

# Dataset View - UII

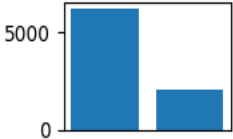
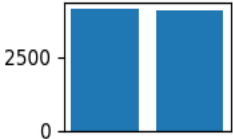
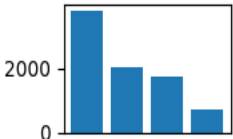
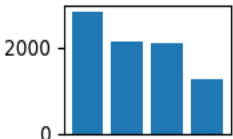
## Dataset Head

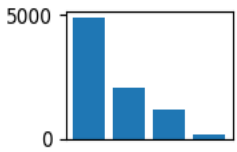
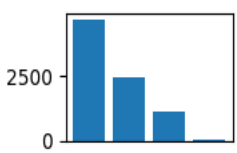
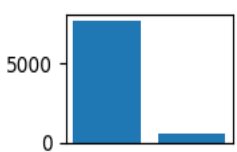
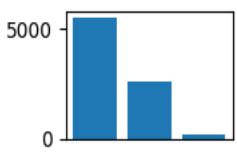
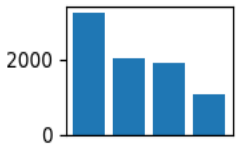
scores_M ATq_3	gender	mother_ed ucation	father_edu cation	mother_oc cupation	father_occ upation	immigrant _status	age_at_en rollment	books_in_ home	adults_rea ding_book s	school_ow nership	teacher_tr ansfer_rat e	capital_isl and	socioecon omic_stat us	decision
Middle Range	Male	Secondary	No Ed.	Unemploye d Not Looking	Unemploye d Looking	Spain	< 3	< 11	< 11	Public	High	No	High	Pass
Middle Range	Male	Tertiary	Tertiary	Unemploye d Not Looking	Retired	Spain	< 3	> 100	> 200	Public	Low	Yes	Low	Pass
Middle Range	Male	Primary	Primary	Retired	Unemploye d Looking	Spain	3 - 4	11 - 50	11 - 50	Public	Low	Yes	High	Pass
Middle Range	Female	Tertiary	Tertiary	Unemploye d Not Looking	Unemploye d Not Looking	Spain	< 3	51 - 100	101 - 200	Private	Low	Yes	Low	Pass
Middle Range	Female	Tertiary	Tertiary	Retired	Retired	Spain	< 3	11 - 50	> 200	Public	Low	Yes	High	Pass
Lower Tail	Female	Secondary	Secondary	Unemploye d Looking	Retired	Another Country	3 - 4	51 - 100	> 200	Public	High	Yes	High	Not Pass
Middle Range	Male	Primary	Primary	Retired	Unemploye d Not Looking	Spain	< 3	51 - 100	11 - 50	Private	Low	Yes	Low	Pass
Lower Tail	Female	No Ed.	No Ed.	Retired	Unemploye d Looking	Spain	< 3	11 - 50	> 200	Public	High	Yes	High	Not Pass
Middle Range	Male	Tertiary	Secondary	Unemploye d Not Looking	Unemploye d Not Looking	Spain	< 3	> 100	< 11	Private	Low	Yes	Low	Pass
Lower Tail	Female	Secondary	No Ed.	Retired	Unemploye d Looking	Spain	< 3	11 - 50	> 200	Public	High	No	Low	Not Pass
Lower Tail	Male	Secondary	Primary	Retired	Unemploye d Looking	Spain	< 3	51 - 100	11 - 50	Public	High	Yes	Low	Not Pass
Lower Tail	Male	Primary	Primary	Retired	Retired	Spain	3 - 4	< 11	11 - 50	Public	High	Yes	High	Not Pass
Middle Range	Female	Primary	Primary	Unemploye d Looking	Unemploye d Looking	Spain	< 3	< 11	> 200	Public	High	Yes	High	Pass
Middle Range	Male	Tertiary	Tertiary	Retired	Retired	Spain	< 3	< 11	11 - 50	Private	Low	Yes	High	Pass
Lower Tail	Female	Tertiary	Secondary	Unemploye d Not Looking	Retired	Spain	< 3	11 - 50	101 - 200	Public	Low	Yes	Low	Not Pass

