

Results of RQ for all tasks

1. SVM-Adult-age

Level	Div.	Before		After		Impr. (%)	
		IFr	Acc.	IFr	Acc.	IFr	Acc.
1	1.11	2.06	81.92	1.71	81.92	16.67	0.006
10	1.94			1.59	81.92	22.69	-0.006
20	2.47			1.42	81.91	31.01	-0.014
30	2.82			1.38	81.91	32.81	-0.017
40	3.13			1.35	81.91	34.10	-0.016
50	3.29			1.29	81.90	37.08	-0.023
60	3.41			1.28	81.91	37.70	-0.017
70	3.53			1.23	81.90	40.01	-0.021
80	3.63			1.20	81.91	41.81	-0.013
90	3.73			1.16	81.91	43.76	-0.014
100	3.87			1.13	81.91	44.95	-0.018
Fairness (IFr)		PCC:	0.99	p-value:	7.3e-09	Slope:	10.21
Accuracy		PCC:	-0.83	p-value:	1.4e-03	Slope:	-0.01

2. SVM-Adult-race

Level	Div.	Before		After		Impr. (%)	
		IFr	Acc.	IFr	Acc.	IFr	Acc.
1	1.23	0.64	81.86	0.56	81.86	13.35	-0.001
10	2.37			0.55	81.85	15.07	-0.017
20	3.07			0.53	81.87	18.45	0.005
30	3.24			0.52	81.86	19.45	-0.006
40	3.39			0.48	81.85	25.34	-0.014
50	3.66			0.48	81.86	24.77	-0.008
60	3.80			0.47	81.86	27.54	-0.008
70	3.86			0.46	81.86	28.66	0.000
80	4.06			0.43	81.87	32.52	0.002
90	4.26			0.42	81.87	34.99	0.004
100	4.38			0.38	81.86	40.58	-0.011
Fairness (IFr)		PCC:	0.89	p-value:	2.0e-04	Slope:	8.28
Accuracy		PCC:	0.12	p-value:	7.4e-01	Slope:	0.00

3. SVM-Adult-gender

Level	Div.	Before		After		Impr. (%)	
		IFr	Acc.	IFr	Acc.	IFr	Acc.
1	1.55	0.17	81.80	0.15	81.81	11.80	0.015
10	2.46			0.13	81.79	24.19	-0.002
20	2.76			0.11	81.79	36.91	-0.010
30	2.93			0.10	81.79	39.15	-0.010
40	3.04			0.09	81.79	47.94	-0.004
50	3.14			0.09	81.80	50.02	0.003
60	3.19			0.08	81.79	52.21	-0.011
70	3.27			0.08	81.79	55.90	-0.005
80	3.35			0.07	81.79	60.22	-0.004
90	3.45			0.07	81.80	61.97	0.005
100	3.69			0.06	81.78	65.81	-0.017
Fairness (IFr)		PCC:	0.97	p-value:	6.1e-07	Slope:	27.85
Accuracy		PCC:	-0.63	p-value:	3.9e-02	Slope:	-0.01

4. SVM-Bank-age

Level	Div.	Before		After		Impr. (%)	
		IFr	Acc.	IFr	Acc.	IFr	Acc.
1	2.72	0.67	88.91	0.49	88.90	27.78	-0.006
10	4.61			0.40	88.89	40.93	-0.024
20	5.18			0.36	88.89	46.65	-0.016
30	5.39			0.32	88.88	52.40	-0.032
40	5.52			0.30	88.86	54.72	-0.053
50	5.60			0.27	88.88	59.16	-0.029
60	5.67			0.27	88.87	59.21	-0.040
70	5.72			0.27	88.88	59.82	-0.030
80	5.77			0.25	88.87	62.18	-0.041
90	5.80			0.24	88.86	63.80	-0.050
100	5.88			0.25	88.87	63.01	-0.041
Fairness (IFr)		PCC:	0.95	p-value:	7.0e-06	Slope:	11.59
Accuracy		PCC:	-0.77	p-value:	5.6e-03	Slope:	-0.01

