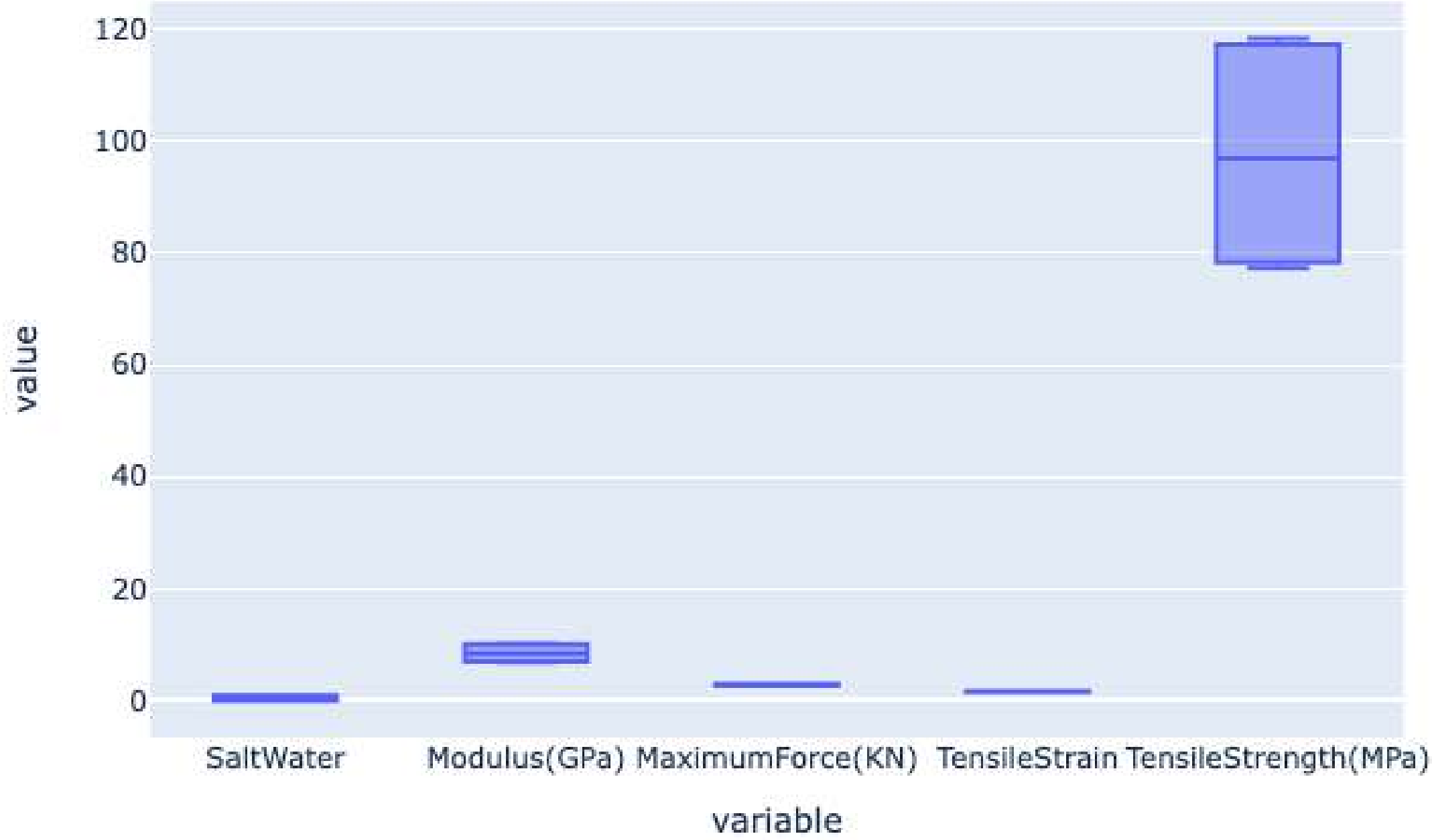
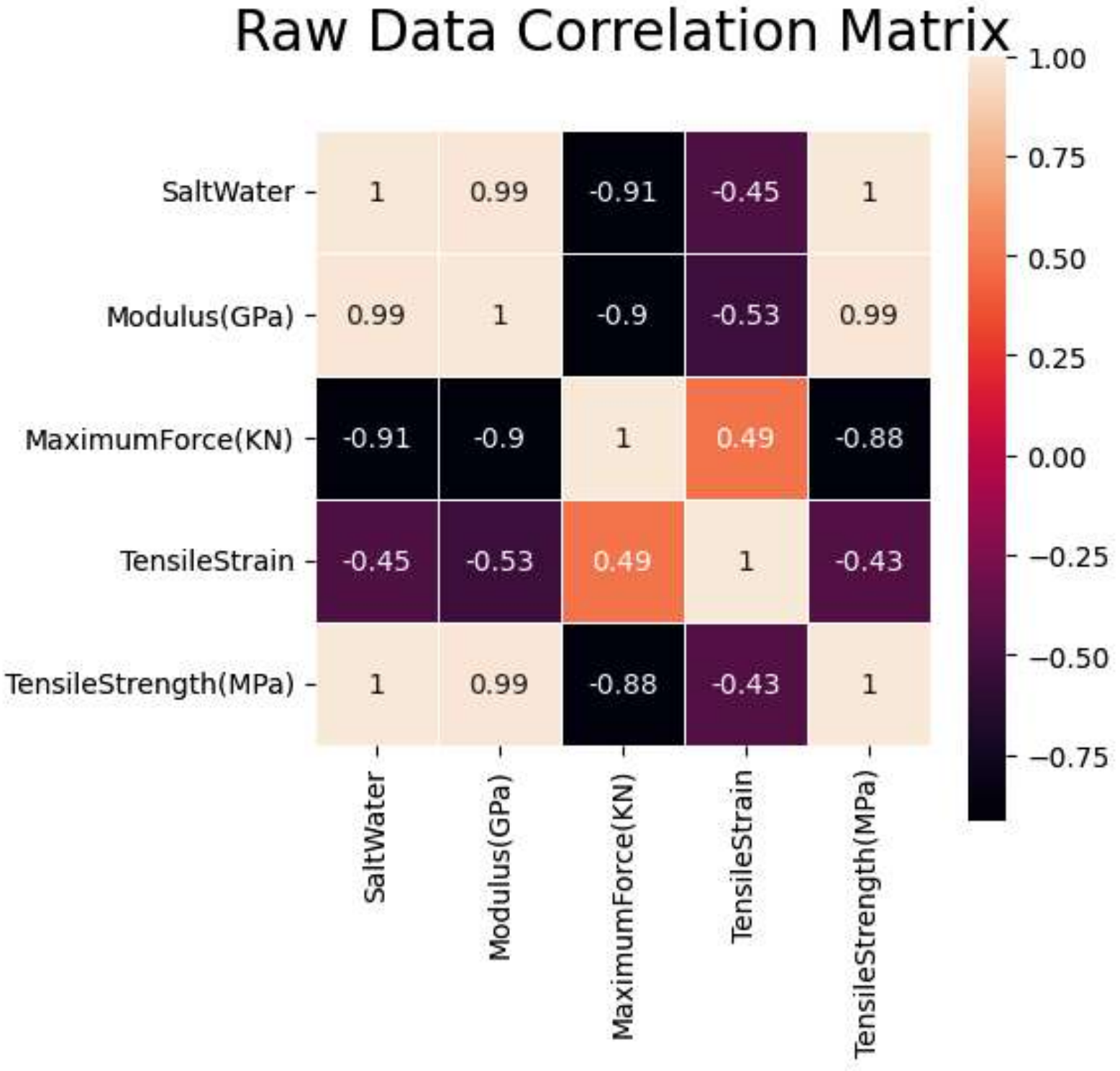
