Dataset View - Akkodis

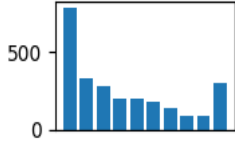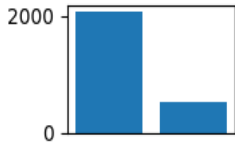## Dataset Head
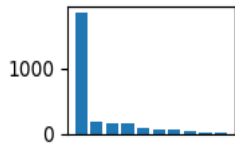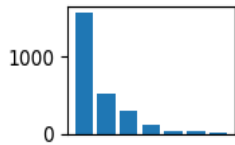
Age Bin	Sensitive	Sex	Study Area	Study Title	Sector	Job Family Hiring	Job Title Hiring	Technical Skills	Comunication	Maturity	Dynamism	Mobility	English	European Residence	Italian Residence	Status
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Automotive	Engineering	Consultant	3	2	3	3	2	4	Yes	Yes	Positive
40 - 45	Female 40 - 45 Italian	Female	Engineering	Five-year degree	Aeronautics	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Negative
36 - 40	Male 36 - 40 Italian	Male	Engineering	Five-year degree	Consulting	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Positive
> 45	Male > 45 Italian	Male	Law	Five-year degree	Telecom	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Positive
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Automotive	Not Specified	Not Specified	3	2	2	3	1	1	Yes	Yes	Negative
36 - 40	Male 36 - 40 Italian	Male	Engineering	Five-year degree	Telecom	Not Specified	Not Specified	2	2	3	3	3	3	Yes	Yes	Negative
31 - 35	Female 31 - 35 Italian	Female	Economic	Five-year degree	Others	Support	Support Advanced	2	2	2	2	2	2	Yes	Yes	Positive
36 - 40	Male 36 - 40 Italian	Male	Engineering	Five-year degree	Space	Not Specified	Not Specified	3	3	3	3	2	2	Yes	Yes	Negative
36 - 40	Male 36 - 40 Italian	Male	Scientific Field	Five-year degree	Life sciences	Engineering	Consultant	2	2	3	3	1	2	Yes	Yes	Positive
40 - 45	Male 40 - 45 Italian	Male	Engineering	Five-year degree	Unemployed	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Negative
36 - 40	Male 36 - 40 Italian	Male	Engineering	Five-year degree	Consulting	Engineering	Consultant	3	2	3	3	3	3	Yes	Yes	Positive
36 - 40	Female 36 - 40 Italian	Female	Engineering	Doctorate	Others	Engineering	Qualified Consultant	2	2	2	2	2	3	Yes	Yes	Positive
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Others	Not Specified	Not Specified	2	2	2	2	1	3	Yes	Yes	Negative
40 - 45	Male 40 - 45 Italian	Male	Engineering	Five-year degree	Others	Engineering	Qualified Consultant	3	2	2	2	2	2	Yes	Yes	Positive
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Consulting	Engineering	Consultant	2	2	2	2	2	3	Yes	Yes	Positive

