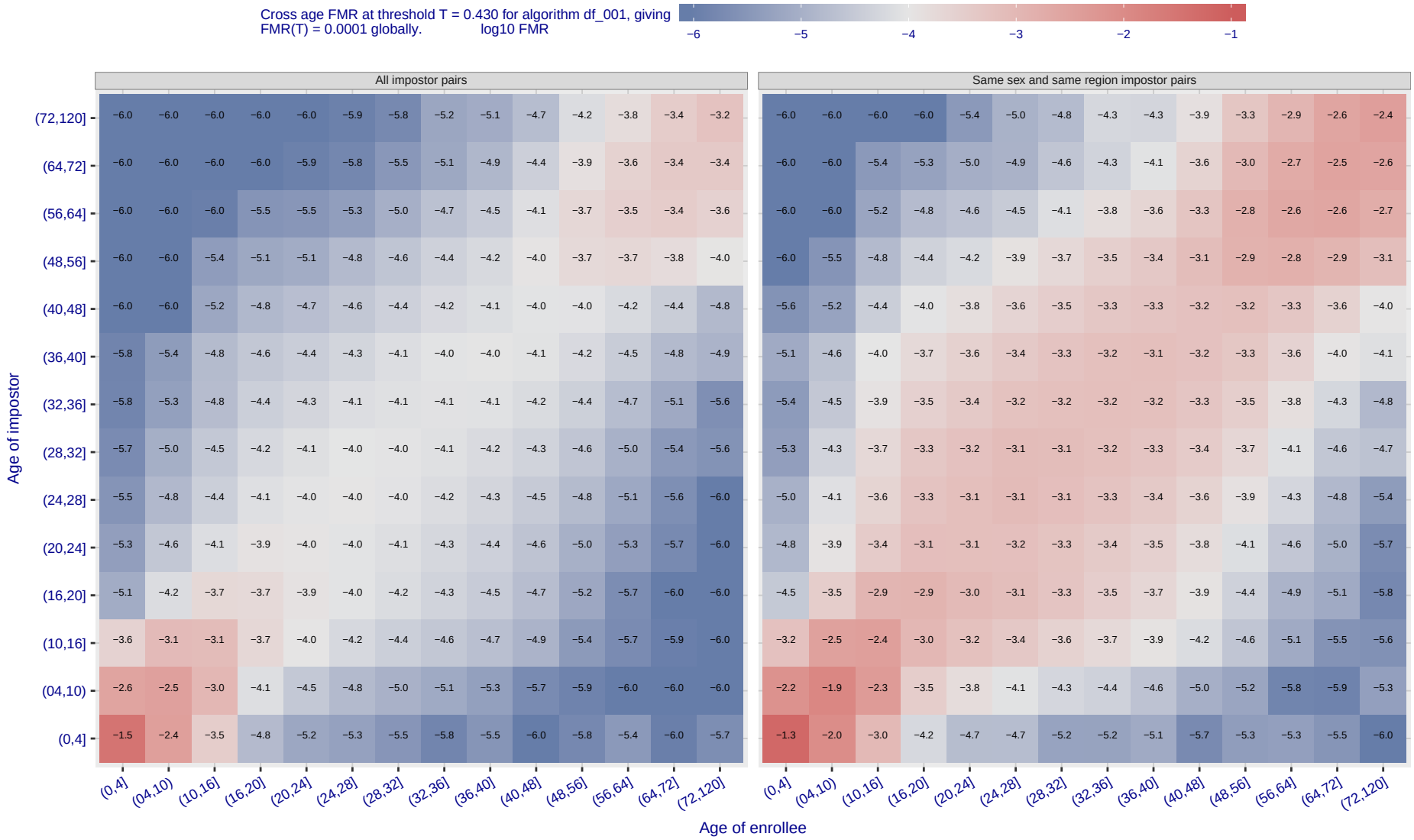


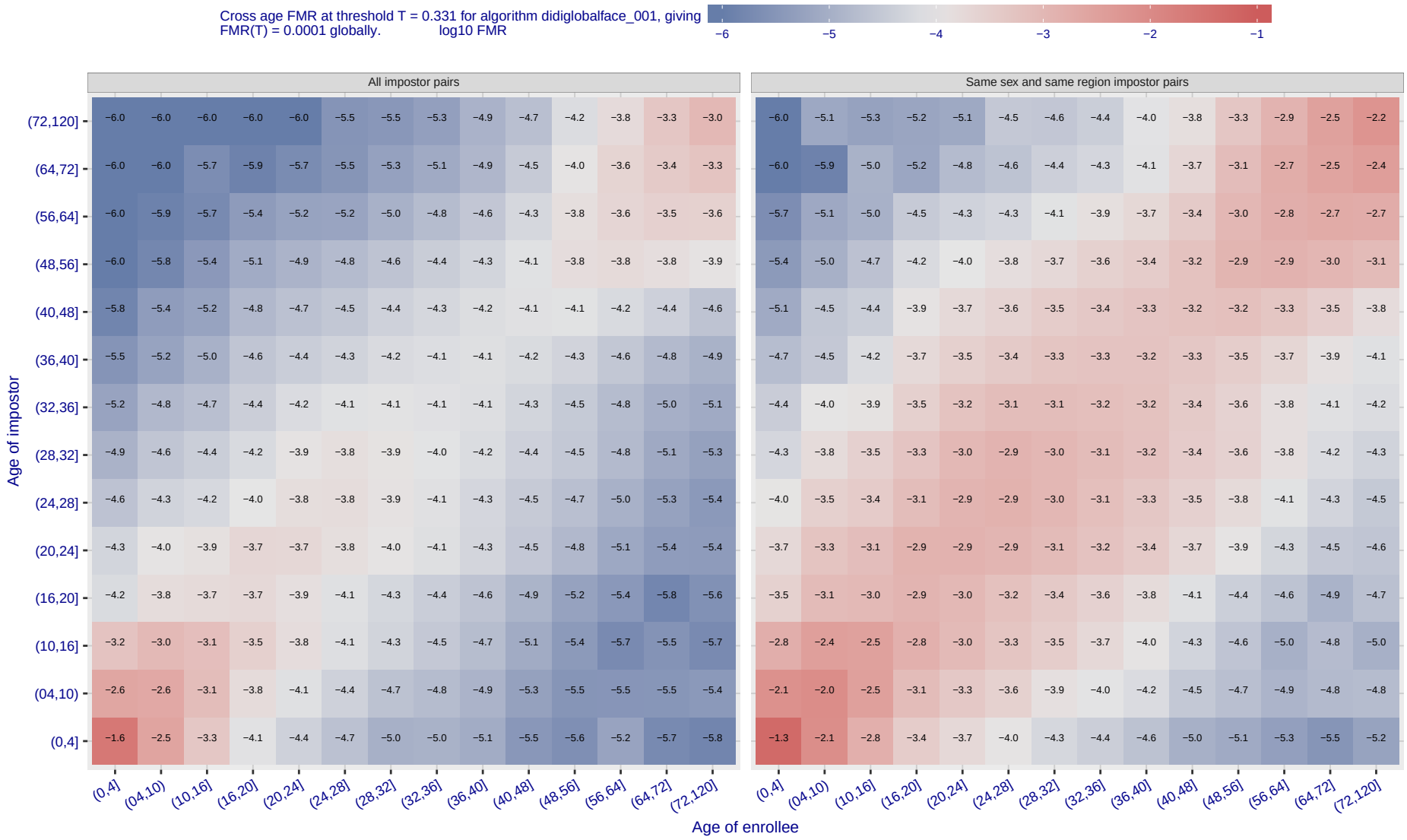


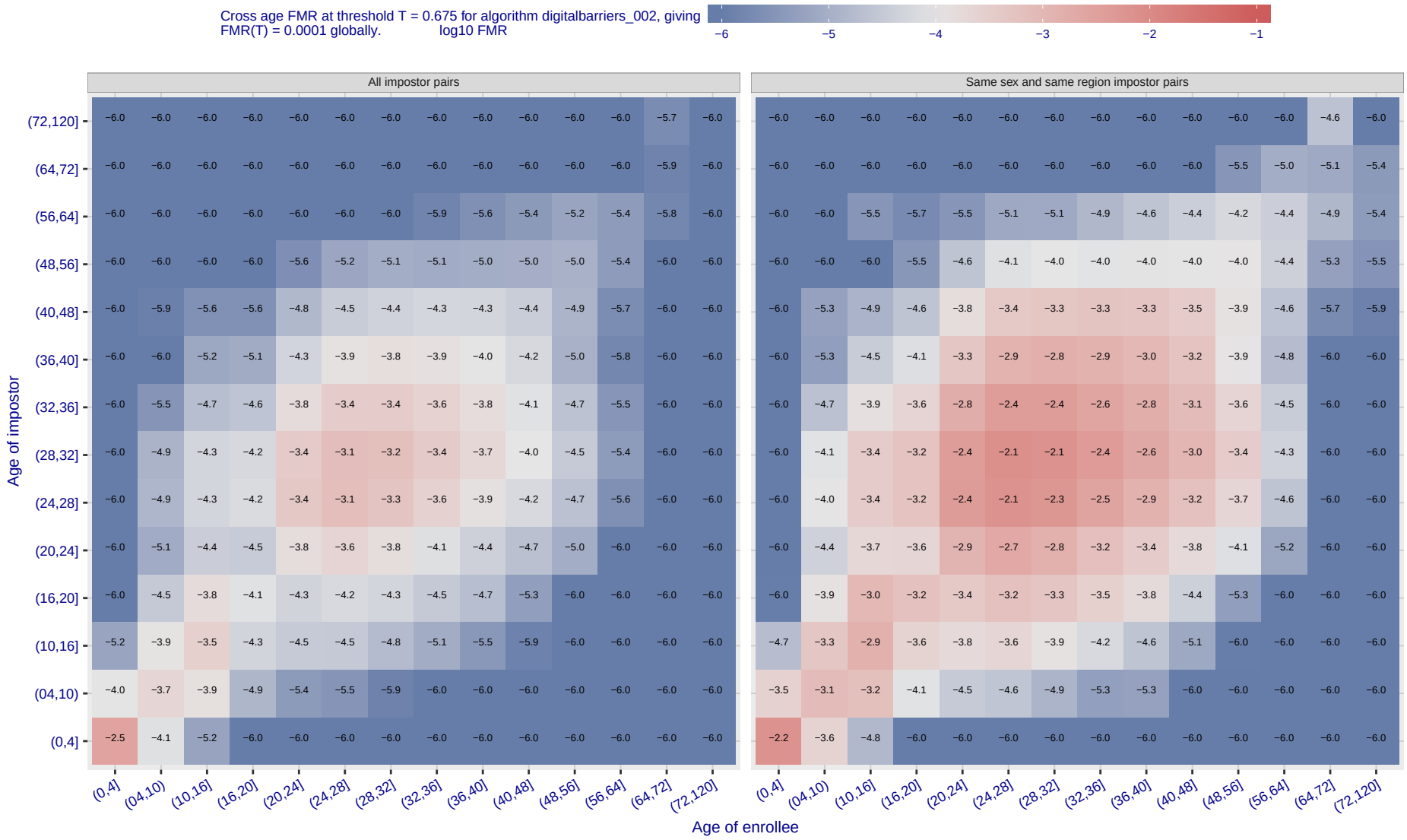


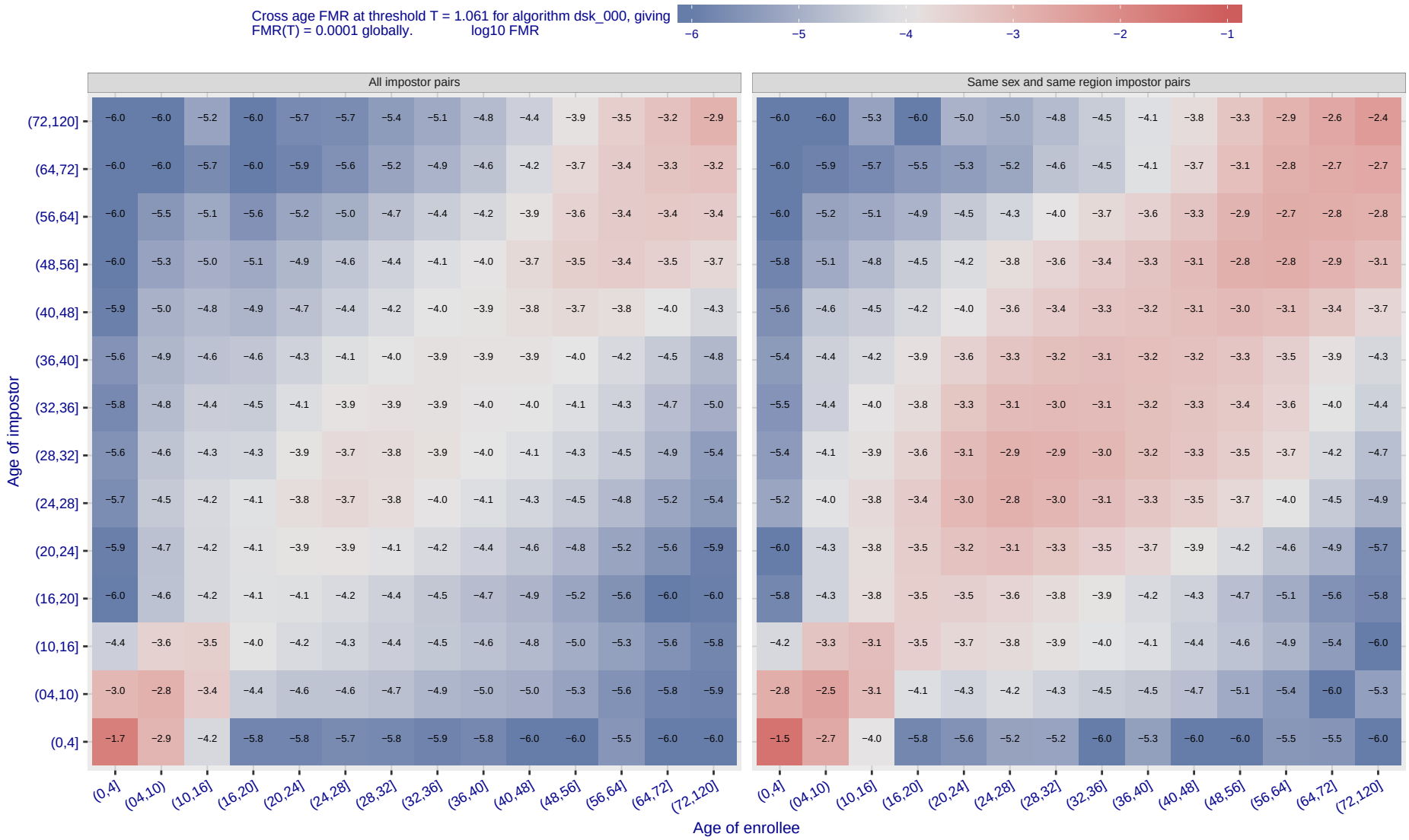


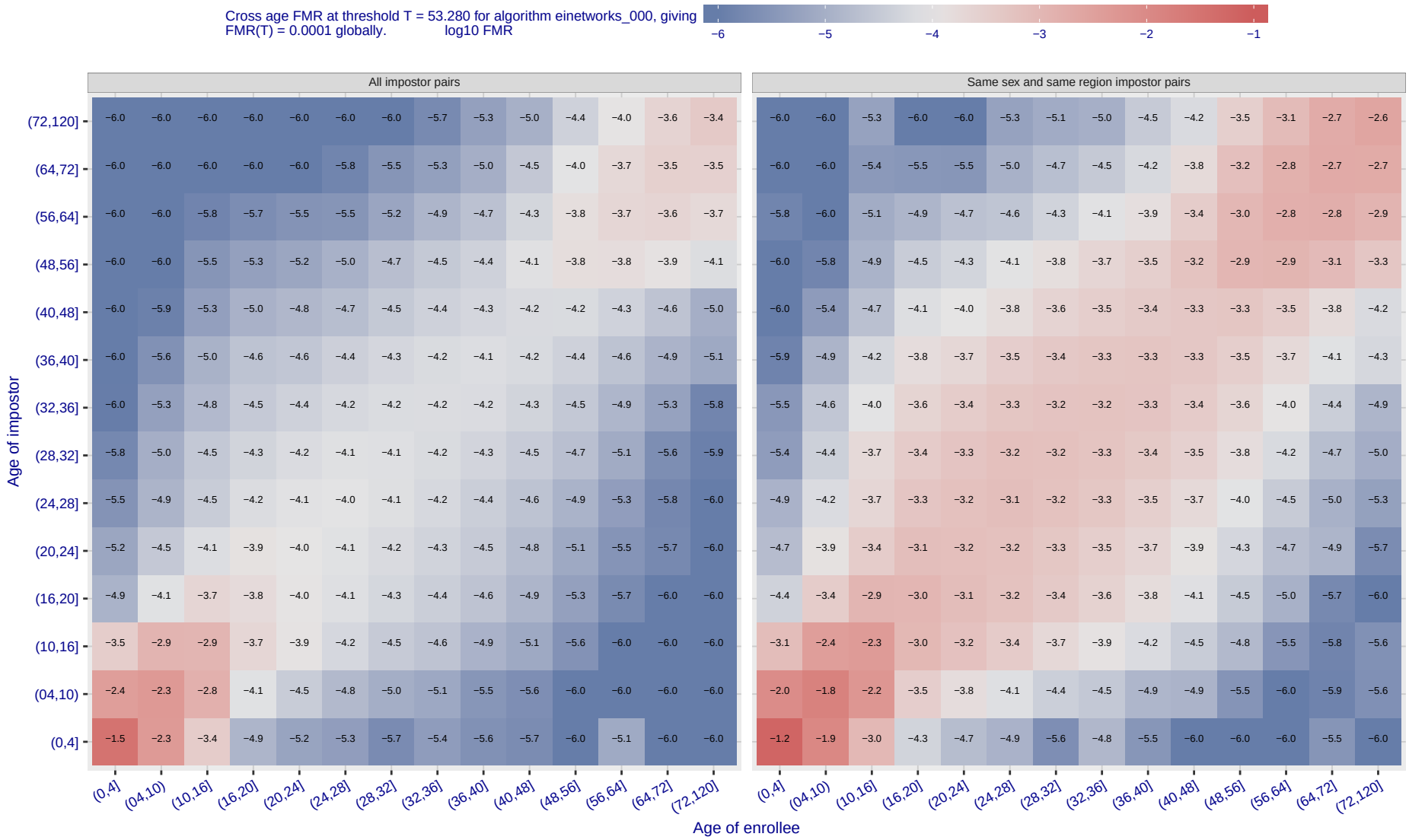


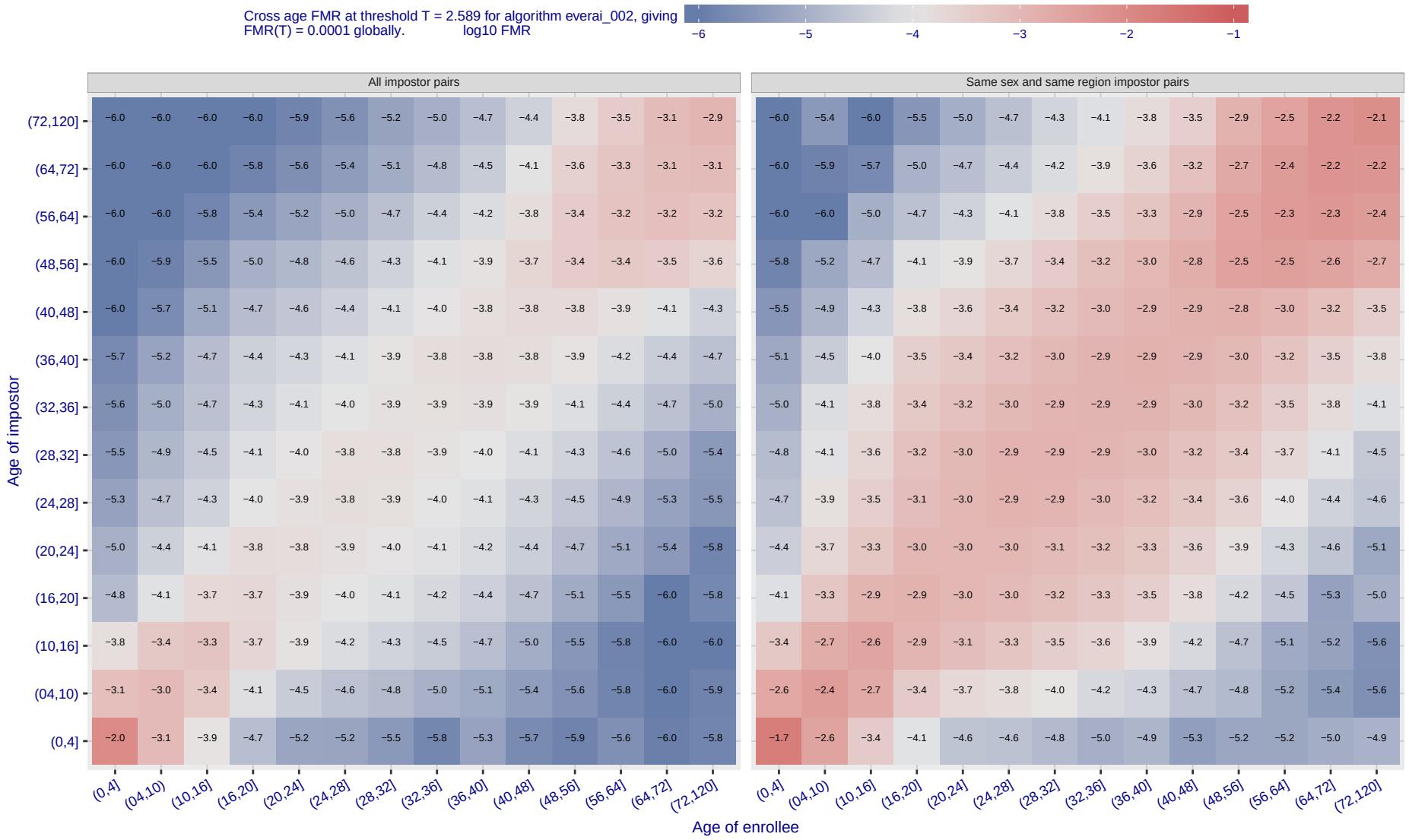


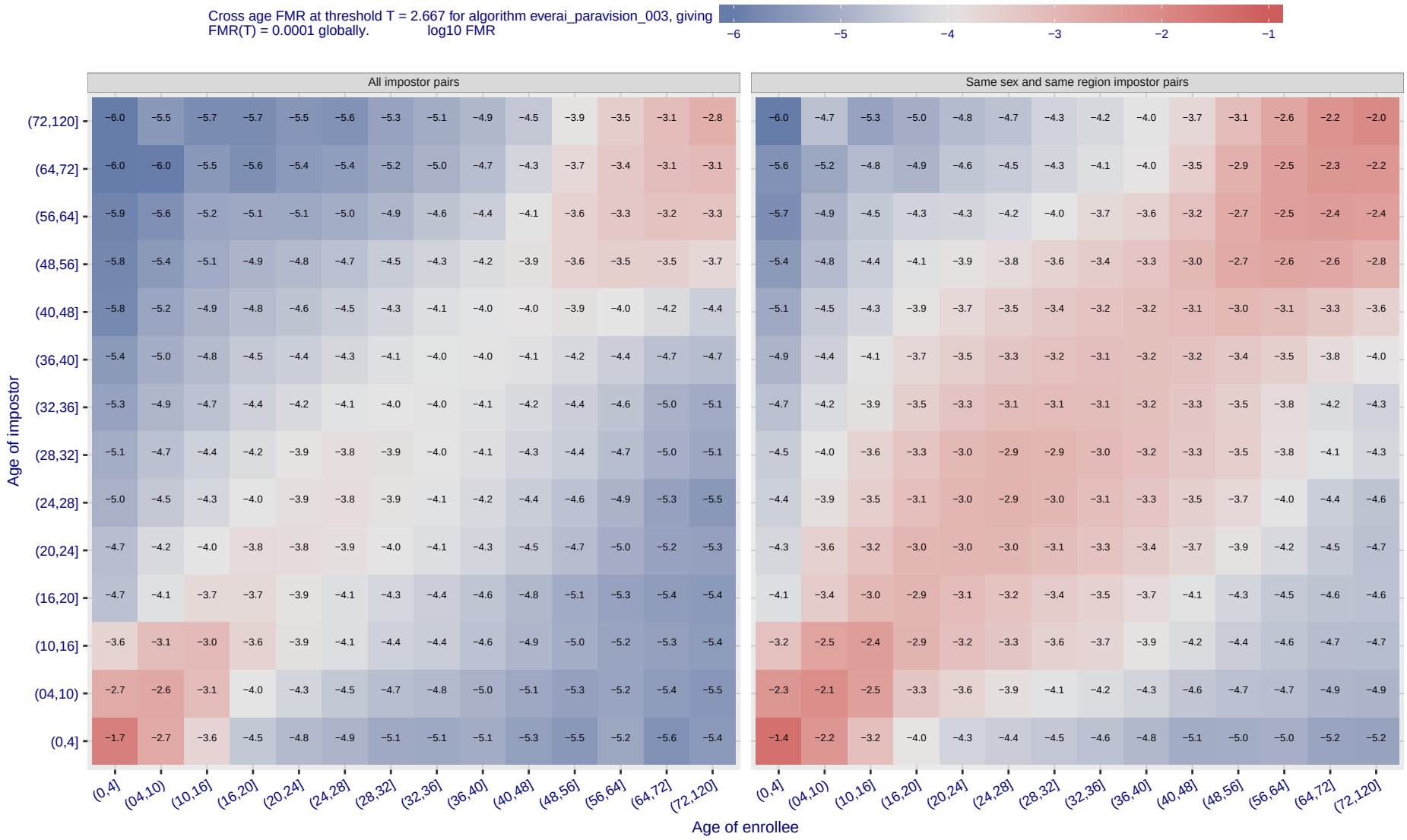


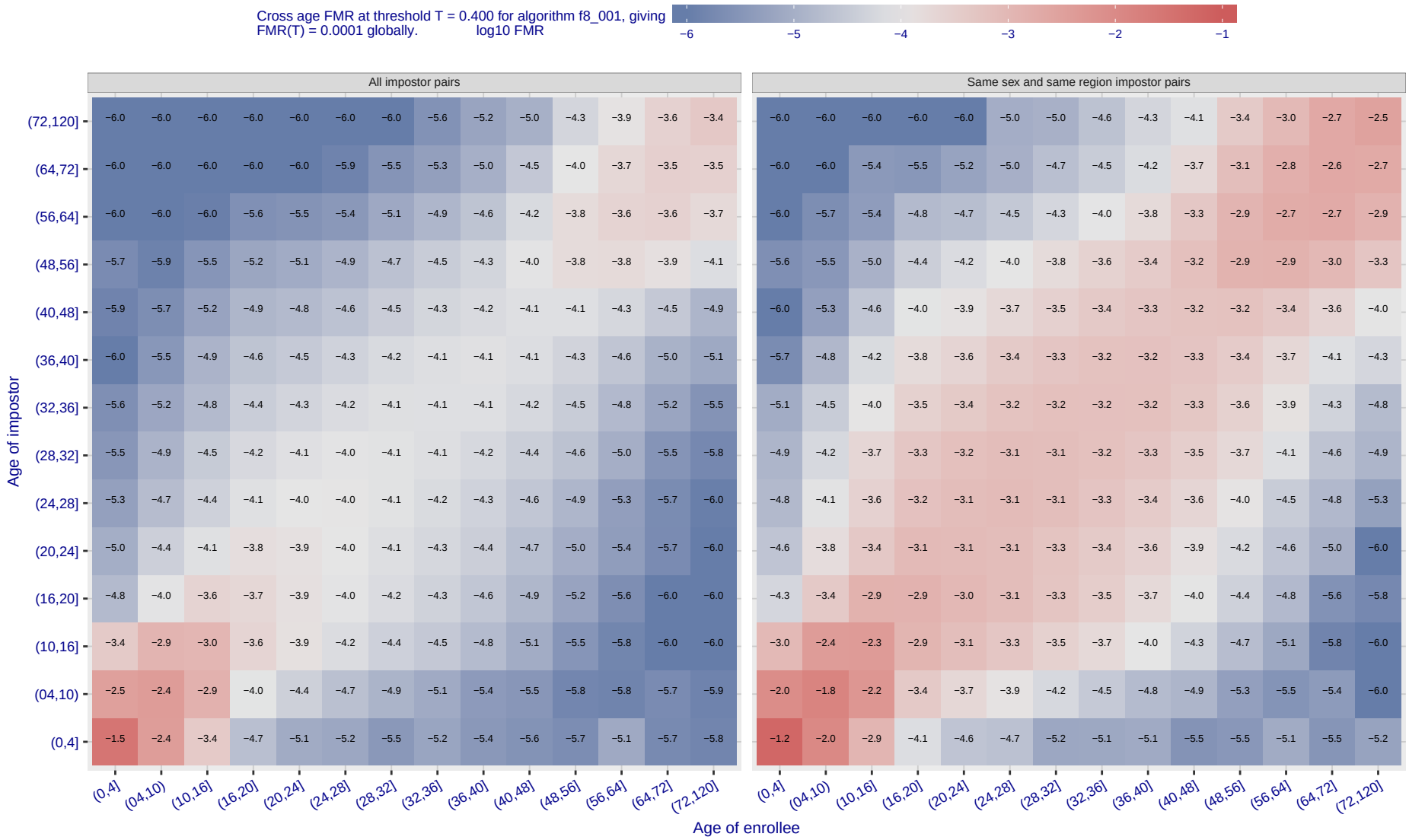