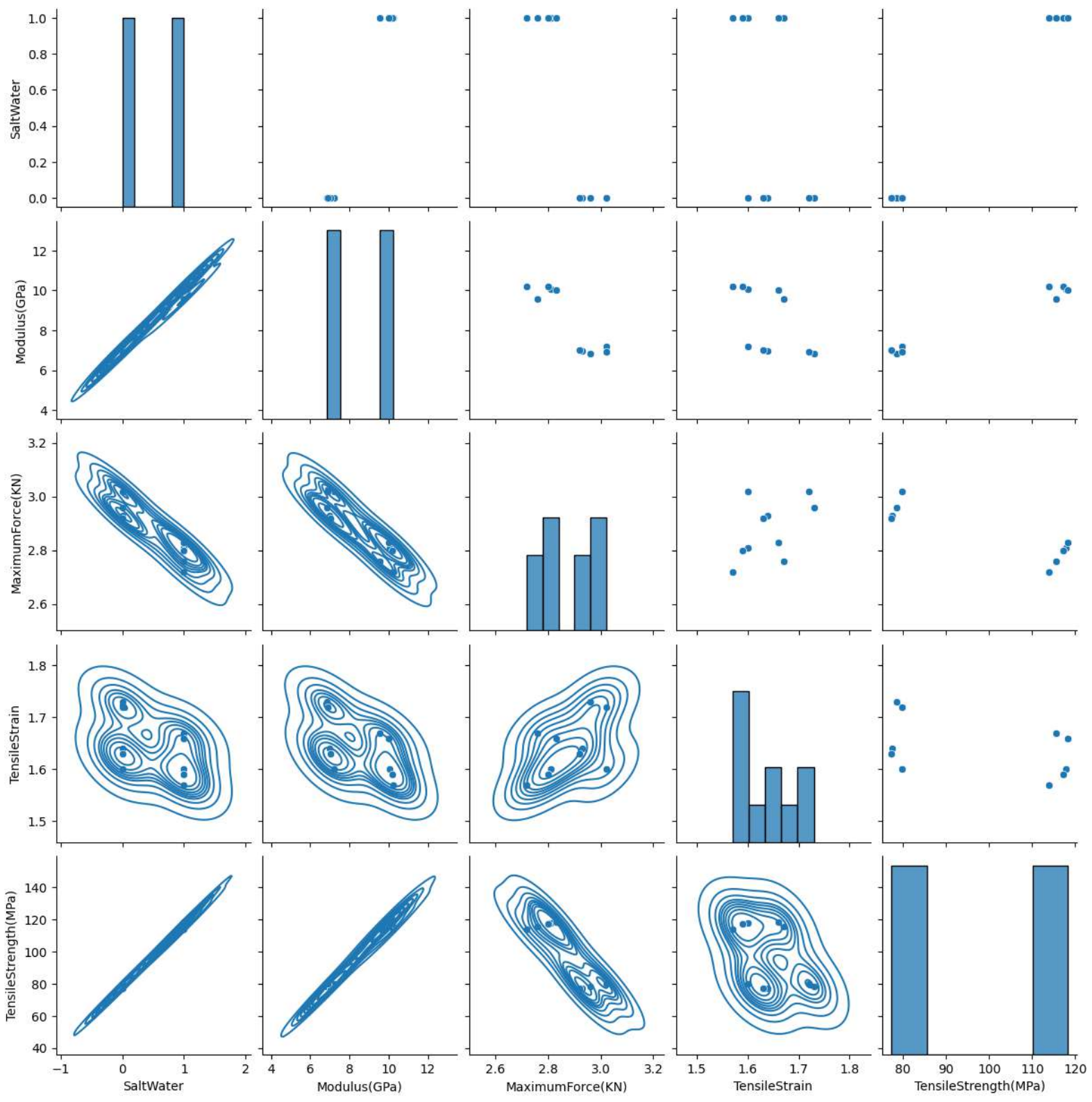
