

Datasetconfirmation

Dataset Head

Candidate State	Age Range	Sex	Study area	Study Title	Years Experience	Sector	event_type_val	Expected Ral	Residence State	Residence Italian Region	European Residence
Hired	early 30s	Male	Automation/Mechatronics Engineering	Five-year degree	between 1 and 3	Automotive	BM interview	24-26 K	ITALY	Piedmont	Yes
Vivier	early 40s	Female	computer engineering	Five-year degree	between 7 and 10	Aeronautics	Candidate notification	26-28 K	ITALY	Puglia	Yes
QM	late 30s	Male	chemical engineering	Five-year degree	between 3 and 5	Consulting	Qualification Meeting	Not Given	ITALY	Campania	Yes
QM	more than 45 years	Male	Legal	Five-year degree	between 7 and 10	Telecom	Qualification Meeting	20-22 K	ITALY	Lombardy	Yes
In selection	early 30s	Male	Mechanical engineering	Five-year degree	between 3 and 5	Automotive	BM interview	24-26 K	ITALY	Sicily	Yes
In selection	late 30s	Male	Telecommunications Engineering	Five-year degree	between 3 and 5	Telecom	Technical interview	28-30 K	ITALY	Lombardy	Yes
Hired	early 30s	Female	Economic - Statistics	Five-year degree	between 5 and 7	Others	HR interview	22-24 K	ITALY	Piedmont	Yes
Vivier	late 30s	Male	Materials Science and Engineering	Five-year degree	between 5 and 7	Space	BM interview	30-32 K	ITALY	Lazio	Yes
Hired	late 30s	Male	Other scientific subjects	Five-year degree	between 1 and 3	Life sciences	BM interview	28-30 K	ITALY	Marche	Yes
First contact	late 30s	Male	Biomedical Engineering	Five-year degree	between 5 and 7	Not Specified	CV request	Not Given	ITALY	Sardinia	Yes
In selection	early 40s	Male	electronic Engineering	Five-year degree	between 3 and 5	Not Specified	Contact note	Not Given	ITALY	Tuscany	Yes
Hired	late 30s	Male	electronic Engineering	Five-year degree	between 3 and 5	Consulting	BM interview	20-22 K	ITALY	Abruzzo	Yes
Hired	late 30s	Female	Telecommunications Engineering	Doctorate	more than 10	Others	Candidate notification	Not Given	ITALY	Tuscany	Yes
In selection	early 30s	Male	Information Engineering	Five-year degree	between 3 and 5	Others	HR interview	44-46 K	ITALY	Puglia	Yes

Hired	early 40s	Male	Automation/Mechatronics Engineering	Five-year degree	between 5 and 7	Others	HR interview	Not Given	ITALY	Tuscany	Yes
Hired	early 30s	Male	Information Engineering	Five-year degree	between 3 and 5	Consulting	CV request	Not Given	ITALY	Lazio	Yes
In selection	early 30s	Male	Telecommunications Engineering	Five-year degree	between 5 and 7	Telecom	CV request	40-42 K	ITALY	Tuscany	Yes
Hired	early 30s	Male	Information Engineering	Five-year degree	between 1 and 3	Others	BM interview	Not Given	ITALY	Puglia	Yes
Hired	early 30s	Male	Automation/Mechatronics Engineering	Five-year degree	between 1 and 3	Consulting	BM interview	32-34 K	ITALY	Sicily	Yes
QM	early 30s	Male	Telecommunications Engineering	Five-year degree	between 5 and 7	Aeronautics	Inadequate CV	Not Given	ITALY	Tuscany	Yes
Hired	early 30s	Female	Biomedical Engineering	Five-year degree	between 3 and 5	Not Specified	Candidate notification	Not Given	ITALY	Tuscany	Yes
Hired	early 30s	Male	electronic Engineering	Five-year degree	between 1 and 3	Others	BM interview	24-26 K	ITALY	Tuscany	Yes
Hired	early 30s	Male	Aeronautical/Aerospace/Astronautics Engineering	Five-year degree	between 3 and 5	Space	Candidate notification	34-36 K	GERMANY	Not Italian Region	Yes
Hired	more than 45 years	Male	Other scientific subjects	High school graduation	more than 10	Railway	HR interview	32-34 K	ITALY	Emilia Romagna	Yes
Economic proposal	early 30s	Male	Automation/Mechatronics Engineering	Five-year degree	none	Others	Economic proposal	Not Given	ITALY	Tuscany	Yes
Hired	early 30s	Male	Automation/Mechatronics Engineering	Five-year degree	between 1 and 3	Defence	BM interview	Not Given	ITALY	Tuscany	Yes
In selection	early 30s	Male	Information Engineering	Five-year degree	between 3 and 5	Not Specified	BM interview	Not Given	ITALY	Tuscany	Yes
In selection	early 30s	Female	Biomedical Engineering	Five-year degree	between 3 and 5	Life sciences	Contact note	Not Given	ITALY	Tuscany	Yes
Hired	early 30s	Male	electronic Engineering	Three-year degree	between 5 and 7	Not Specified	HR interview	Not Given	ITALY	Emilia Romagna	Yes
In selection	late 20s	Female	Biomedical Engineering	Three-year degree	between 0 and 1	Not Specified	Contact note	Not Given	ITALY	Puglia	Yes
QM	early 30s	Male	Automation/Mechatronics Engineering	Five-year degree	between 0 and 1	Naval	Contact note	Not Given	ITALY	Tuscany	Yes