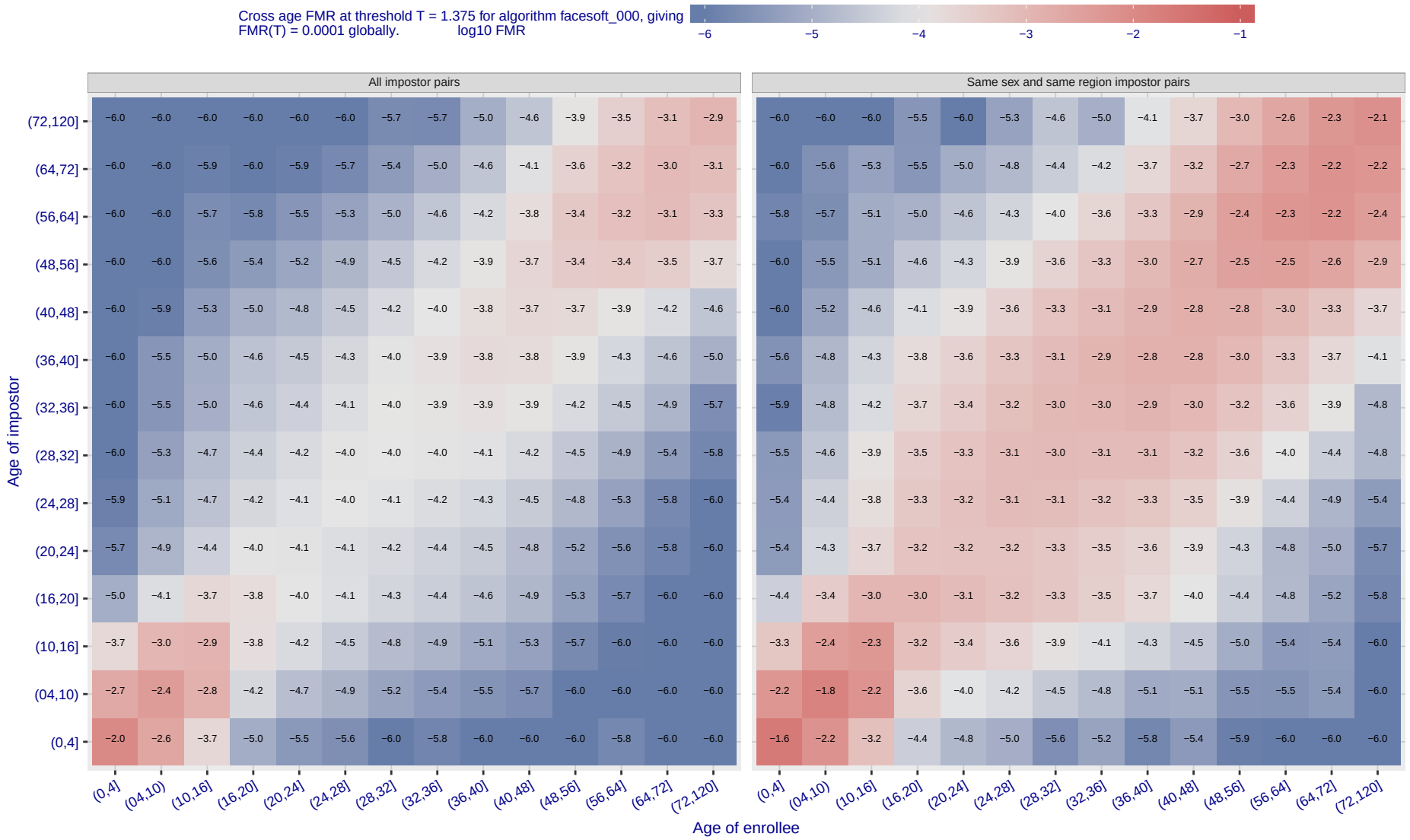


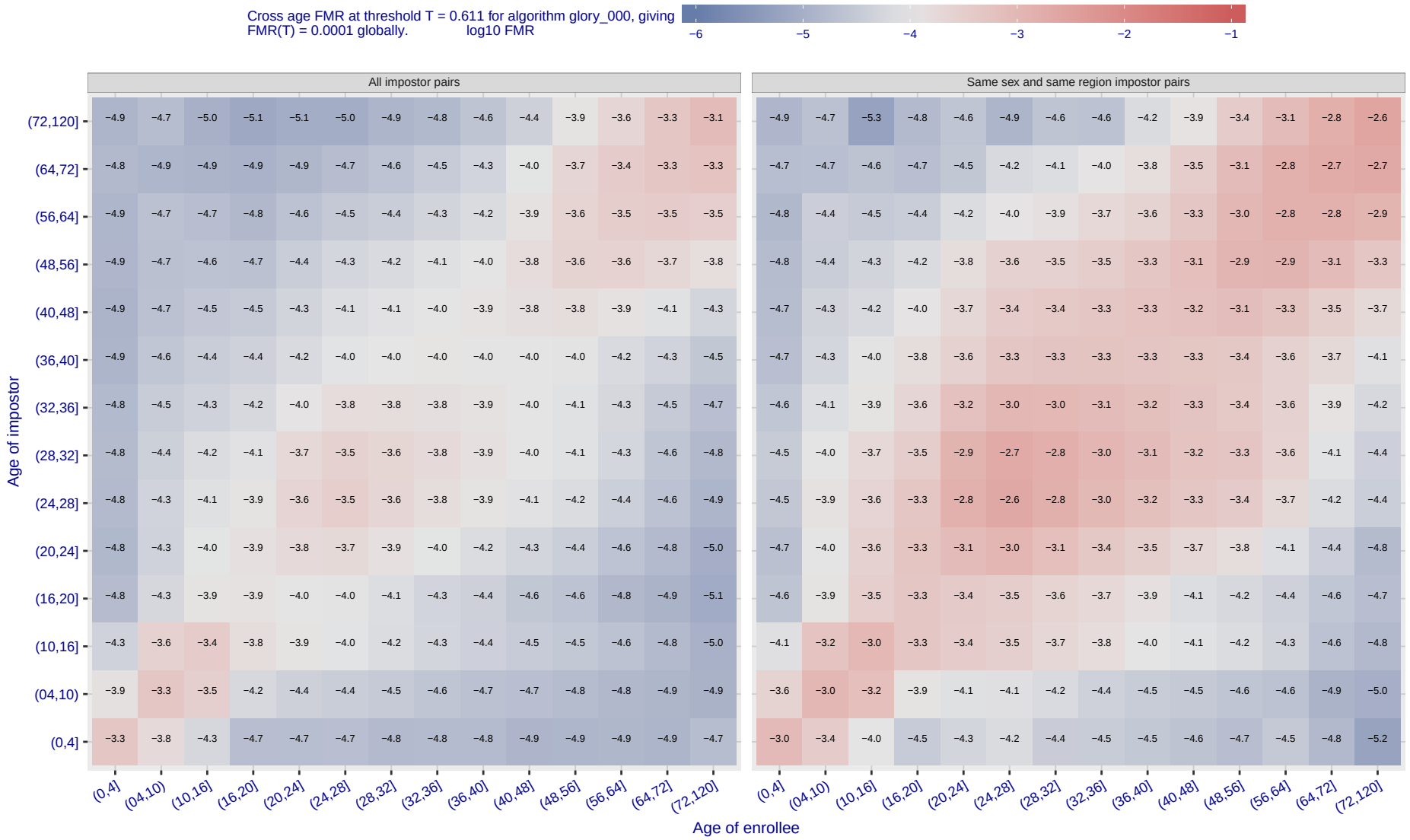


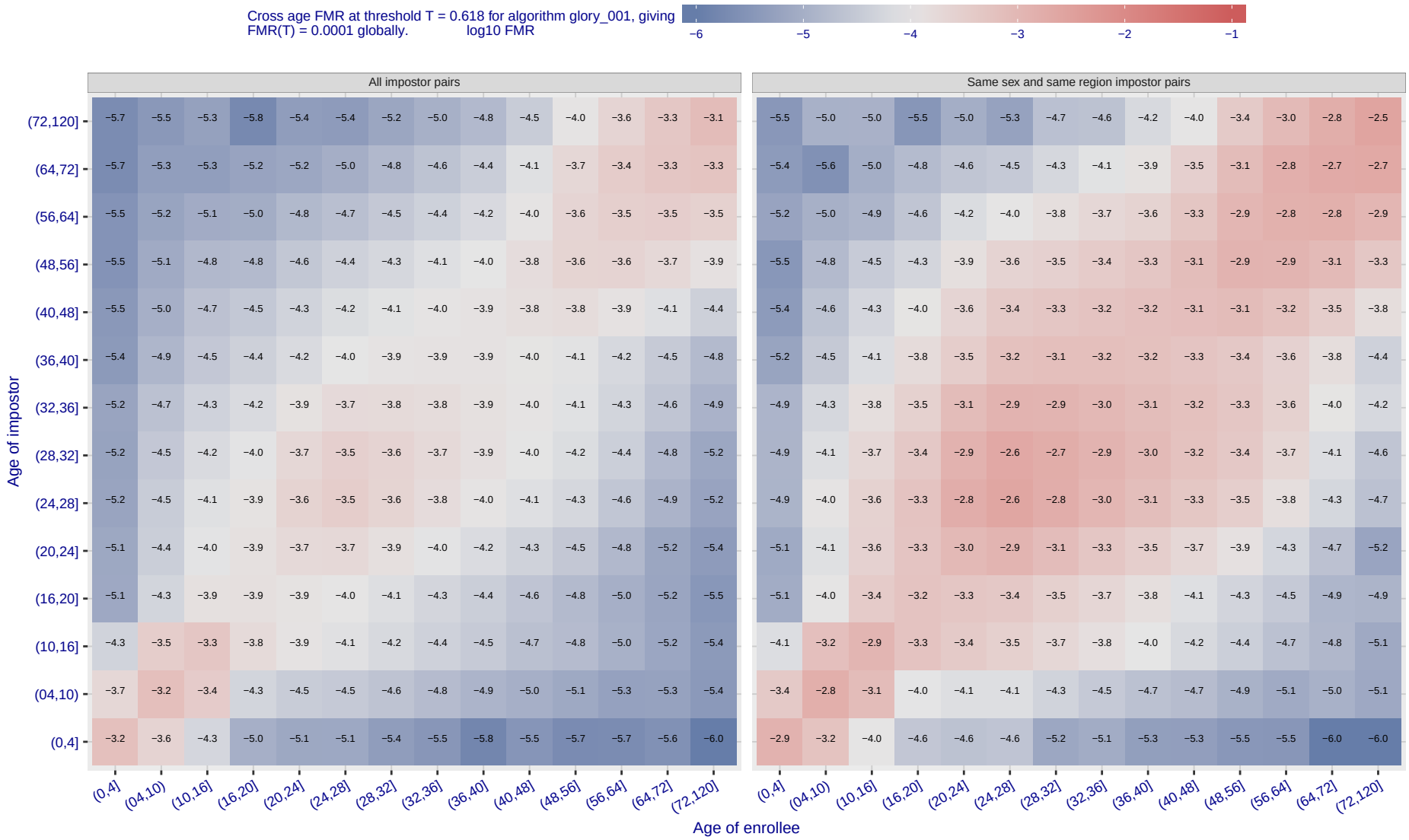


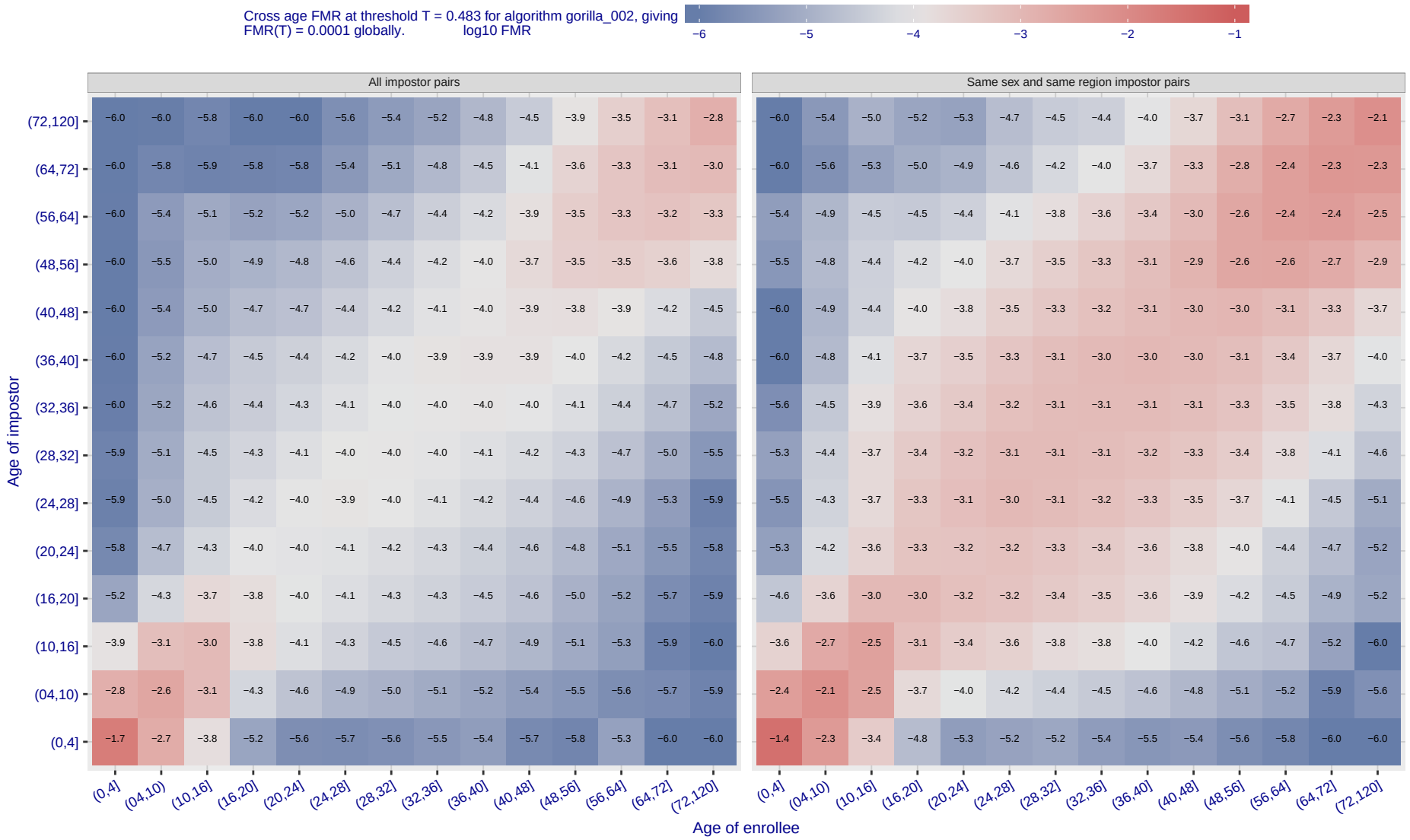


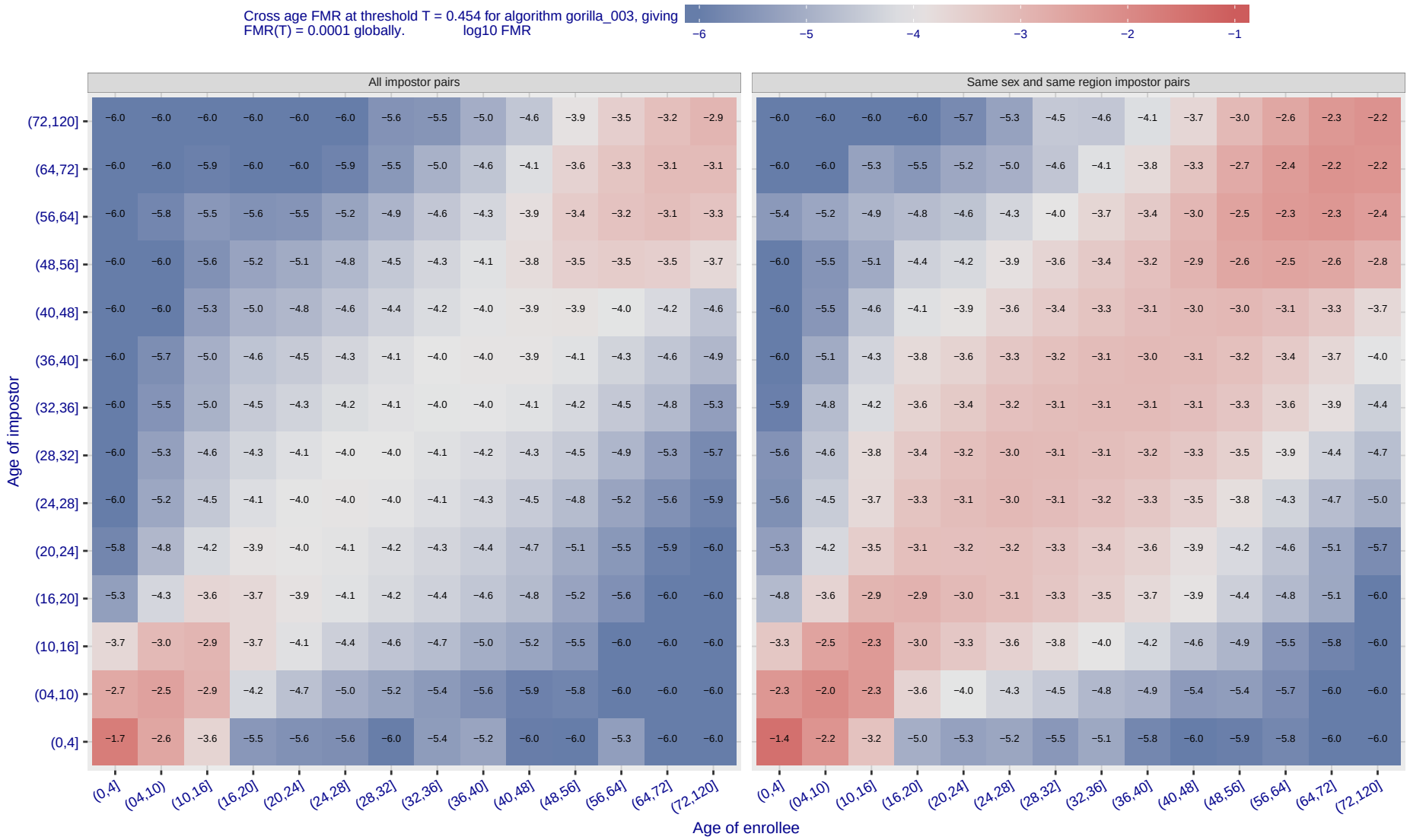


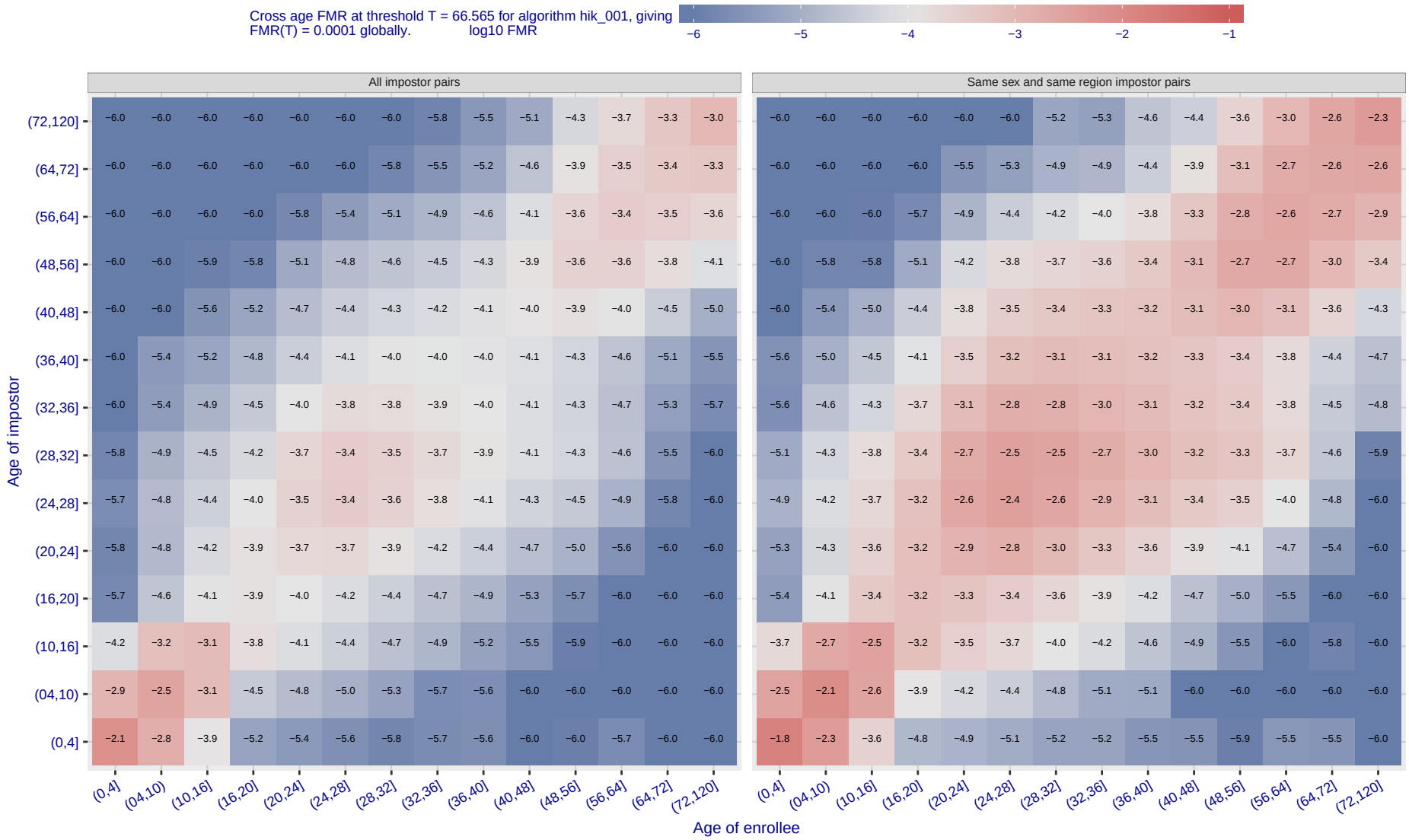


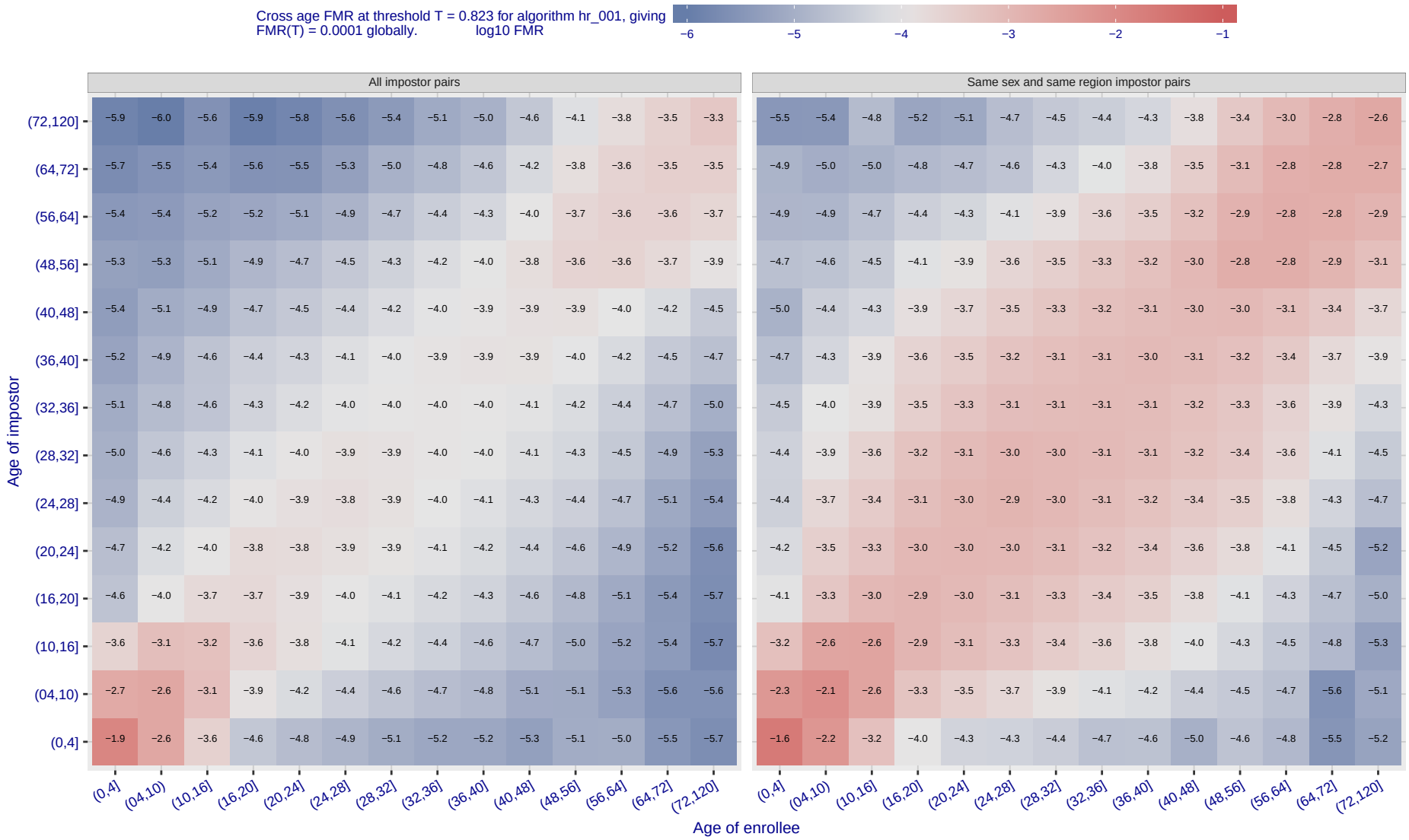