Age	Description	Gender	Field	Education	Sector	Role Field	Role	C1	C2	C3	C4	C5	C6	Q1	Q2	Sentiment
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Telecom	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Negative
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Others	Engineering	Consultant	3	3	3	2	2	3	Yes	Yes	Positive
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Consulting	Engineering	Consultant	3	3	3	2	2	2	Yes	Yes	Positive
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Aeronautics	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Positive
31 - 35	Female 31 - 35 Italian	Female	Engineering	Five-year degree	Unemployed	Engineering	Consultant	2	2	2	2	2	3	Yes	Yes	Positive
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Others	Engineering	Consultant	3	3	2	2	2	2	Yes	Yes	Positive
31 - 35	Male 31 - 35 Non-Italian	Male	Engineering	Five-year degree	Space	Engineering	Consultant	2	2	2	2	2	3	Yes	No	Positive
> 45	Male > 45 Italian	Male	Scientific Field	High school graduation	Railway	Engineering	Team Leader	3	2	3	2	2	2	Yes	Yes	Positive
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Others	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Positive
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Defence	Engineering	Consultant	3	3	2	3	3	3	Yes	Yes	Positive
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Unemployed	Not Specified	Not Specified	3	3	2	1	1	3	Yes	Yes	Positive
31 - 35	Female 31 - 35 Italian	Female	Engineering	Five-year degree	Life sciences	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Negative
31 - 35	Male 31 - 35 Italian	Male	Engineering	Three-year degree	Unemployed	Tech Consulting & Solutions	Advanced Consultant	3	2	2	3	1	3	Yes	Yes	Positive
26 - 30	Female 26 - 30 Italian	Female	Engineering	Three-year degree	Unemployed	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Negative
31 - 35	Male 31 - 35 Italian	Male	Engineering	Five-year degree	Naval	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Positive
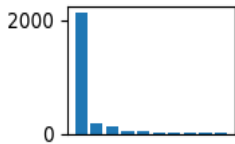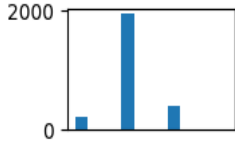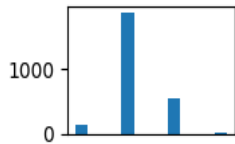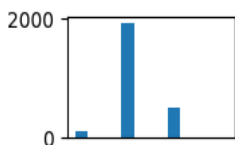
Features View
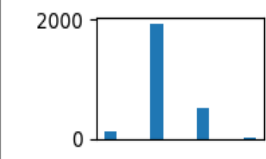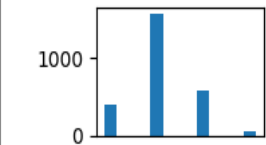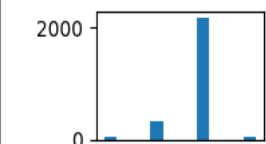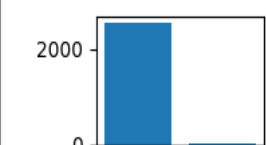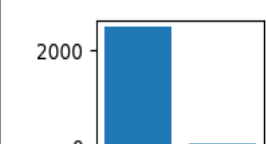
Stats
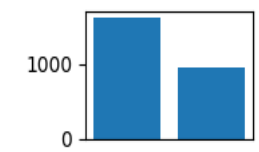
feature	missing_values	min	max	mean	std	1st_percentile	2nd_percentile	3rd_percentile	type	values	distribution	sensitive	target
Age Bin	0								categorical	20 - 25 , 26 - 30 , 31 - 35 , 36 - 40 , 40 - 45 , < 20 , > 45		True	False
Sensitive	0								categorical	Female 20 - 25 Italian, Female 26 - 30 Italian, Female 26 - 30 Non-Italian, Female 31 - 35 Italian, Female 31 - 35 Non-Italian, Female 36 - 40 Italian...		True	False
Sex	0								binary	Female, Male		True	False

feature	missing_values	min	max	mean	std	1st_percentile	2nd_percentile	3rd_percentile	type	values	distribution	sensitive	target
Study Area	0								categorical	Economic, Engineering, Informatics, Law, Linguistics, Medical Field, NO COLLEGE, Other, Other Humanities Subjects, Scientific Field		False	False
Study Title	0								categorical	Doctorate, Five-year degree, High school graduation, Middle school diploma, Professional qualification, Three-year degree, master's degree		False	False

feature	missing_values	min	max	mean	std	1st_percentile	2nd_percentile	3rd_percentile	type	values	distribution	sensitive	target
Sector	0								categorical	Aeronautics, Automotive, Consulting, Defence, Energy, Life sciences, Machining - Heavy Industry, Naval, Oil and Gas, Others, Railway, Services and Inf...		False	False
Job Family Hiring	0								categorical	Business & Sales, Business Management & Sales, Enabling Function, Engineering, Not Specified, Support, Talent Acquisition, Tech Consulting & Solutions		False	False

