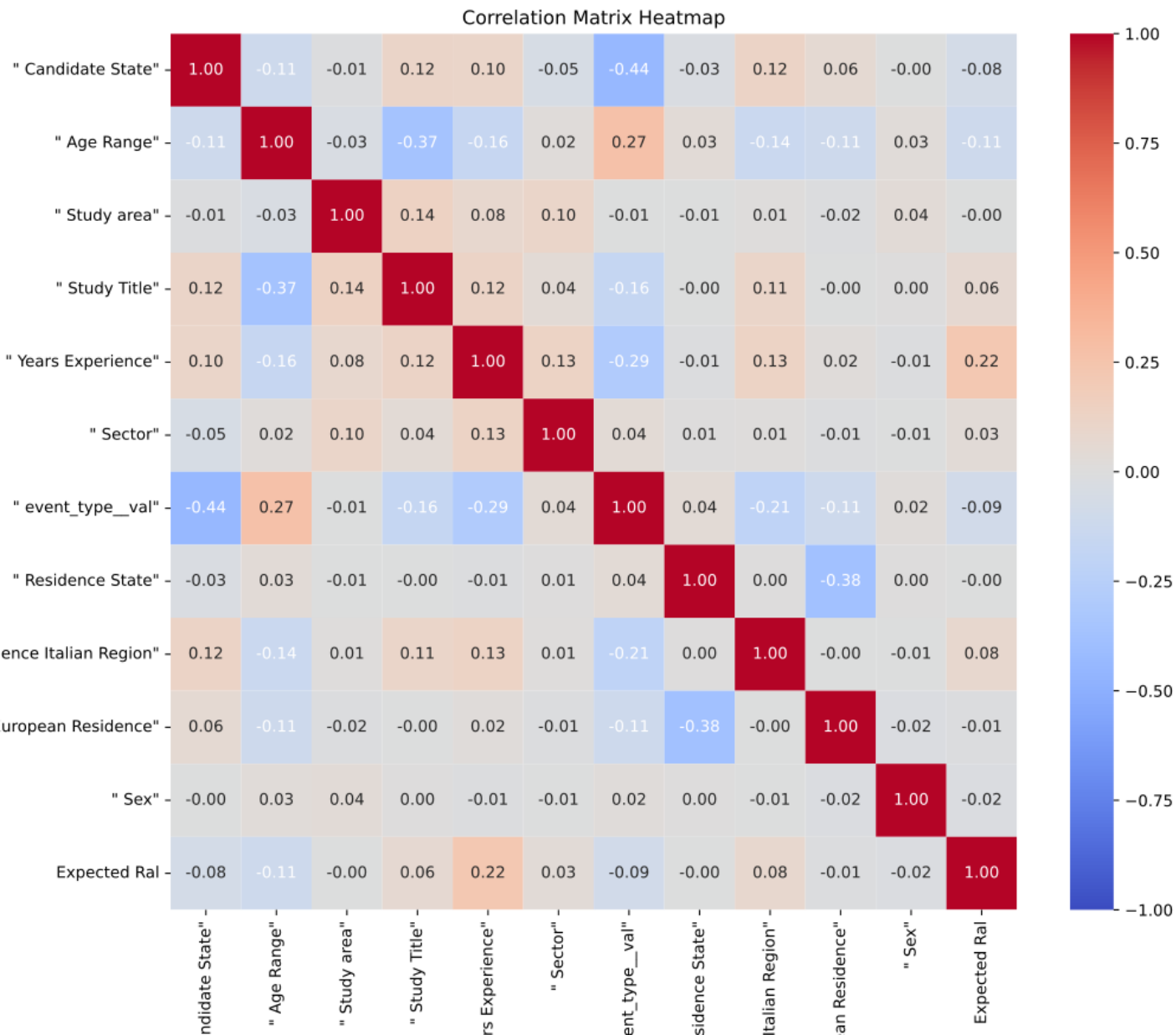