Hired	early 30s	Female	Automation/Mechatronics Engineering	Five-year degree	between 5 and 7	Others	BM interview	Not Given	ITALY	Tuscany	Yes
First contact	early 30s	Female	Telecommunications Engineering	Three-year degree	between 0 and 1	Not Specified	CV request	Not Given	ITALY	Sardinia	Yes
First contact	late 20s	Female	computer engineering	Three-year degree	between 5 and 7	Not Specified	CV request	Not Given	ITALY	Tuscany	Yes
In selection	late 20s	Male	Biomedical Engineering	Five-year degree	none	Others	Technical interview	Not available	ITALY	Sicily	Yes
Hired	early 30s	Male	electronic Engineering	Three-year degree	between 1 and 3	Consulting	BM interview	28-30 K	ITALY	Lazio	Yes
Hired	early 40s	Male	Automation/Mechatronics Engineering	Five-year degree	more than 10	Consulting	BM interview	+ 50 K	ITALY	Lombardy	Yes
In selection	late 20s	Male	Mechanical engineering	Five-year degree	between 1 and 3	Automotive	CV request	Not Given	ITALY	Piedmont	Yes
In selection	early 30s	Male	Mechanical engineering	Five-year degree	between 0 and 1	Not Specified	CV request	Not Given	ITALY	Piedmont	Yes
In selection	early 30s	Female	Aeronautical/Aerospace/Astronautics Engineering	Five-year degree	between 3 and 5	Space	Candidate notification	Not Given	ITALY	Piedmont	Yes
Hired	early 30s	Male	Mechanical engineering	Five-year degree	between 0 and 1	Not Specified	Qualification Meeting	Not Given	ITALY	Piedmont	Yes
Hired	early 30s	Male	Aeronautical/Aerospace/Astronautics Engineering	Five-year degree	between 1 and 3	Aeronautics	Research association	28-30 K	ITALY	Piedmont	Yes
Hired	early 30s	Male	Mechanical engineering	Five-year degree	between 3 and 5	Space	BM interview	30-32 K	ITALY	Piedmont	Yes
Hired	early 30s	Female	Biomedical Engineering	Five-year degree	between 3 and 5	Others	BM interview	Not Given	ITALY	Piedmont	Yes
QM	late 20s	Male	Aeronautical/Aerospace/Astronautics Engineering	Five-year degree	between 5 and 7	Not Specified	Qualification Meeting	28-30 K	ITALY	Puglia	Yes
First contact	early 30s	Male	Mechanical engineering	Five-year degree	between 3 and 5	Automotive	CV request	Not available	ITALY	Puglia	Yes
In selection	early 30s	Male	computer engineering	Five-year degree	between 3 and 5	Not Specified	Contact note	Not Given	ITALY	Piedmont	Yes
In selection	early 30s	Male	electronic Engineering	Doctorate	between 3 and 5	Not Specified	CV request	Not Given	ITALY	Piedmont	Yes

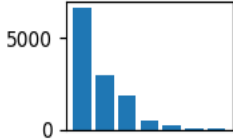
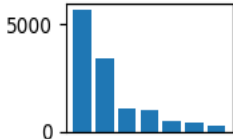
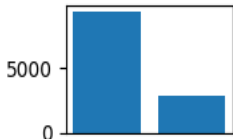
First contact	late 30s	Male	Mechanical engineering	Five-year degree	between 5 and 7	Others	CV request	Not available	ITALY	Piedmont	Yes
Hired	early 30s	Female	Biomedical Engineering	Five-year degree	between 0 and 1	Telecom	BM interview	26-28 K	ITALY	Puglia	Yes
Hired	late 20s	Male	Automation/Mechatronics Engineering	Five-year degree	between 1 and 3	Automotive	BM interview	34-36 K	ITALY	Tuscany	Yes
In selection	early 30s	Male	Mechanical engineering	Five-year degree	between 3 and 5	Others	Candidate notification	Not Given	ITALY	Lombardy	Yes
First contact	early 30s	Male	Biomedical Engineering	Five-year degree	between 3 and 5	Life sciences	Contact note	40-42 K	ITALY	Piedmont	Yes
Hired	early 30s	Male	electronic Engineering	Five-year degree	none	Others	Sending SC to customer	Not Given	ITALY	Abruzzo	Yes
In selection	late 20s	Male	Energy and Nuclear Engineering	Five-year degree	between 3 and 5	Railway	HR interview	Not Given	ITALY	Emilia Romagna	Yes
Hired	early 40s	Male	computer engineering	Five-year degree	more than 10	Telecom	HR interview	36-38 K	ITALY	Lombardy	Yes
Hired	early 40s	Male	electronic Engineering	Five-year degree	between 5 and 7	Defence	BM interview	36-38 K	ITALY	Tuscany	Yes
Hired	early 30s	Female	Biomedical Engineering	Five-year degree	between 0 and 1	Automotive	Sending SC to customer	26-28 K	ITALY	Puglia	Yes
In selection	less than 20 years	Male	computer engineering	Five-year degree	between 1 and 3	Automotive	Contact note	34-36 K	ITALY	Liguria	Yes
Economic proposal	early 30s	Female	Biomedical Engineering	Five-year degree	between 5 and 7	Life sciences	Contact note	Not available	ITALY	Abruzzo	Yes
In selection	more than 45 years	Male	Informatics	High school graduation	more than 10	Defence	Candidate notification	48-50 K	ITALY	Abruzzo	Yes
Hired	late 30s	Male	Informatics	High school graduation	more than 10	Life sciences	BM interview	40-42 K	ITALY	Emilia Romagna	Yes
Hired	early 30s	Male	Aeronautical/Aerospace/Astronautics Engineering	'master's degree'	between 3 and 5	Others	Technical interview	Not Given	ITALY	Campania	Yes
In selection	late 20s	Female	Management Engineering	Three-year degree	none	Not Specified	Contact note	Not Given	ITALY	Piedmont	Yes
In selection	late 20s	Male	Biomedical Engineering	Three-year degree	between 3 and 5	Life sciences	HR interview	Not Given	ITALY	Sicily	Yes
In selection	late 20s	Male	Automation/Mechatronics Engineering	Five-year degree	between 3 and 5	Others	Contact note	Not Given	ITALY	Puglia	Yes