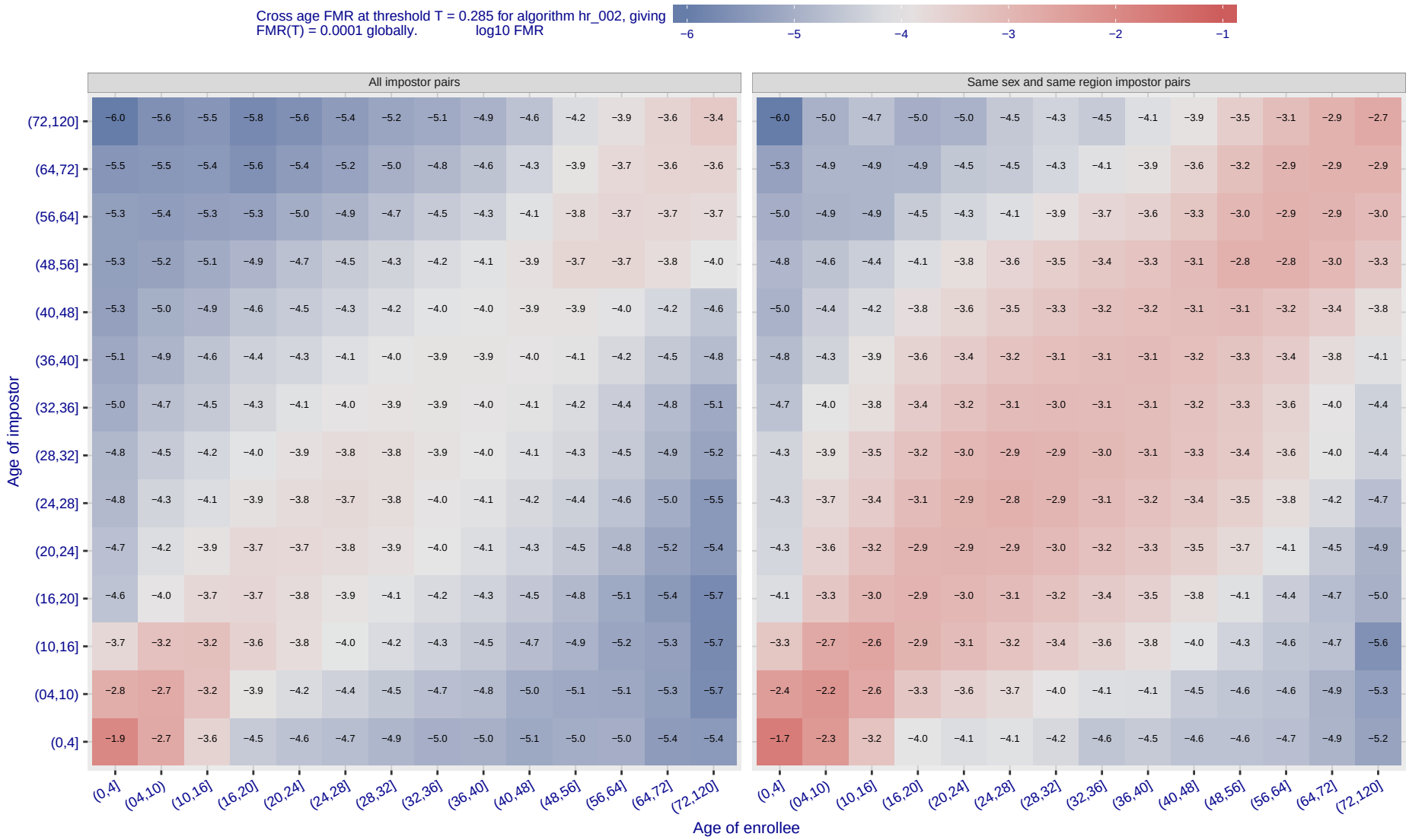


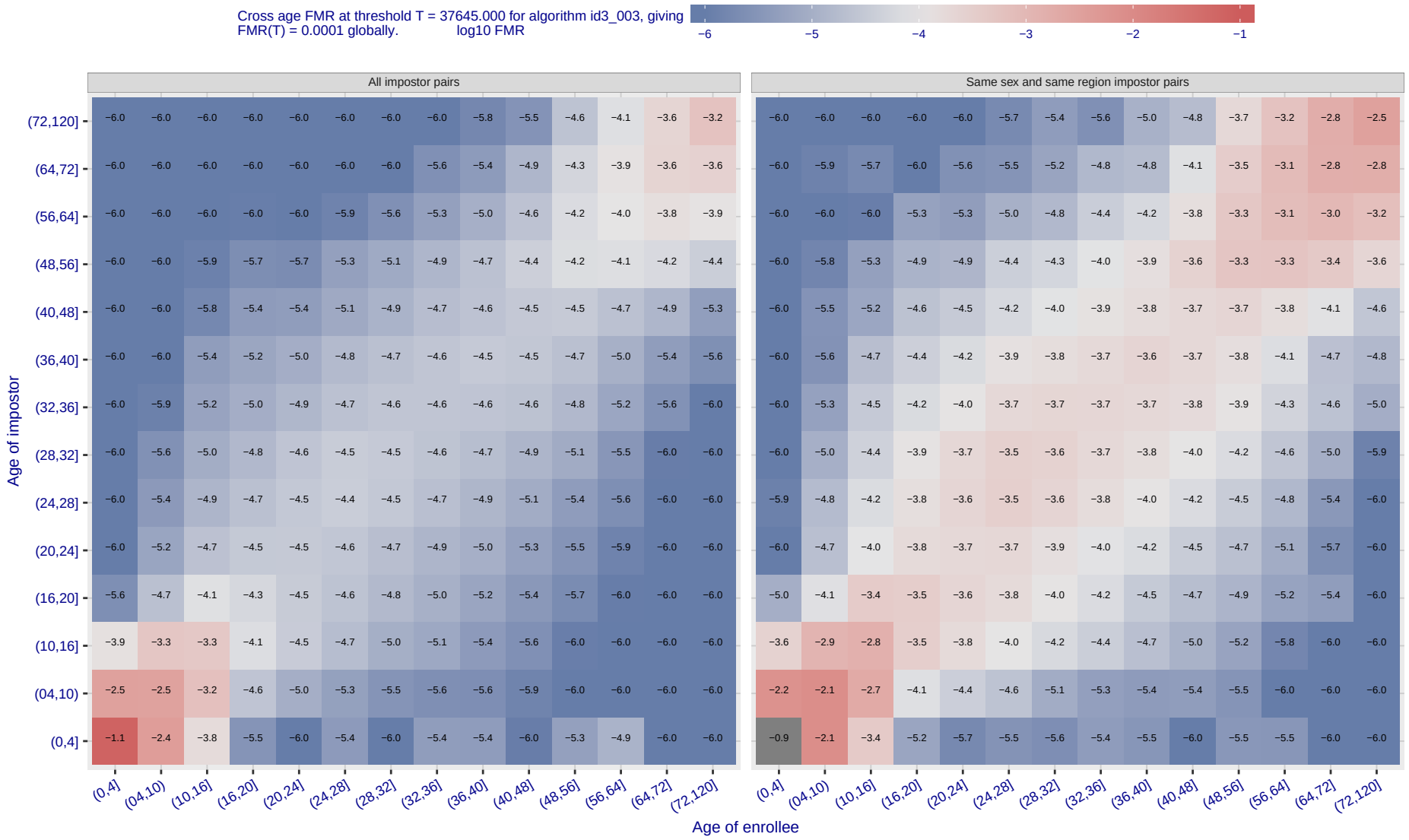


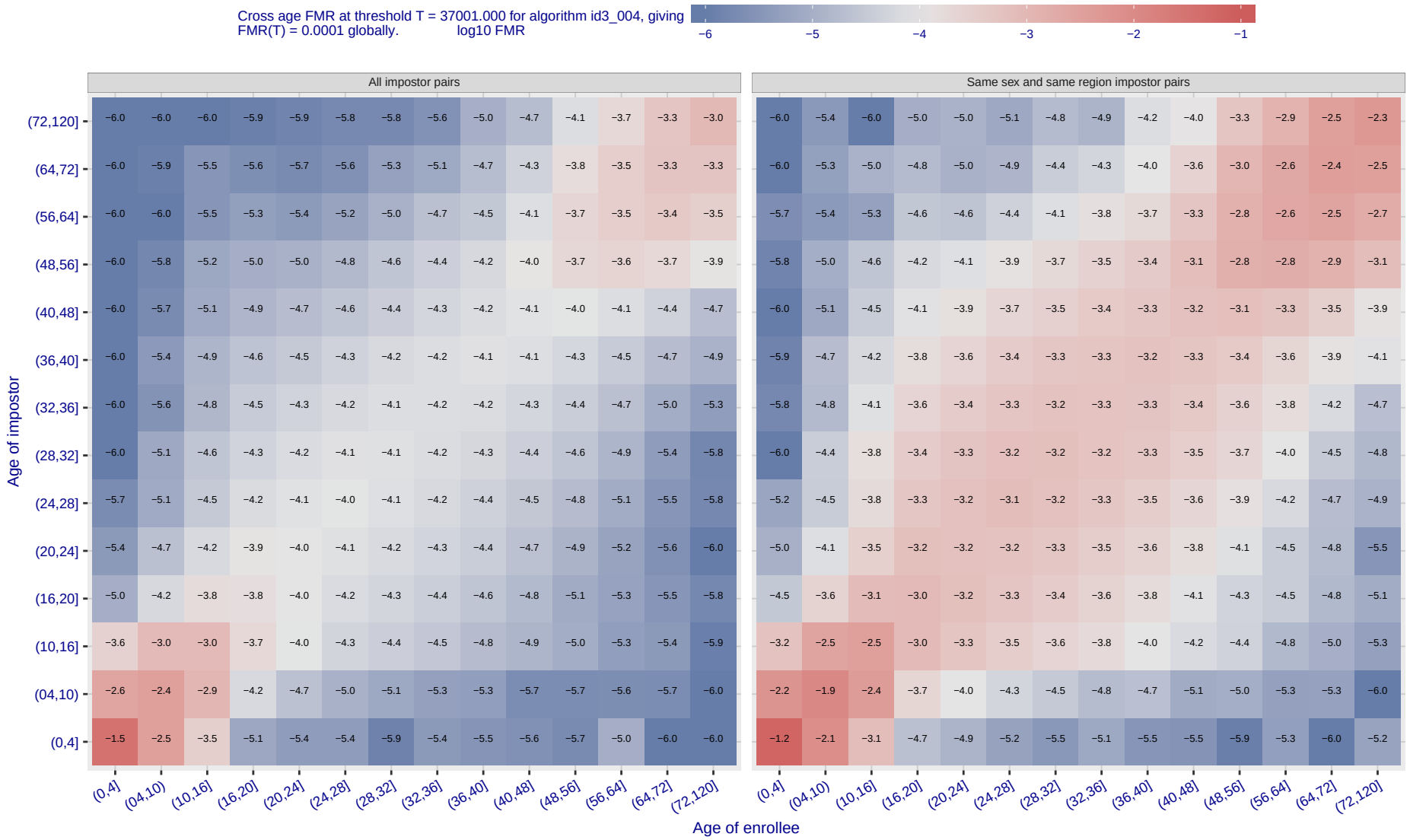


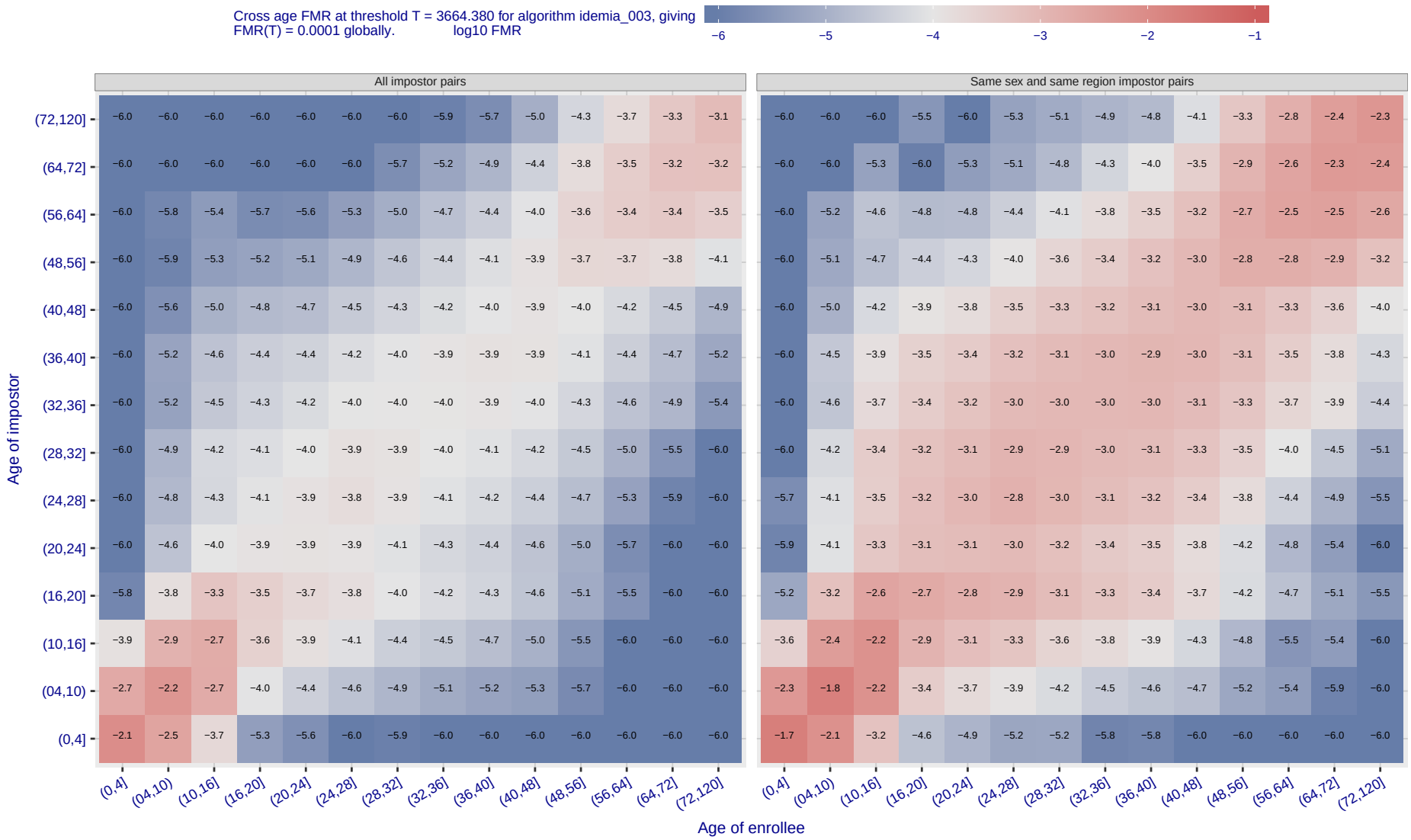


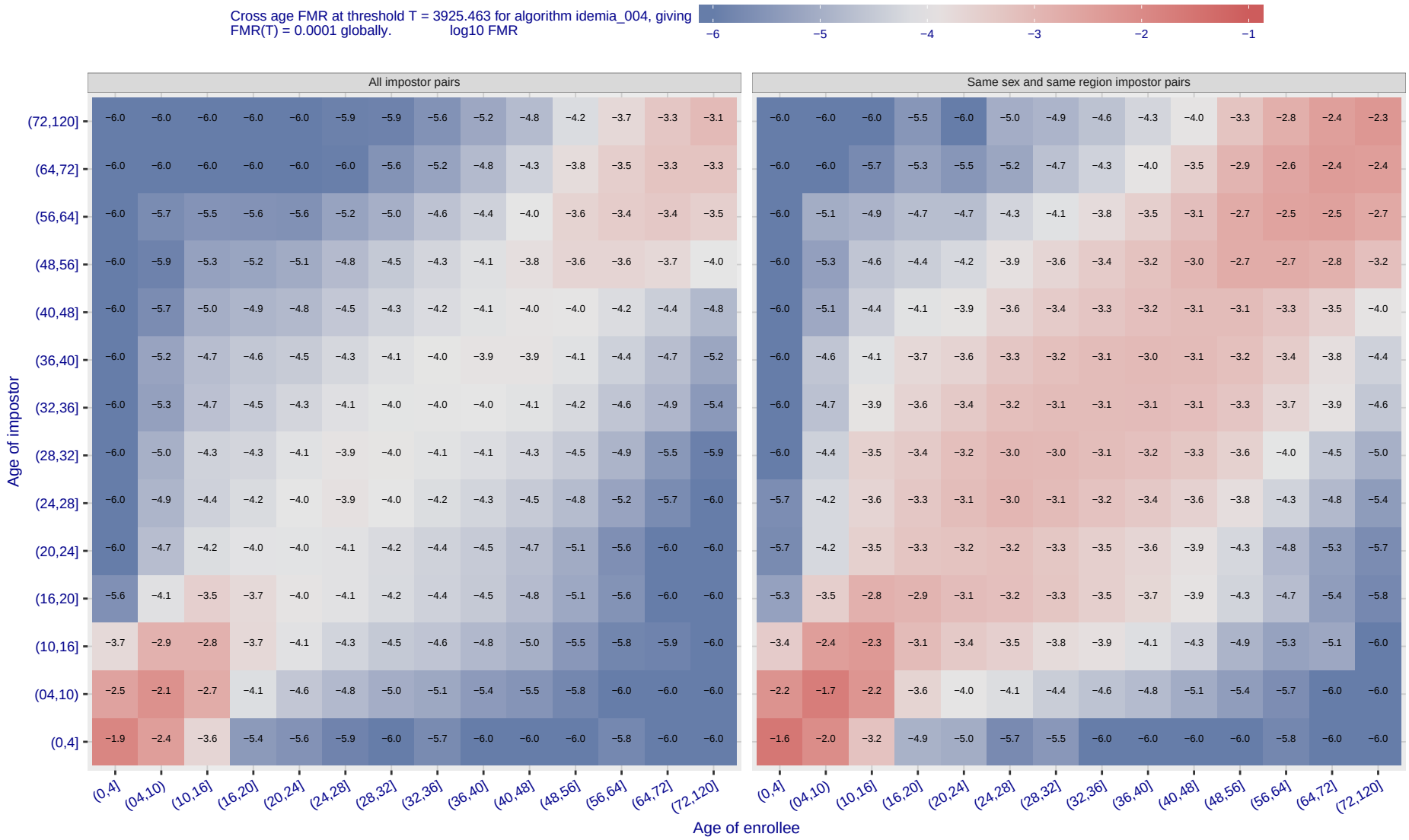


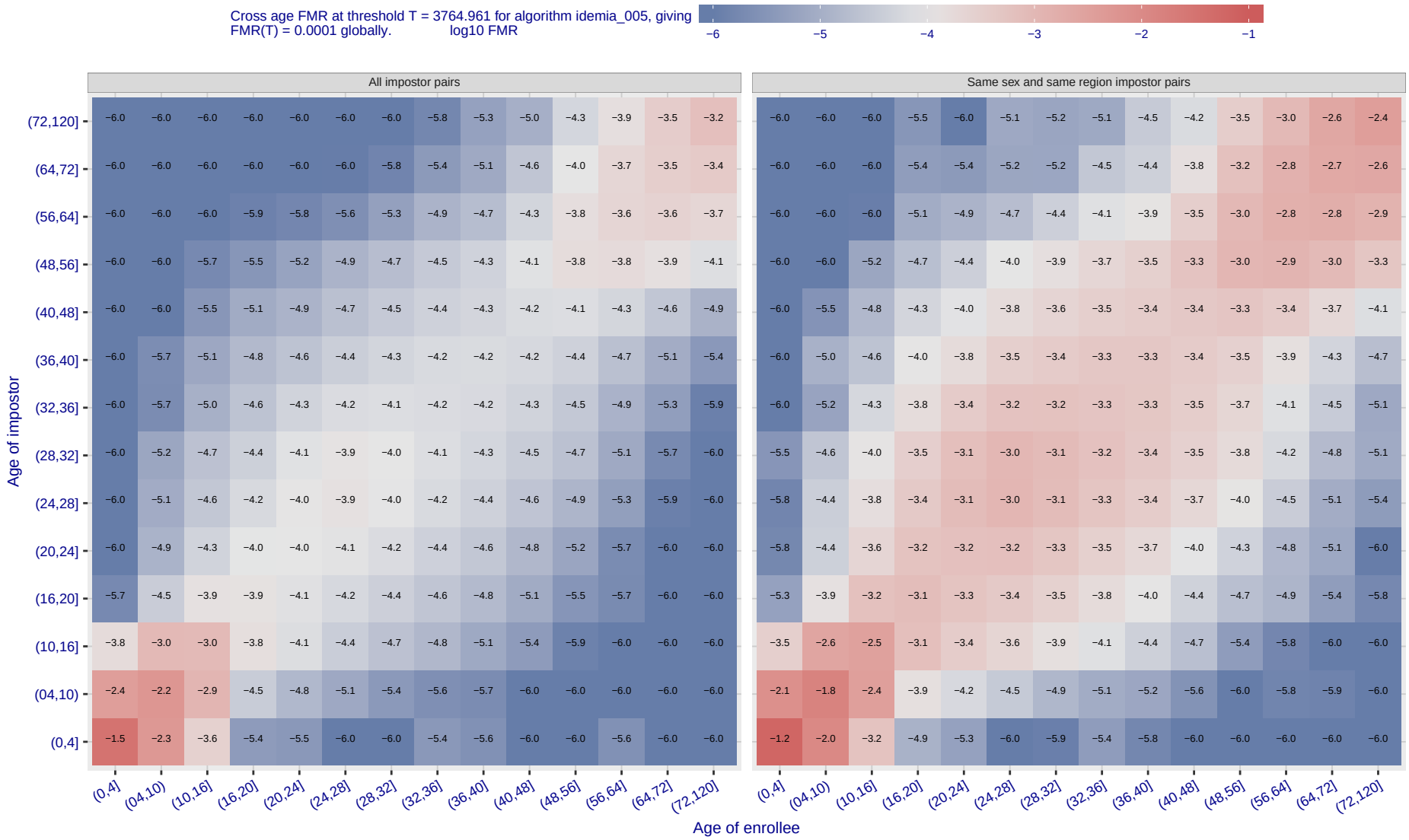


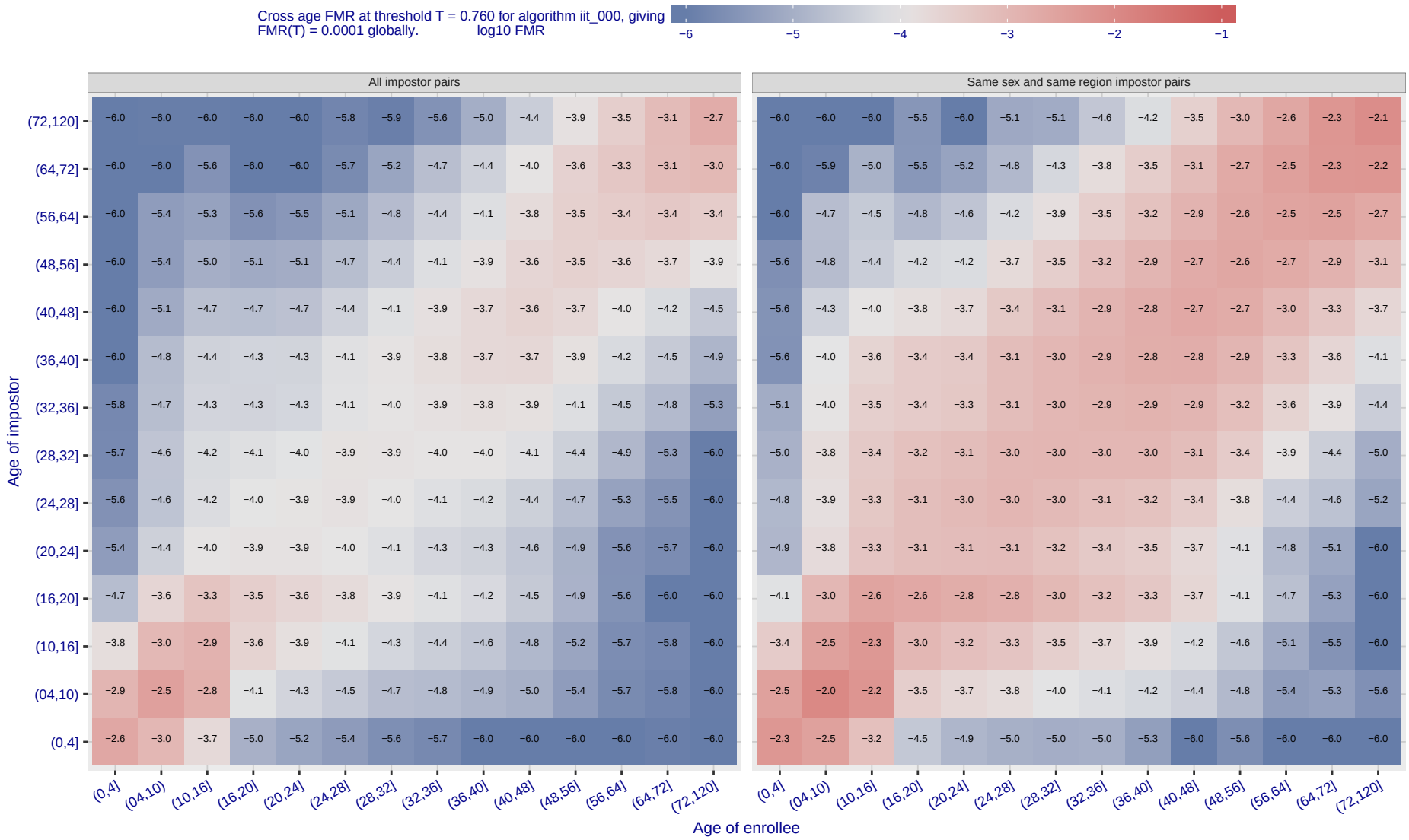


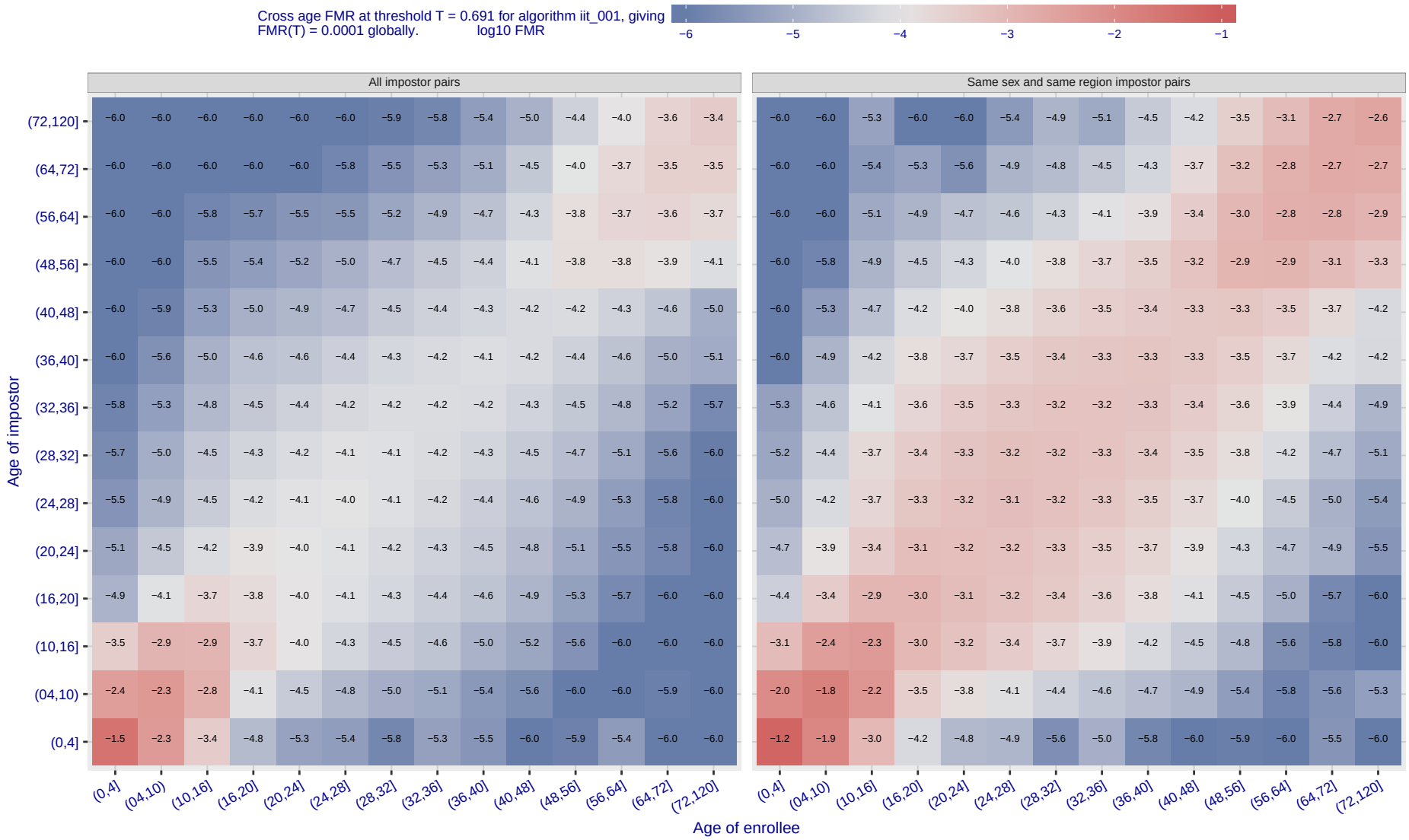