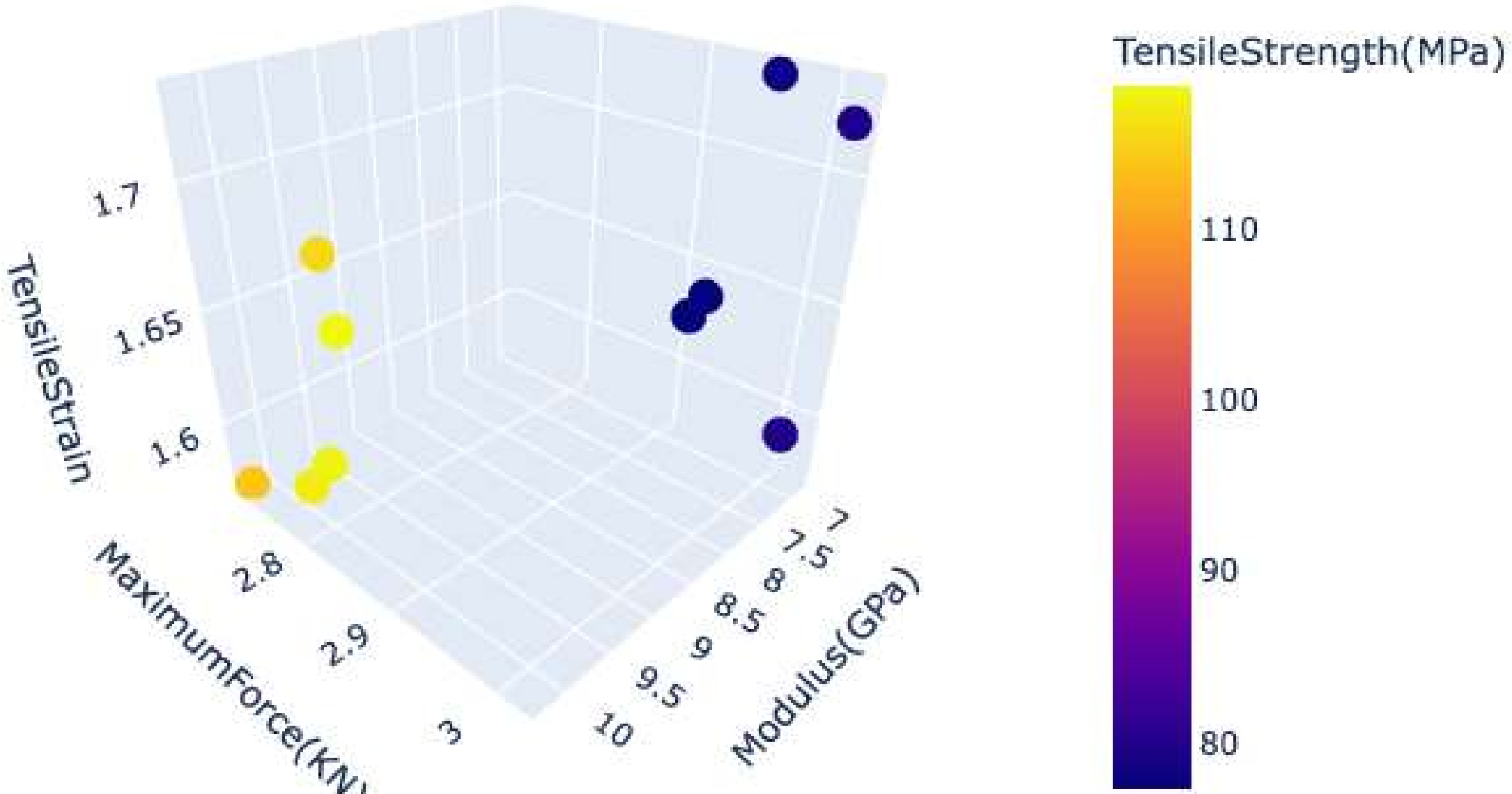
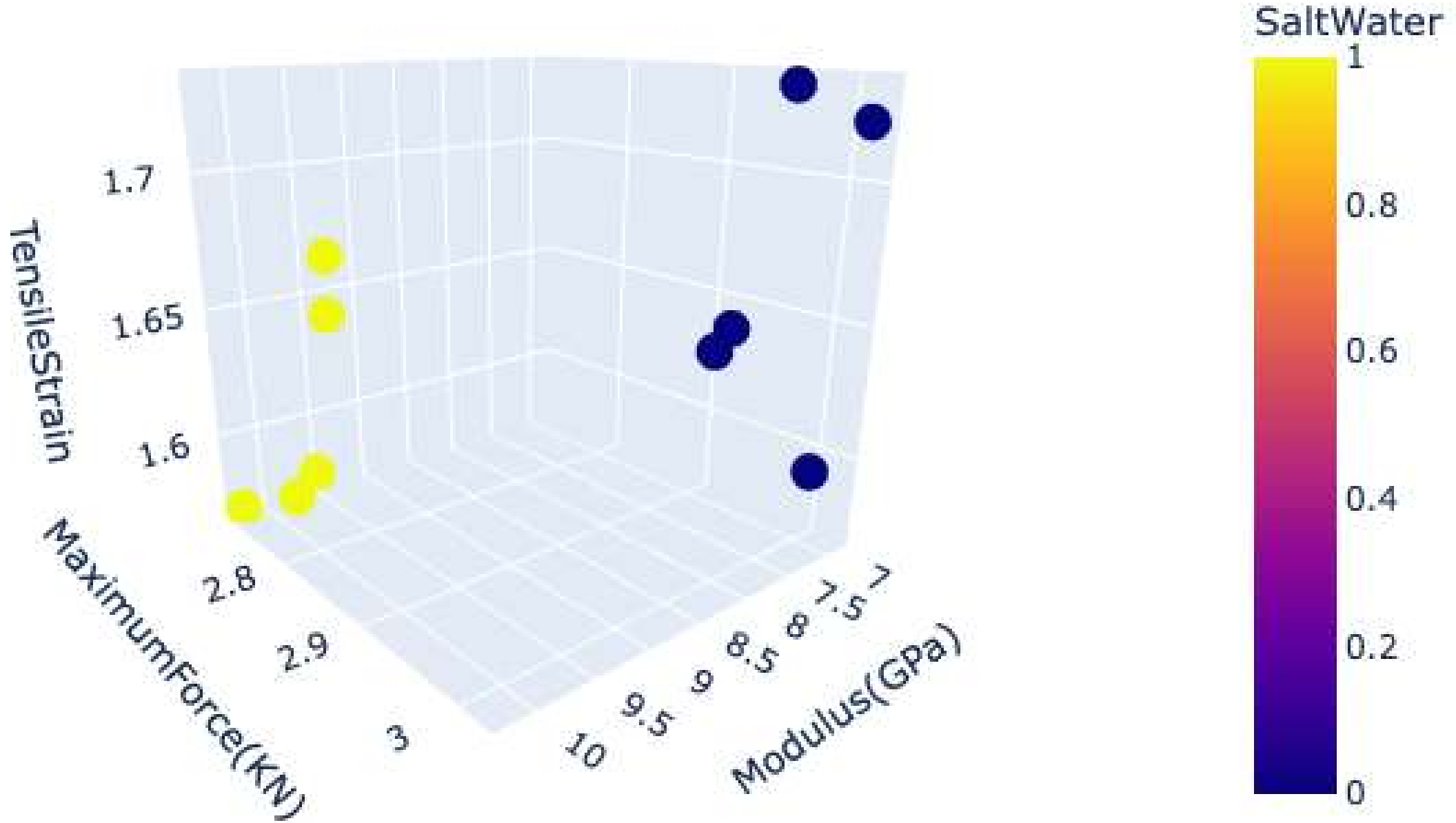