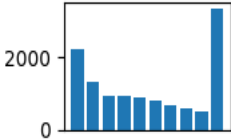
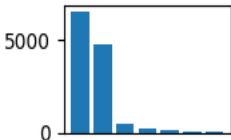
Hired	late 20s	Male	Aeronautical/Aerospace/Astronautics Engineering	Five-year degree	between 1 and 3	Not Specified	BM interview	Not Given	ITALY	Piedmont	Yes
Hired	late 20s	Male	Automotive Engineering	Five-year degree	between 0 and 1	Others	BM interview	Not Given	ITALY	Marche	Yes
In selection	early 30s	Male	Aeronautical/Aerospace/Astronautics Engineering	Five-year degree	none	Not Specified	Contact note	Not Given	ITALY	Piedmont	Yes
In selection	late 20s	Male	Mechanical engineering	Five-year degree	between 3 and 5	Automotive	CV request	Not available	ITALY	Campania	Yes
In selection	late 20s	Male	Aeronautical/Aerospace/Astronautics Engineering	Five-year degree	between 3 and 5	Others	BM interview	Not Given	ITALY	Piedmont	Yes
Hired	early 30s	Female	Management Engineering	Five-year degree	none	Not Specified	BM interview	Not Given	ITALY	Piedmont	Yes
Hired	late 30s	Male	Mechanical engineering	Three-year degree	none	Others	BM interview	Not Given	ITALY	Friuli Venezia Giulia	Yes
In selection	late 20s	Male	Aeronautical/Aerospace/Astronautics Engineering	Three-year degree	between 3 and 5	Aeronautics	BM interview	Not available	ITALY	Liguria	Yes
In selection	late 20s	Male	Aeronautical/Aerospace/Astronautics Engineering	Five-year degree	between 3 and 5	Not Specified	Contact note	34-36 K	ITALY	Puglia	Yes
In selection	late 20s	Female	Aeronautical/Aerospace/Astronautics Engineering	Three-year degree	between 3 and 5	Not Specified	Contact note	Not Given	ITALY	Piedmont	Yes
QM	early 30s	Male	Aeronautical/Aerospace/Astronautics Engineering	Five-year degree	between 3 and 5	Aeronautics	Candidate notification	Not Given	ITALY	Piedmont	Yes
Hired	early 30s	Female	Biomedical Engineering	Five-year degree	between 1 and 3	Others	BM interview	Not Given	ITALY	Piedmont	Yes
In selection	late 20s	Female	Biomedical Engineering	Three-year degree	none	Not Specified	CV request	Not Given	ITALY	Piedmont	Yes
Hired	early 30s	Female	Biomedical Engineering	Five-year degree	between 0 and 1	Others	BM interview	Not Given	ITALY	Tuscany	Yes
QM	late 20s	Female	Automotive Engineering	Five-year degree	between 1 and 3	Others	BM interview	Not Given	ITALY	Piedmont	Yes

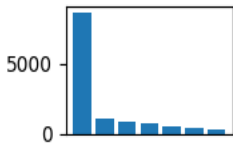
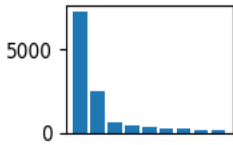
In selection	late 20s	Male	electronic Engineering	Five-year degree	between 1 and 3	Automotive	Contact note	Not Given	ITALY	Campania	Yes
In selection	late 20s	Male	Mechanical engineering	Five-year degree	none	Not Specified	Contact note	Not Given	ITALY	Liguria	Yes
Hired	late 20s	Male	Aeronautical/Aerospace/Astronautics Engineering	Three-year degree	between 3 and 5	Not Specified	Candidate notification	Not Given	ITALY	Calabria	Yes
First contact	late 20s	Male	Mechanical engineering	Five-year degree	between 3 and 5	Others	CV request	44-46 K	ITALY	Piedmont	Yes
Economic proposal	late 20s	Male	Biomedical Engineering	Five-year degree	none	Others	Candidate notification	Not available	ITALY	Abruzzo	Yes
First contact	late 20s	Male	Biomedical Engineering	Five-year degree	none	Others	Contact note	Not Given	ITALY	Liguria	Yes
Hired	early 30s	Female	Management Engineering	Five-year degree	between 0 and 1	Consulting	Technical interview	28-30 K	ITALY	Emilia Romagna	Yes
In selection	early 30s	Male	Telecommunications Engineering	Five-year degree	between 5 and 7	Others	BM interview	34-36 K	ITALY	Calabria	Yes
Hired	more than 45 years	Male	Informatics	High school graduation	between 7 and 10	Aeronautics	Contact note	34-36 K	ITALY	Piedmont	Yes
Hired	late 30s	Male	Other scientific subjects	Five-year degree	between 3 and 5	Services and Information Systems	BM interview	26-28 K	ITALY	Lombardy	Yes
In selection	more than 45 years	Male	electronic Engineering	Five-year degree	more than 10	Telecom	BM interview	+ 50 K	ITALY	Lombardy	Yes
Hired	early 30s	Female	Mechanical engineering	Five-year degree	between 1 and 3	Life sciences	HR interview	Not Given	ITALY	Puglia	Yes
In selection	early 30s	Male	Automotive Engineering	Five-year degree	none	Others	BM interview	Not Given	ITALY	Puglia	Yes
QM	early 30s	Male	Mechanical engineering	Three-year degree	between 5 and 7	Automotive	CV request	Not Given	ITALY	Puglia	Yes
In selection	late 20s	Male	Mechanical engineering	Three-year degree	between 5 and 7	Others	HR interview	Not available	ITALY	Puglia	Yes
In selection	early 30s	Male	electronic Engineering	Five-year degree	between 5 and 7	Not Specified	CV request	32-34 K	ITALY	Puglia	Yes
In selection	early 30s	Male	industrial engineering	Three-year degree	between 1 and 3	Not Specified	BM interview	Not Given	ITALY	Puglia	Yes
In selection	early 30s	Female	electronic Engineering	Three-year degree	between 1 and 3	Not Specified	CV request	Not Given	ITALY	Puglia	Yes
Hired	early 30s	Female	computer engineering	Three-year degree	between 5 and 7	Railway	HR interview	Not Given	ITALY	Puglia	Yes