5. SVM-Credit-age

Level	Div.	Before		After		Impr. (%)	
		IFr	Acc.	IFr	Acc.	IFr	Acc.
1	1.25	2.18	71.37	1.66	71.55	23.78	0.257
10	4.02			1.40	71.70	36.02	0.467
20	5.49			1.36	71.62	37.92	0.350
30	6.19			1.22	71.68	43.99	0.444
40	6.56			1.24	71.85	43.15	0.677
50	6.80			1.27	71.78	42.05	0.584
60	7.09			1.12	71.60	48.49	0.327
70	7.27			1.21	71.80	44.50	0.607
80	7.43			1.10	71.58	49.59	0.304
90	7.51			1.20	71.83	44.98	0.654
100	7.77			1.17	71.35	46.22	-0.023
Fairness (IFr)		PCC:	0.96	p-value:	3.2e-06	Slope:	3.56
Accuracy		PCC:	0.13	p-value:	7.0e-01	Slope:	0.01

6. SVM-Credit-gender

Level	Div.	Before		After		Impr. (%)	
		IFr	Acc.	IFr	Acc.	IFr	Acc.
1	1.62	0.17	71.58	0.11	71.22	32.37	-0.512
10	3.54			0.11	71.15	37.62	-0.605
20	3.97			0.10	70.83	40.57	-1.048
30	4.21			0.10	70.78	42.34	-1.118
40	5.01			0.10	70.70	41.85	-1.234
50	5.77			0.09	70.67	49.31	-1.281
60	6.04			0.08	70.60	52.90	-1.374
70	6.46			0.08	70.57	53.39	-1.420
80	6.76			0.07	70.70	59.72	-1.234
90	6.95			0.07	70.62	61.69	-1.350
100	7.38			0.06	70.58	66.90	-1.397
Fairness (IFr)		PCC:	0.95	p-value:	6.5e-06	Slope:	5.93
Accuracy		PCC:	-0.90	p-value:	1.3e-04	Slope:	-0.16

7. MLPC-Adult-age

Level	Div.	Before		After		Impr. (%)	
		IFr	Acc.	IFr	Acc.	IFr	Acc.
1	2.10	10.37	83.37	10.66	83.22	-2.74	-0.180
10	2.88			8.82	83.48	14.93	0.142
20	3.47			7.22	83.45	30.36	0.102
30	3.68			7.19	83.43	30.71	0.082
40	3.84			6.86	83.51	33.84	0.177
50	3.96			6.27	83.50	39.56	0.157
60	4.06			6.32	83.42	39.09	0.061
70	4.14			5.88	83.45	43.35	0.104
80	4.32			6.46	83.47	37.75	0.131
90	4.82			6.28	83.48	39.42	0.138
100	5.66			5.62	83.52	45.85	0.181
Fairness (IFr)		PCC:	0.89	p-value:	2.1e-04	Slope:	13.60
Accuracy		PCC:	0.69	p-value:	1.8e-02	Slope:	0.07

8. MLPC-Adult-race

Level	Div.	Before		After		Impr. (%)	
		IFr	Acc.	IFr	Acc.	IFr	Acc.
1	2.36	1.99	83.44	0.81	83.21	59.32	-0.274
10	3.37			0.78	83.37	60.85	-0.088
20	3.72			0.79	83.26	60.55	-0.212
30	3.78			0.90	83.21	55.11	-0.277
40	3.87			1.01	83.39	49.39	-0.066
50	4.00			0.92	83.15	53.92	-0.349
60	4.06			0.85	83.29	57.44	-0.180
70	4.15			0.98	83.29	50.81	-0.184
80	4.33			1.02	83.34	48.81	-0.121
90	5.07			1.05	83.17	47.41	-0.328
100	6.06			0.97	83.22	51.40	-0.263
Fairness (IFr)		PCC:	-0.63	p-value:	3.6e-02	Slope:	-3.33
Accuracy		PCC:	-0.20	p-value:	5.6e-01	Slope:	-0.02

9. MLPC-Adult-gender

Level	Div.	Before		IFr	After Acc.	Impr. (%)	
		IFr	Acc.			IFr	Acc.
1	2.09	0.92	83.45	1.29	83.50	-40.23	0.063
10	2.89			1.42	83.42	-55.35	-0.035
20	3.17			1.38	83.29	-50.52	-0.194
30	3.39			1.30	83.44	-42.36	-0.011
40	3.60			1.37	83.43	-49.06	-0.019
50	3.60			1.39	83.41	-51.13	-0.048
60	3.75			1.39	83.30	-51.17	-0.174
70	3.83			1.29	83.44	-41.19	-0.010
80	3.99			1.33	83.37	-45.26	-0.099
90	4.41			1.38	83.40	-50.53	-0.059
100	5.30			1.38	83.37	-50.48	-0.098
Fairness (IFr)		PCC:	-0.27	p-value:	4.3e-01	Slope:	-1.58
Accuracy		PCC:	-0.39	p-value:	2.4e-01	Slope:	-0.04