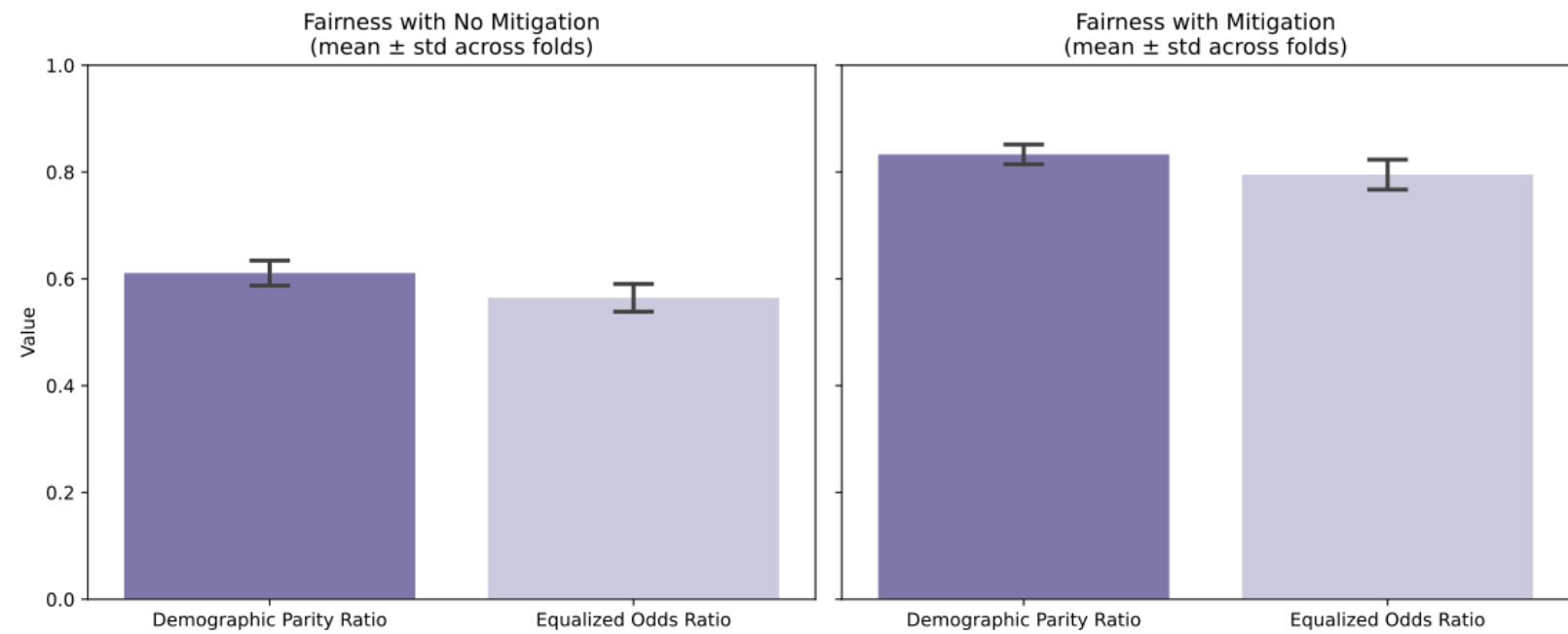