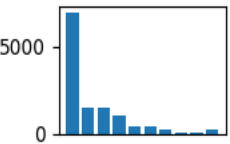
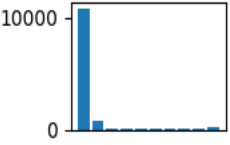
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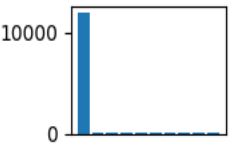
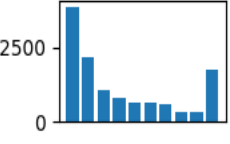
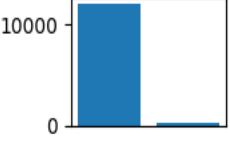
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feature	missing_values	unique	top	freq	values	distribution	sensitive	target
" Candidate State"	0	7	Imported	6691	"Economic proposal", "First contact", "Hired", "Imported", "In selection", "QM", "Vivier"		False	False
" Age Range"	0	7	late 20s	5666	"early 20s", "early 30s", "early 40s", "late 20s", "late 30s", "less than 20 years", "more than 45 years"		False	False
" Sex"	0	2	Male	9414	"Female", "Male"		False	False

feature	missing_values	unique	top	freq	values	distribution	sensitive	target
" Study area"	0	48	Mechanical engineering	2235	"Accounting", "Aeronautical/Aerospace/Astronautics Engineering", "Agriculture and veterinary", "Architecture", "Artistic", "Automation/Mechatronics"		False	False
" Study Title"	0	7	Five-year degree	6538	"Doctorate", "Five-year degree", "High school graduation", "Middle school diploma", "Professional qualification", "Three-year degree", "master's degree"		False	False

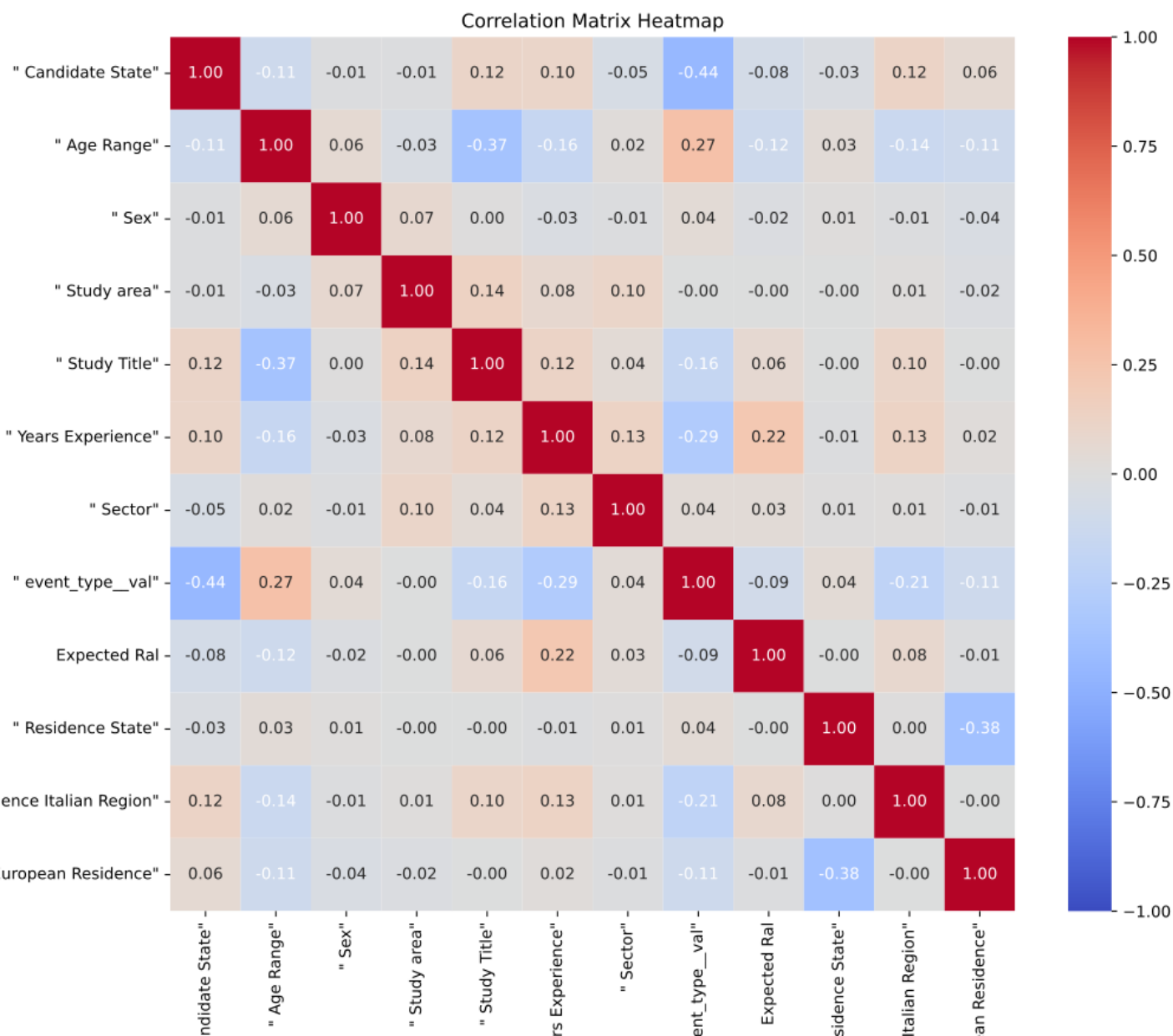
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" Years Experience"	0	7	none	8635	"between 0 and 1", "between 1 and 3", "between 3 and 5", "between 5 and 7", "between 7 and 10", "more than 10", "none"		False	False
" Sector"	0	15	Not Specified	7290	"Aeronautics", "Automotive", "Consulting", "Defence", "Energy", "Life sciences", "Machining - Heavy Industry", "Naval", "Not Specified", "Oi..."		False	False

feature	missing_values	unique	top	freq	values	distribution	sensitive	target
" event_type__ val"	0	13	CV request	6988	"BM interview", "CV request", "Candidate notification", "Commercial note", "Contact note", "Economic proposal", "HR interview", "Inadequate CV..."		False	False
Expected Ral	0	19	Not Given	10791	" "+ 50 K", "- 20 K", "20-22 K", "22-24 K", "24-26 K", "26-28 K", "28-30 K", "30-32 K", "32-34 K", "34-36 K", "36-38 K", "38-40 K", "40-42 ..."		False	False

feature	missing_values	unique	top	freq	values	distribution	sensitive	target
" Residence State"	0	63	ITALY	11960	"ALBANIA", "ALGERIA", "AUSTRIA", "BELARUS", "BELGIUM", "BRAZIL", "BULGARIA", "CHILE", "CHINA PEOPLE'S REPUBLIC", "COLOMBIA", "CROATIA", "		False	False
" Residence Italian Region"	0	22	Piedmont	3879	"Abruzzo", "Aosta Valley", "Basilicata", "Calabria", "Campania", "Emilia Romagna", "Friuli Venezia Giulia", "Lazio", "Liguria", "Lombardy", ...		False	False
" European Residence"	0	2	Yes	12087	"No", "Yes"		False	False