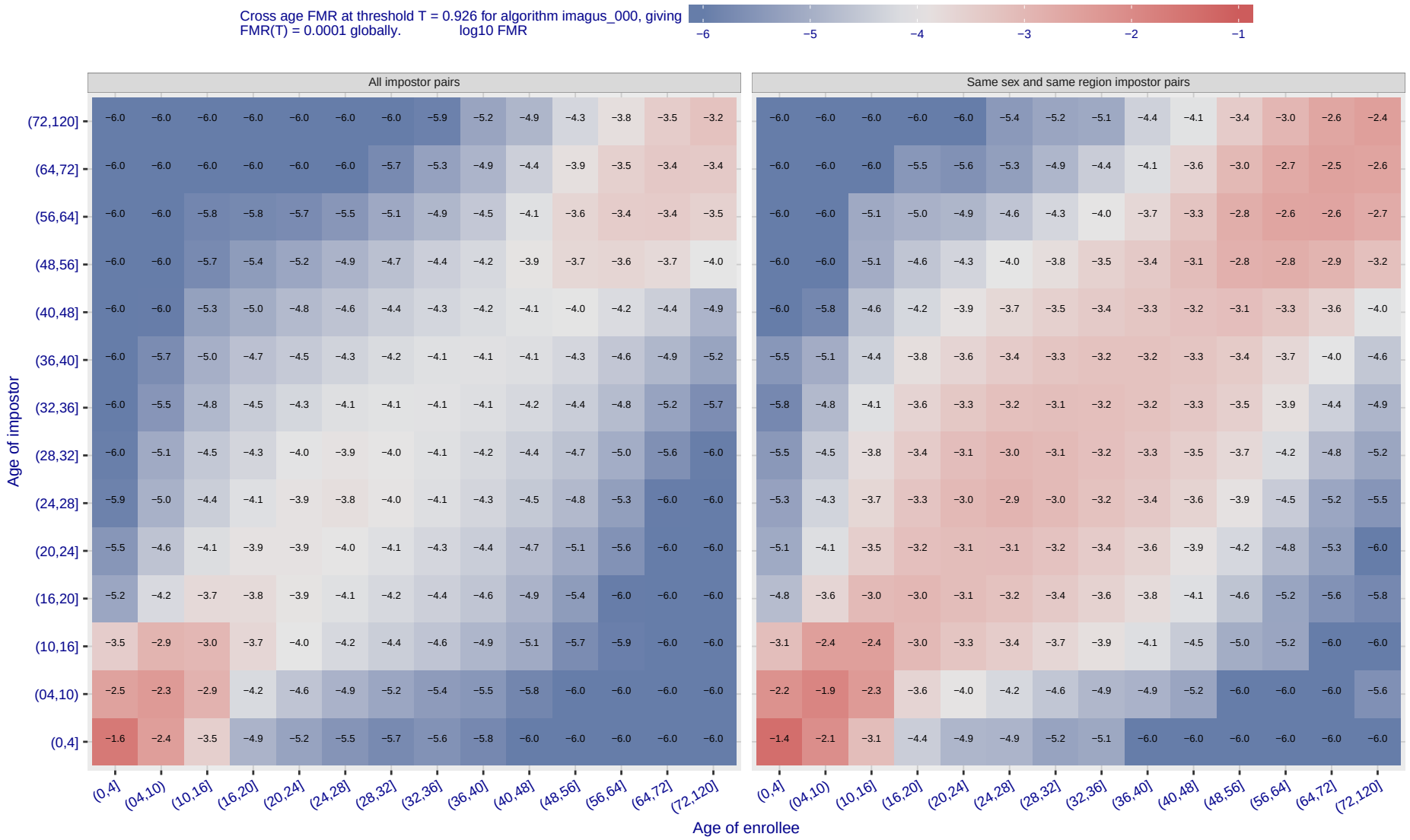


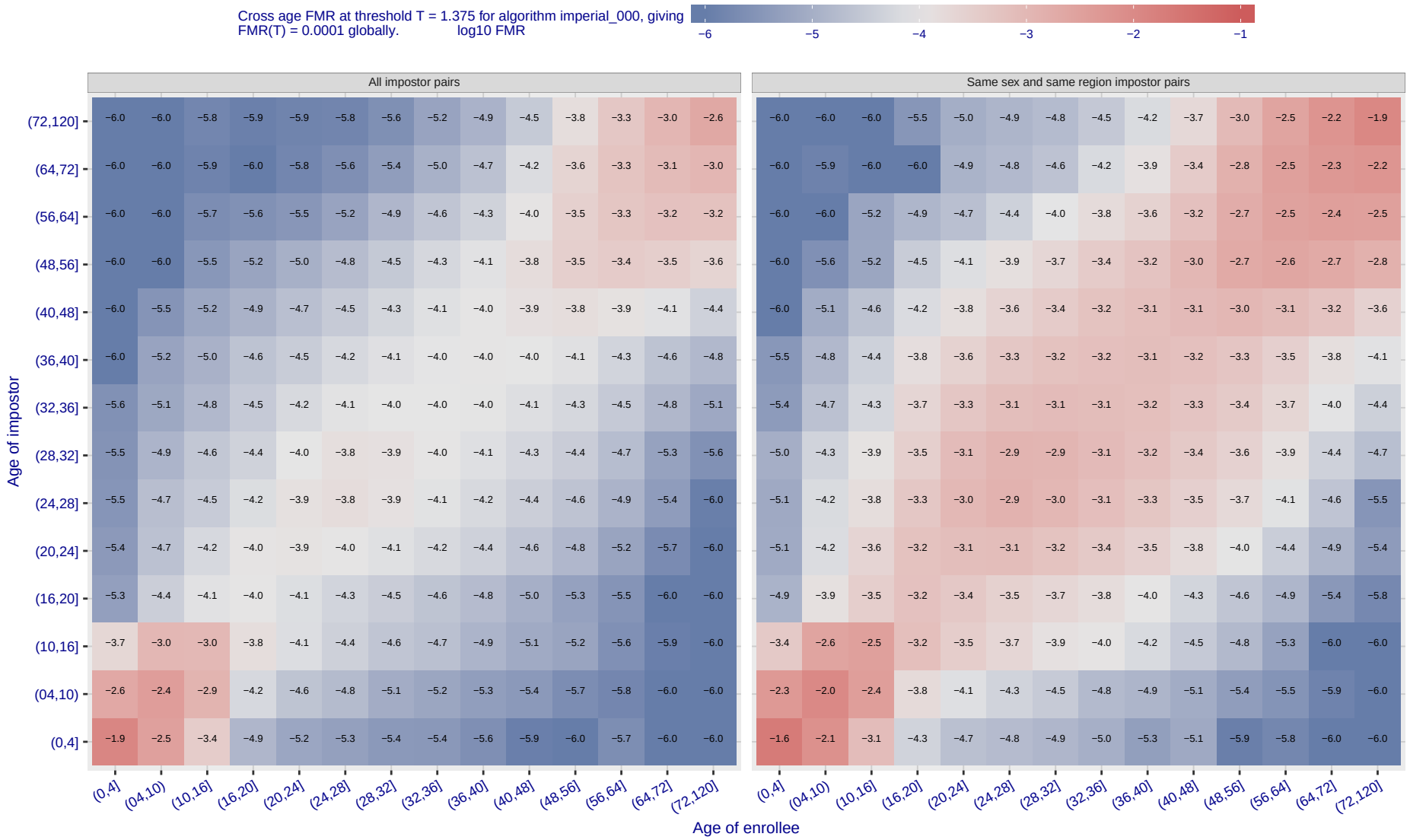


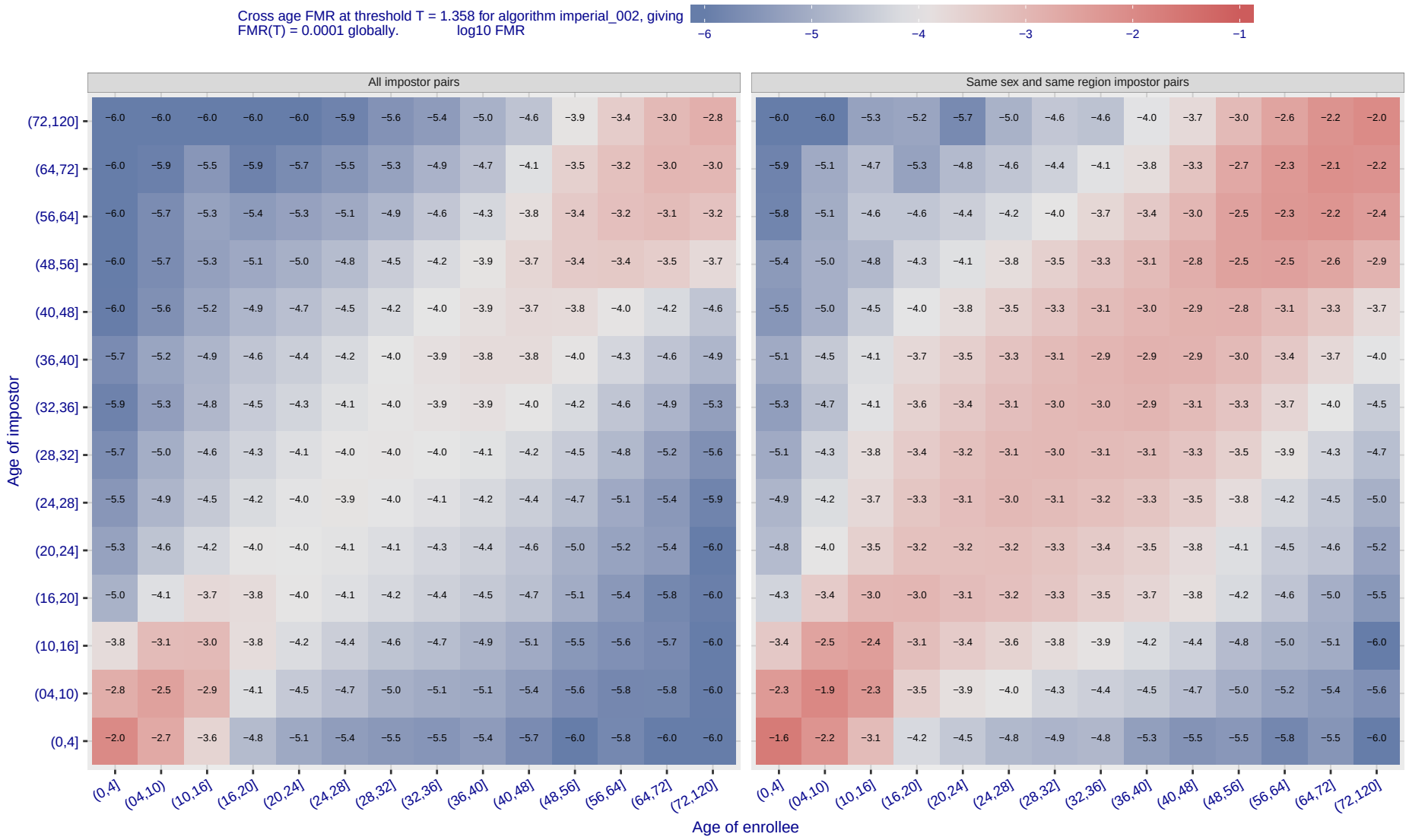


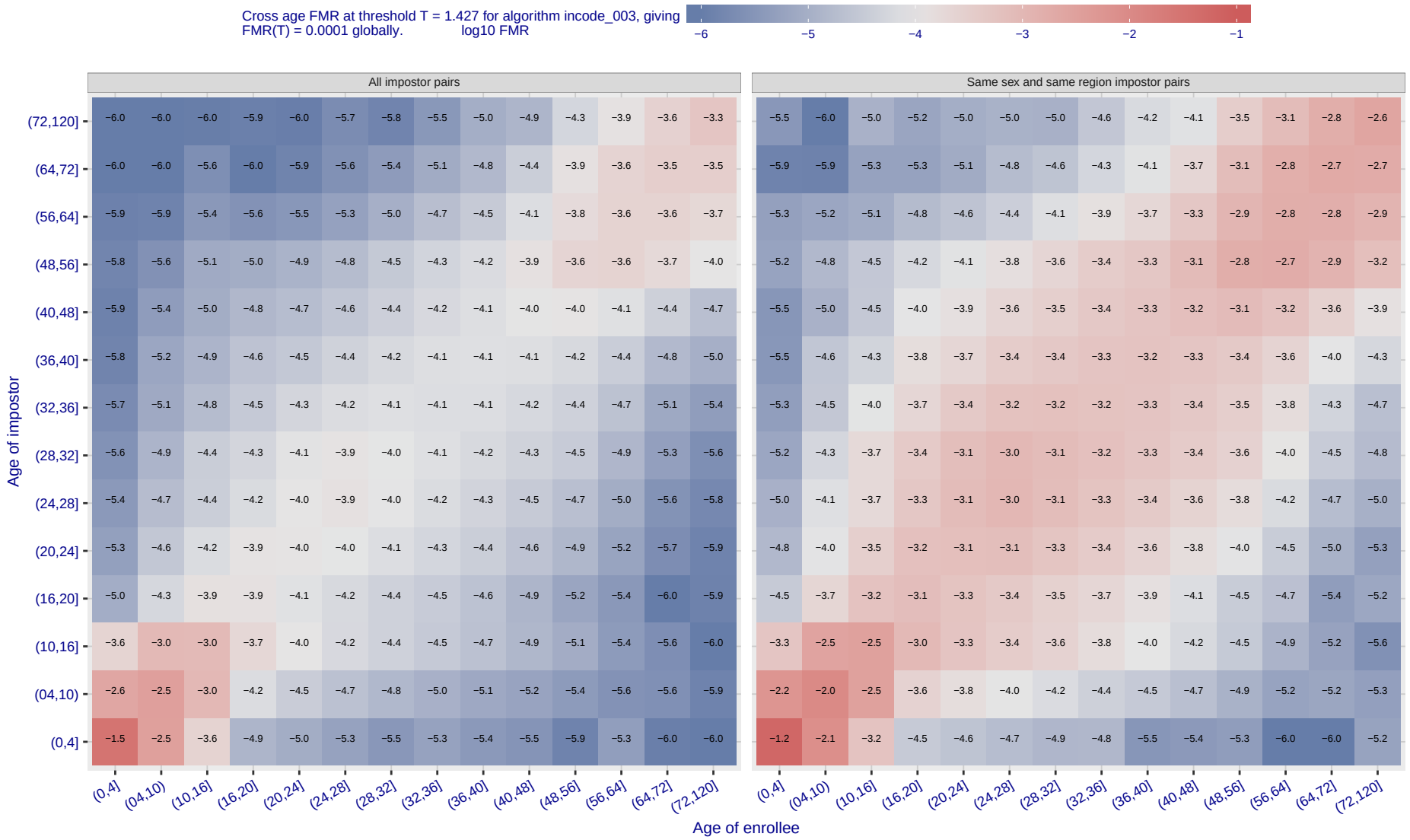


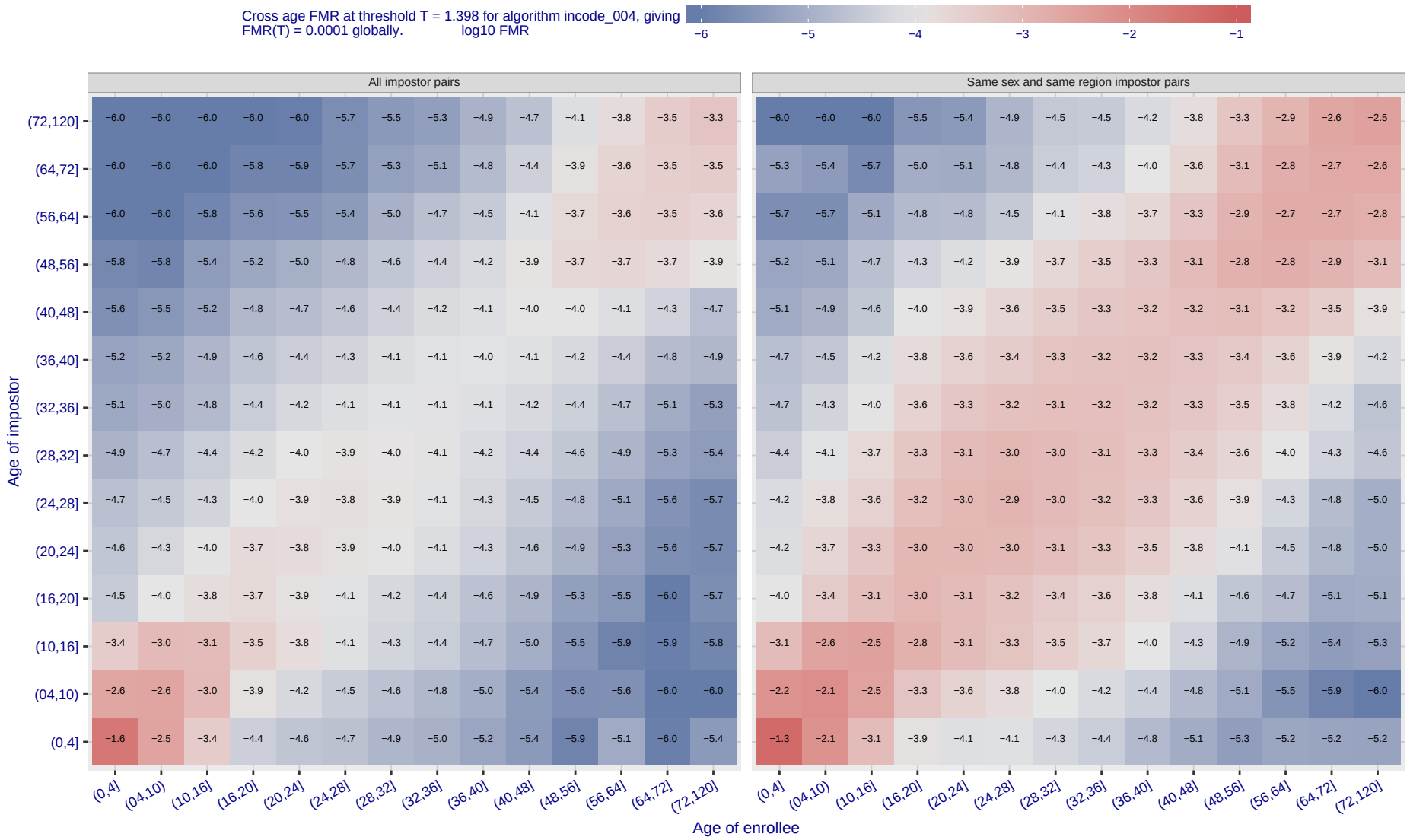


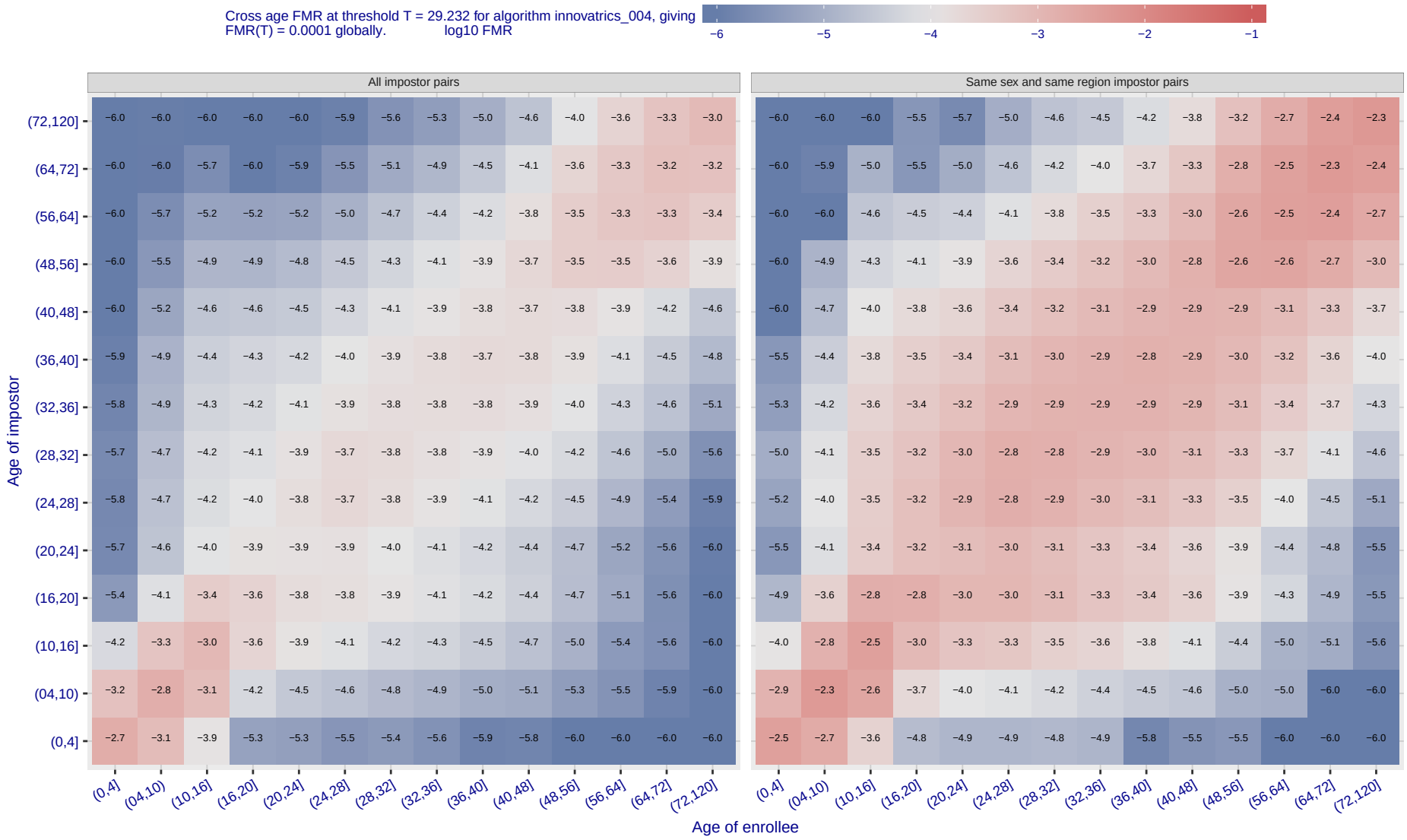


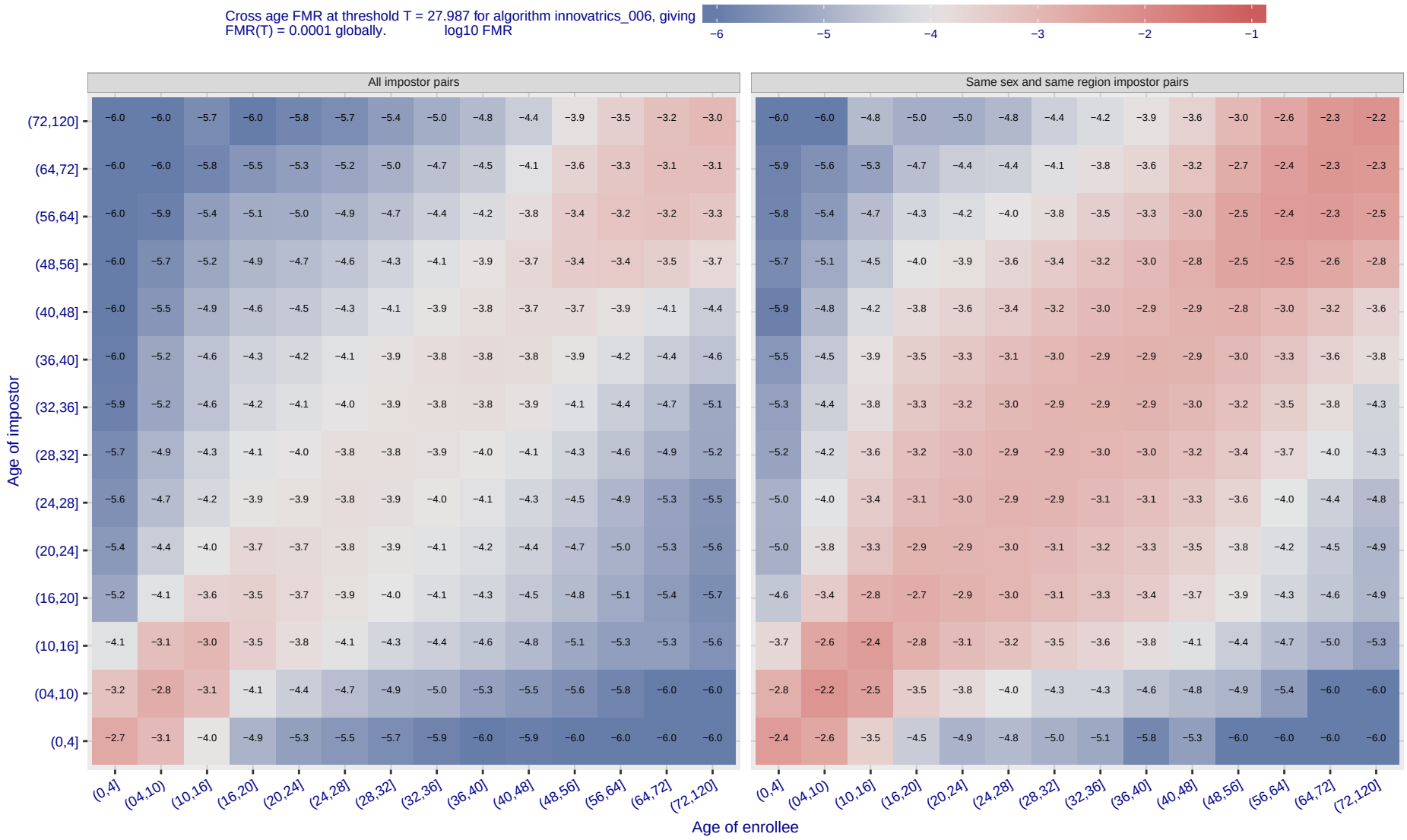