10. MLPC-Bank-age

Level	Div.	Before		IFr	After Acc.	Impr. (%)	
		IFr	Acc.			IFr	Acc.
1	3.55	4.81	89.72	1.98	89.65	58.84	-0.072
10	5.07			1.50	89.72	68.75	0.001
20	5.51			1.65	89.62	65.67	-0.106
30	5.69			1.54	89.68	67.94	-0.045
40	5.77			1.66	89.69	65.42	-0.030
50	5.84			1.46	89.74	69.68	0.027
60	5.89			1.63	89.65	66.07	-0.077
70	5.94			1.60	89.69	66.64	-0.034
80	5.97			1.55	89.71	67.84	-0.013
90	6.02			1.77	89.70	63.29	-0.024
100	6.12			1.53	89.77	68.28	0.056
Fairness (IFr)		PCC:	0.68	p-value:	2.0e-02	Slope:	2.84
Accuracy		PCC:	0.37	p-value:	2.6e-01	Slope:	0.02

11. MLPC-Credit-age

Level	Div.	Before		IFr	After Acc.	Impr. (%)	
		IFr	Acc.			IFr	Acc.
1	3.15	11.23	76.02	7.79	76.28	30.64	0.351
10	6.20			7.64	76.15	31.96	0.175
20	6.89			7.13	75.72	36.51	-0.395
30	7.24			6.49	75.60	42.20	-0.548
40	7.35			7.21	76.17	35.83	0.197
50	7.49			7.74	75.93	31.12	-0.110
60	7.59			6.96	75.67	38.07	-0.460
70	7.68			6.87	75.92	38.81	-0.132
80	7.81			6.69	75.72	40.48	-0.395
90	7.96			7.22	75.97	35.77	-0.066
100	8.28			7.07	75.80	37.06	-0.285
Fairness (IFr)		PCC:	0.58	p-value:	6.2e-02	Slope:	1.54
Accuracy		PCC:	-0.62	p-value:	4.4e-02	Slope:	-0.13

12. MLPC-Credit-gender

Level	Div.	Before		IFr	After Acc.	Impr. (%)	
		IFr	Acc.			IFr	Acc.
1	2.79	8.80	76.43	6.39	76.28	27.40	-0.196
10	6.11			5.41	76.22	38.56	-0.283
20	6.78			4.96	76.63	43.67	0.262
30	7.03			5.02	76.42	42.98	-0.022
40	7.27			4.90	76.82	44.39	0.502
50	7.32			4.76	76.43	45.92	0.000
60	7.49			4.85	76.62	44.87	0.240
70	7.60			5.02	76.47	42.95	0.044
80	7.71			4.93	76.50	44.03	0.087
90	7.83			5.01	76.35	43.10	-0.109
100	8.13			5.02	76.55	42.95	0.153
Fairness (IFr)		PCC:	0.94	p-value:	1.6e-05	Slope:	3.28
Accuracy		PCC:	0.46	p-value:	1.6e-01	Slope:	0.07

13. RF-Adult-age

Level	Div.	Before		IFr	After Acc.	Impr. (%)	
		IFr	Acc.			IFr	Acc.
1	2.27	26.51	83.85	14.54	83.20	45.14	-0.775
10	3.52			10.49	83.09	60.41	-0.897
20	3.82			7.28	82.96	72.53	-1.053
30	3.93			8.13	83.13	69.33	-0.850
40	4.00			7.11	83.25	73.16	-0.715
50	4.32			7.10	83.13	73.20	-0.858
60	4.38			6.38	83.20	75.92	-0.770
70	4.73			6.18	83.24	76.67	-0.720
80	5.92			5.72	83.11	78.43	-0.882
90	7.27			5.61	83.17	78.84	-0.809
100	7.97			5.21	83.15	80.36	-0.834
Fairness (IFr)		PCC:	0.76	p-value:	6.5e-03	Slope:	4.66
Accuracy		PCC:	0.03	p-value:	9.3e-01	Slope:	0.00