Proxies

Suggestd Proxies



correlation matrix

Sex

	Candidate State	Age Range	Study area	Study Title	Years Experience	Sector
correlation	-0.95%	5.80%	7.39%	0.24%	-2.94%	-1.04%
suggested_proxy	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>

Sex

	event_type__val	Residence State	Residence Italian Region	European Residence
correlation	4.11%	0.95%	-1.09%	-3.55%
suggested_proxy	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>

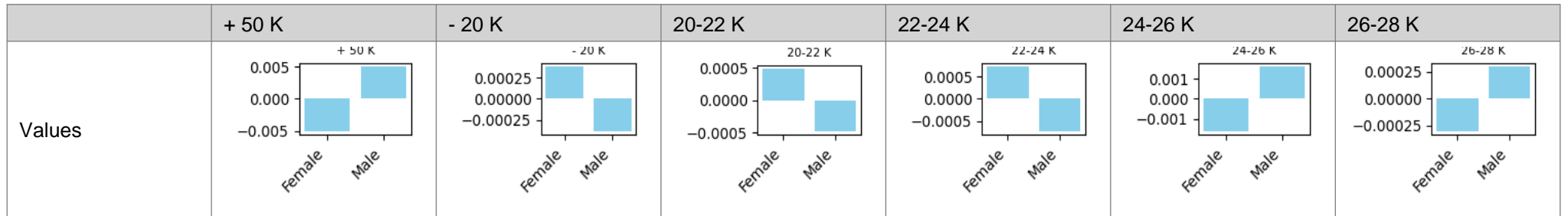
Detection

features

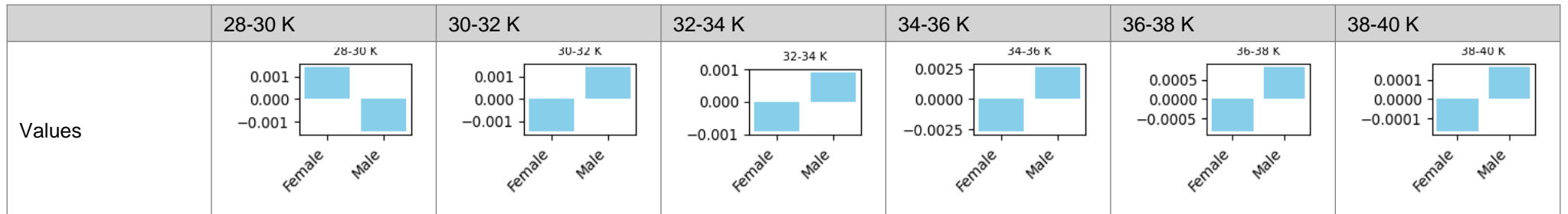
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Candidate State	✗	✗	✗
Age Range	✗	✗	✗
Sex	✗	✓	✗
Study area	✗	✗	✗
Study Title	✗	✗	✗
Years Experience	✗	✗	✗
Sector	✗	✗	✗
event_type__val	✗	✗	✗
Expected Ral	✗	✗	✓
Residence State	✗	✗	✗
Residence Italian Region	✗	✗	✗
European Residence	✗	✗	✗

metrics

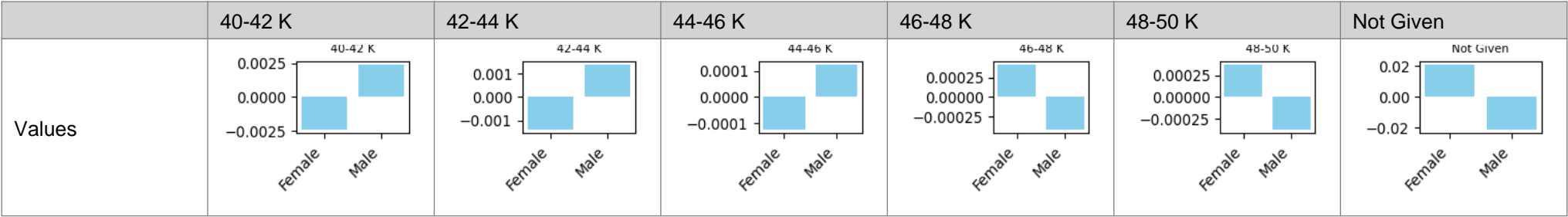
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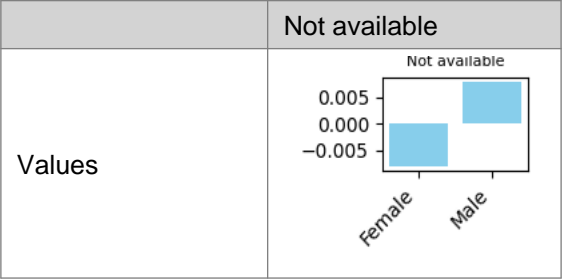
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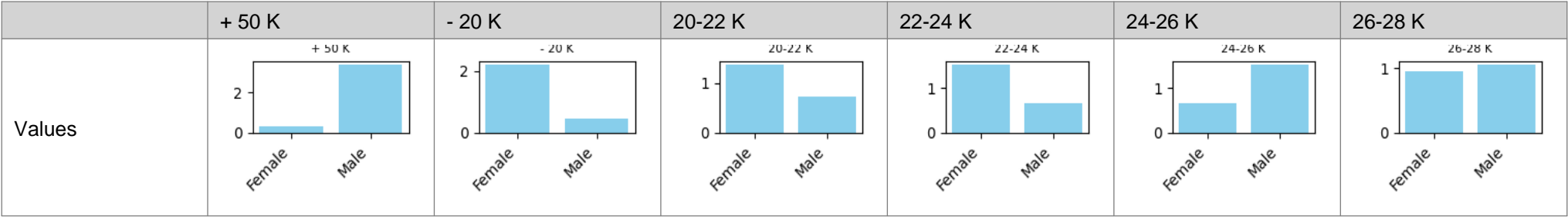
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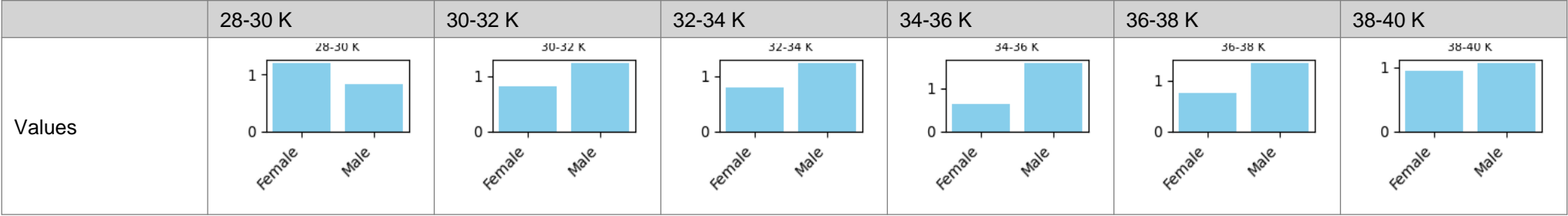
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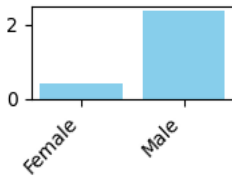
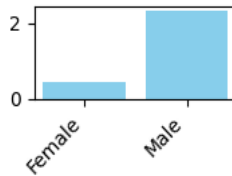
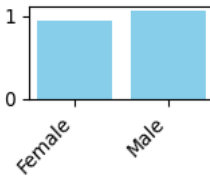
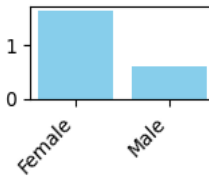
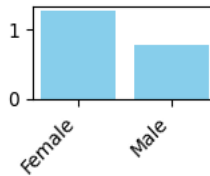
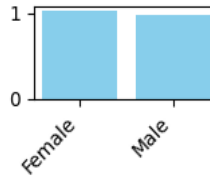
DisparateImpact