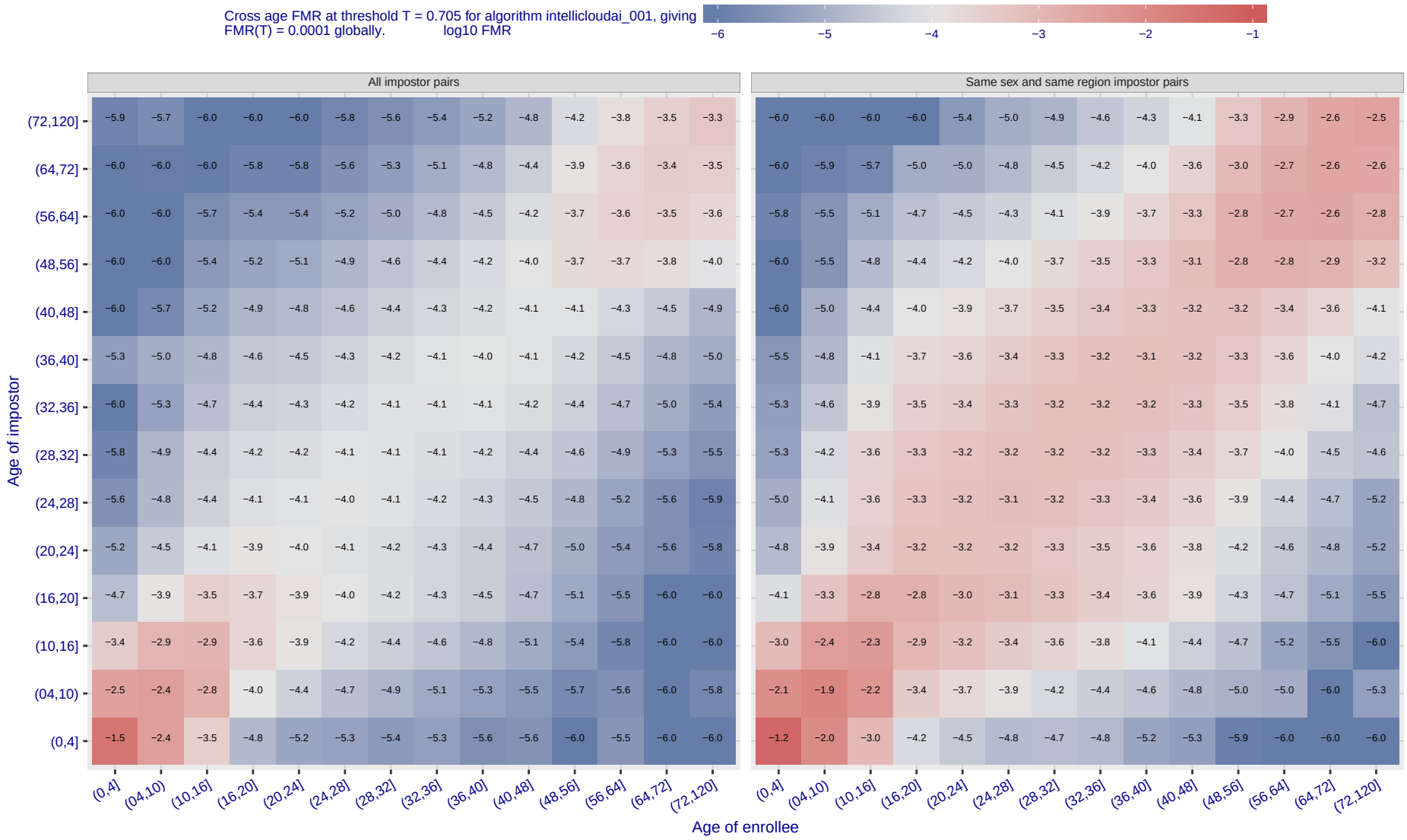


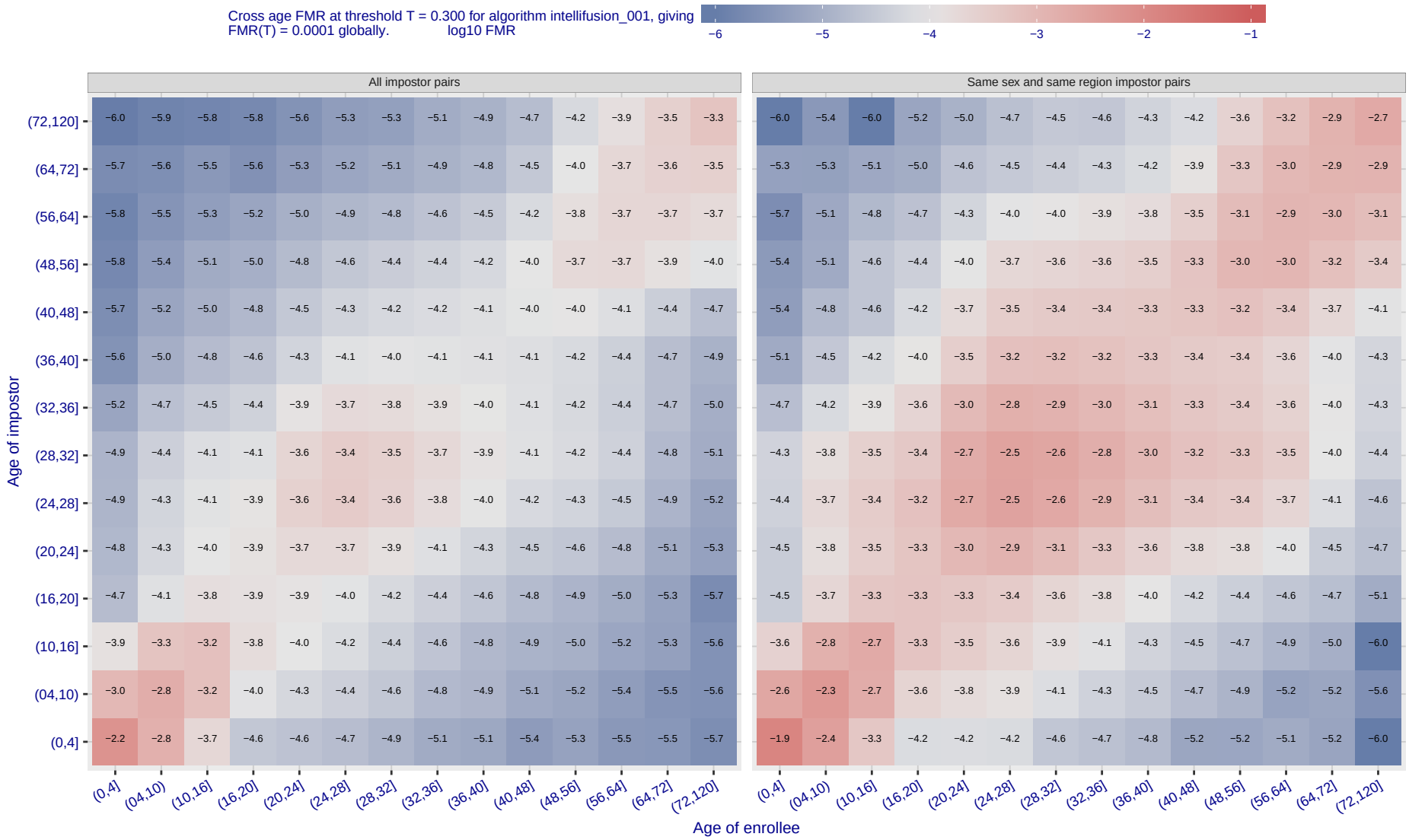


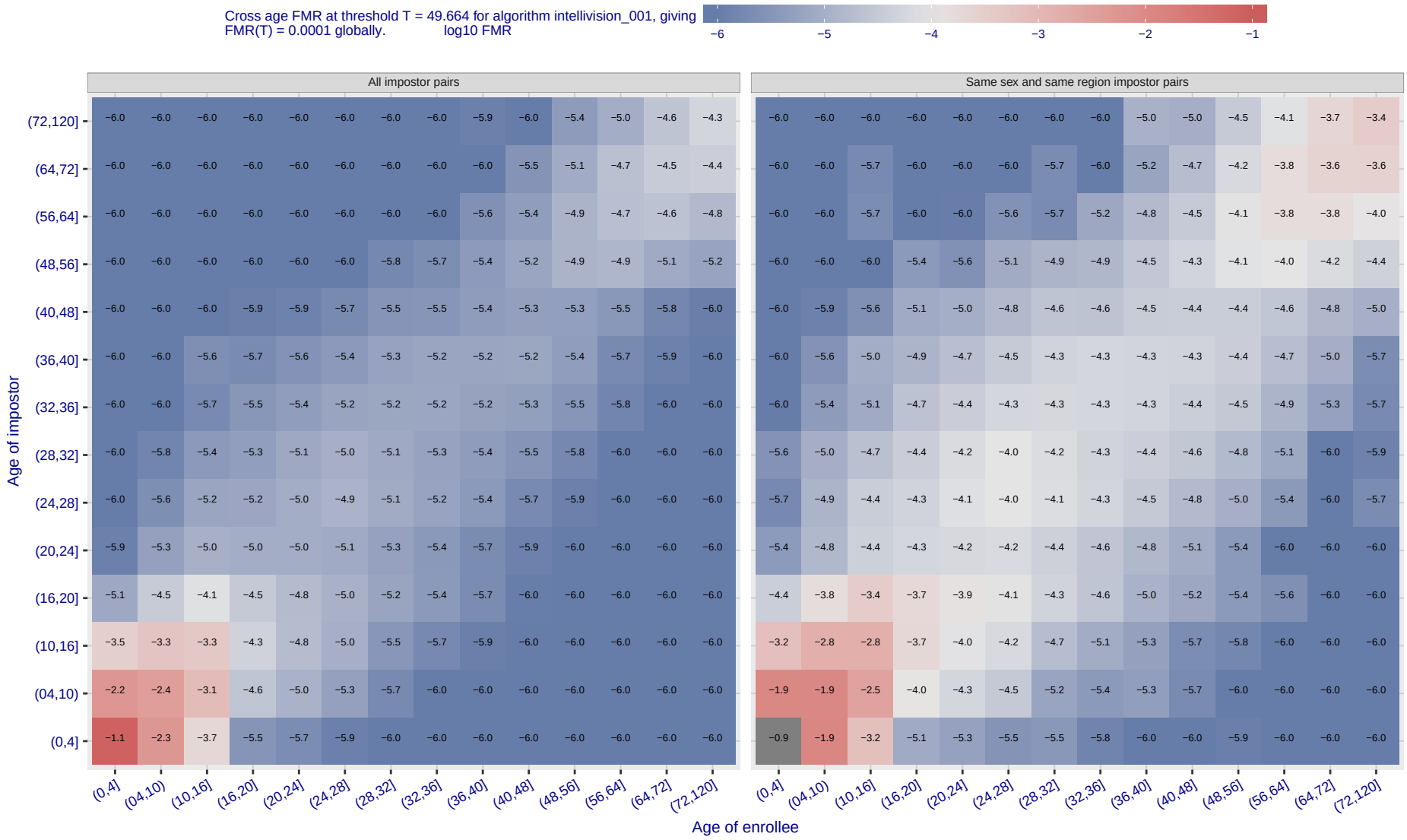


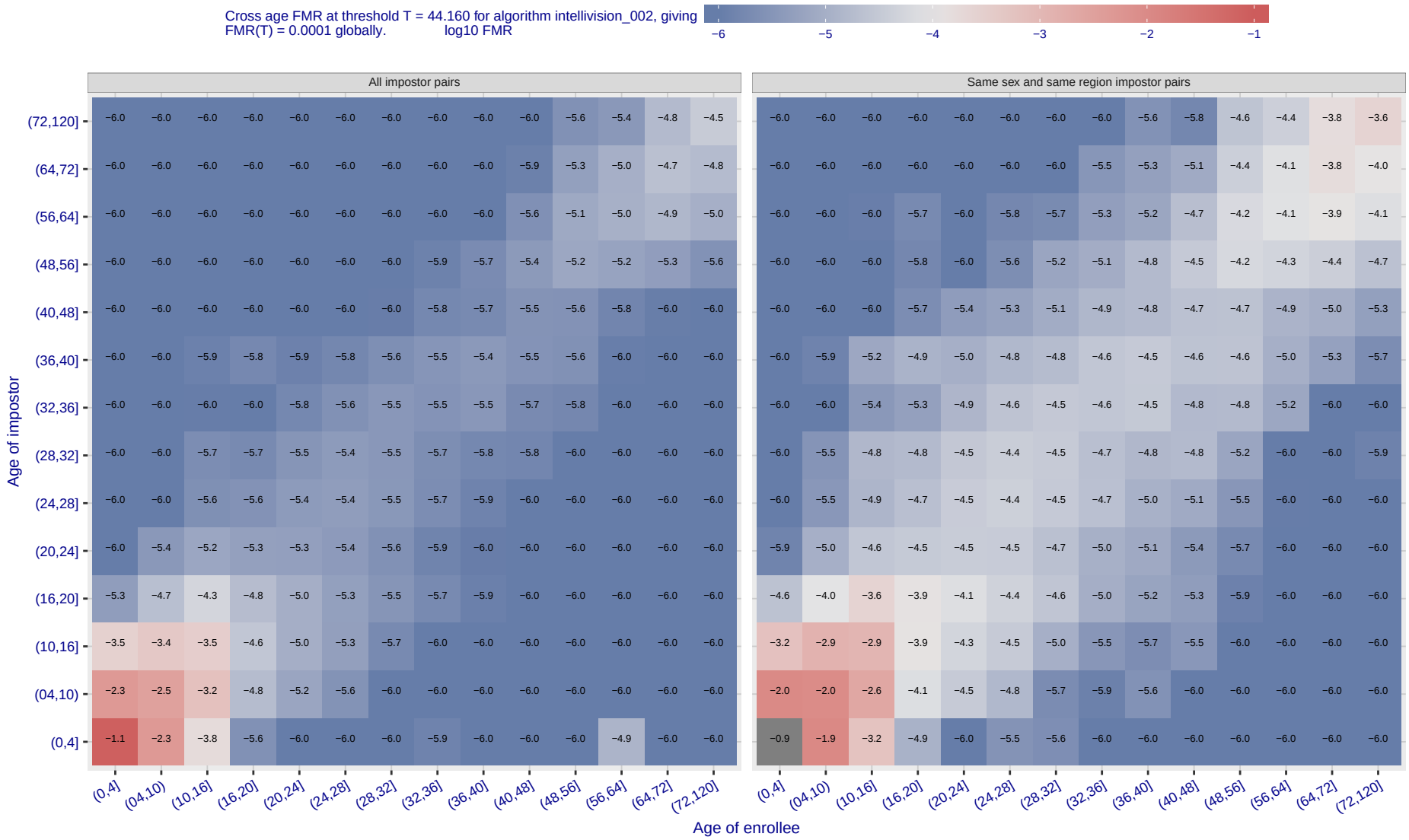


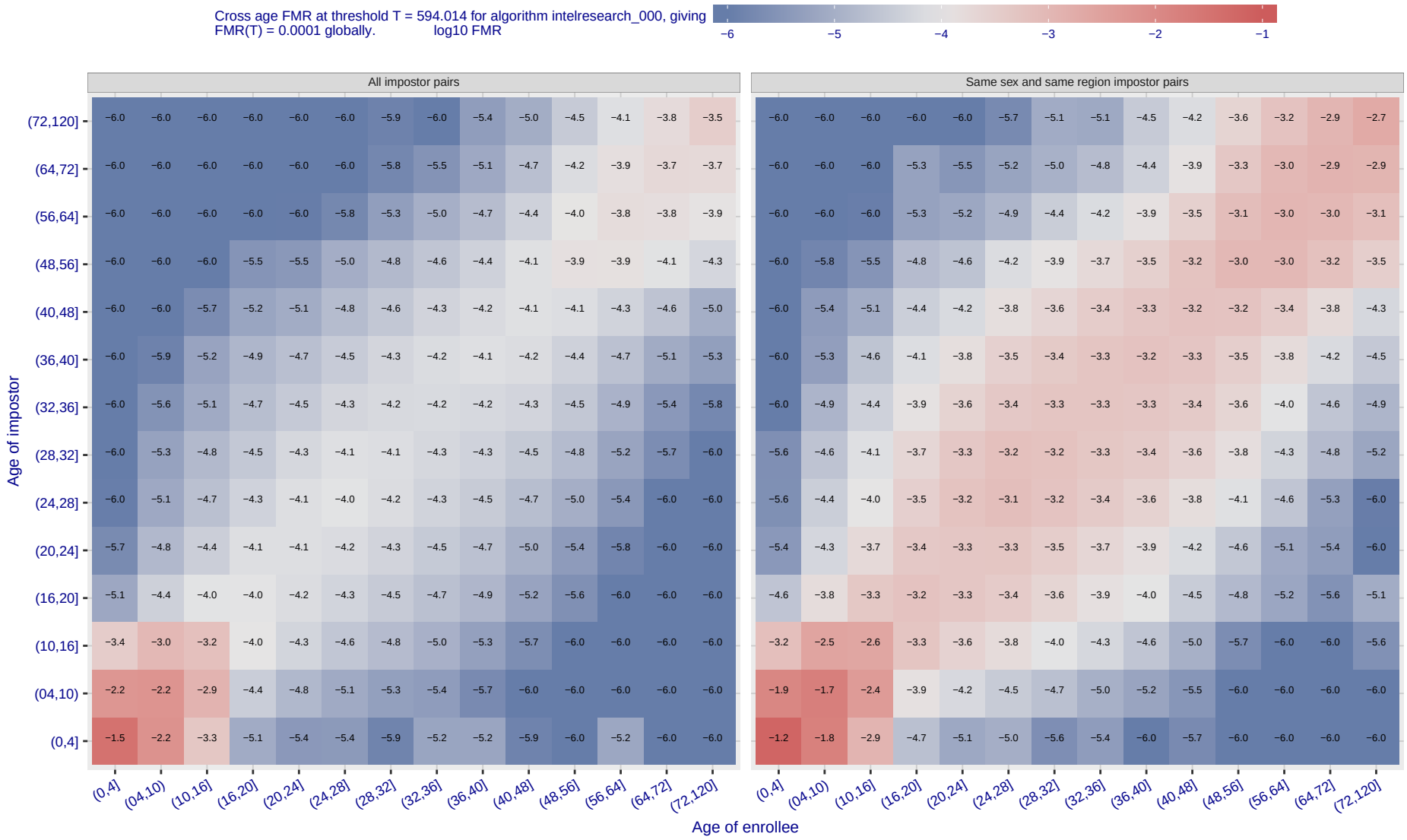


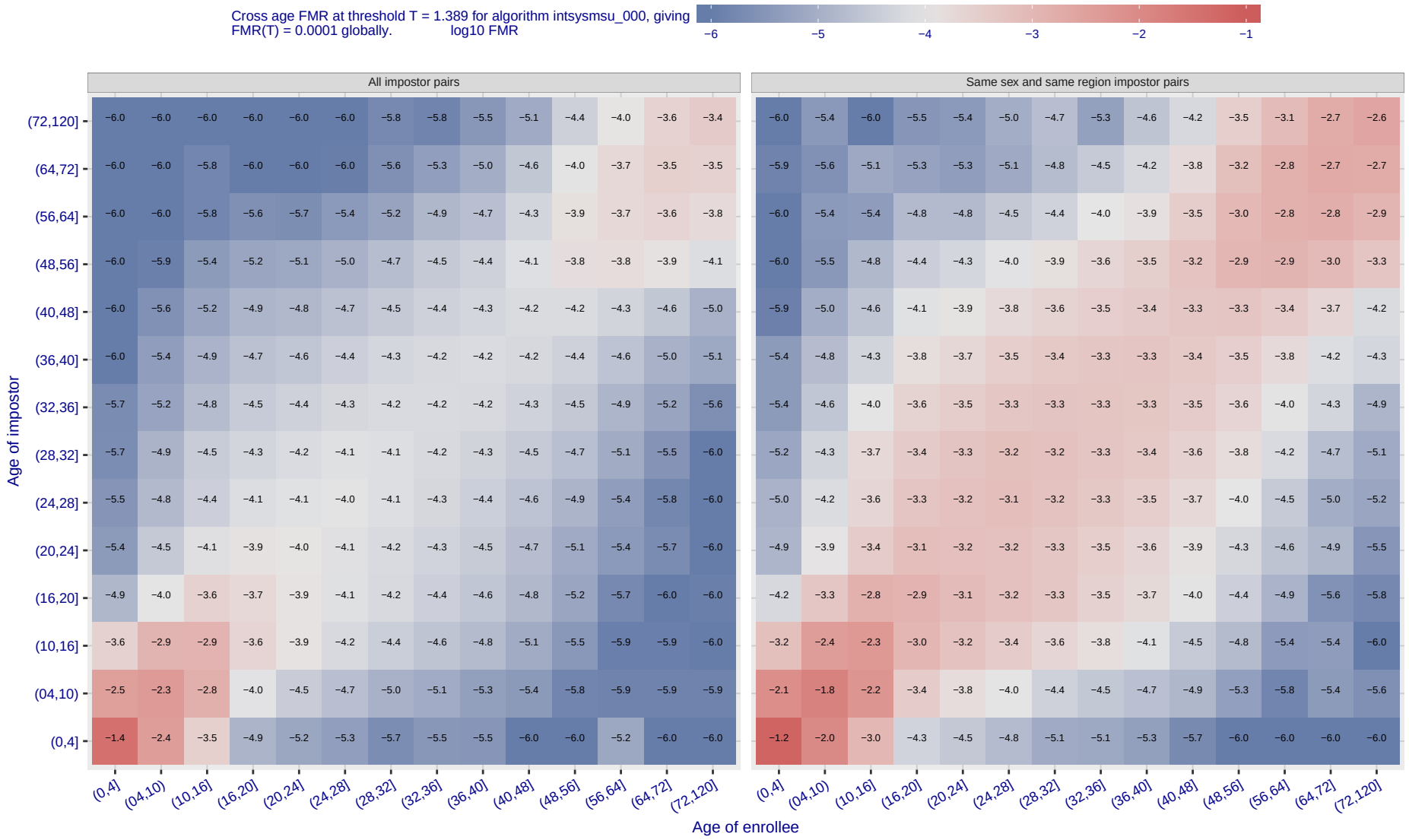


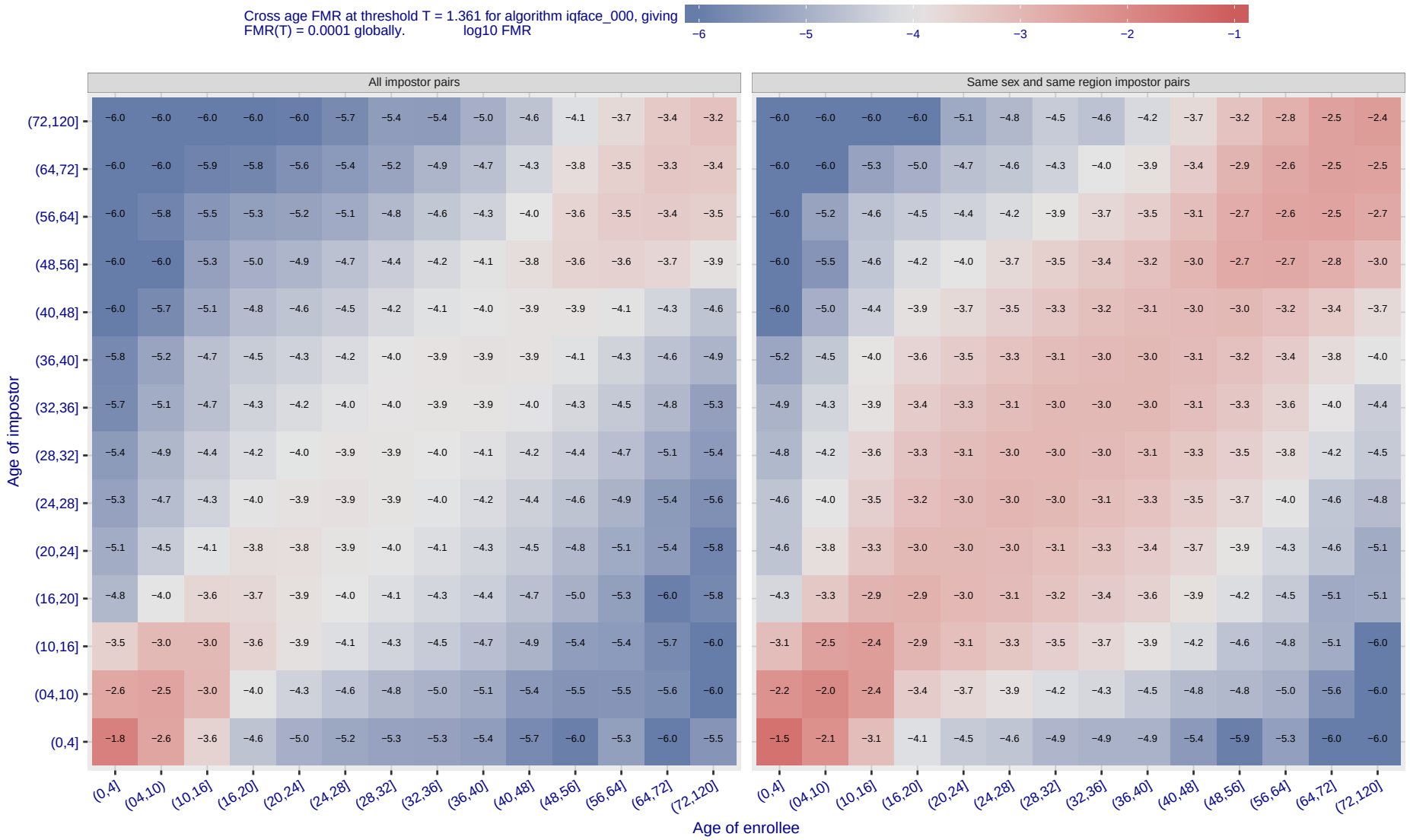


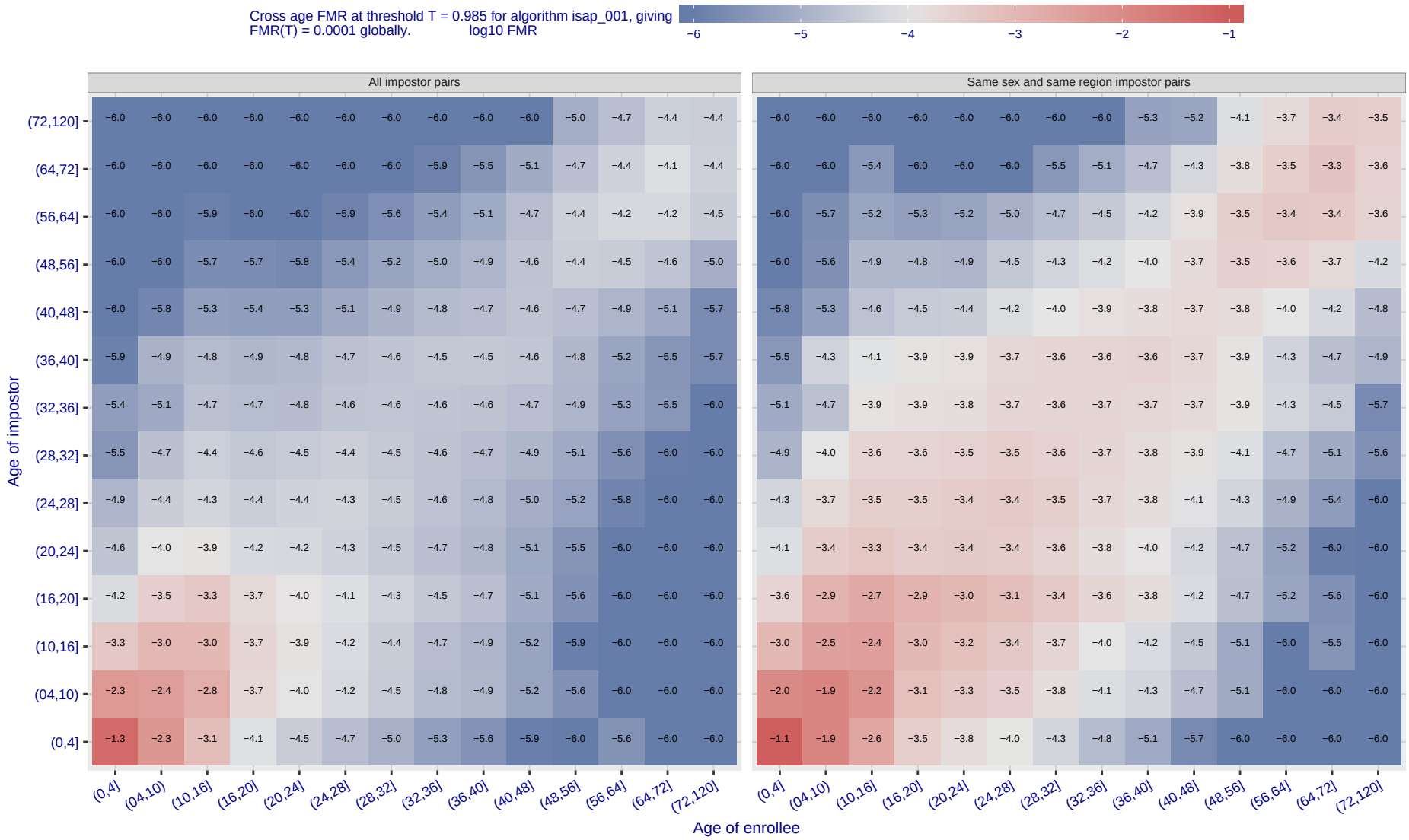