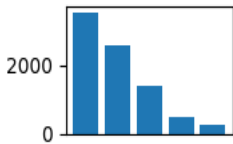
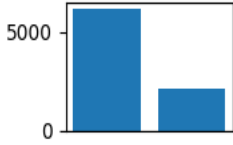
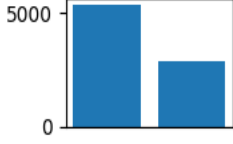
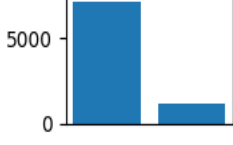
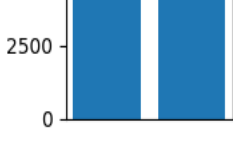
Middle Range	Male	Tertiary	Tertiary	Unemployed Not Looking	Retired	Spain	< 3	> 100	> 200	Private	Low	Yes	Low	Pass
Middle Range	Male	Tertiary	Secondary	Retired	Retired	Spain	< 3	> 100	101 - 200	Public	High	Yes	Low	Pass
Lower Tail	Female	Tertiary	No Ed.	Retired	Retired	Spain	3 - 4	51 - 100	> 200	Public	High	Yes	High	Not Pass
Middle Range	Female	Tertiary	Primary	Wage Employment	Retired	Spain	< 3	11 - 50	> 200	Public	High	Yes	High	Pass
Middle Range	Female	Tertiary	Tertiary	Unemployed Not Looking	Unemployed Not Looking	Spain	< 3	> 100	> 200	Private	Low	Yes	Low	Pass
Middle Range	Male	Tertiary	Tertiary	Retired	Retired	Another Country	< 3	51 - 100	101 - 200	Public	Low	No	High	Pass
Middle Range	Female	Primary	Secondary	Unemployed Not Looking	Retired	Spain	< 3	11 - 50	11 - 50	Public	High	Yes	Low	Pass
Middle Range	Male	No Ed.	No Ed.	Unemployed Looking	Retired	Spain	3 - 4	11 - 50	> 200	Public	High	Yes	High	Pass
Lower Tail	Female	Secondary	Secondary	Retired	Retired	Spain	< 3	11 - 50	11 - 50	Public	Low	Yes	High	Not Pass
Lower Tail	Male	Primary	No Ed.	Unemployed Looking	Retired	Spain	< 3	< 11	11 - 50	Public	High	Yes	High	Not Pass
Middle Range	Male	Tertiary	Tertiary	Unemployed Not Looking	Unemployed Not Looking	Spain	< 3	51 - 100	> 200	Public	High	Yes	Low	Pass
Middle Range	Female	No Ed.	Primary	Unemployed Looking	Retired	Spain	3 - 4	< 11	11 - 50	Public	High	Yes	High	Pass
Middle Range	Male	Tertiary	Tertiary	Unemployed Not Looking	Unemployed Not Looking	Spain	< 3	> 100	> 200	Public	High	Yes	Low	Pass
Middle Range	Female	Tertiary	Tertiary	Unemployed Not Looking	Unemployed Not Looking	Another Country	< 3	> 100	> 200	Public	High	Yes	Low	Pass
Middle Range	Female	Primary	Primary	Unemployed Looking	Retired	Spain	3 - 4	> 100	> 200	Public	High	Yes	Low	Pass