14. RF-Adult-race

Level	Div.	Before		IFr	After Acc.	Impr. (%)	
		IFr	Acc.			IFr	Acc.
1	1.34	5.01	83.76	1.66	83.05	66.92	-0.854
10	2.15			1.03	83.10	79.36	-0.791
20	2.52			0.82	83.11	83.66	-0.771
30	3.56			1.31	82.90	73.78	-1.027
40	3.72			0.73	83.01	85.43	-0.898
50	3.64			0.70	83.19	86.01	-0.678
60	4.43			0.50	83.13	90.05	-0.753
70	4.95			0.79	83.06	84.23	-0.833
80	6.05			1.01	83.03	79.75	-0.869
90	7.05			0.94	83.03	81.30	-0.873
100	7.42			0.81	83.06	83.72	-0.835
Fairness (IFr)		PCC:	0.40	p-value:	2.2e-01	Slope:	1.31
Accuracy		PCC:	-0.13	p-value:	7.1e-01	Slope:	-0.01

15. RF-Adult-gender

Level	Div.	Before		IFr	After Acc.	Impr. (%)	
		IFr	Acc.			IFr	Acc.
1	2.05	9.40	83.95	5.41	83.43	42.44	-0.626
10	3.07			3.46	83.41	63.24	-0.652
20	3.39			3.24	83.22	65.50	-0.875
30	3.44			2.83	83.34	69.92	-0.727
40	3.87			1.68	83.36	82.15	-0.711
50	3.92			1.96	83.33	79.13	-0.747
60	3.94			2.14	83.48	77.22	-0.566
70	4.40			2.25	83.36	76.11	-0.703
80	5.49			1.38	83.42	85.31	-0.640
90	6.76			0.98	83.45	89.62	-0.599
100	7.28			1.28	83.47	86.42	-0.580
Fairness (IFr)		PCC:	0.83	p-value:	1.5e-03	Slope:	7.13
Accuracy		PCC:	0.42	p-value:	1.9e-01	Slope:	0.02

16. RF-Bank-age

Level	Div.	Before		IFr	After Acc.	Impr. (%)	
		IFr	Acc.			IFr	Acc.
1	2.88	8.84	89.62	3.07	89.53	65.23	-0.103
10	4.40			0.91	89.50	89.75	-0.135
20	4.98			0.65	89.54	92.64	-0.092
30	5.32			0.57	89.49	93.55	-0.147
40	5.37			0.63	89.47	92.88	-0.172
50	5.54			0.39	89.44	95.55	-0.204
60	5.60			0.51	89.45	94.22	-0.191
70	5.68			0.36	89.48	95.90	-0.162
80	5.75			0.38	89.41	95.73	-0.241
90	5.82			0.29	89.44	96.67	-0.203
100	5.92			0.36	89.41	95.93	-0.238
Fairness (IFr)		PCC:	0.95	p-value:	5.0e-06	Slope:	9.69
Accuracy		PCC:	-0.73	p-value:	1.0e-02	Slope:	-0.04

17. RF-Credit-age

Level	Div.	Before		IFr	After Acc.	Impr. (%)	
		IFr	Acc.			IFr	Acc.
1	3.44	16.61	73.60	11.84	72.97	28.74	-0.861
10	6.31			10.95	72.97	34.09	-0.861
20	6.90			10.03	73.20	39.61	-0.543
30	7.17			9.47	73.37	42.99	-0.317
40	7.37			10.48	72.78	36.88	-1.110
50	7.47			9.62	73.38	42.05	-0.294
60	7.63			9.88	73.02	40.49	-0.793
70	7.78			10.79	73.28	35.06	-0.430
80	7.88			10.20	72.95	38.57	-0.883
90	8.04			10.98	72.90	33.91	-0.951
100	8.37			9.61	73.23	42.15	-0.498
Fairness (IFr)		PCC:	0.67	p-value:	2.5e-02	Slope:	2.18
Accuracy		PCC:	0.20	p-value:	5.5e-01	Slope:	0.04

18. RF-Credit-gender

Level	Div.	Before		After		Impr. (%)	
		IFr	Acc.	IFr	Acc.	IFr	Acc.
1	2.20	8.63	74.32	4.23	74.17	50.94	-0.202
10	5.30			2.66	73.72	69.12	-0.807
20	6.08			2.49	73.55	71.08	-1.032
30	6.71			2.23	73.50	74.09	-1.099
40	6.84			3.18	73.15	63.19	-1.570
50	7.03			3.02	73.58	65.03	-0.987
60	7.25			2.79	73.68	67.65	-0.852
70	7.33			3.47	73.77	59.74	-0.740
80	7.51			2.60	73.98	69.84	-0.449
90	7.66			2.63	73.77	69.50	-0.740
100	7.95			3.10	73.57	64.09	-1.009
Fairness (IFr)		PCC:	0.58	p-value:	6.0e-02	Slope:	2.30
Accuracy		PCC:	-0.47	p-value:	1.4e-01	Slope:	-0.10