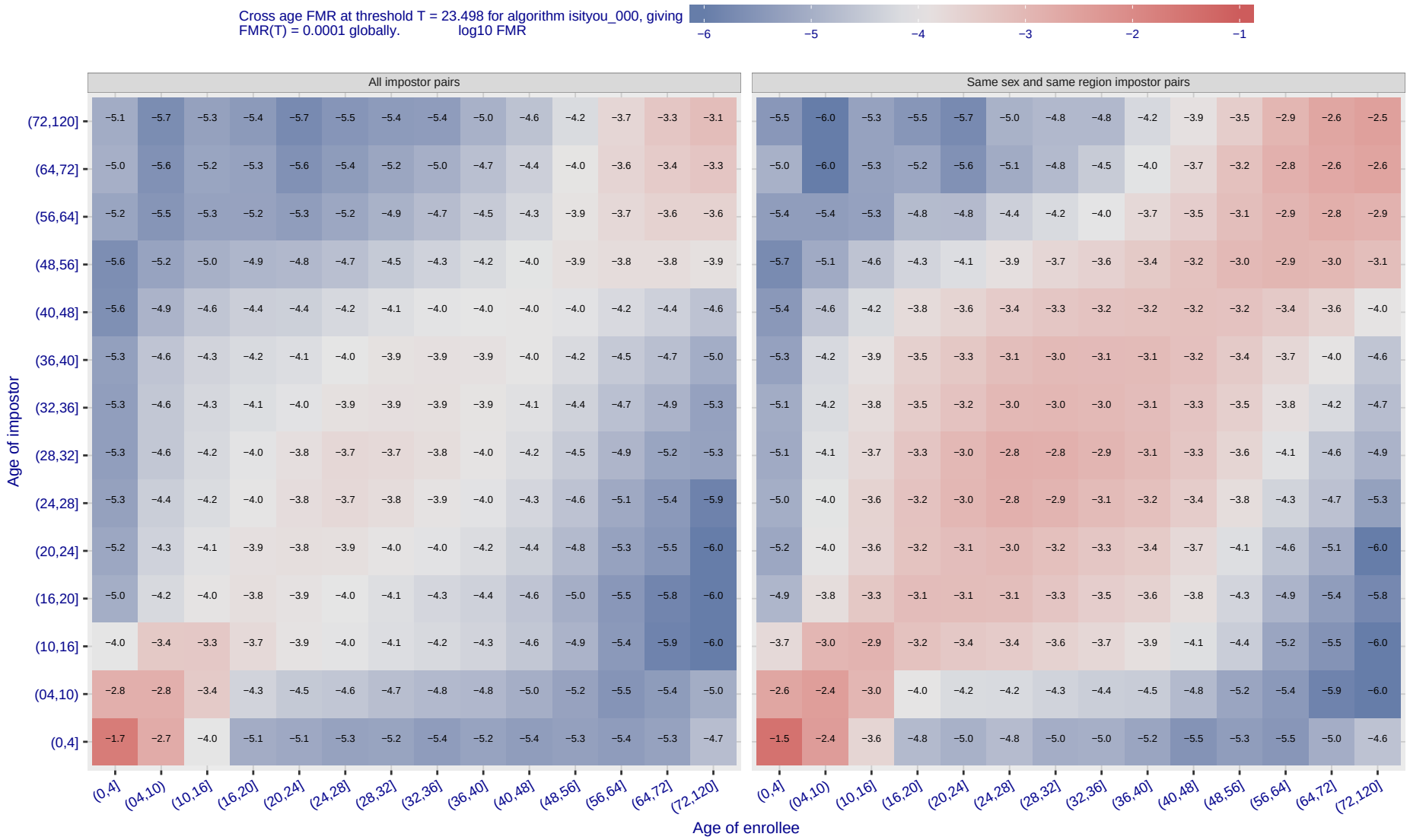


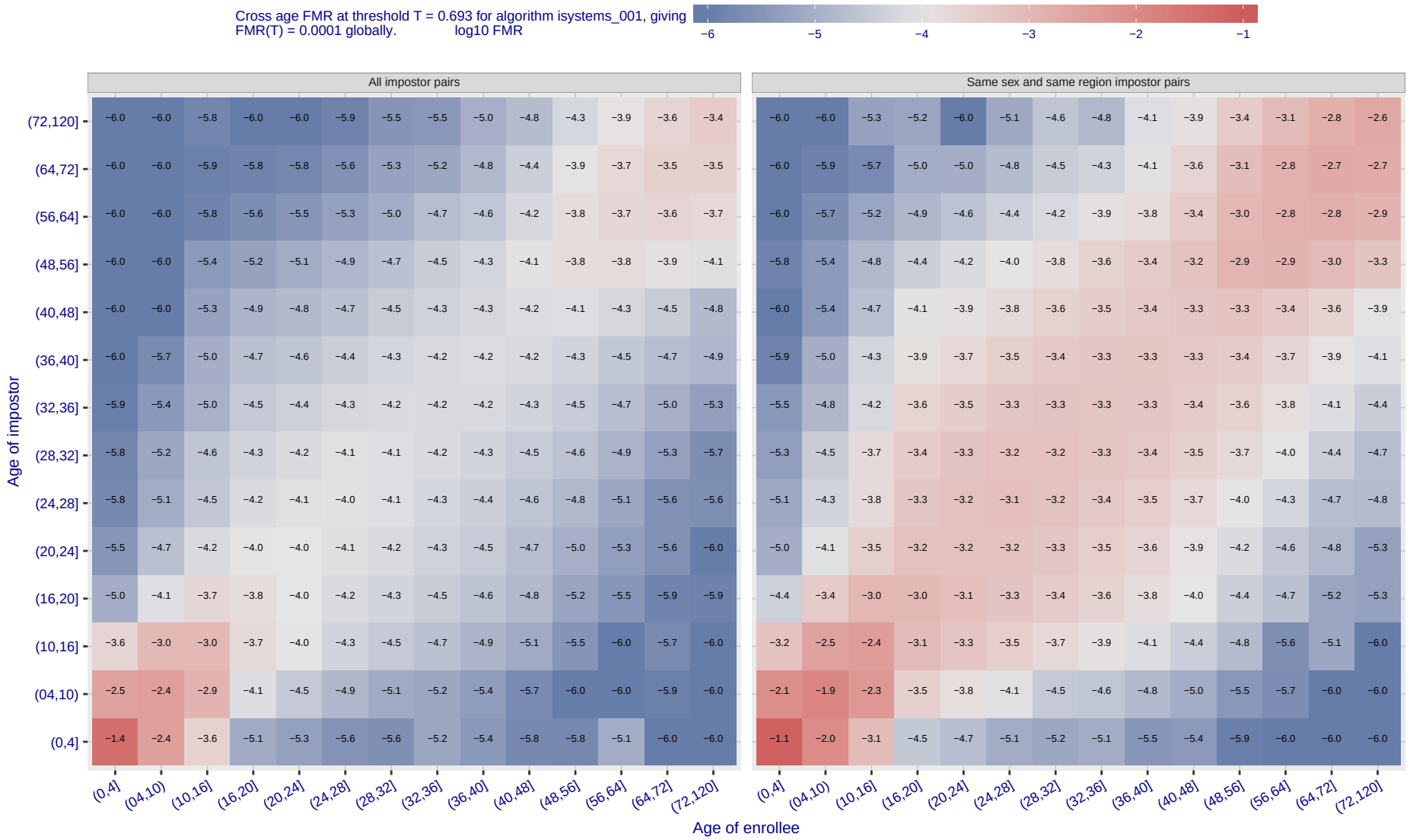


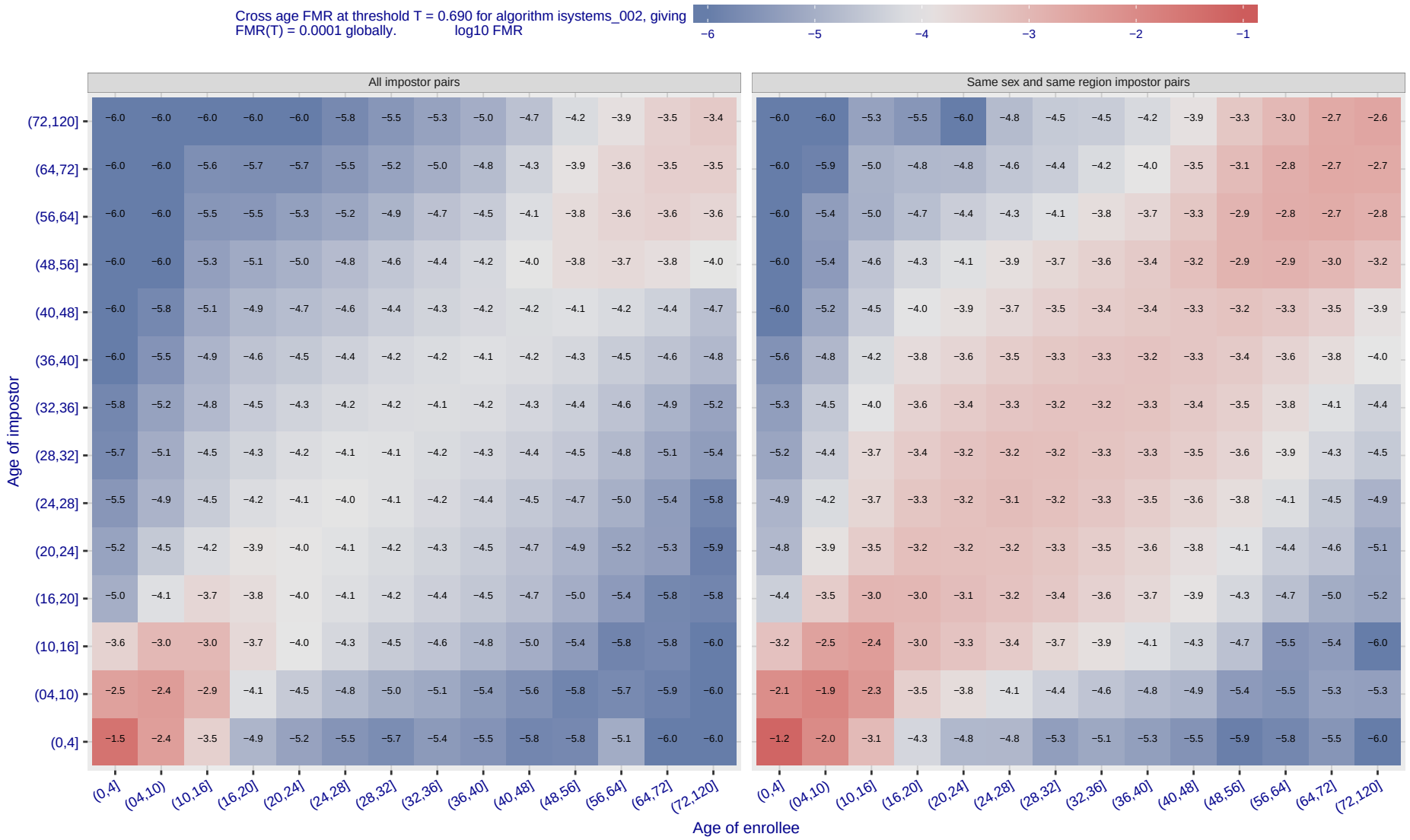


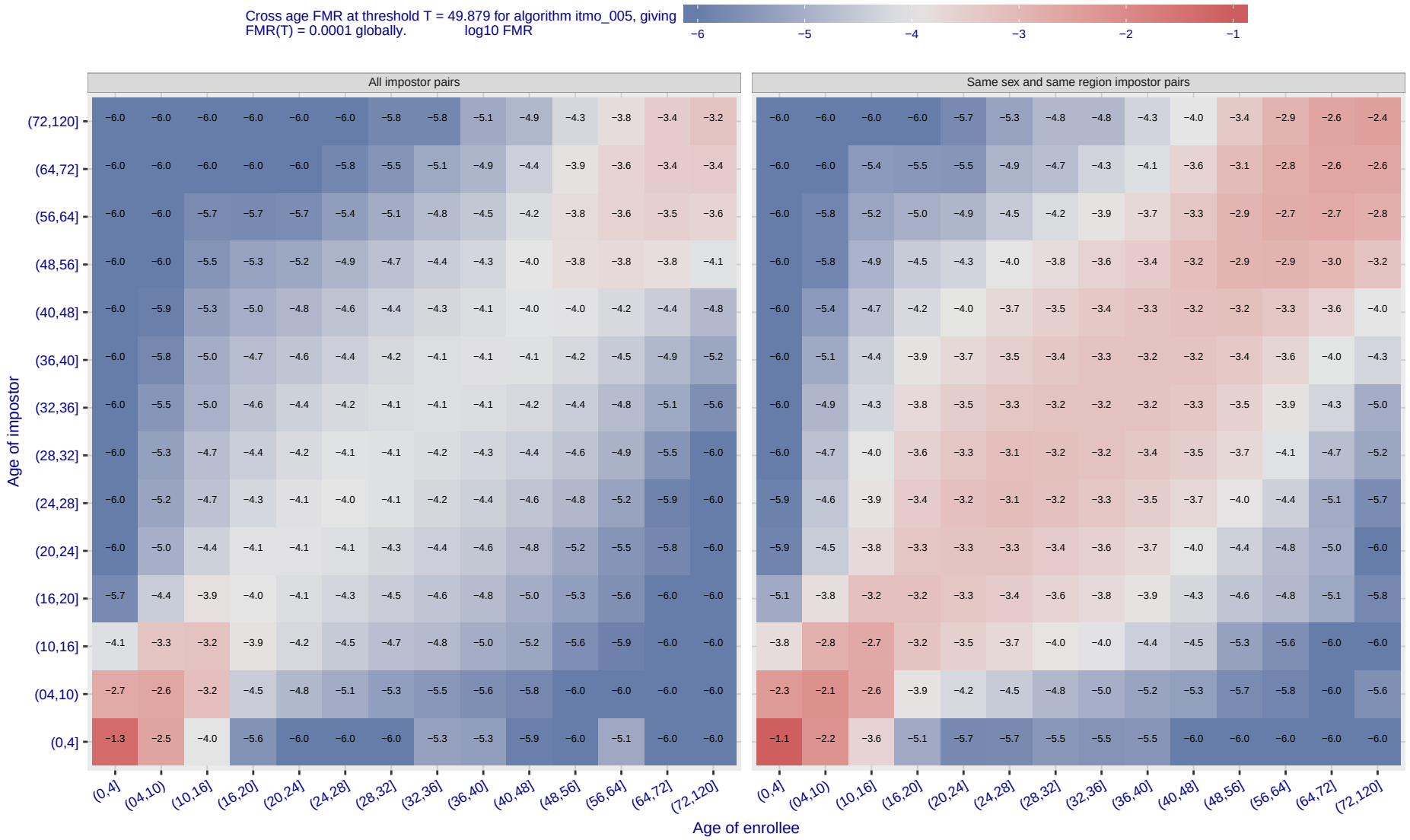


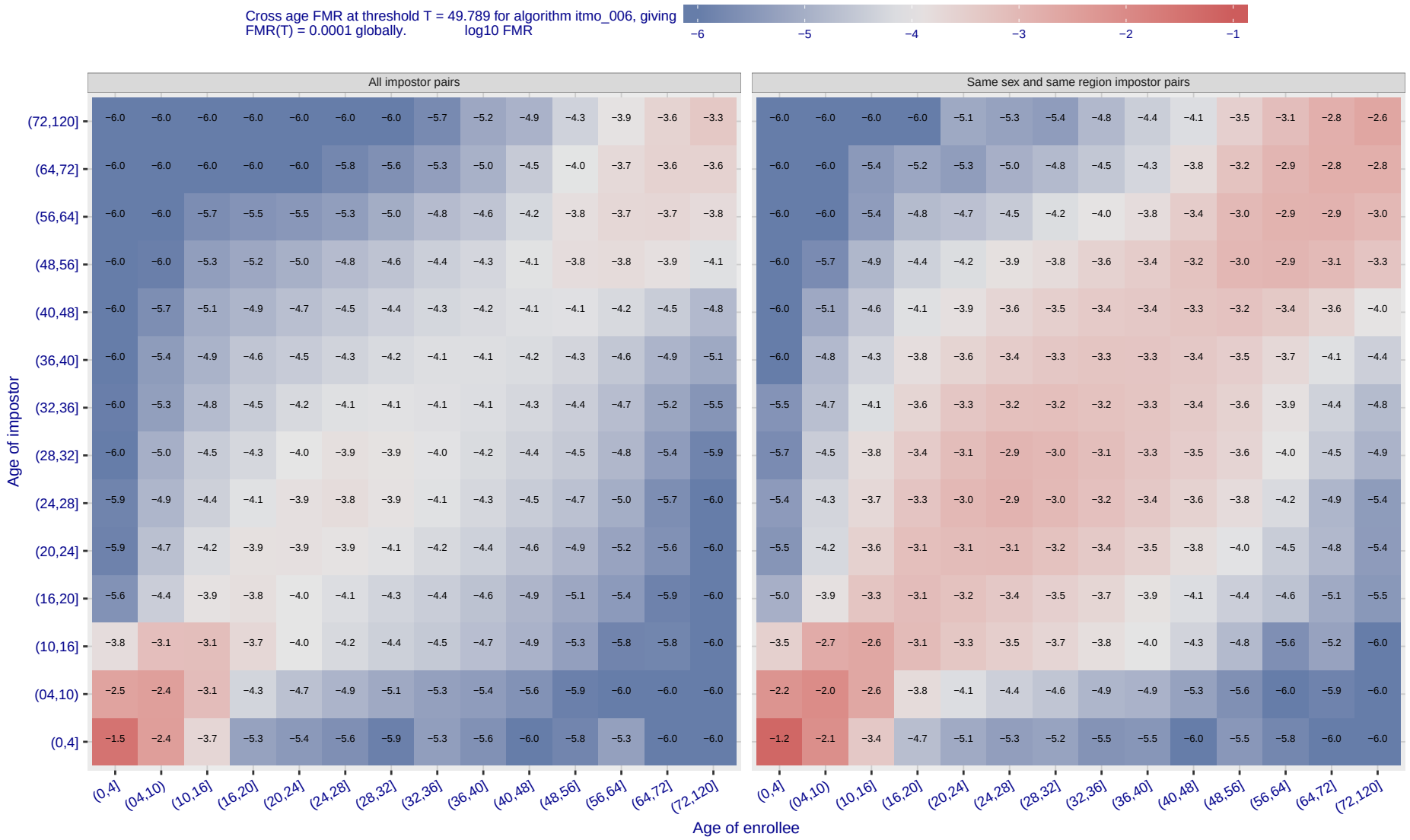


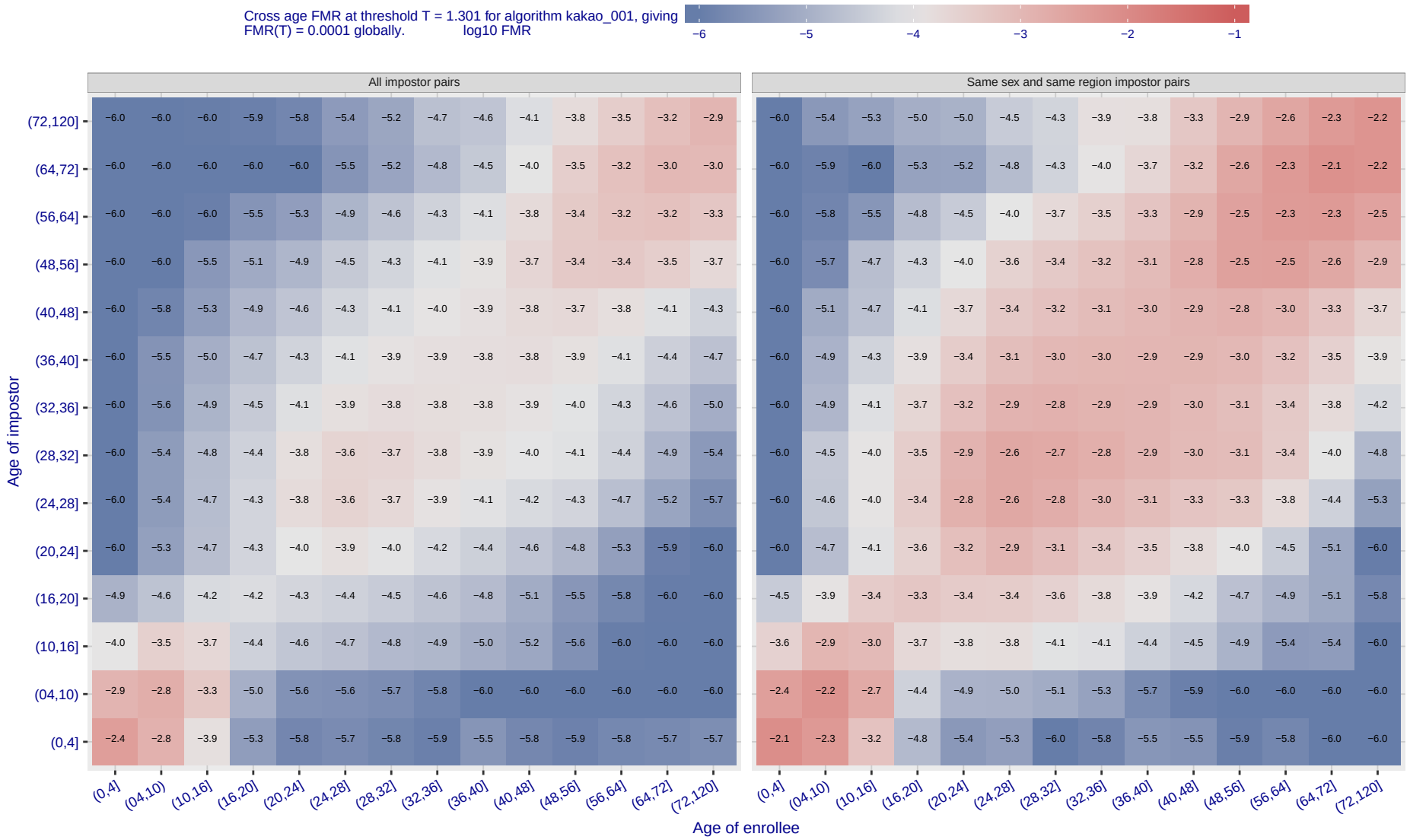


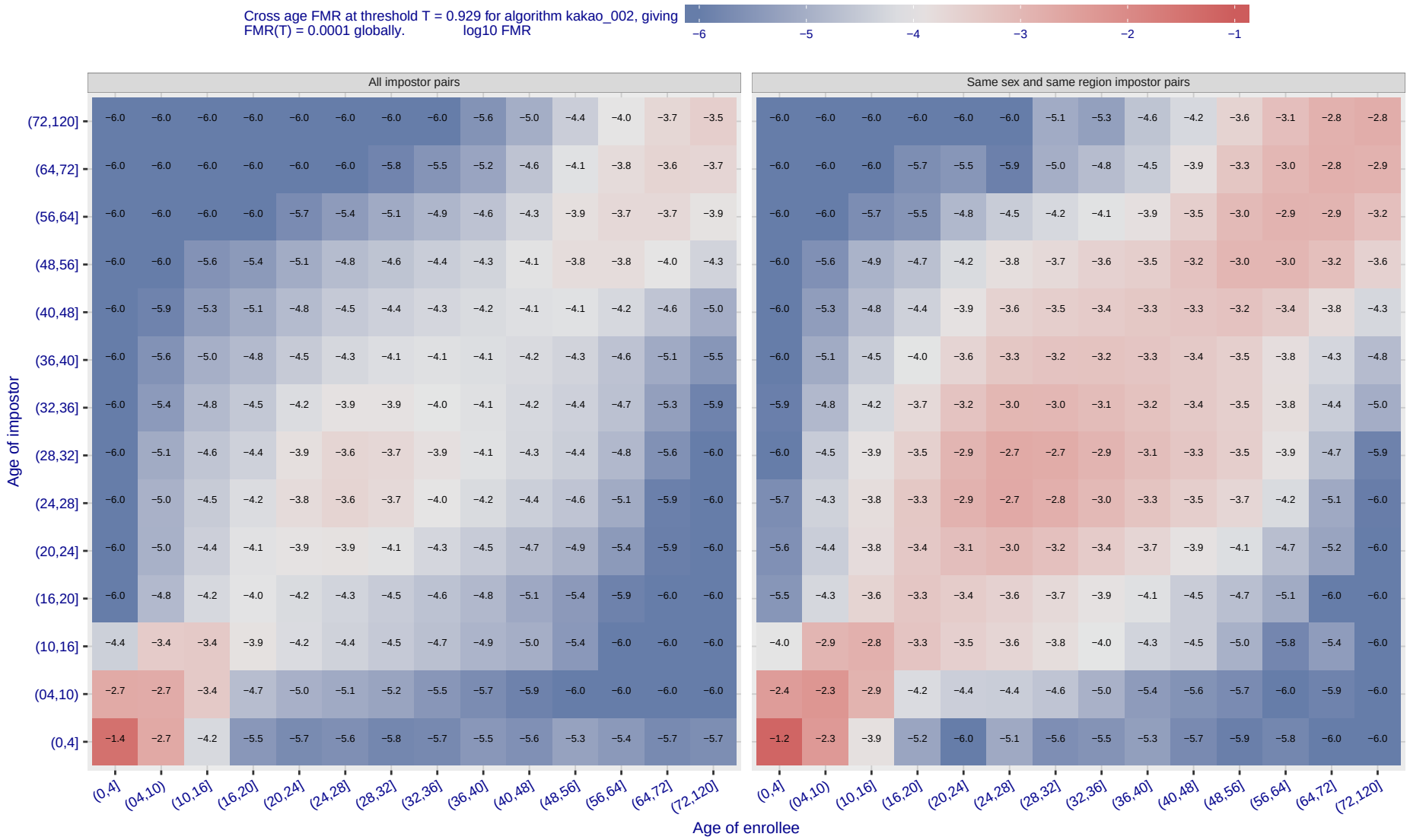