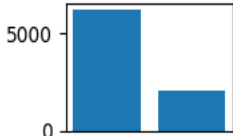
# Features View

## Stats

feature	missing_values	unique	top	freq	values	distribution	sensitive	target
scores_MATq_3	0	2	Middle Range	6217	Lower Tail, Middle Range		False	False
gender	0	2	Male	4172	Female, Male		False	False
mother_education	0	4	Tertiary	3796	No Ed., Primary, Secondary, Tertiary		False	False
father_education	0	4	Tertiary	2825	No Ed., Primary, Secondary, Tertiary		False	False

feature	missing_values	unique	top	freq	values	distribution	sensitive	target
mother_occupation	0	4	Retired	4898	Retired, Unemployed Looking, Unemployed Not Looking, Wage Employment		False	False
father_occupation	0	4	Retired	4725	Retired, Unemployed Looking, Unemployed Not Looking, Wage Employment		False	False
immigrant_status	0	2	Spain	7723	Another Country, Spain		False	False
age_at_enrollment	0	3	< 3	5521	3 - 4, < 3, > 4		False	False
books_in_home	0	4	11 - 50	3261	11 - 50, 51 - 100, < 11, > 100		False	False

feature	missing_values	unique	top	freq	values	distribution	sensitive	target
adults_reading_books	0	5	> 200	3552	101 - 200, 11 - 50, 51 - 100, < 11, > 200		False	False
school_ownership	0	2	Public	6187	Private, Public		False	False
teacher_transfer_rate	0	2	High	5382	High, Low		False	False
capital_island	0	2	Yes	7154	No, Yes		False	False
socioeconomic_status	0	2	Low	4149	High, Low		True	False

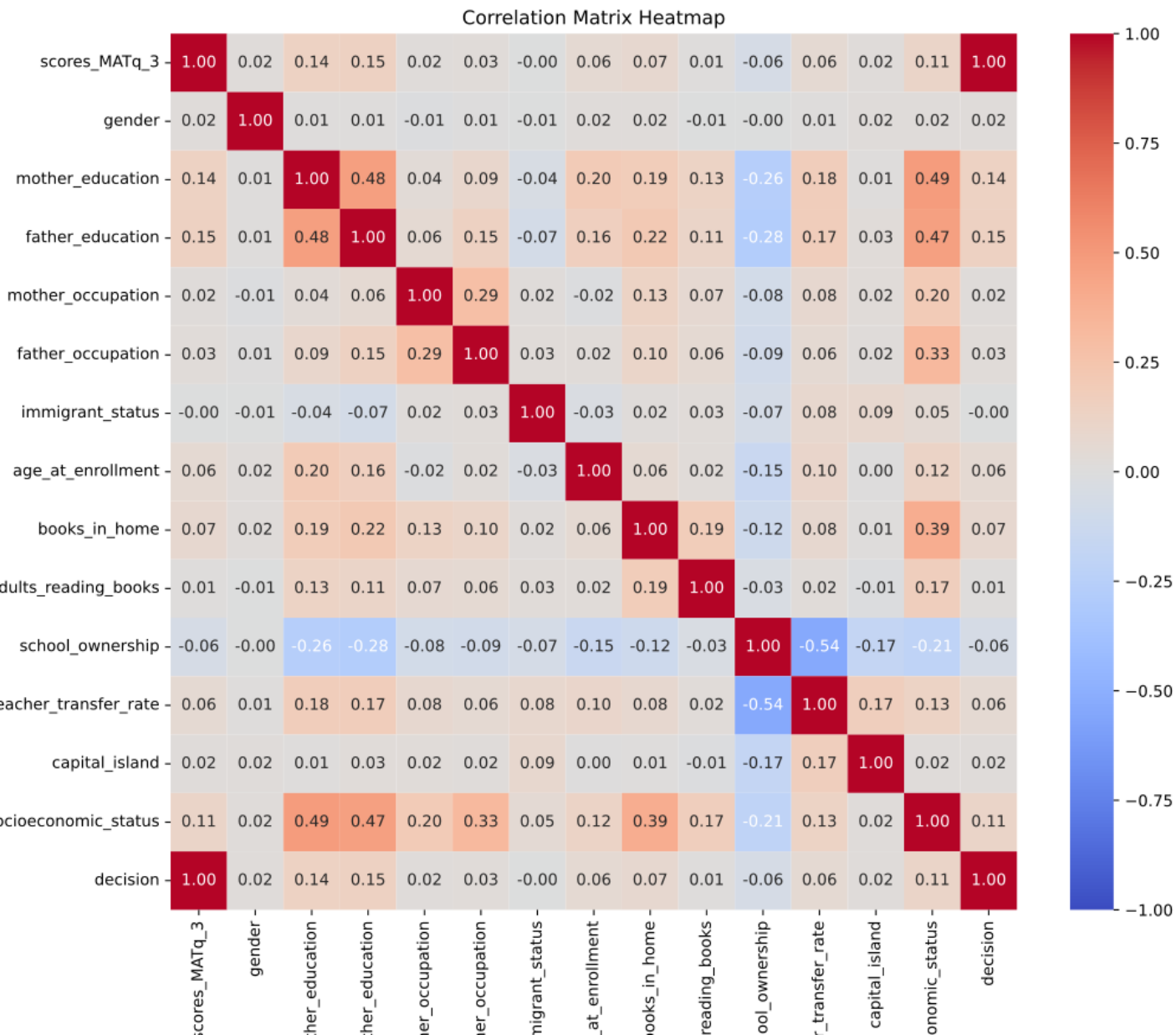
feature	missing_values	unique	top	freq	values	distribution	sensitive	target
decision	0	2	Pass	6217	Not Pass, Pass		False	True