DataMitigationSummary

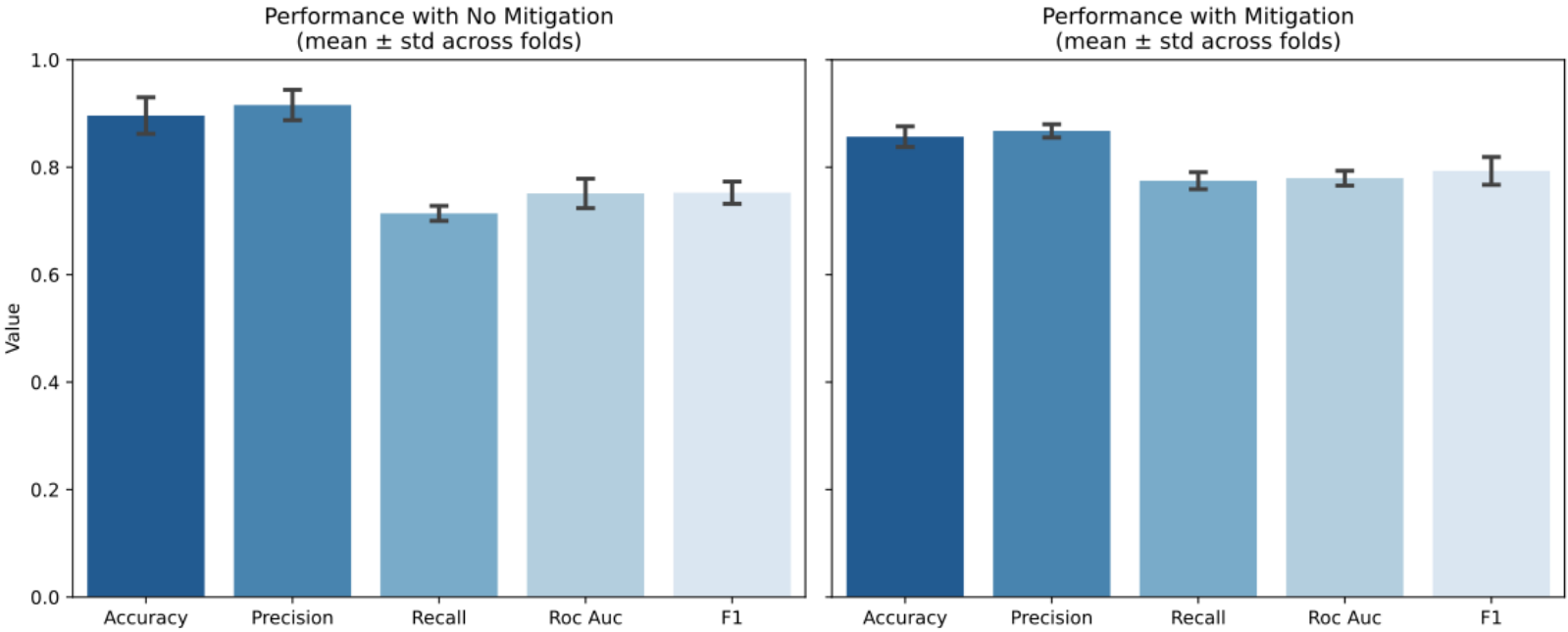
Correlation Matrix Custom-2



Fairness Plot Custom-2

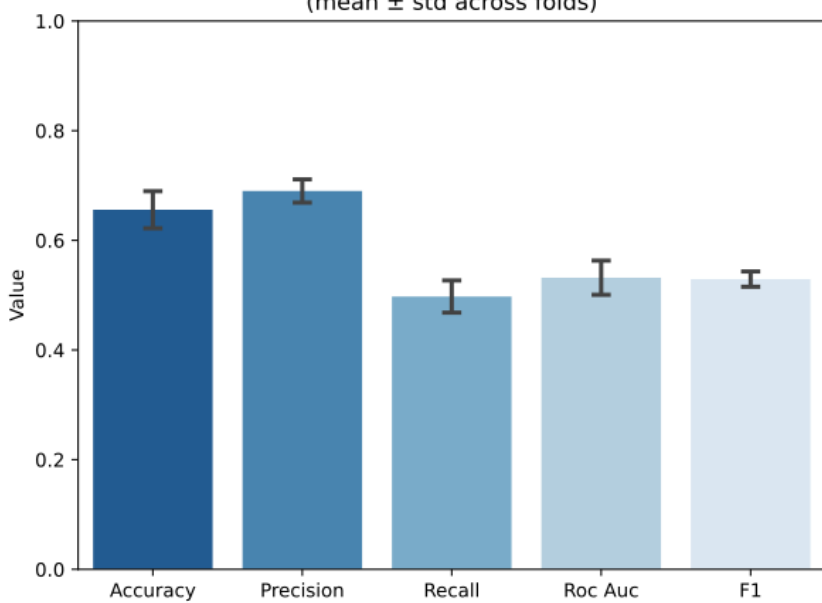


Performance Plot Custom-2