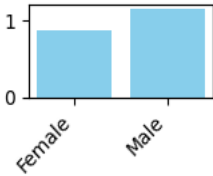
DisparateImpact



DisparateImpact

	40-42 K	42-44 K	44-46 K	46-48 K	48-50 K	Not Given																																				
Values	<div><div>40-42 K</div><table><tr><th>Gender</th><th>Value</th></tr><tr><td>Female</td><td>0.5</td></tr><tr><td>Male</td><td>2.5</td></tr></table></div>	Gender	Value	Female	0.5	Male	2.5	<div><div>42-44 K</div><table><tr><th>Gender</th><th>Value</th></tr><tr><td>Female</td><td>0.5</td></tr><tr><td>Male</td><td>2.5</td></tr></table></div>	Gender	Value	Female	0.5	Male	2.5	<div><div>44-46 K</div><table><tr><th>Gender</th><th>Value</th></tr><tr><td>Female</td><td>1.0</td></tr><tr><td>Male</td><td>1.0</td></tr></table></div>	Gender	Value	Female	1.0	Male	1.0	<div><div>46-48 K</div><table><tr><th>Gender</th><th>Value</th></tr><tr><td>Female</td><td>1.5</td></tr><tr><td>Male</td><td>0.7</td></tr></table></div>	Gender	Value	Female	1.5	Male	0.7	<div><div>48-50 K</div><table><tr><th>Gender</th><th>Value</th></tr><tr><td>Female</td><td>1.3</td></tr><tr><td>Male</td><td>0.9</td></tr></table></div>	Gender	Value	Female	1.3	Male	0.9	<div><div>Not Given</div><table><tr><th>Gender</th><th>Value</th></tr><tr><td>Female</td><td>1.0</td></tr><tr><td>Male</td><td>1.0</td></tr></table></div>	Gender	Value	Female	1.0	Male	1.0
Gender	Value																																									
Female	0.5																																									
Male	2.5																																									
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Male	0.9																																									
Gender	Value																																									
Female	1.0																																									
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DisparateImpact