## Features

Field Name	drop	sensitive	target
scores_MATq_3	✗	✗	✗
gender	✗	✗	✗
mother_education	✗	✗	✗
father_education	✗	✗	✗
mother_occupation	✗	✗	✗
father_occupation	✗	✗	✗
immigrant_status	✗	✗	✗
age_at_enrollment	✗	✗	✗
books_in_home	✗	✗	✗
adults_reading_books	✗	✗	✗
school_ownership	✗	✗	✗
teacher_transfer_rate	✗	✗	✗
capital_island	✗	✗	✗
socioeconomic_status	✗	✓	✗
decision	✗	✗	✓

# Proxies

## Correlation Matrix





Suggested Proxies

Socioeconomic\_status

	scores_MATq_3	gender	mother_education	father_education	mother_occupation	father_occupation
correlation	11.11%	1.78%	48.69%	46.50%	19.95%	32.76%
suggested_proxy	✗	✗	✗	✗	✗	✗

Socioeconomic\_status

	immigrant_status	age_at_enrollment	books_in_home	adults_reading_books	school_ownership	teacher_transfer_rate
correlation	5.24%	12.11%	39.31%	16.93%	-20.82%	13.02%
suggested_proxy	✗	✗	✗	✗	✗	✗

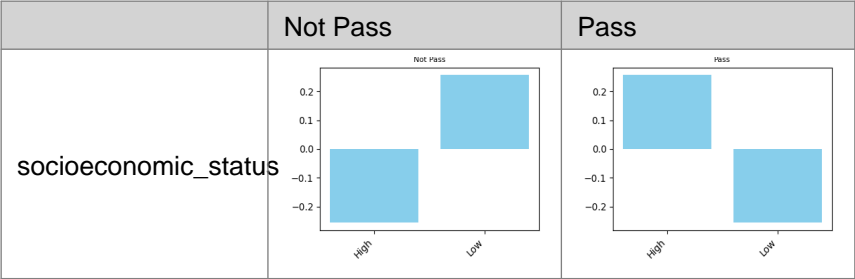
Socioeconomic\_status

	capital_island
correlation	2.21%
suggested_proxy	✗

# Detection

## Selected Metrics

## ConditionedDemographicDisparity



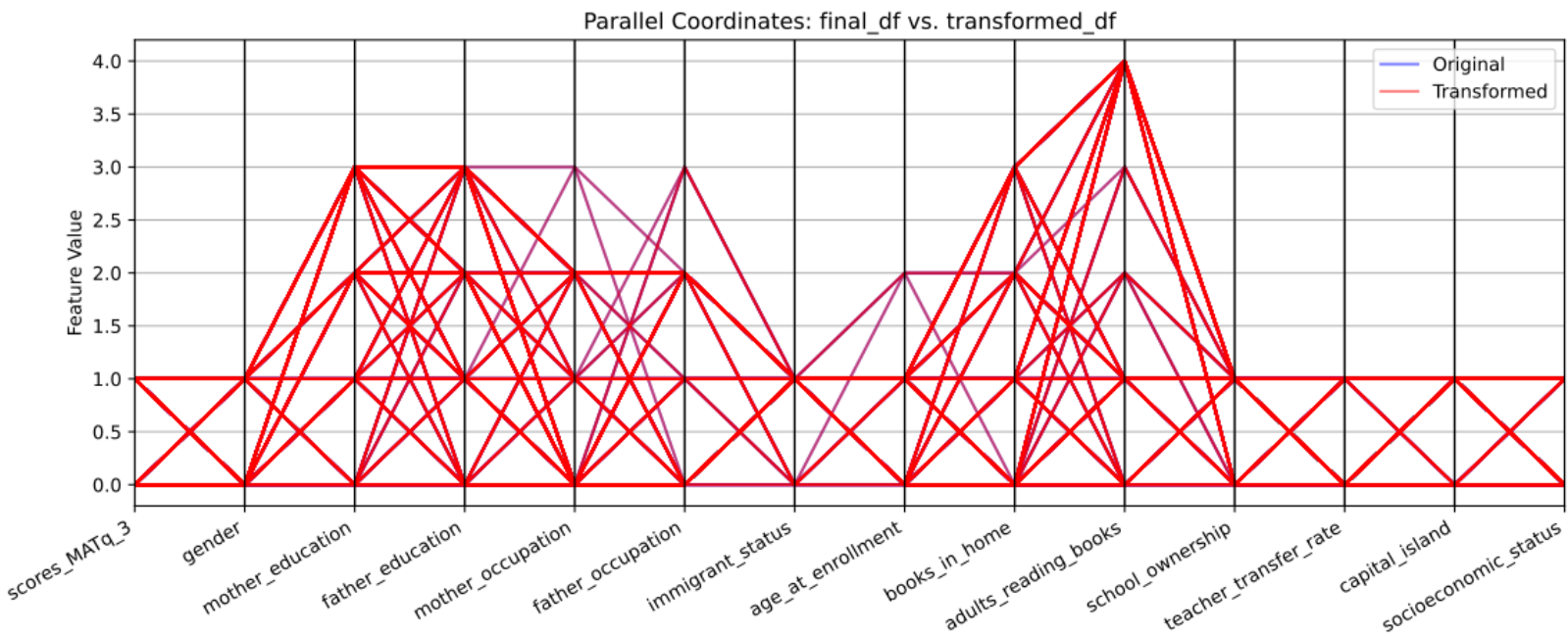
# Data Mitigation

## Preprocessing

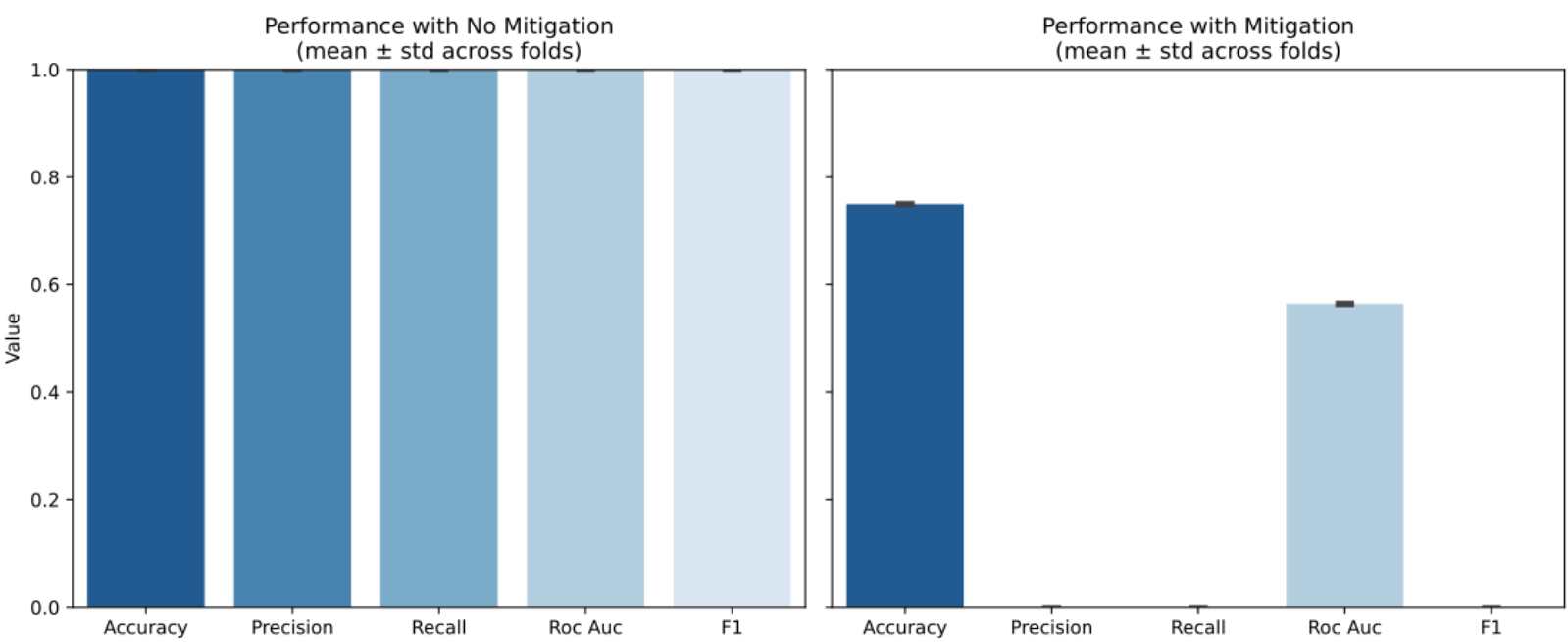
\$algorithm	alpha	hidden_layers	hidden_dim	epochs
CorrelationRemover	50.00%	1	8	100