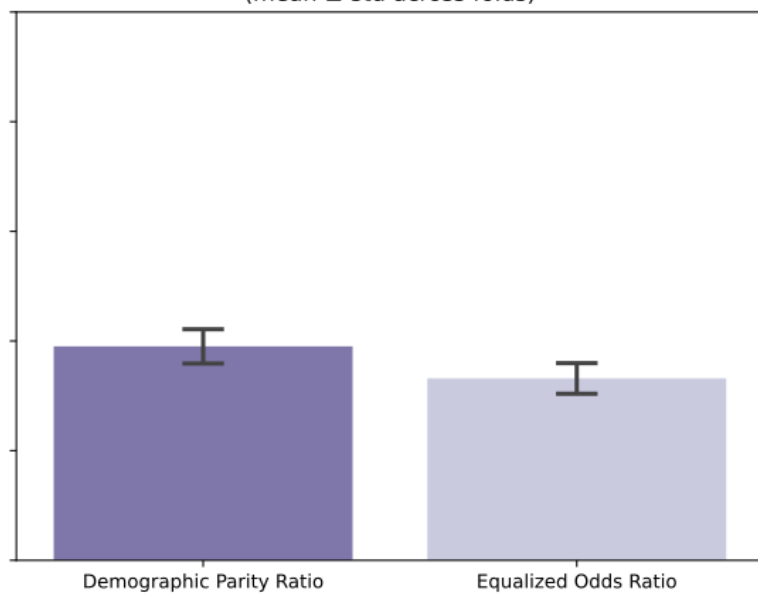


Polarization Plot Custom-2

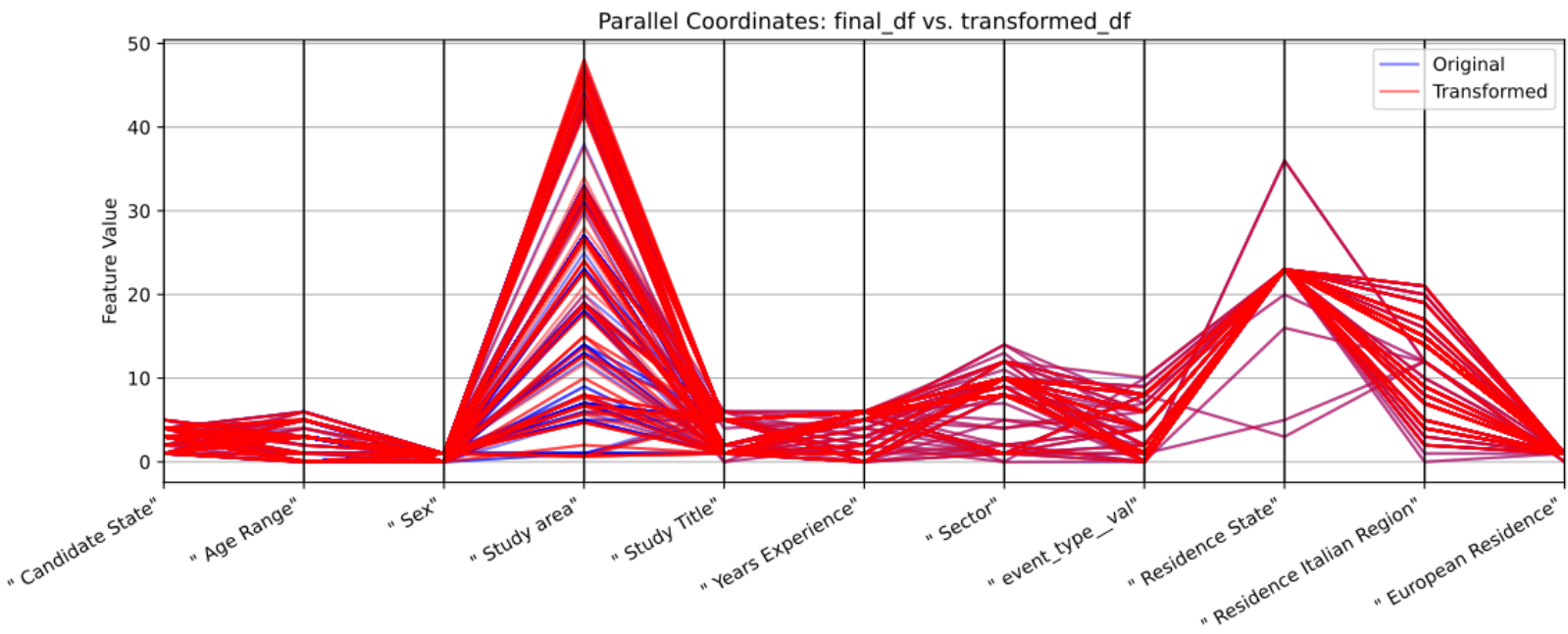
Performance with Polarized Dataset
(mean \pm std across folds)