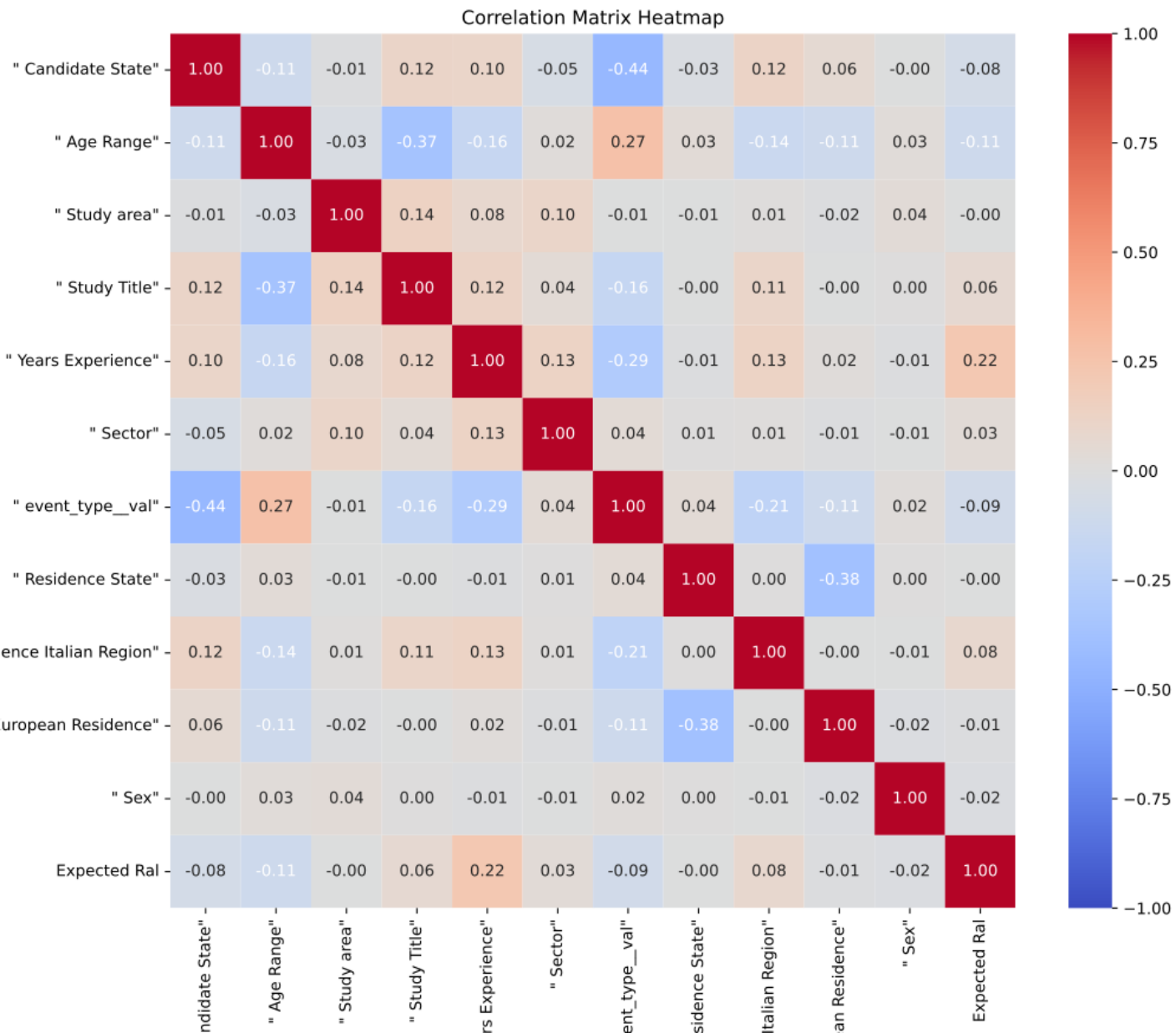
	Not available						
Values	<div><div>Not available</div><table><thead><tr><th>Gender</th><th>Value</th></tr></thead><tbody><tr><td>Female</td><td>0.9</td></tr><tr><td>Male</td><td>1.0</td></tr></tbody></table></div>	Gender	Value	Female	0.9	Male	1.0
Gender	Value						
Female	0.9						
Male	1.0						