feature	missing_values	min	max	mean	std	1st_percentile	2nd_percentile	3rd_percentile	type	values	distribution	sensitive	target
Job Title Hiring	0								categorical	???, Advanced Business Manager, Advanced Consultant, Business Manager, Business Unit Director, Consultant, Junior Business Manager, Junior Consultant,...		False	False
Technical Skills	0	1.0	4.0	2.08675 4453911 696	0.51651 0436229 2585	2.0	2.0	2.0	integer	1, 2, 3, 4		False	False
Comunication	0	1.0	4.0	2.17118 5127807 901	0.50504 4745624 4623	2.0	2.0	2.0	integer	1, 2, 3, 4		False	False
Maturity	0	1.0	4.0	2.16382 6491092 1765	0.49158 0169715 6381	2.0	2.0	2.0	integer	1, 2, 3, 4		False	False

feature	missing_values	min	max	mean	std	1st_percentile	2nd_percentile	3rd_percentile	type	values	distribution	sensitive	target
Dynamism	0	1.0	4.0	2.162664601084 4306	0.492359628420 1219	2.0	2.0	2.0	integer	1, 2, 3, 4		False	False
Mobility	0	1.0	4.0	2.102246320681 642	0.655500663798 4702	2.0	2.0	2.0	integer	1, 2, 3, 4		False	False
English	0	1.0	4.0	2.849728892331 526	0.444386752186 6916	3.0	3.0	3.0	integer	1, 2, 3, 4		False	False
European Residence	0								binary	No, Yes		False	False
Italian Residence	0								binary	No, Yes		True	False

feature	missing_values	min	max	mean	std	1st_percentile	2nd_percentile	3rd_percentile	type	values	distribution	sensitive	target
Status	0								binary	Negative, Positive		False	True

Features

Field Name	drop	sensitive	target
Age Bin	✗	✔	✗
Sensitive	✗	✔	✗
Sex	✗	✔	✗
Study Area	✗	✗	✗
Study Title	✗	✗	✗
Sector	✗	✗	✗
Job Family Hiring	✗	✗	✗
Job Title Hiring	✗	✗	✗
Technical Skills	✗	✗	✗
Comunication	✗	✗	✗
Maturity	✗	✗	✗
Dynamism	✗	✗	✗
Mobility	✗	✗	✗
English	✗	✗	✗
European Residence	✗	✗	✗
Italian Residence	✗	✔	✗
Status	✗	✗	✔