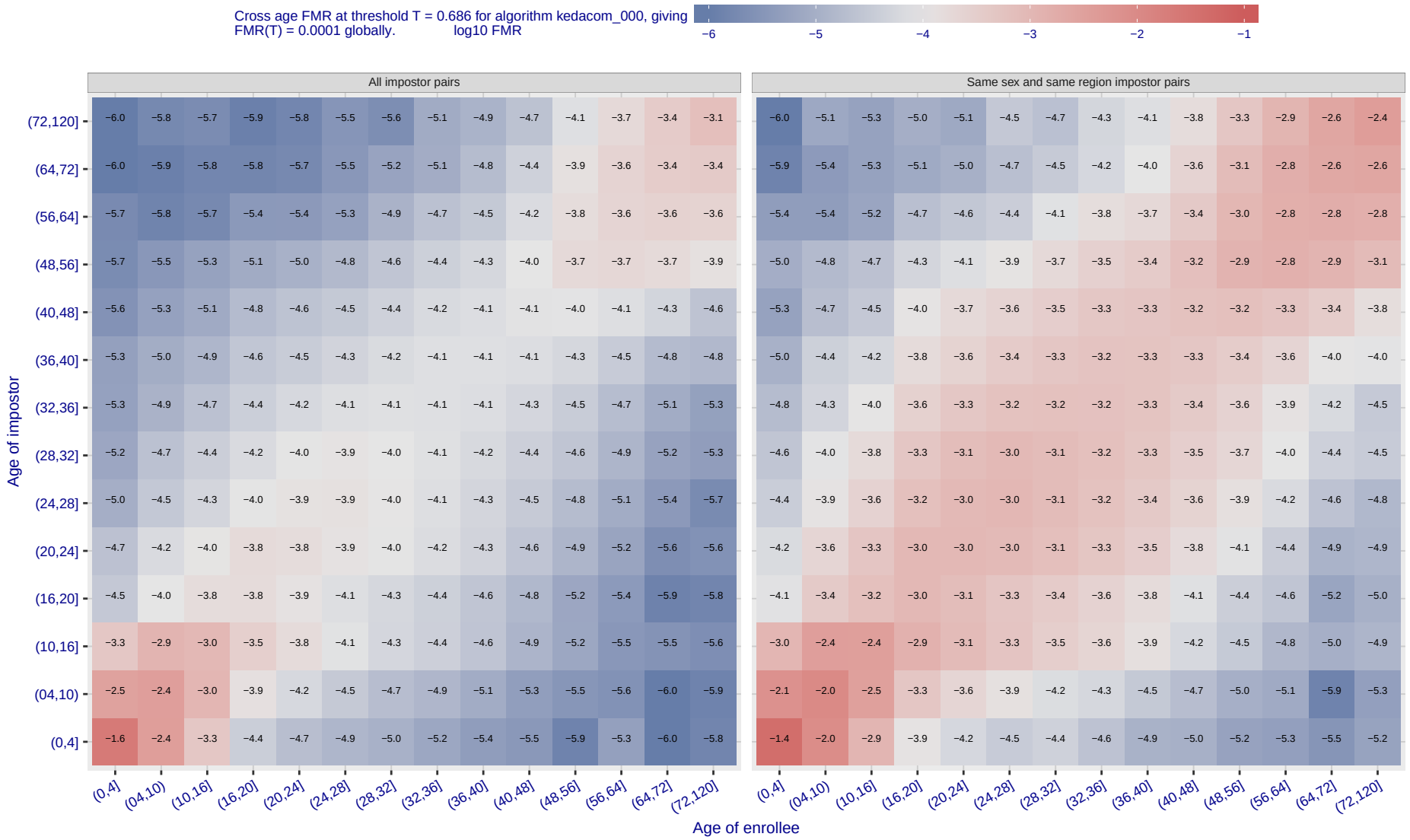


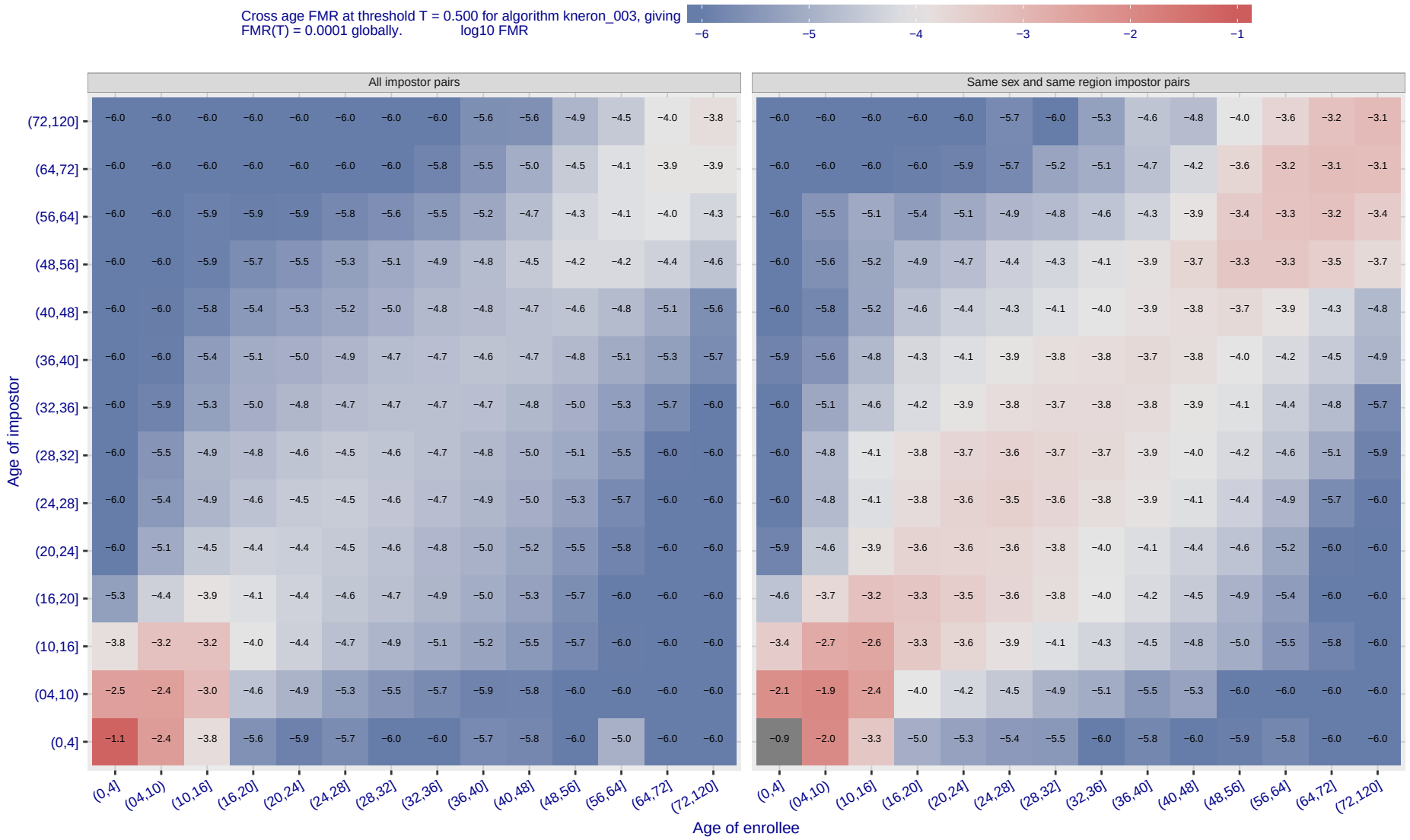


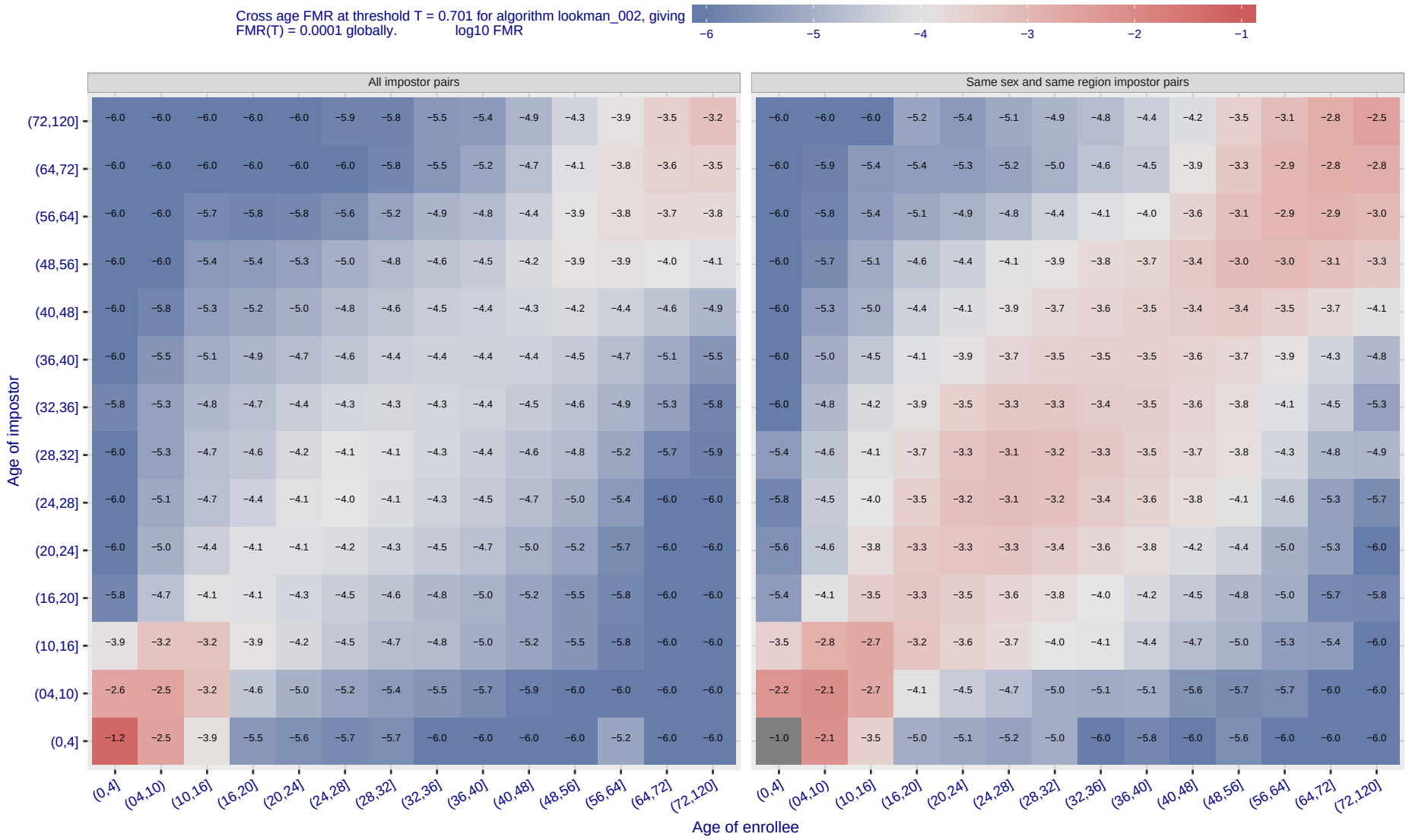


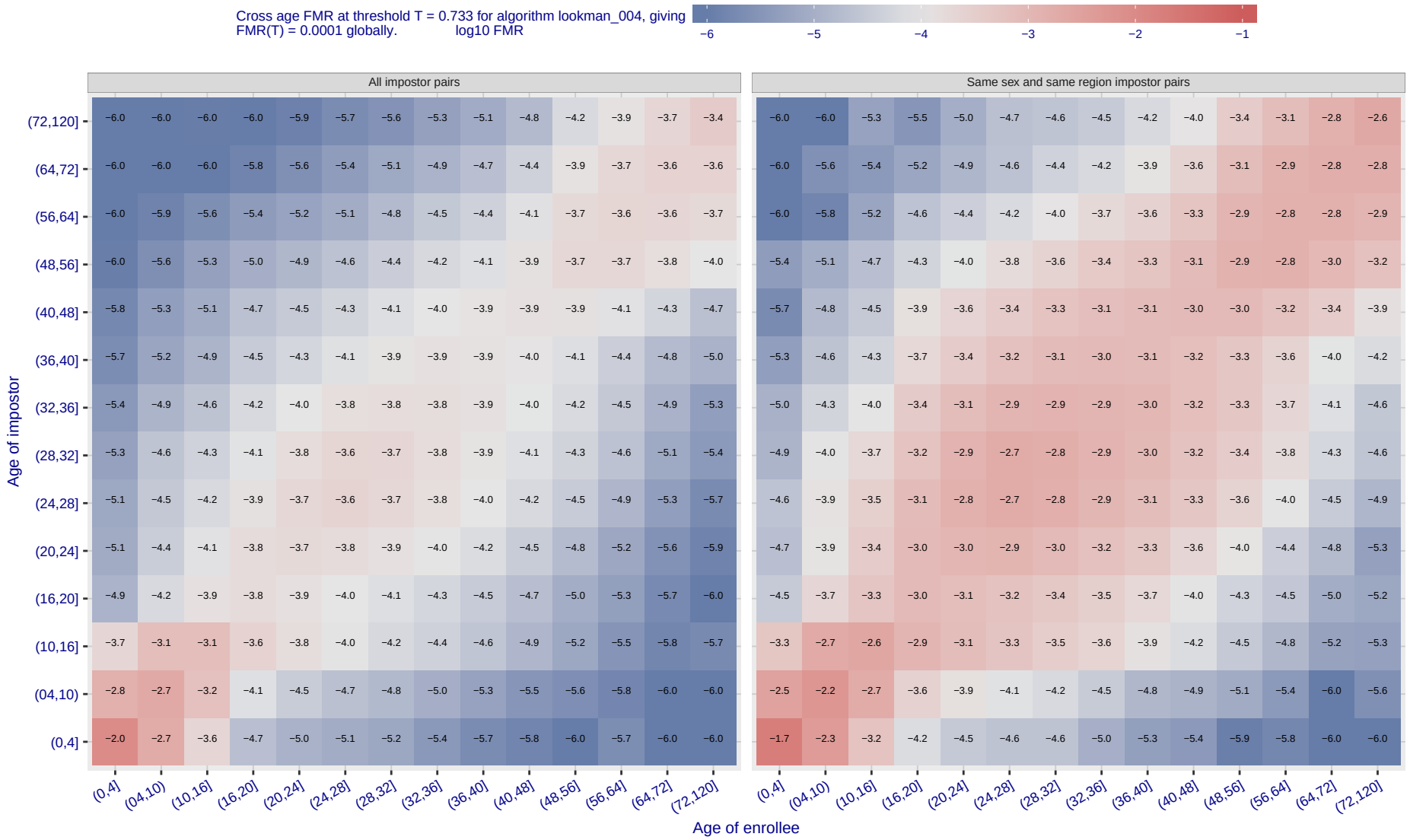


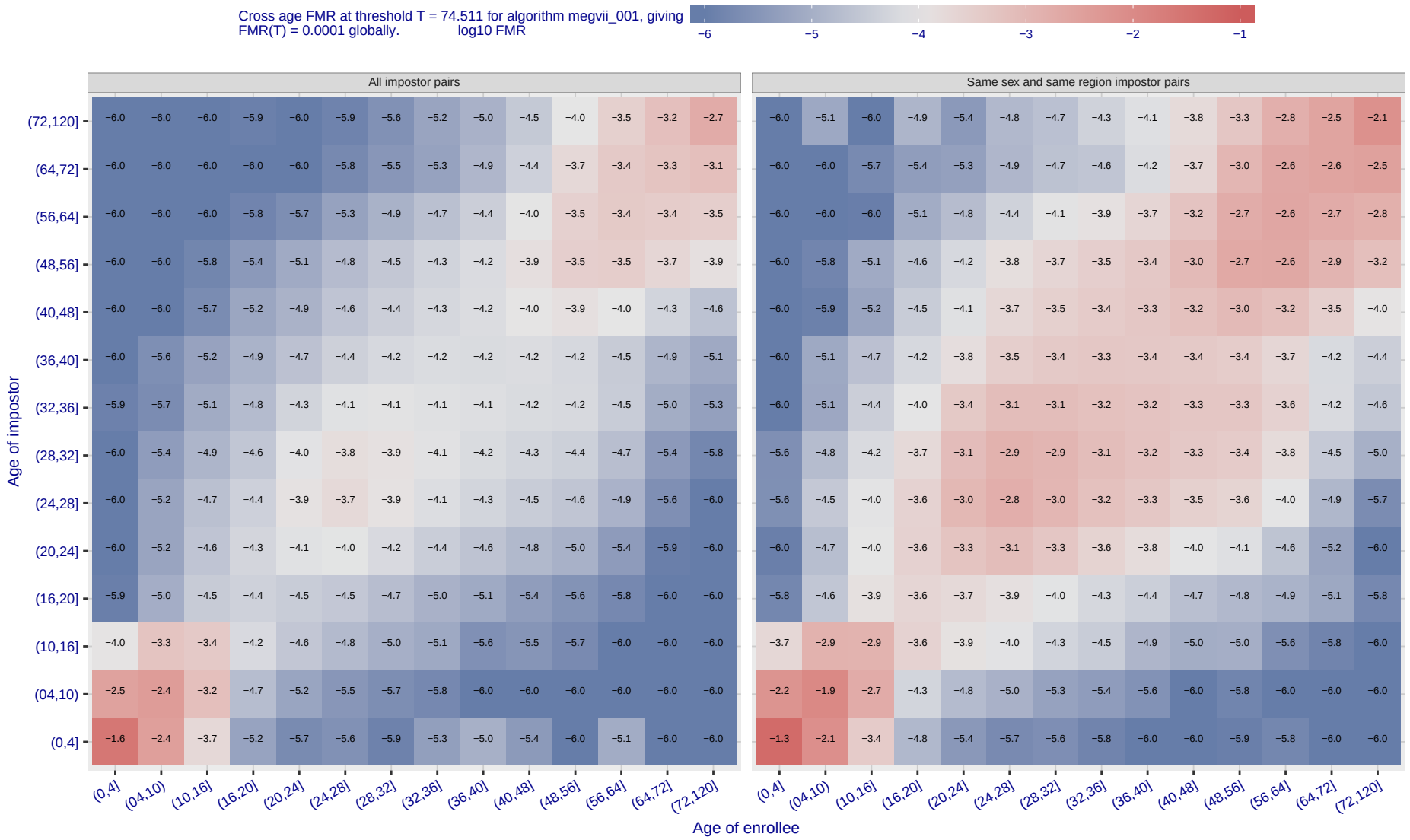


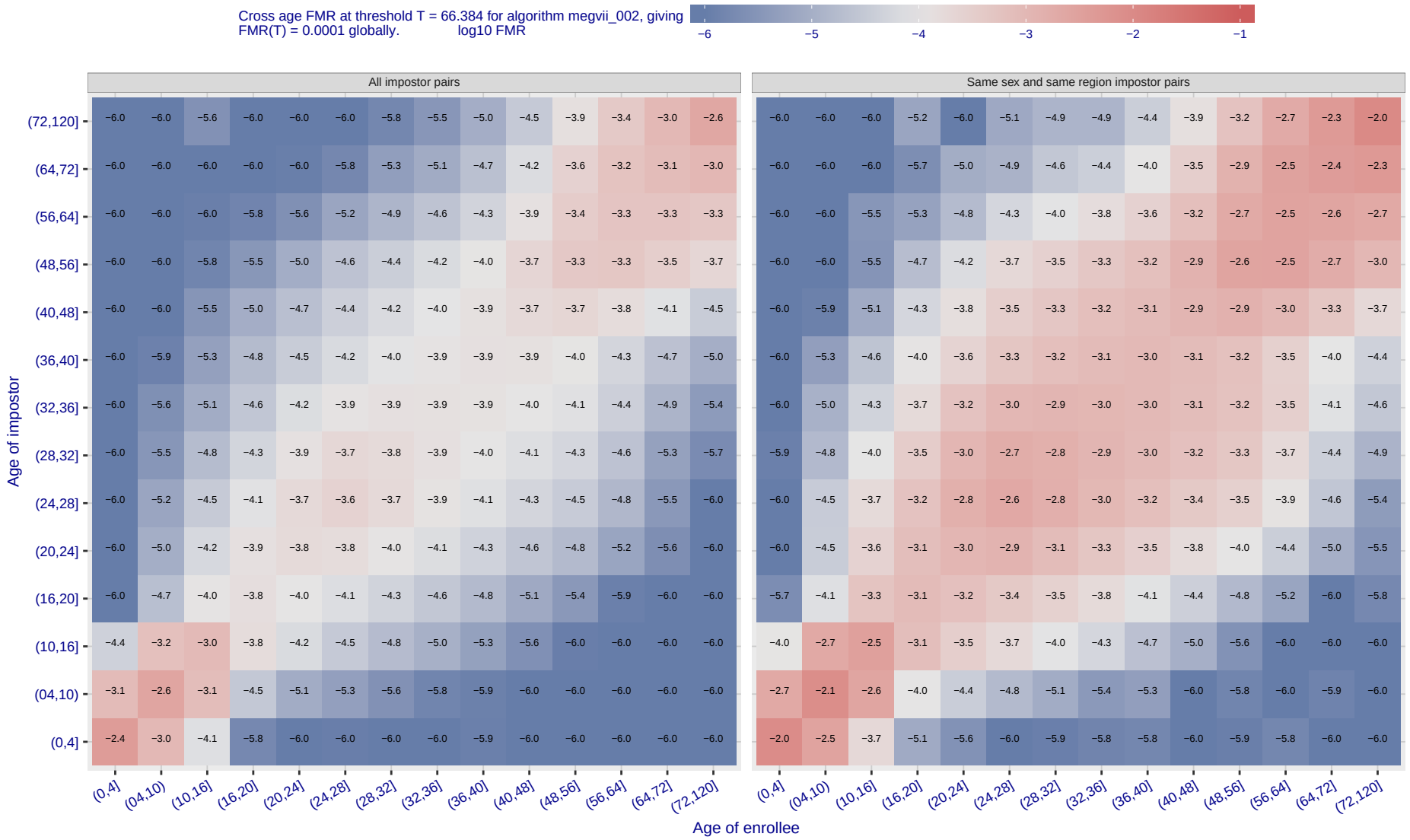


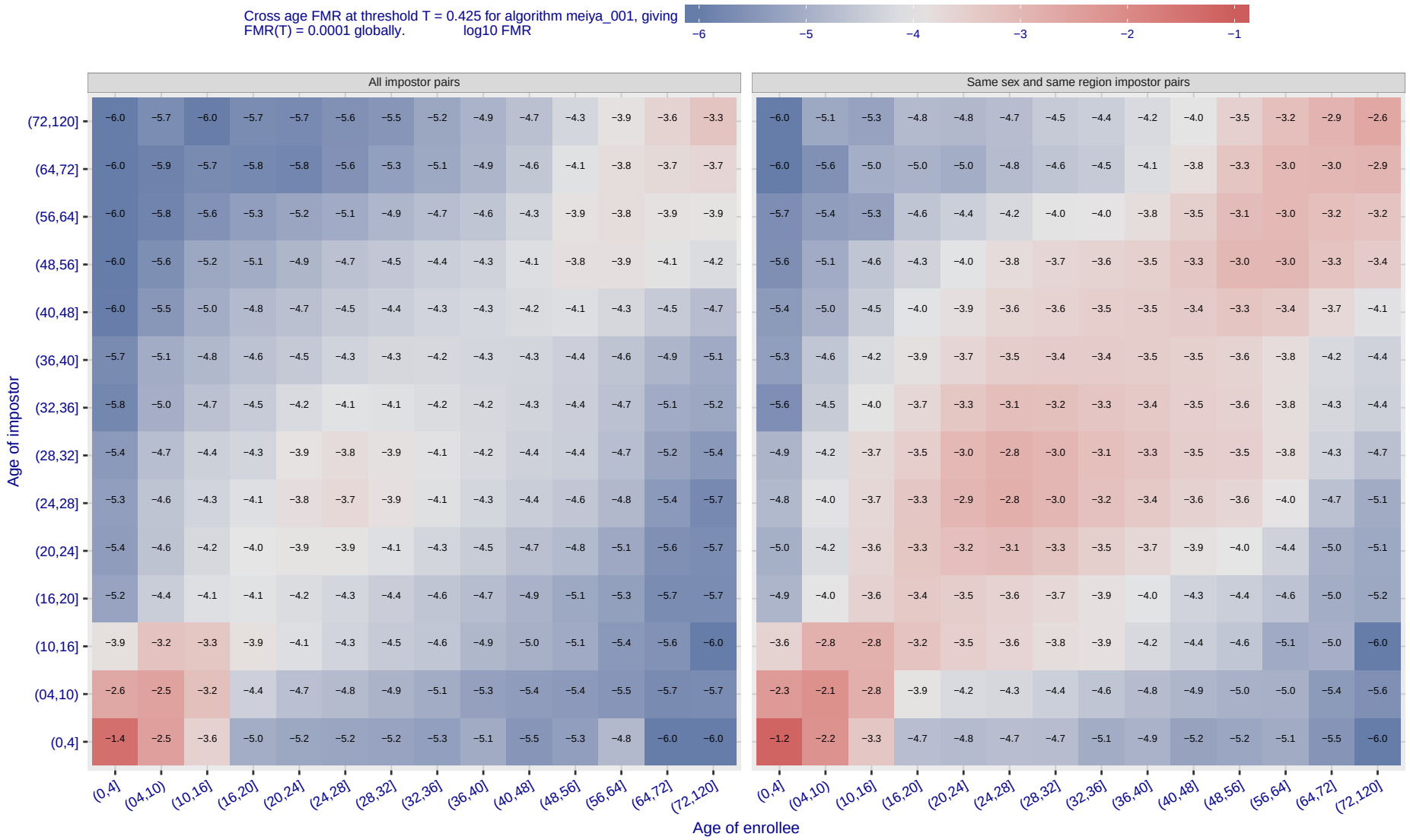


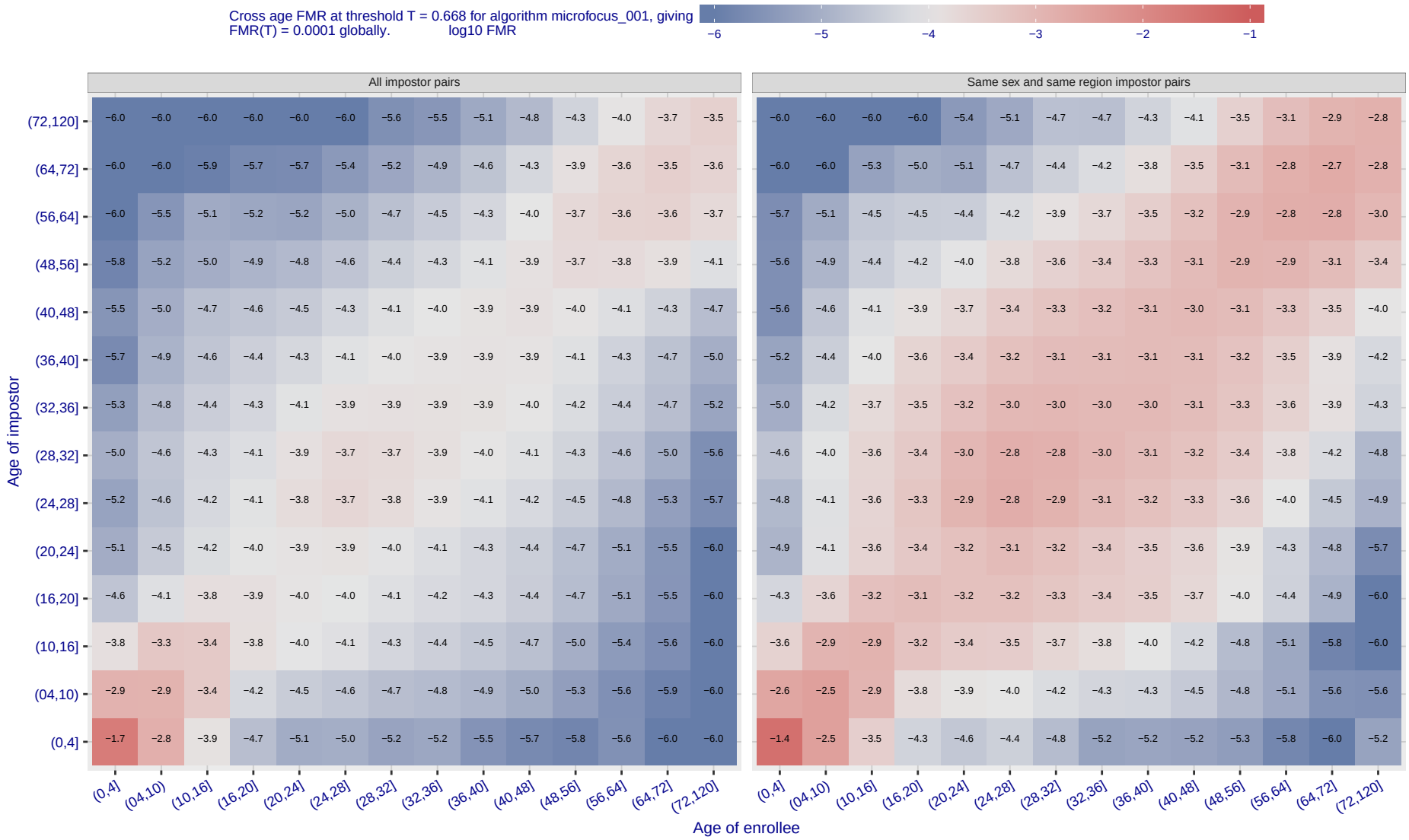