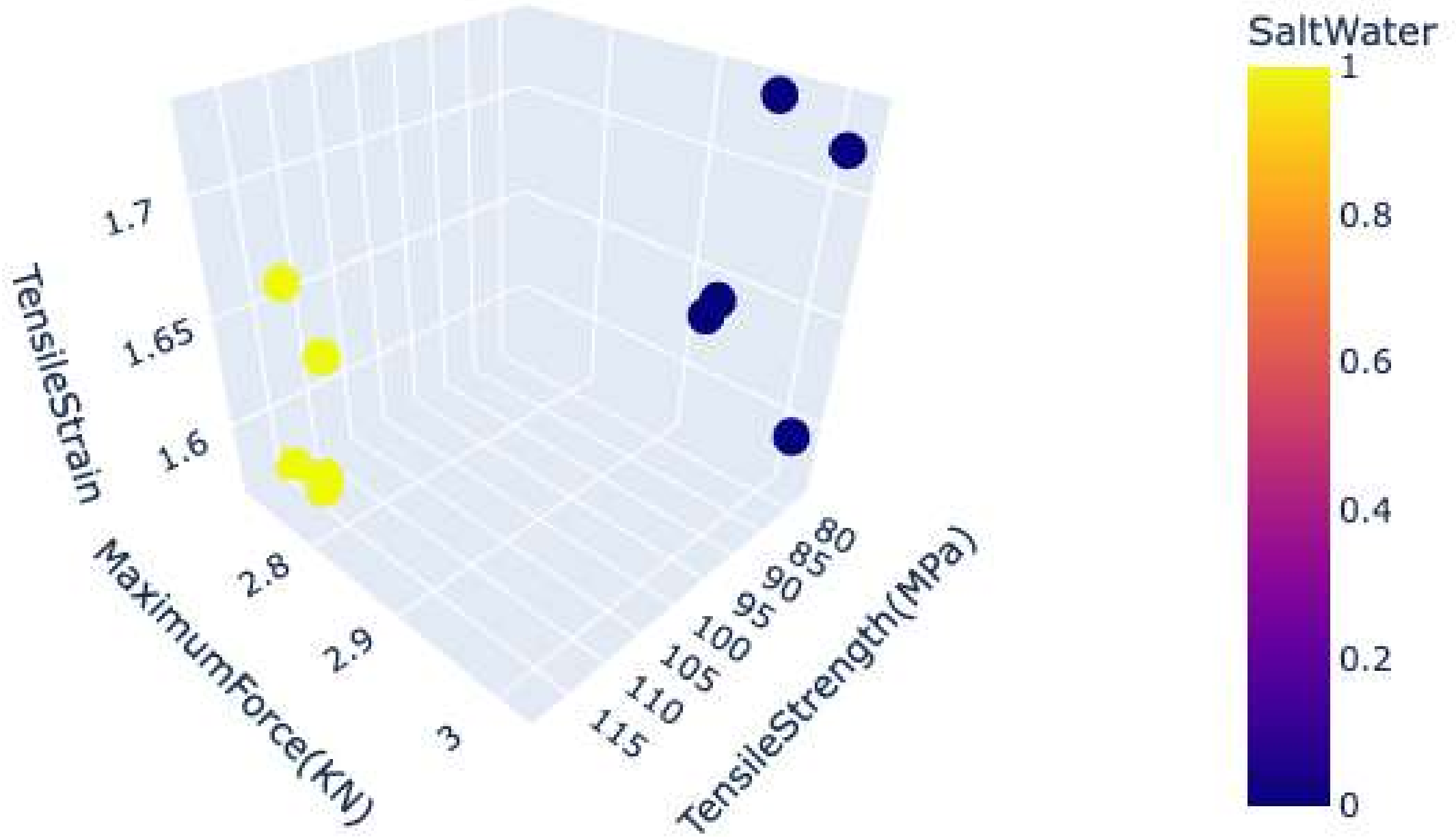