Proxies

Correlation Matrix

Correlation Matrix Heatmap
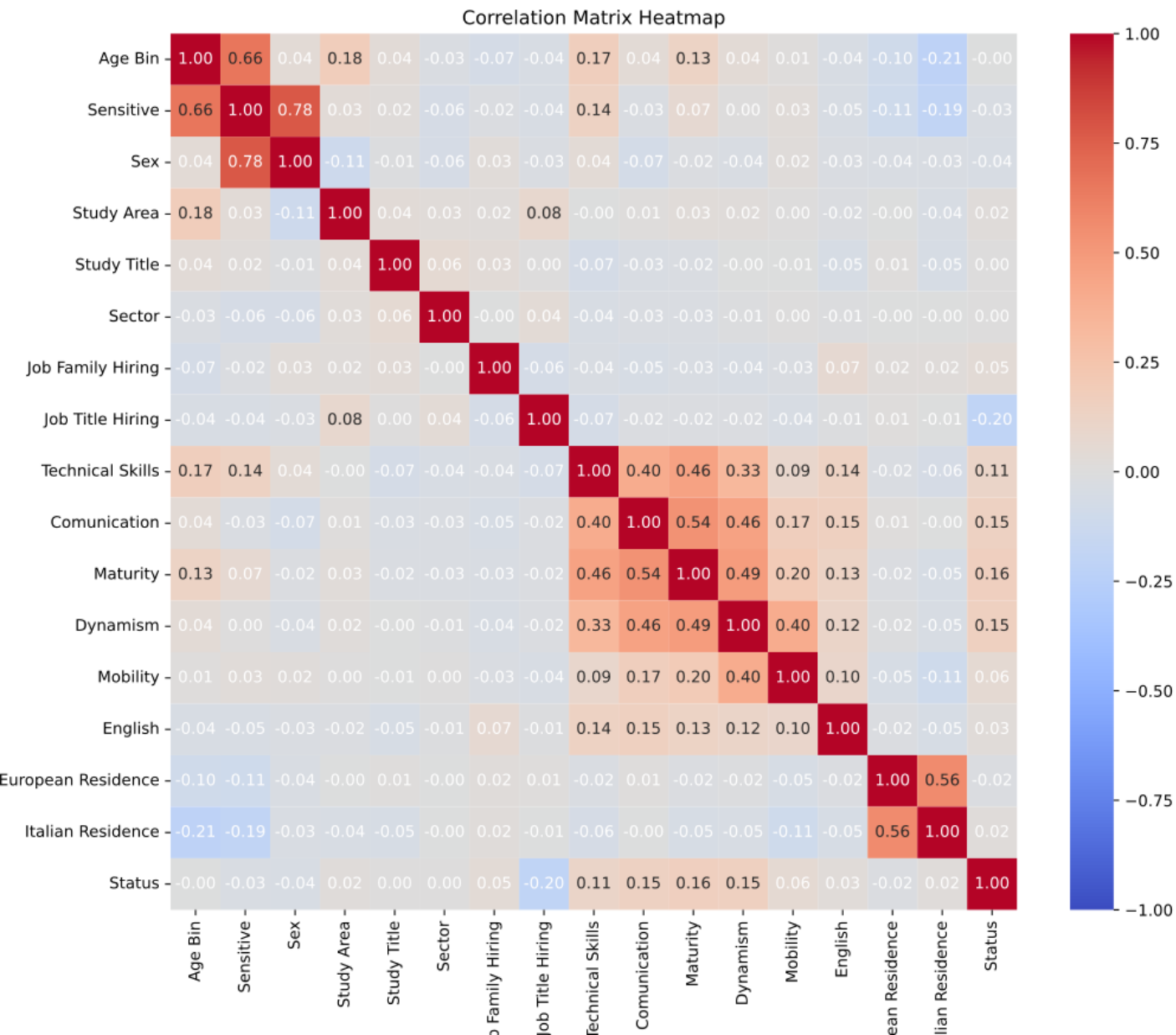
Suggested Proxies

Age Bin

	Sensitive	Sex	Study Area	Study Title	Sector	Job Family Hiring
correlation	66.06%	4.43%	17.73%	3.62%	-2.79%	-6.83%
suggested_proxy	✗	✗	✗	✗	✗	✗

Age Bin

	Job Title Hiring	Technical Skills	Comunication	Maturity	Dynamism	Mobility
correlation	-4.14%	17.17%	3.95%	13.07%	4.10%	1.39%
suggested_proxy	✗	✗	✗	✗	✗	✗

Age Bin

	English	European Residence	Italian Residence
correlation	-4.41%	-9.96%	-21.45%
suggested_proxy	✗	✗	✗

Sensitive

	Age Bin	Sex	Study Area	Study Title	Sector	Job Family Hiring
correlation	66.06%	77.68%	3.20%	2.30%	-5.81%	-1.89%
suggested_proxy	✗	✗	✗	✗	✗	✗

Sensitive

	Job Title Hiring	Technical Skills	Comunication	Maturity	Dynamism	Mobility
correlation	-4.39%	13.87%	-3.07%	6.72%	0.02%	2.57%
suggested_proxy	✗	✗	✗	✗	✗	✗

Sensitive

	English	European Residence	Italian Residence
correlation	-4.61%	-10.78%	-19.12%
suggested_proxy	✗	✗	✗

Sex

	Age Bin	Sensitive	Study Area	Study Title	Sector	Job Family Hiring

correlation	4.43%	77.68%	-11.16%	-0.92%	-5.65%	2.86%
suggested_proxy	✗	✗	✗	✗	✗	✗

Sex

	Job Title Hiring	Technical Skills	Comunication	Maturity	Dynamism	Mobility
correlation	-2.66%	4.22%	-7.38%	-2.00%	-3.69%	1.68%
suggested_proxy	✗	✗	✗	✗	✗	✗

Sex

	English	European Residence	Italian Residence
correlation	-2.61%	-3.58%	-3.27%
suggested_proxy	✗	✗	✗