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



Preprocessing Plot Custom-2



Datasetconfirmation

Dataset Head Custom-1

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

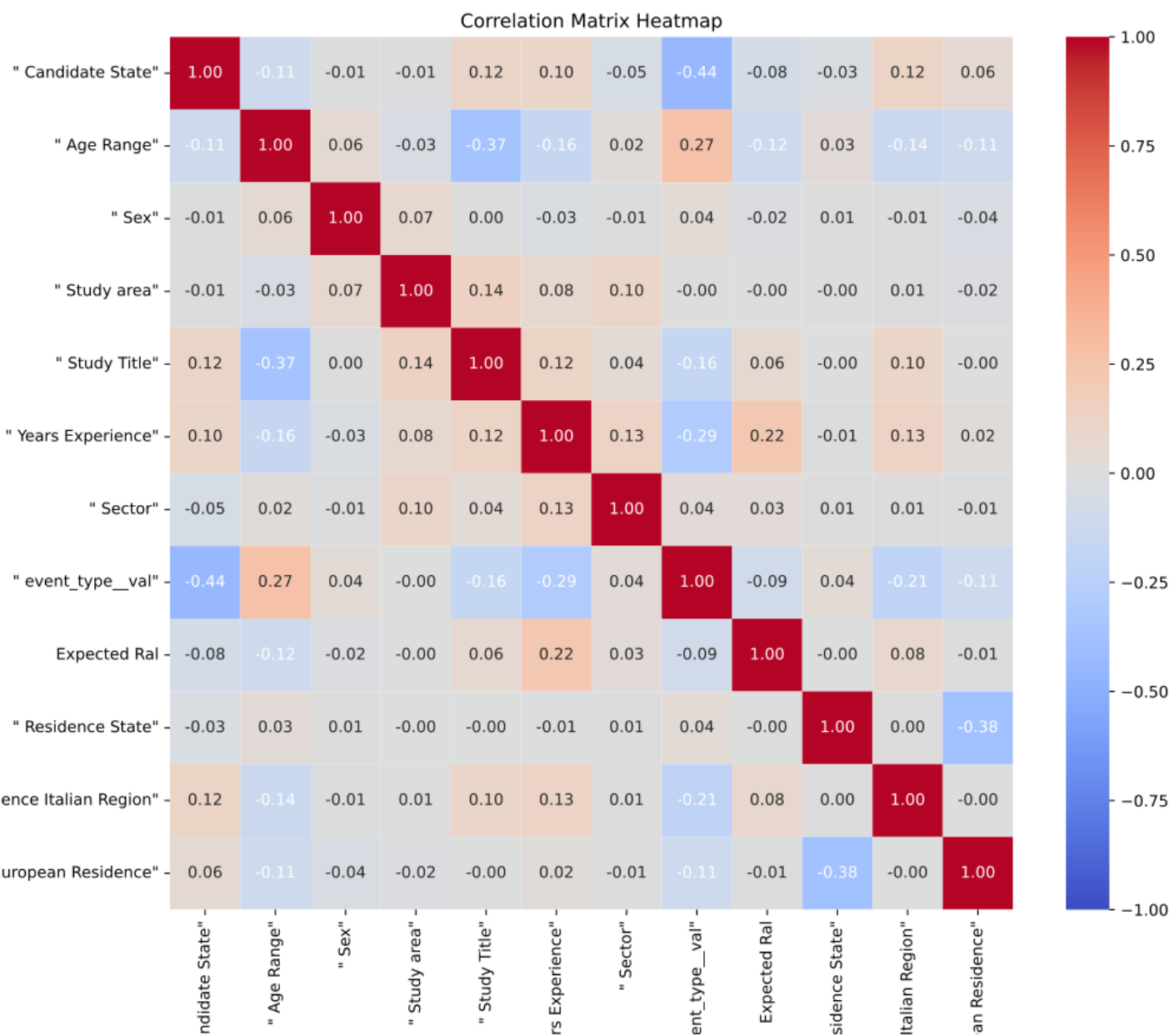
First contact	late 30s	Male	Mechanical engineering	Five-year degree	between 5 and 7	Others	CV request	Not available	ITALY	Piedmont	Yes
Hired	early 30s	Female	Biomedical Engineering	Five-year degree	between 0 and 1	Telecom	BM interview	26-28 K	ITALY	Puglia	Yes
Hired	late 20s	Male	Automation/Mechatronics 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