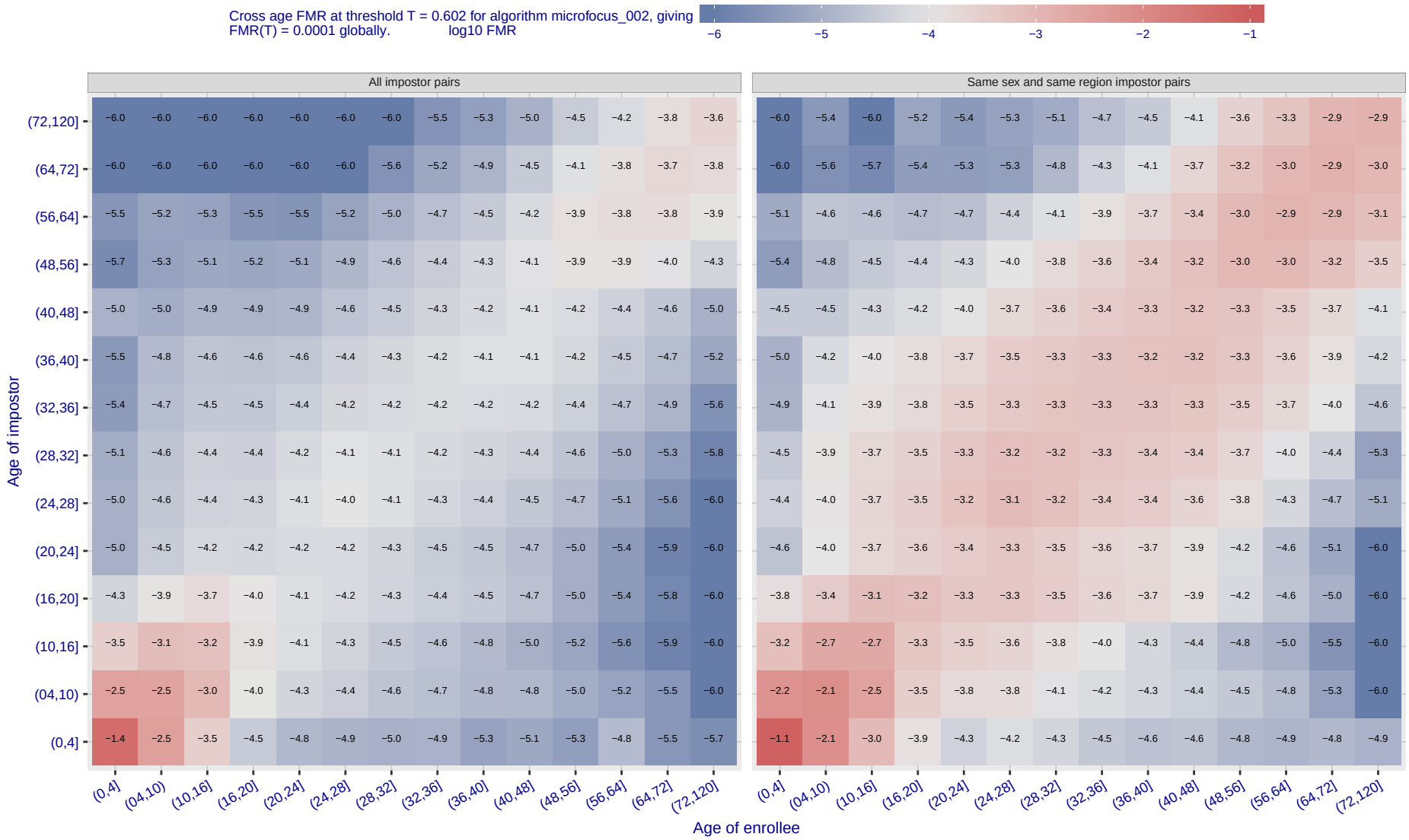


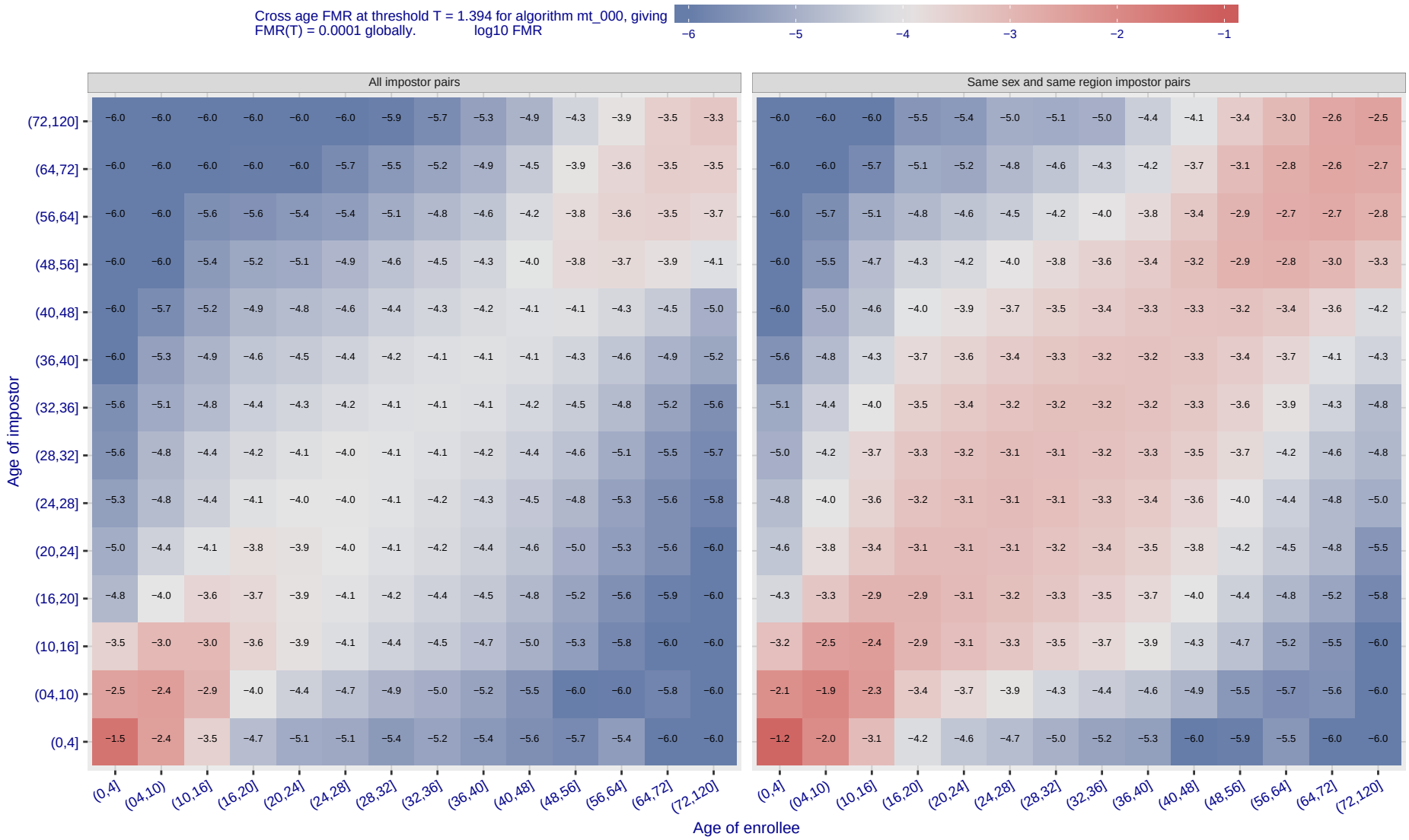


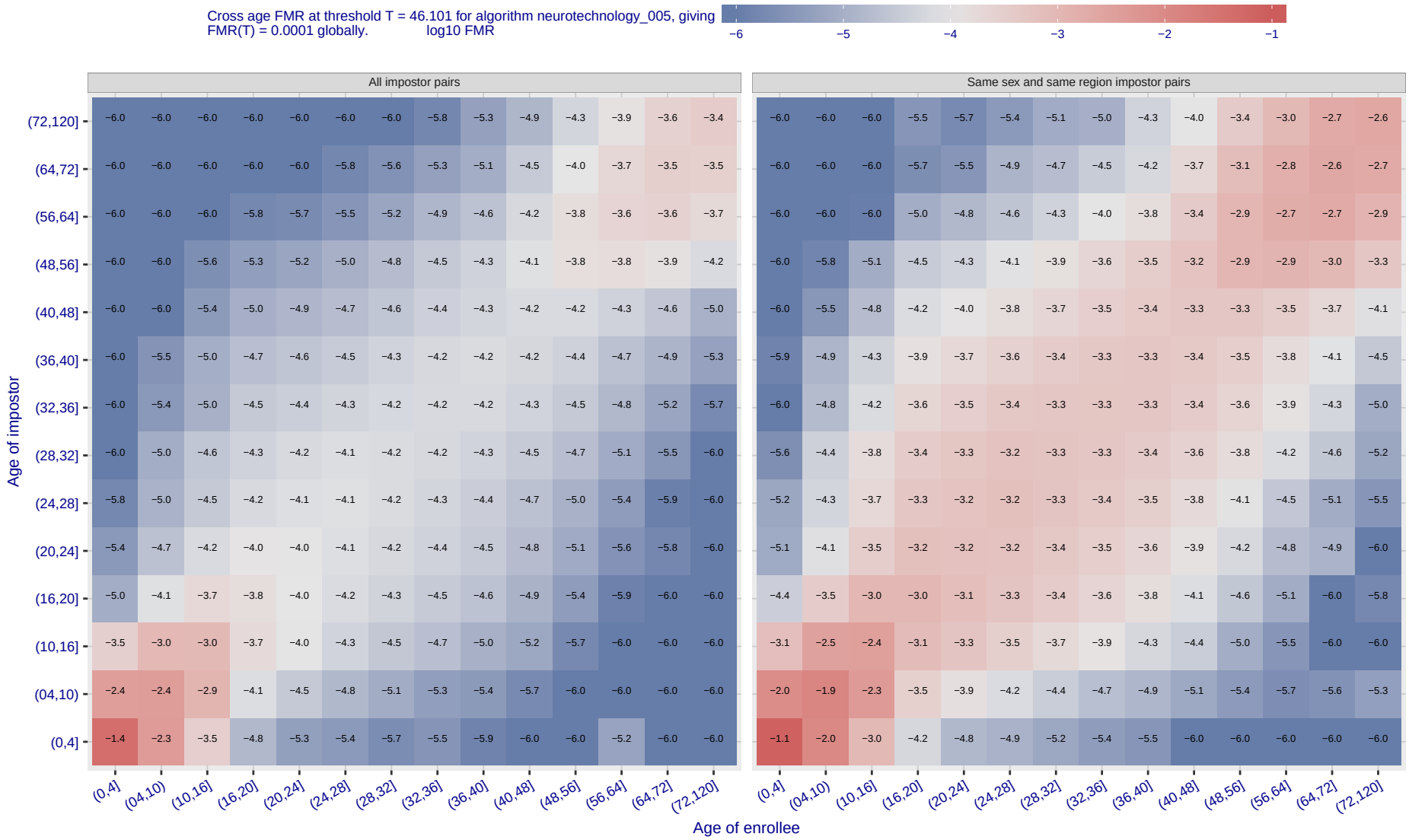


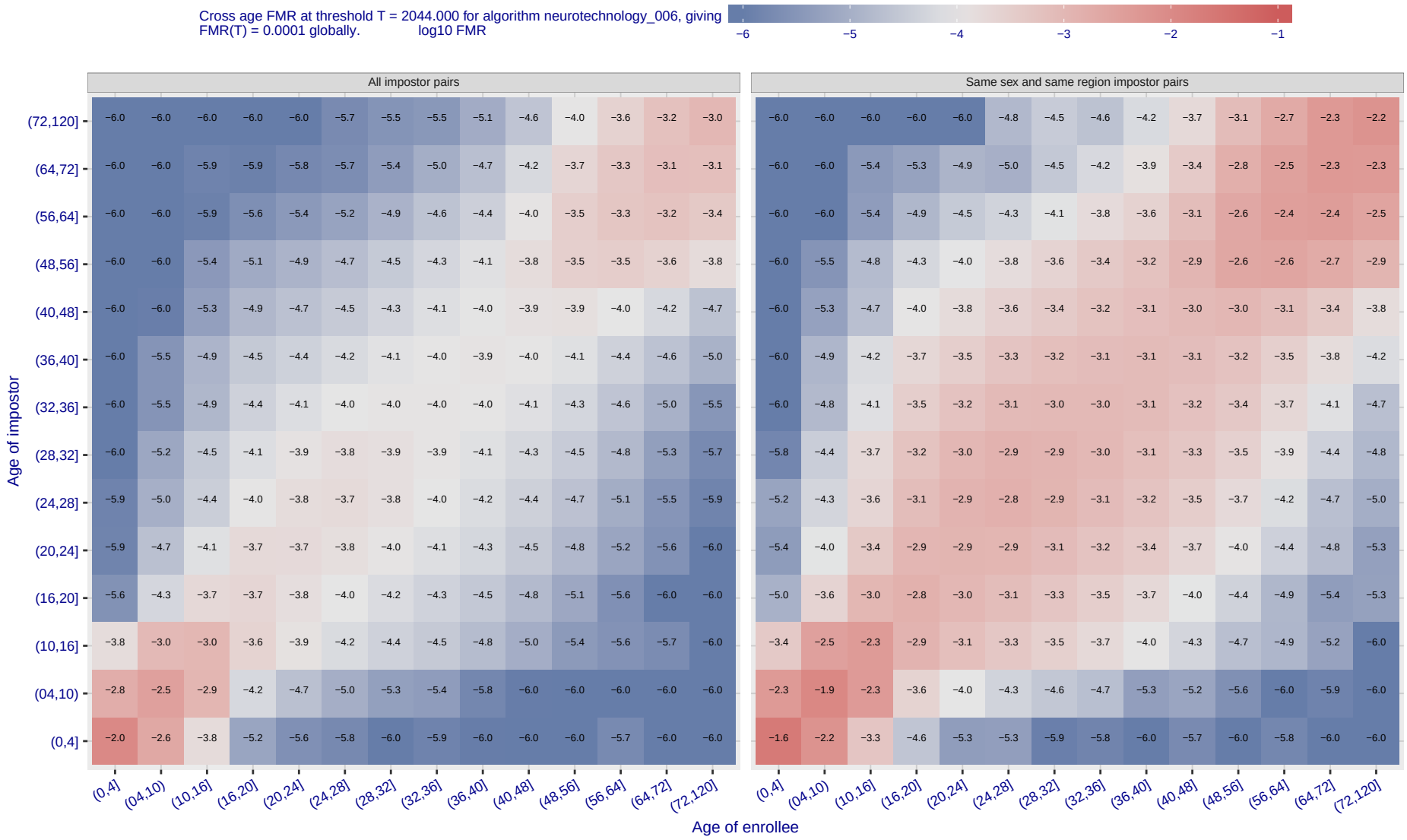


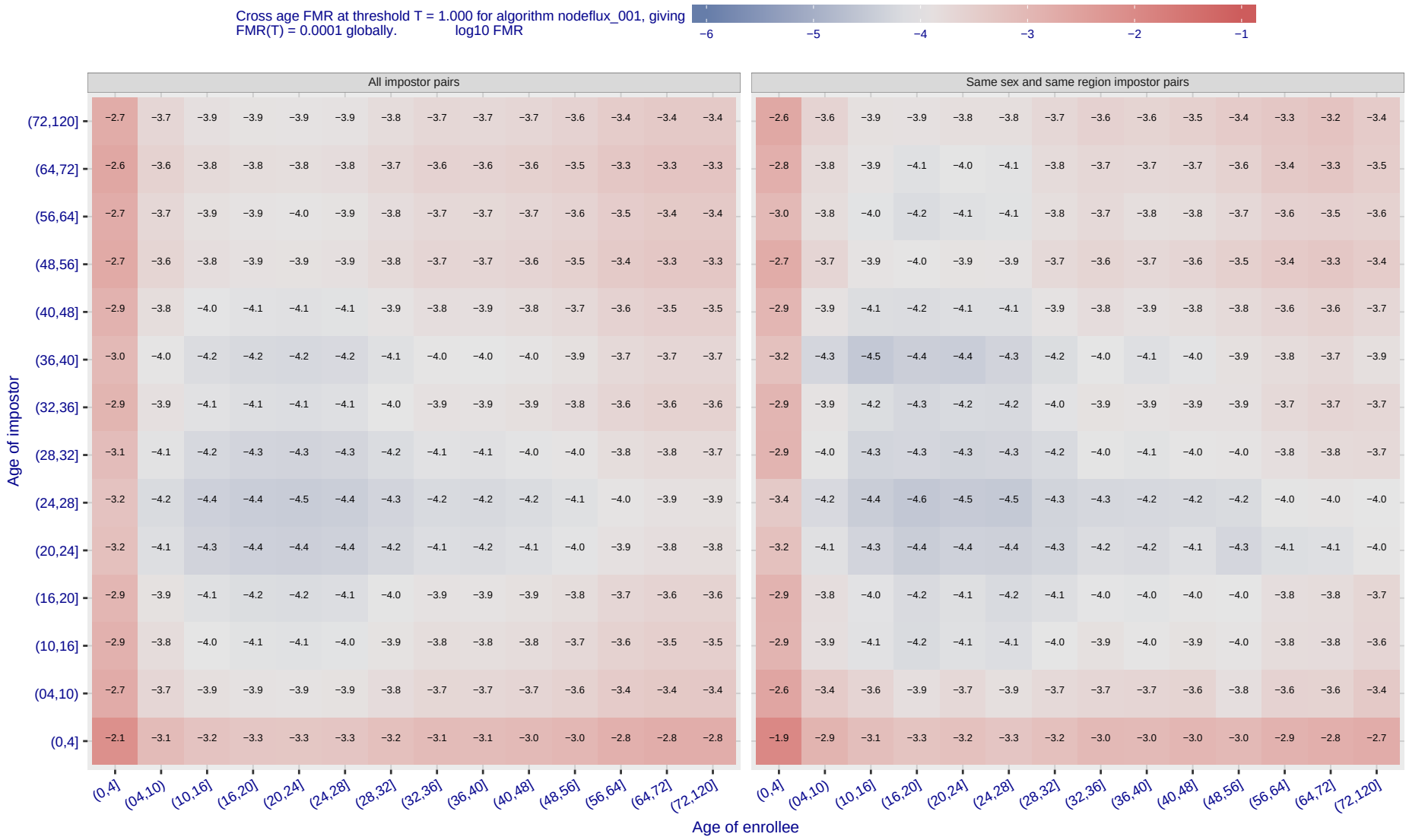


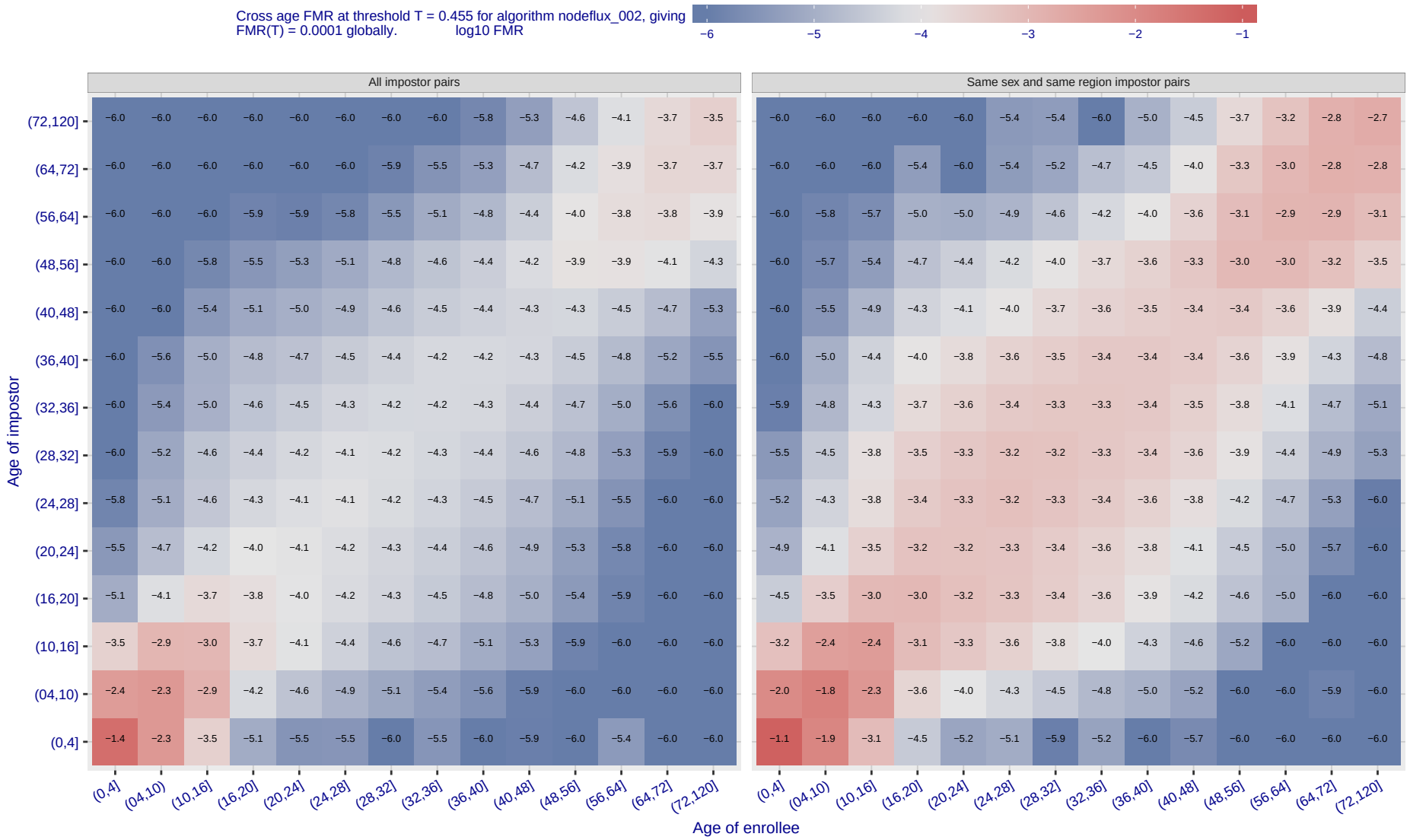












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