Italian Residence

	Age Bin	Sensitive	Sex	Study Area	Study Title	Sector
correlation	-21.45%	-19.12%	-3.27%	-4.04%	-4.99%	-0.17%
suggested_proxy	✗	✗	✗	✗	✗	✗

Italian Residence

	Job Family Hiring	Job Title Hiring	Technical Skills	Comunication	Maturity	Dynamism
correlation	1.72%	-0.70%	-5.67%	-0.10%	-5.07%	-4.68%
suggested_proxy	✗	✗	✗	✗	✗	✗

Italian Residence

	Mobility	English	European Residence
correlation	-10.71%	-5.09%	56.41%
suggested_proxy	✗	✗	✗

Detection

Selected Metrics

StatisticalParityDifference

	Negative	Positive
Sensitive		
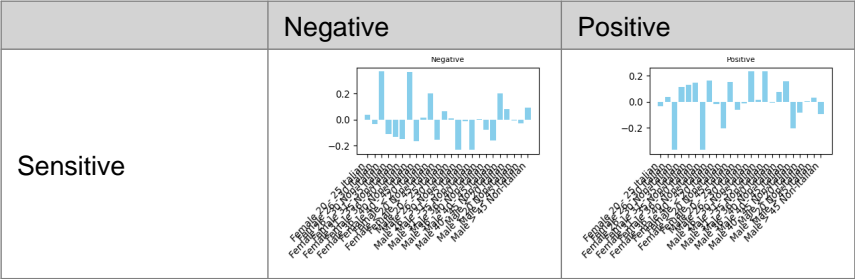
Model Mitigation

Inprocessing

$algorithm	eta	hidden_layers	hidden_dim	epochs
PrejudiceRemover	1	1	8	100

Model Mitigation Results

Correlation Matrix

Correlation Matrix Heatmap

Performance Plot

Performance with No Mitigation
(mean ± std across folds)