Proxies

Suggestd Proxies Custom-1



Proxies

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Detection

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    },
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    {
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        "Expected Ral": "Not Given"
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    {
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    {
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        "Expected Ral": "26-28 K"
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  ],

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  {
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  {
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      "Expected Ral": "38-40 K"
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  {
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      "Expected Ral": "40-42 K"
    },
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  {
    "when": {
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  {
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  {
    "when": {
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      "Expected Ral": "Not Given"
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  {
    "when": {
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      "Expected Ral": "Not available"
    },

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    "value": 0.8670903564520586
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  {
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  },
  {
    "when": {

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    "value": 1.0592203101763331
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        "Expected Ral": "44-46 K"
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        "Expected Ral": "46-48 K"
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        " \" Sex\"": "Male",
        "Expected Ral": "48-50 K"
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{
    "when": {
        " \" Sex\"": "Male",
        "Expected Ral": "Not Given"
    },
    "value": 0.9765381808776937
},
{
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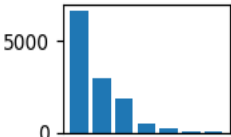
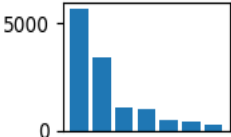
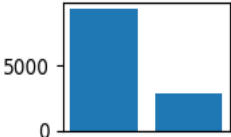
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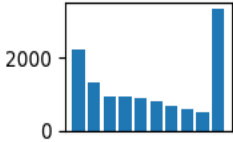
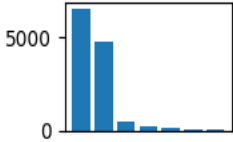
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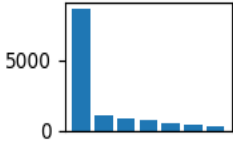
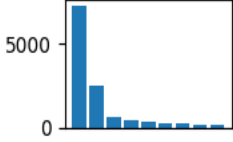
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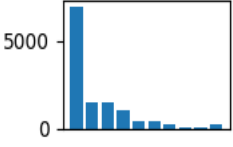
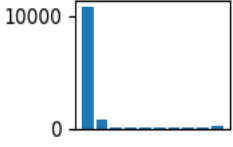
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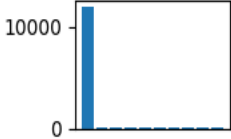
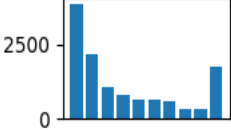
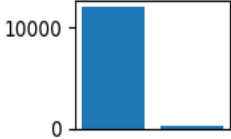
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feature	missing_values	unique	top	freq	values	distribution	sensitive	target
" Candidate State"	0	7	Imported	6691	"Economic proposal", "First contact", "Hired", "Imported", "In selection", "QM", "Vivier"		False	False
" Age Range"	0	7	late 20s	5666	"early 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/Mechatron..."		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'..."		False	False

feature	missing_values	unique	top	freq	values	distribution	sensitive	target
" 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