# Data Mitigation Results

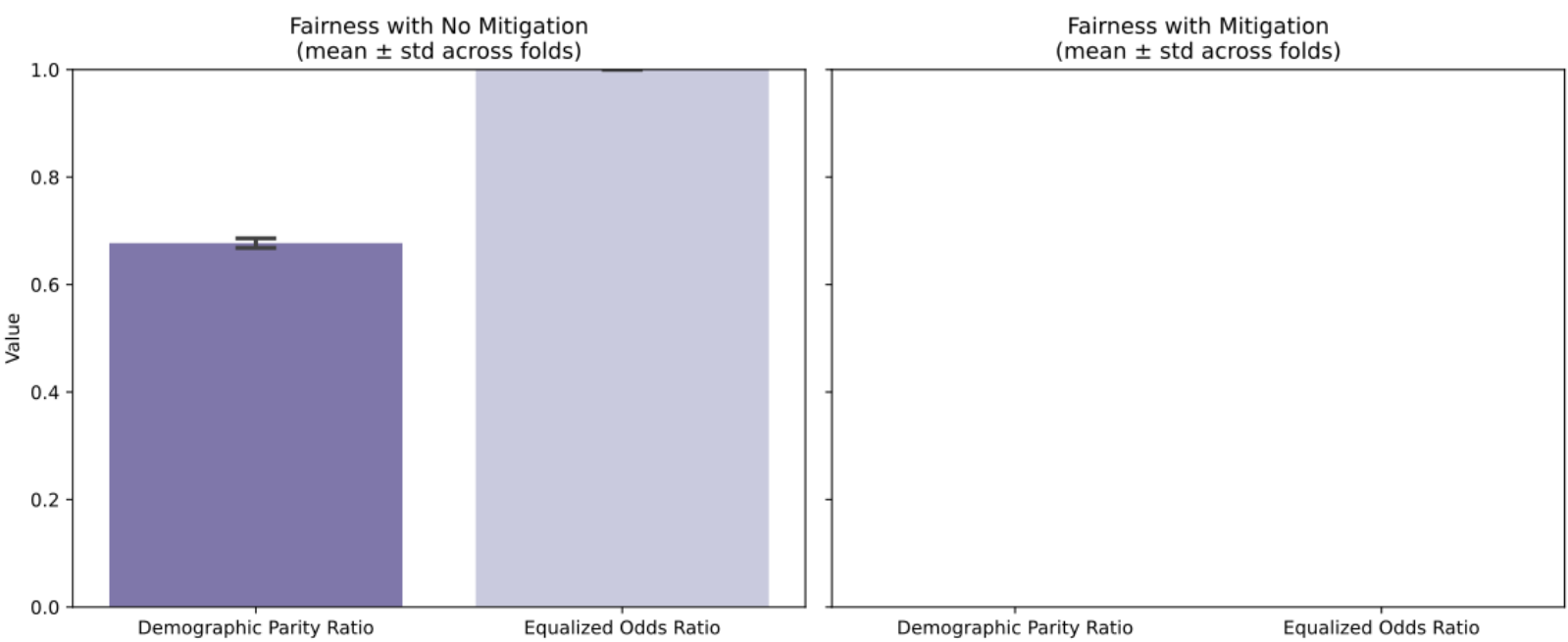
## Preprocessing Plot



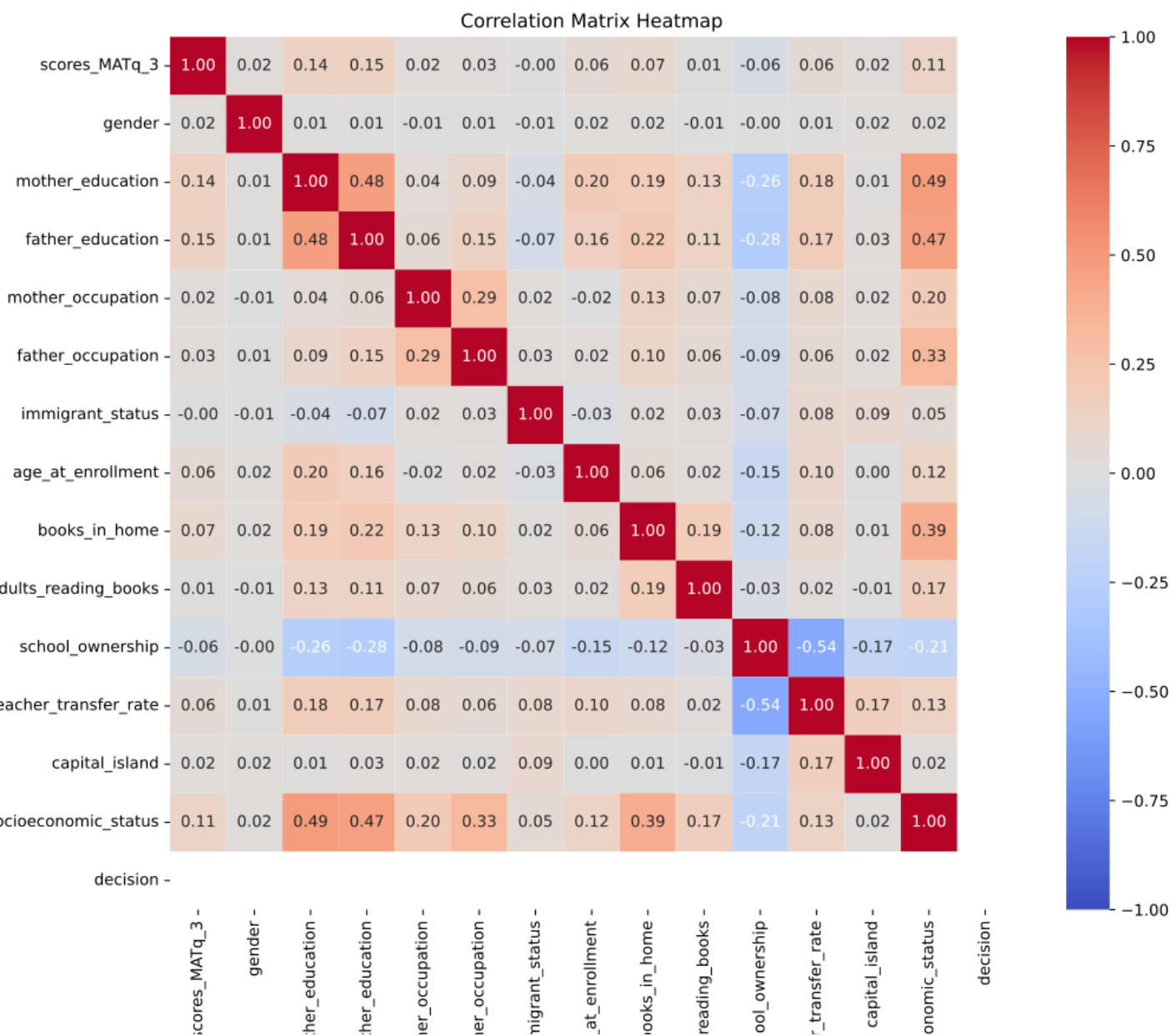
# Performance Plot



# Fairness Plot



## Correlation Matrix



# Dataset Head

scores_M ATq_3	gender	mother_ed ucation	father_edu cation	mother_oc cupation	father_occ upation	immigrant _status	age_at_en rollment	books_in_ home	adults_rea ding_book s	school_ow nership	teacher_tr ansfer_rat e	capital_isl and	socioecon omic_stat us	decision
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Middle Range	Female	Primary	Primary	Unemploye d Looking	Unemploye d Looking	Spain	< 3	< 11	> 200	Public	High	Yes	High	Pass
Middle Range	Male	Tertiary	Tertiary	Retired	Retired	Spain	< 3	< 11	11 - 50	Private	Low	Yes	High	Pass