Performance with Mitigation
(mean ± std across folds)
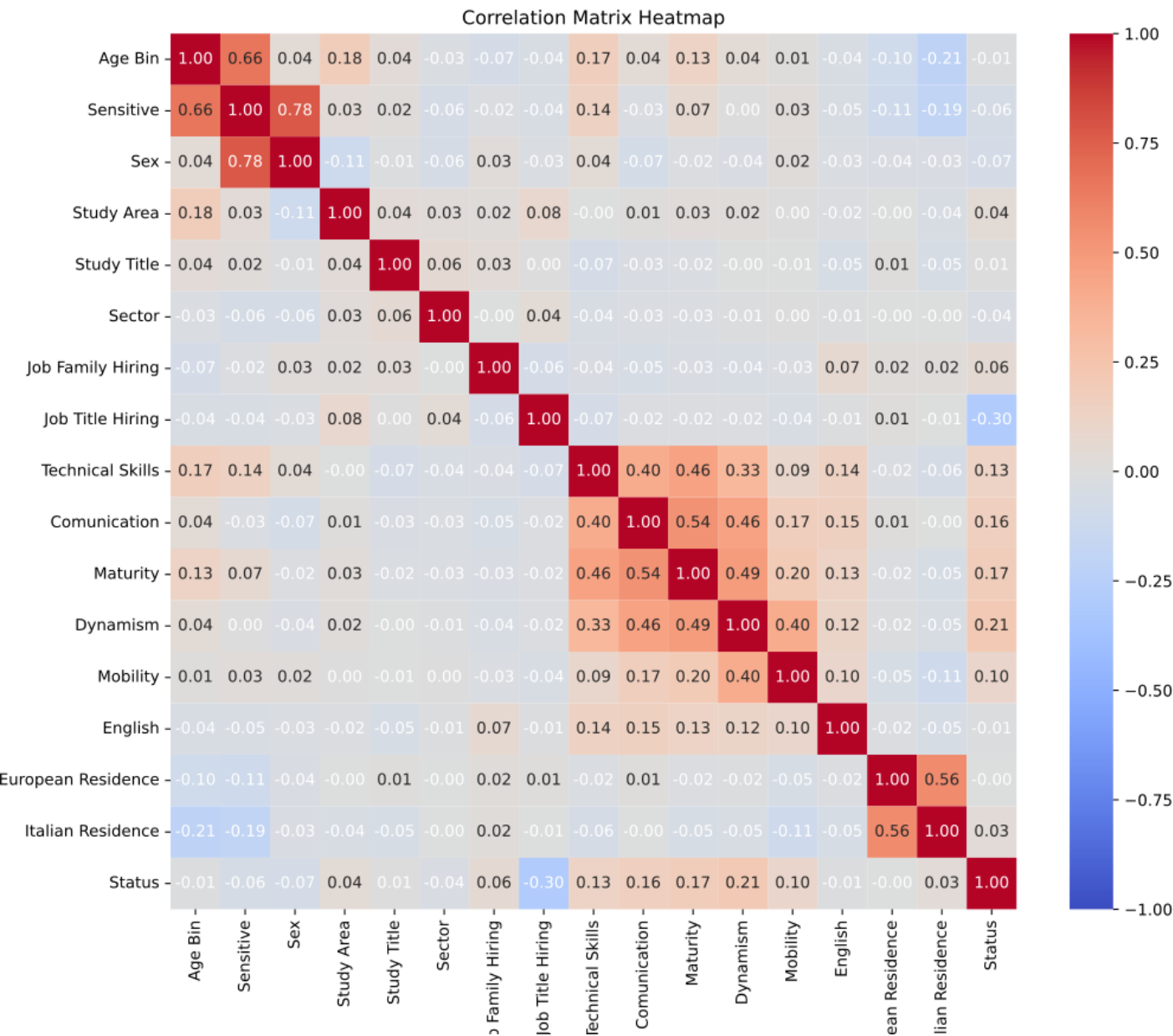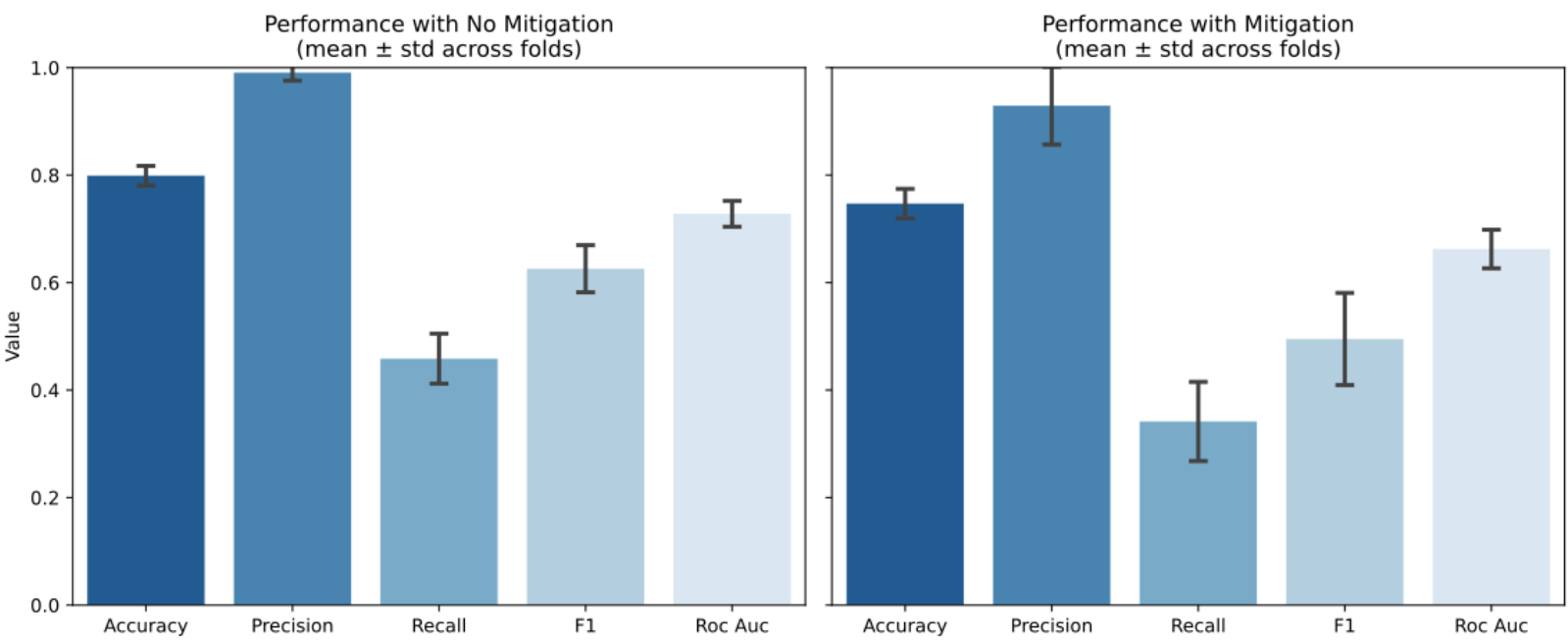
Fairness Plot