120
100
80
60
40
20
0
value
SaltWater
Modulus(GPa)
MaximumForce(KN)
TensileStrain
TensileStrength(MPa)
variable

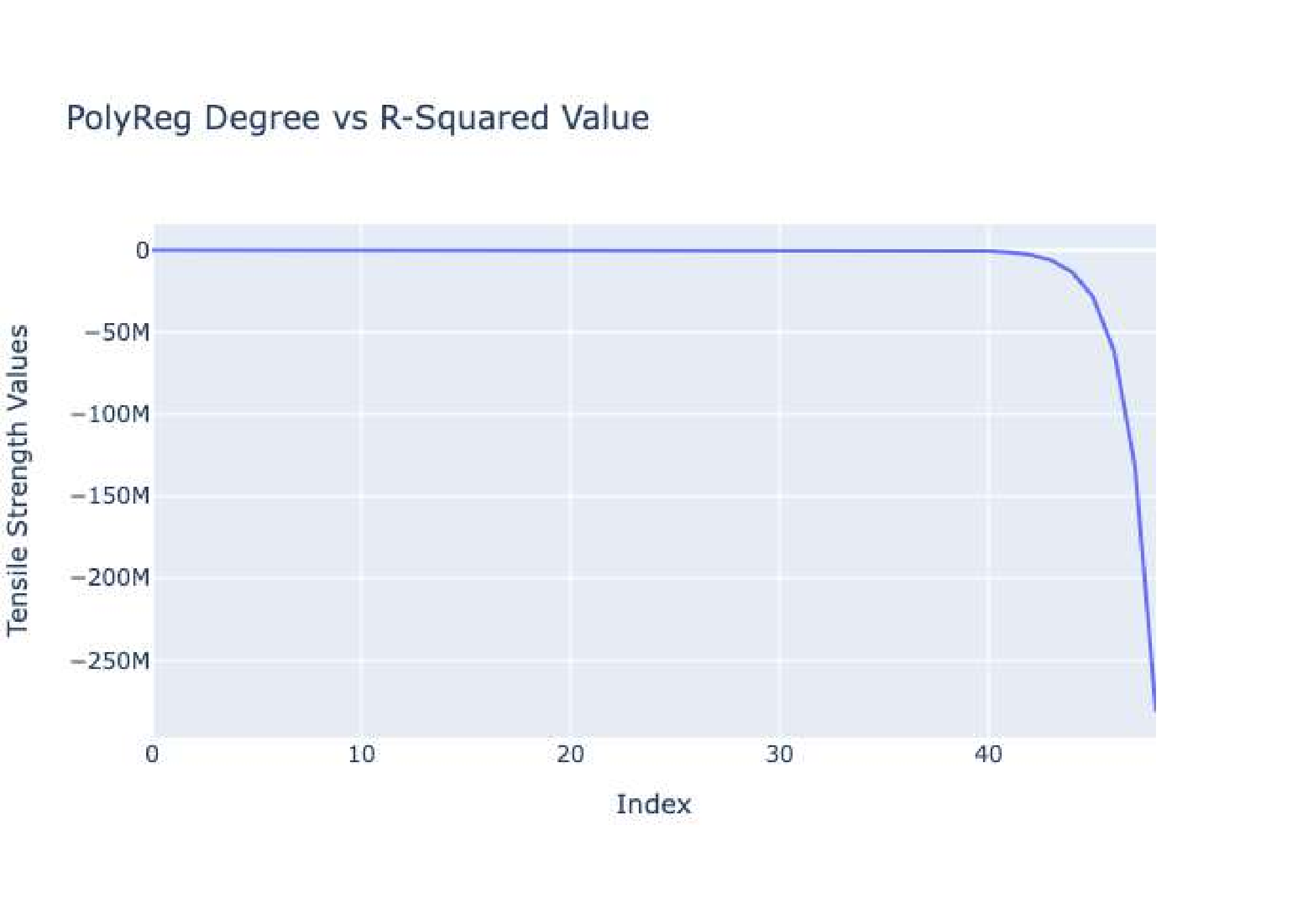

Raw Data Correlation Matrix
SaltWater
Modulus(GPa)
MaximumForce(KN)
TensileStrain
TensileStrength(MPa)
1
0.99
-0.91
-0.45
1
0.99
1
-0.9
-0.53
0.99
-0.91
-0.9
1
0.49
-0.88
-0.45
-0.53
0.49
1
-0.43
1
0.99
-0.88
-0.43
1
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75

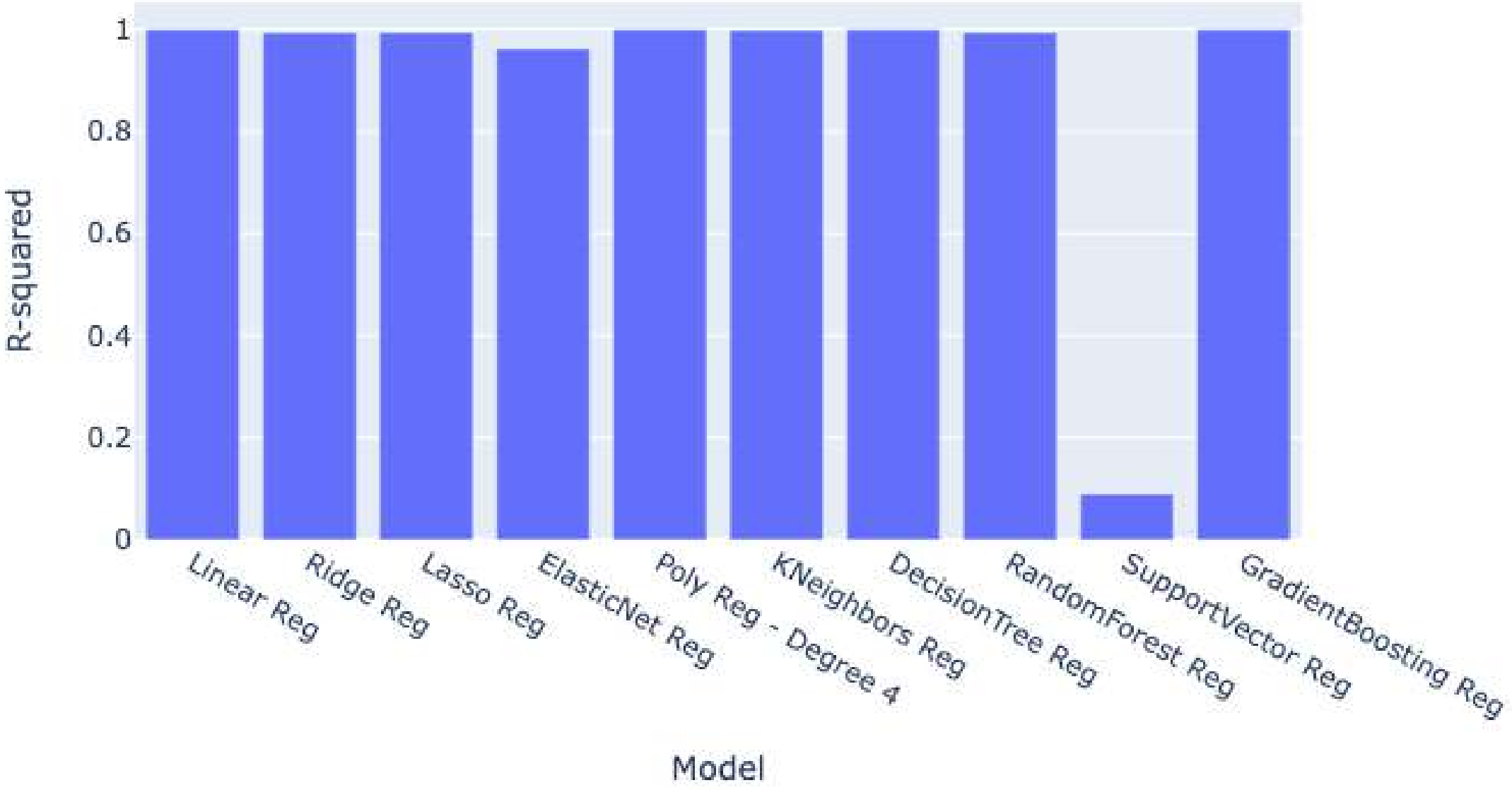

SaltWater
Modulus(GPa)
MaximumForce(KN)
TensileStrain
TensileStrength(MPa)