preprocessing

\$algorithm	alpha
CorrelationRemover	70.00%

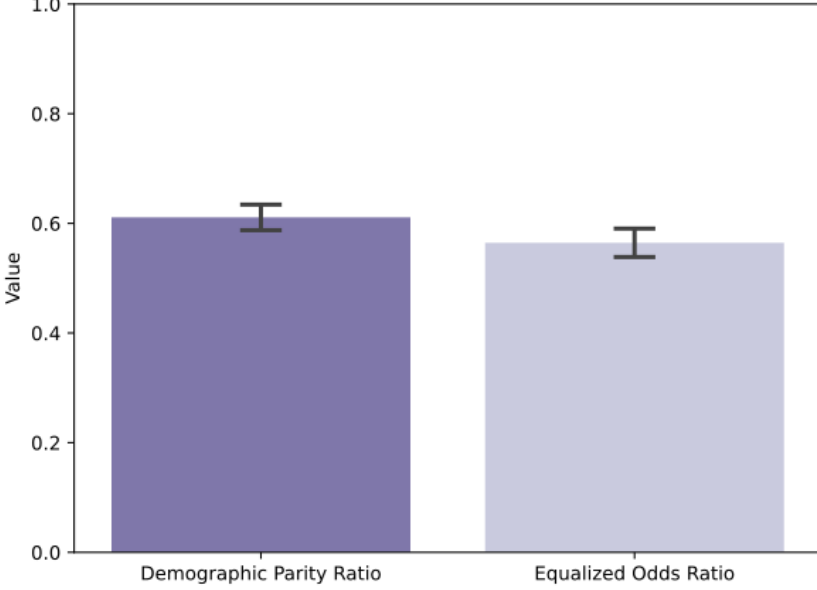
DataMitigationSummary

Correlation Matrix

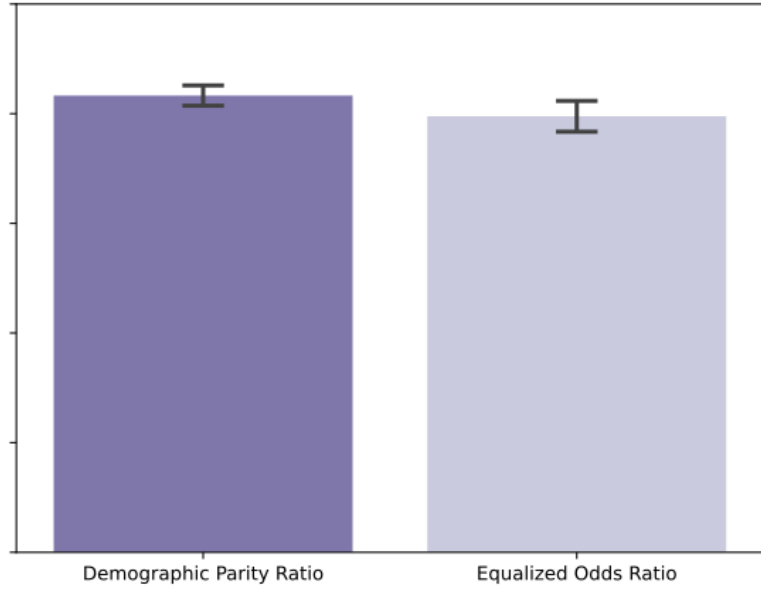


Fairness Plot

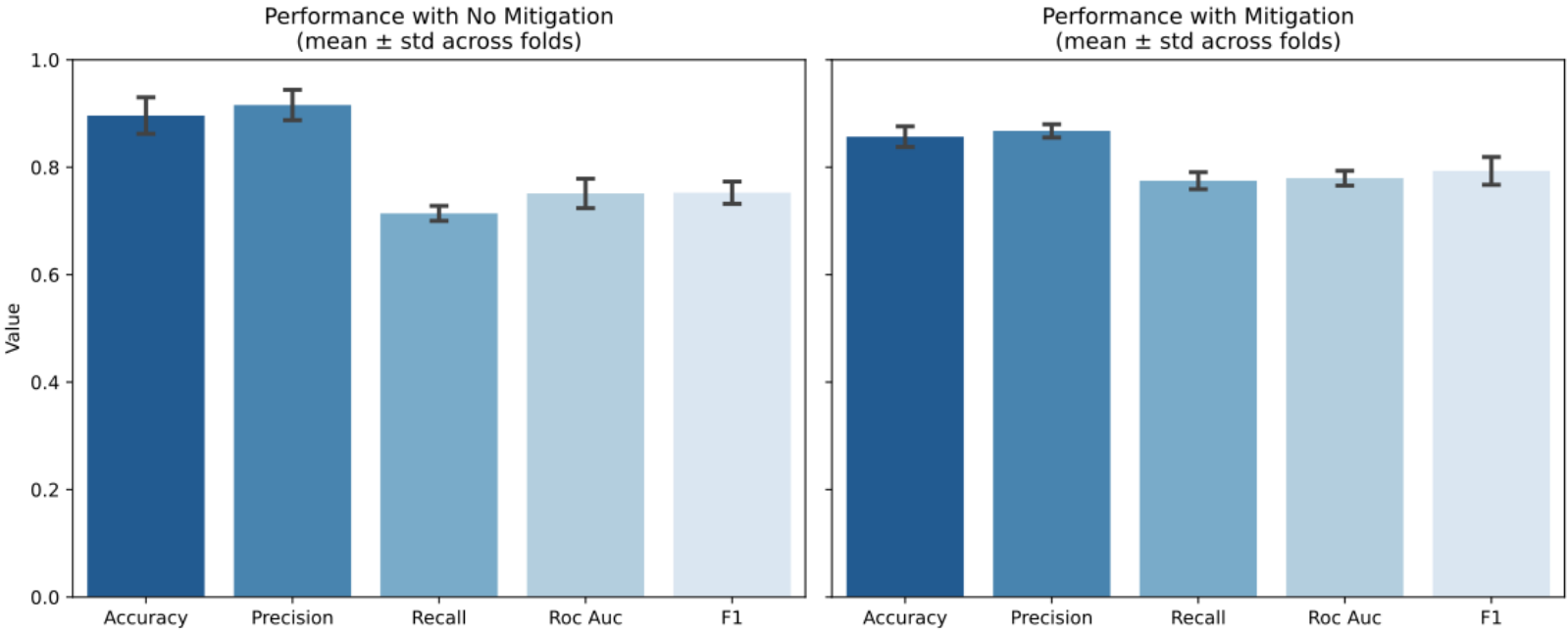
Fairness with No Mitigation
(mean \pm std across folds)



Fairness with Mitigation
(mean \pm std across folds)

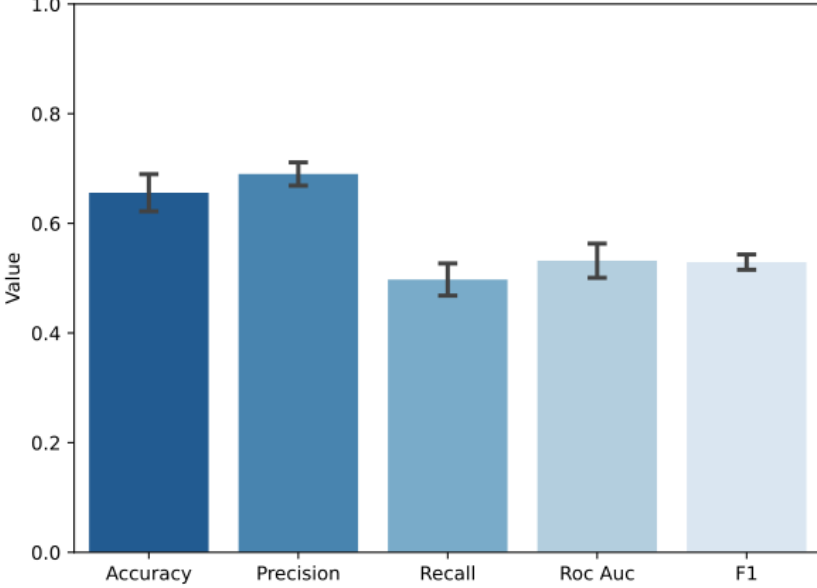


Performance Plot

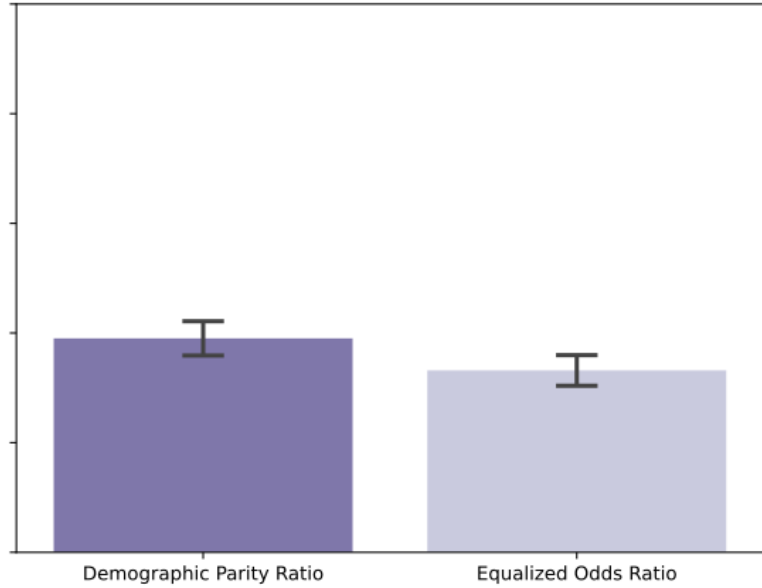


Polarization Plot

Performance with Polarized Dataset
(mean \pm std across folds)



Fairness with Polarized Dataset
(mean \pm std across folds)



Preprocessing Plot