Fairness with No Mitigation
(mean ± std across folds)

Fairness with Mitigation
(mean ± std across folds)

Predictions Head

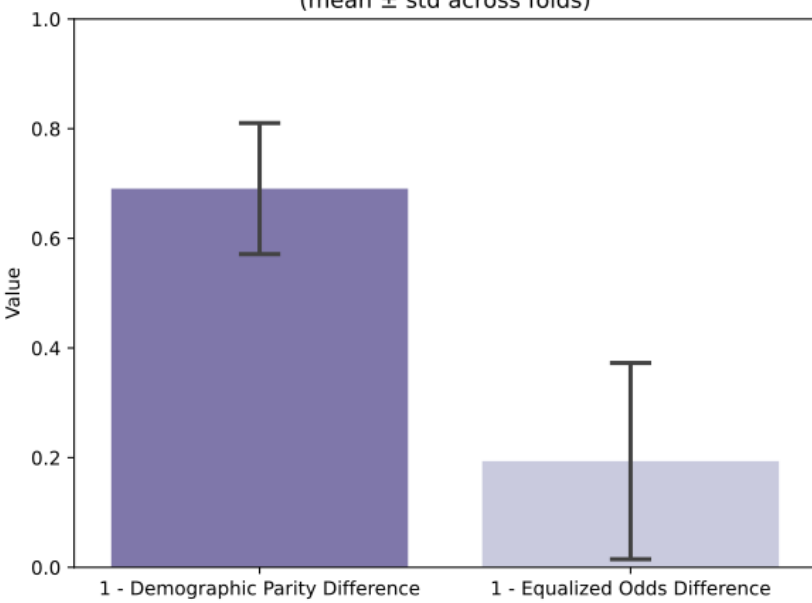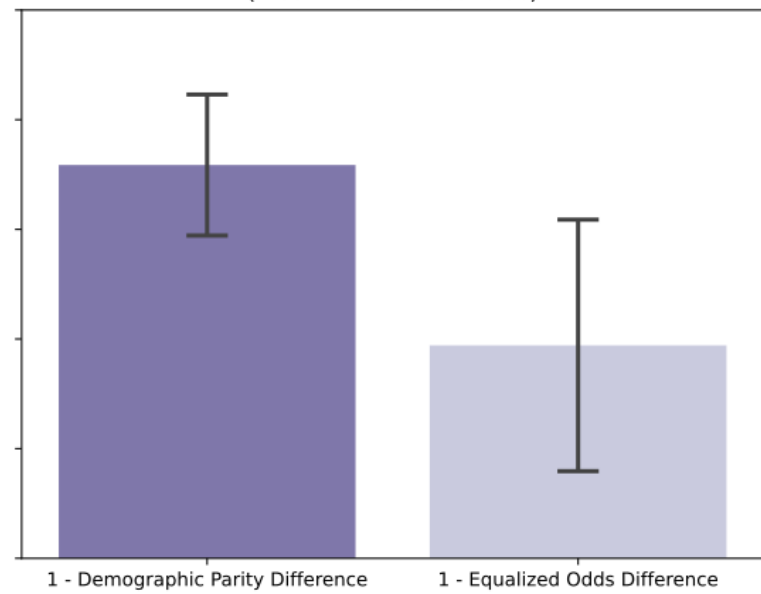| Sensitive	Sex	Study Area	Study Title	Sector	Job Family Hiring	Job Title Hiring	Technical Skills	Comunication	Maturity	Dynamism	Mobility	English	European Residence	Italian Residence	Status
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Automotive	Engineering	Consultant	3	2	3	3	2	4	Yes	Yes	Positive
Not a protected category 40 - 45 years	Female	Engineering	Five-year degree	Aeronautics	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Negative
Not a protected category 36 - 40 years	Male	Engineering	Five-year degree	Consulting	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Positive
Not a protected category > 45 years	Male	Law	Five-year degree	Telecom	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Positive
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Automotive	Not Specified	Not Specified	3	2	2	3	1	1	Yes	Yes	Negative
Not a protected category 36 - 40 years	Male	Engineering	Five-year degree	Telecom	Not Specified	Not Specified	2	2	3	3	3	3	Yes	Yes	Negative
Not a protected category 31 - 35 years	Female	Economic	Five-year degree	Others	Support	Support Advanced	2	2	2	2	2	2	Yes	Yes	Positive
Not a protected category 36 - 40 years	Male	Engineering	Five-year degree	Space	Not Specified	Not Specified	3	3	3	3	2	2	Yes	Yes	Negative