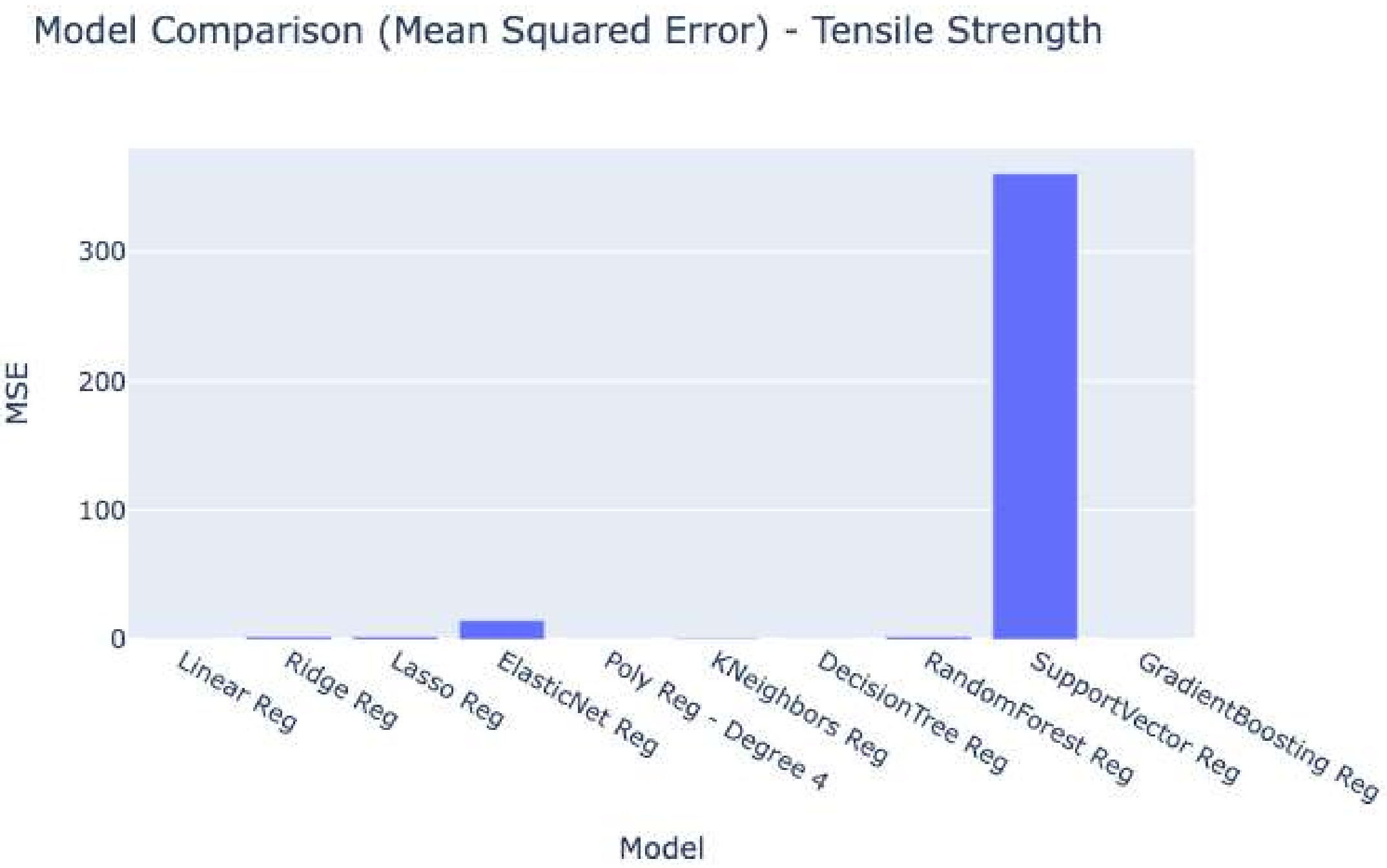

TensileStrength(MPa)
110
100
90
80
TensileStrain
1.7
1.65
1.6
MaximumForce(KN)
2.8
2.9
3
Modulus(GPa)
10
9.5
9
8.5
8
7.5
7

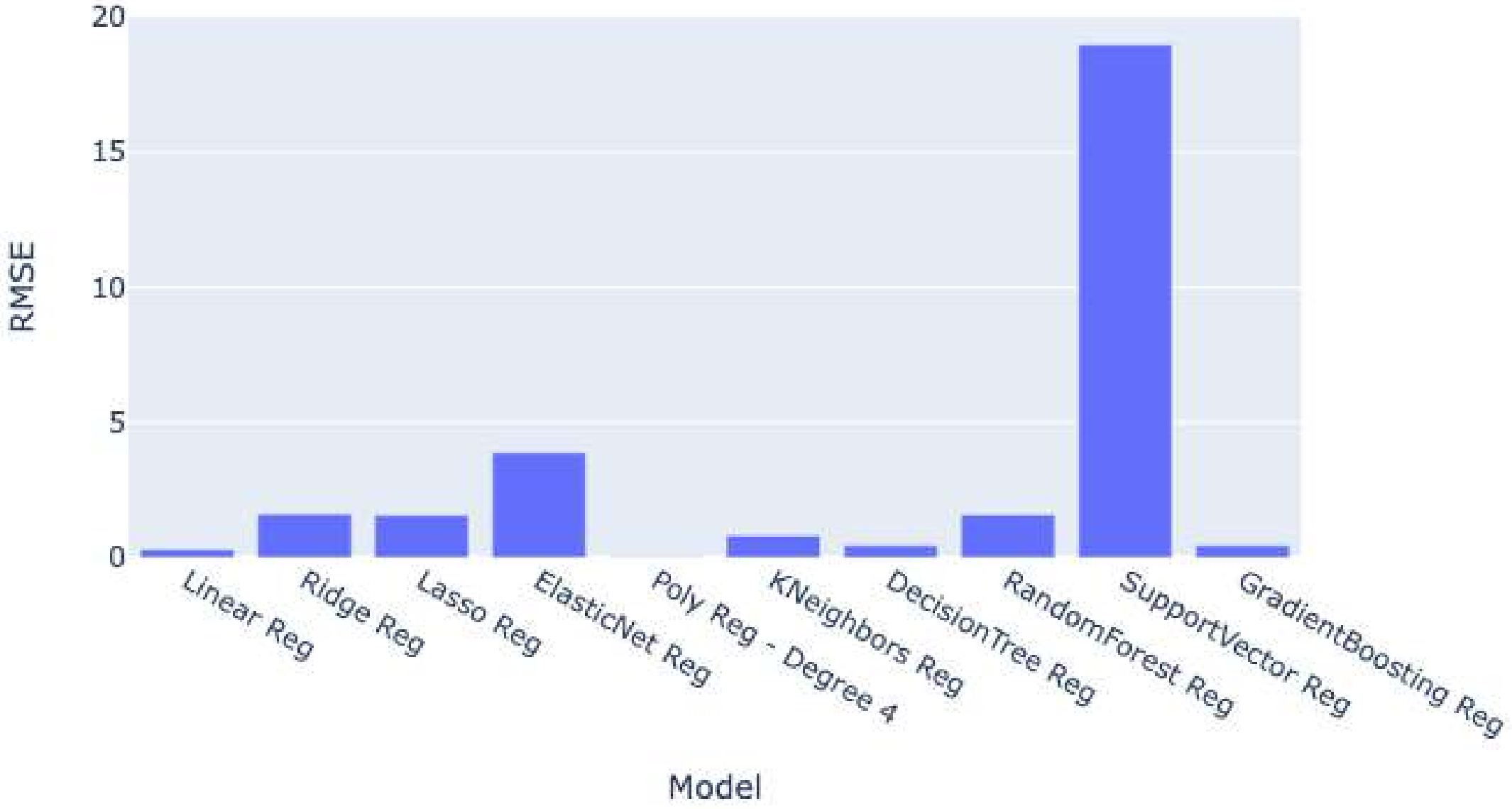

SaltWater
1
0.8
0.6
0.4
0.2
0
Tensilestrain
1.7
1.65
1.6
Maximumforce(KN)
2.8
2.9
3
Modulus(GPa)
10
9.5
9
8.5
8
7.5
7