Lower Tail	Female	Tertiary	Secondary	Unemploye d Not Looking	Retired	Spain	< 3	11 - 50	101 - 200	Public	Low	Yes	Low	Pass



Middle Range	Male	Tertiary	Tertiary	Unemployed Not Looking	Retired	Spain	< 3	> 100	> 200	Private	Low	Yes	Low	Pass
Middle Range	Male	Tertiary	Secondary	Retired	Retired	Spain	< 3	> 100	101 - 200	Public	High	Yes	Low	Pass
Lower Tail	Female	Tertiary	No Ed.	Retired	Retired	Spain	3 - 4	51 - 100	> 200	Public	High	Yes	High	Pass
Middle Range	Female	Tertiary	Primary	Wage Employment	Retired	Spain	< 3	11 - 50	> 200	Public	High	Yes	High	Pass
Middle Range	Female	Tertiary	Tertiary	Unemployed Not Looking	Unemployed Not Looking	Spain	< 3	> 100	> 200	Private	Low	Yes	Low	Pass
Middle Range	Male	Tertiary	Tertiary	Retired	Retired	Another Country	< 3	51 - 100	101 - 200	Public	Low	No	High	Pass
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Middle Range	Male	Tertiary	Tertiary	Unemployed Not Looking	Unemployed Not Looking	Spain	< 3	51 - 100	> 200	Public	High	Yes	Low	Pass
Middle Range	Female	No Ed.	Primary	Unemployed Looking	Retired	Spain	3 - 4	< 11	11 - 50	Public	High	Yes	High	Pass
Middle Range	Male	Tertiary	Tertiary	Unemployed Not Looking	Unemployed Not Looking	Spain	< 3	> 100	> 200	Public	High	Yes	Low	Pass
Middle Range	Female	Tertiary	Tertiary	Unemployed Not Looking	Unemployed Not Looking	Another Country	< 3	> 100	> 200	Public	High	Yes	Low	Pass
Middle Range	Female	Primary	Primary	Unemployed Looking	Retired	Spain	3 - 4	> 100	> 200	Public	High	Yes	Low	Pass

## **Selected\_metrics**

Field Name