Not a protected category 36 - 40 years	Male	Scientific Field	Five-year degree	Life sciences	Engineering	Consultant	2	2	3	3	1	2	Yes	Yes	Positive
Not a protected category 40 - 45 years	Male	Engineering	Five-year degree	Unemployed	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Negative
Not a protected category 36 - 40 years	Male	Engineering	Five-year degree	Consulting	Engineering	Consultant	3	2	3	3	3	3	Yes	Yes	Positive
Not a protected category 36 - 40 years	Female	Engineering	Doctorate	Others	Engineering	Qualified Consultant	2	2	2	2	2	3	Yes	Yes	Negative
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Others	Not Specified	Not Specified	2	2	2	2	1	3	Yes	Yes	Negative
Not a protected category 40 - 45 years	Male	Engineering	Five-year degree	Others	Engineering	Qualified Consultant	3	2	2	2	2	2	Yes	Yes	Positive
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Consulting	Engineering	Consultant	2	2	2	2	2	3	Yes	Yes	Positive
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Telecom	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Negative
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Others	Engineering	Consultant	3	3	3	2	2	3	Yes	Yes	Positive
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Consulting	Engineering	Consultant	3	3	3	2	2	2	Yes	Yes	Positive

Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Aeronautics	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Negative
Not a protected category 31 - 35 years	Female	Engineering	Five-year degree	Unemployed	Engineering	Consultant	2	2	2	2	2	3	Yes	Yes	Positive
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Others	Engineering	Consultant	3	3	2	2	2	2	Yes	Yes	Positive
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Space	Engineering	Consultant	2	2	2	2	2	3	Yes	No	Positive
Not a protected category > 45 years	Male	Scientific Field	High school graduation	Railway	Engineering	Team Leader	3	2	3	2	2	2	Yes	Yes	Positive
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Others	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Positive
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Defence	Engineering	Consultant	3	3	2	3	3	3	Yes	Yes	Positive
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Unemployed	Not Specified	Not Specified	3	3	2	1	1	3	Yes	Yes	Positive
Not a protected category 31 - 35 years	Female	Engineering	Five-year degree	Life sciences	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Negative
Not a protected category 31 - 35 years	Male	Engineering	Three-year degree	Unemployed	Tech Consulting & Solutions	Advanced Consultant	3	2	2	3	1	3	Yes	Yes	Positive

Not a protected category 26 - 30 years	Female	Engineering	Three-year degree	Unemployed	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Negative
Not a protected category 31 - 35 years	Male	Engineering	Five-year degree	Naval	Not Specified	Not Specified	2	2	2	2	2	3	Yes	Yes	Positive

Selected Metrics

StatisticalParityDifference

	Negative	Positive
Sensitive		