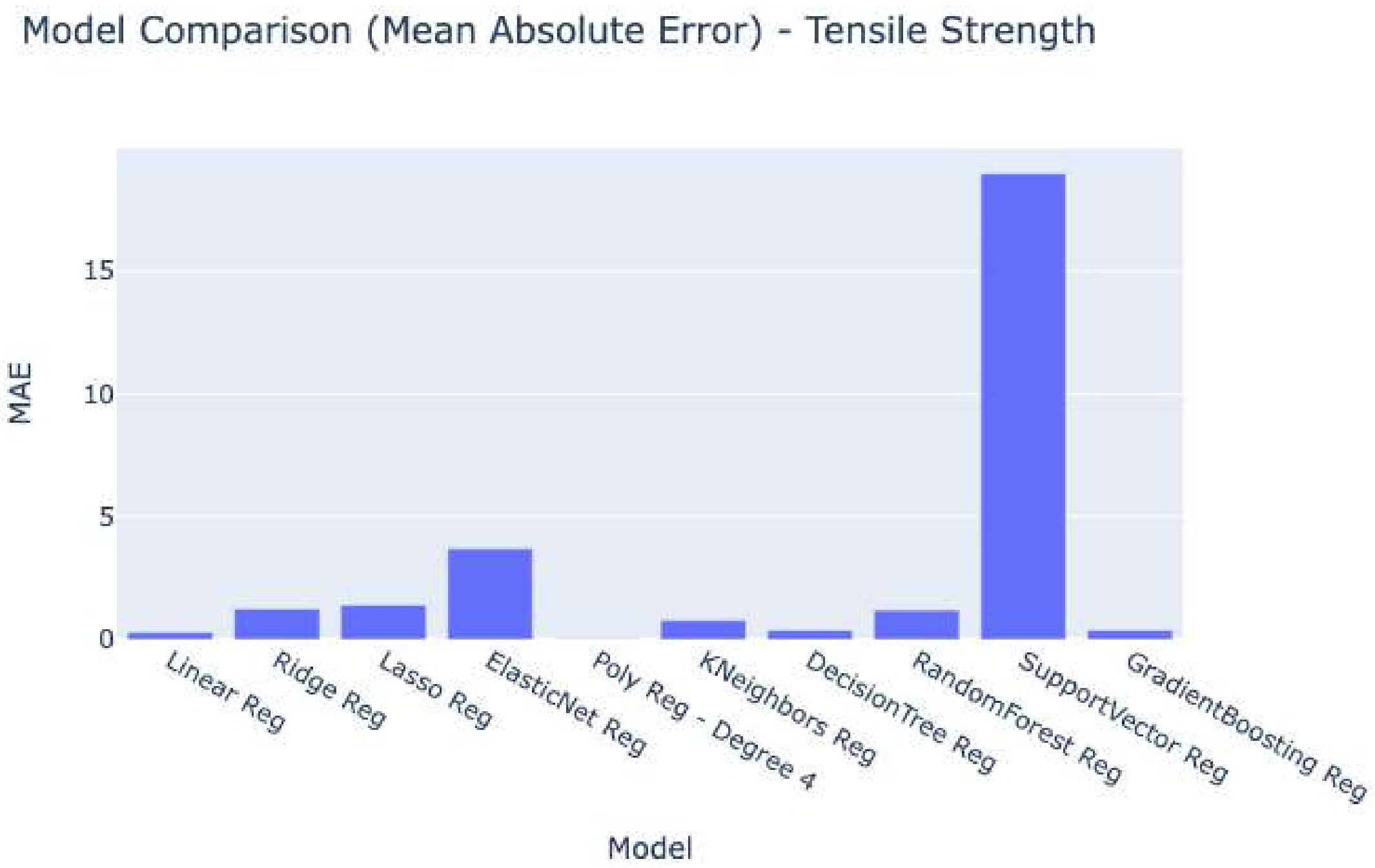

TensileStrain
1.7
1.65
1.6
MaximumForce(KN)
2.8
2.9
3
TensileStrength(MPa)
115
110
105
100
95
90
85
80
SaltWater
1
0.8
0.6
0.4
0.2
0

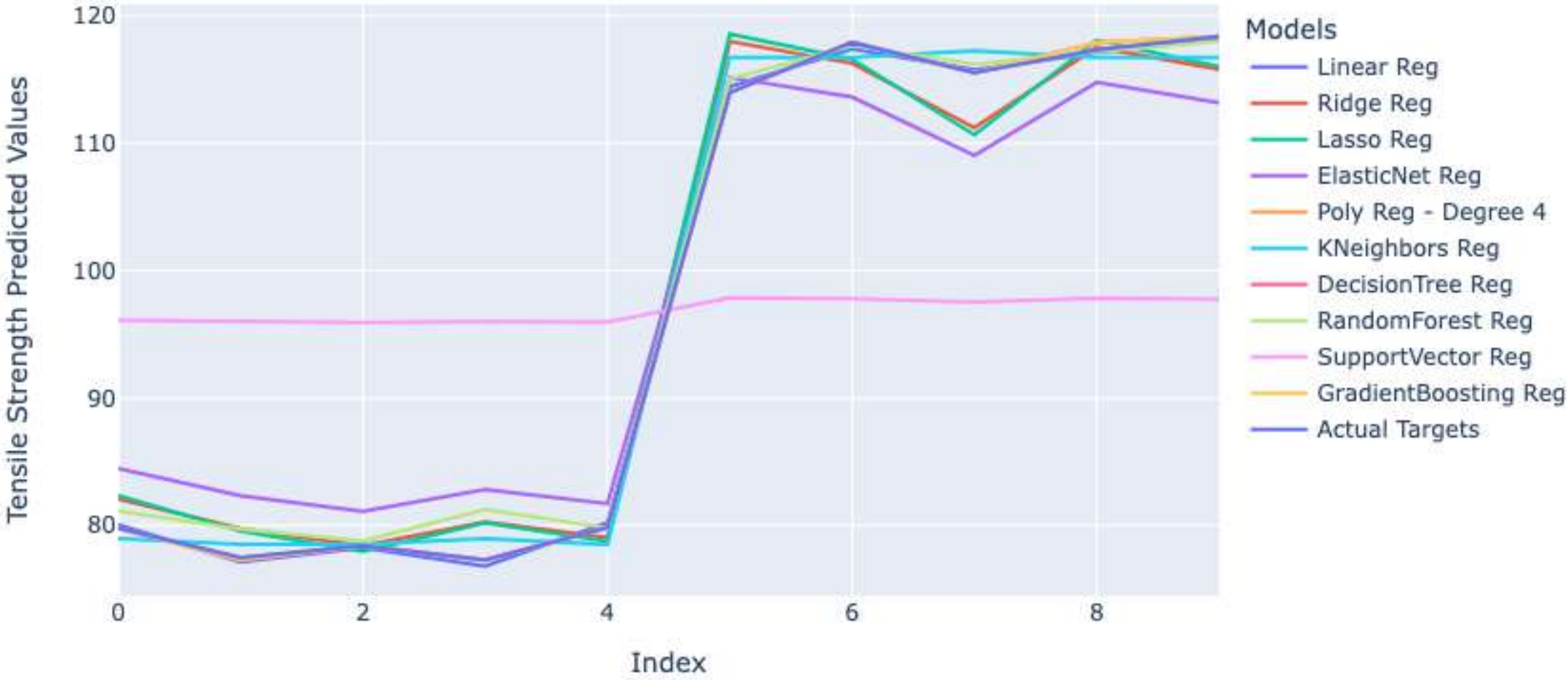

PolyReg Degree vs R-Squared Value
Tensile Strength Values
0
−50M
−100M
−150M
−200M
−250M
0
10
20
30
40
Index

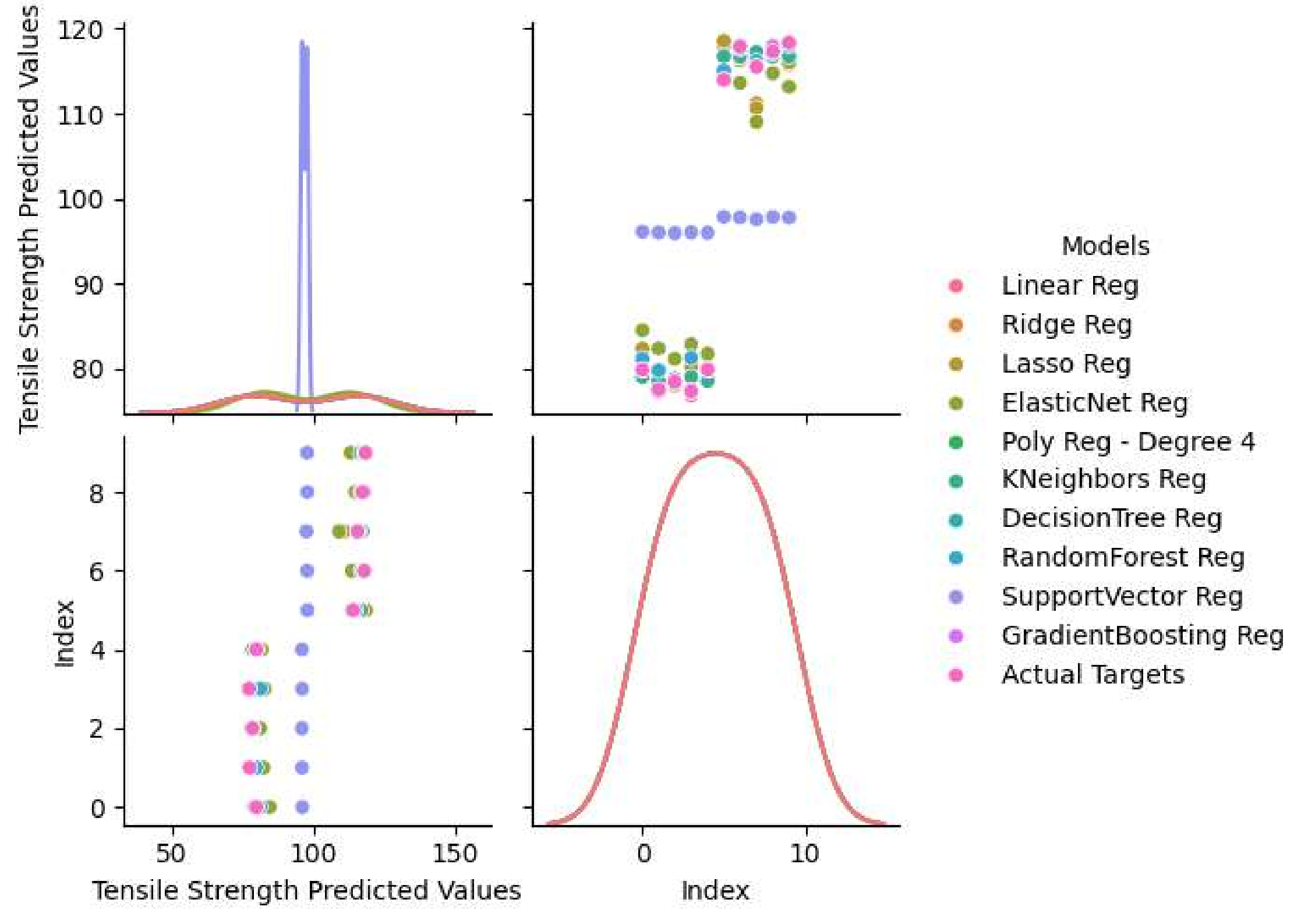

Model Comparison (R-squared) - Tensile Strength
R-squared
1
0.8
0.6
0.4
0.2
0
Linear Reg
Ridge Reg
Lasso Reg
ElasticNet Reg
Poly Reg - Degree 4
KNeighbors Reg
DecisionTree Reg
RandomForest Reg
SupportVector Reg
GradientBoosting Reg
Model


Model Comparison (Mean Squared Error) - Tensile Strength
MSE
300
200
100
0
Linear Reg
Ridge Reg
Lasso Reg
ElasticNet Reg
Poly Reg - Degree 4
KNeighbors Reg
DecisionTree Reg
RandomForest Reg
SupportVector Reg
GradientBoosting Reg
Model


Model Comparison (Root Mean Squared Error) - Tensile Strength
RMSE
20
15
10
5
0
Linear Reg
Ridge Reg
Lasso Reg
ElasticNet Reg
Poly Reg - Degree 4
KNeighbors Reg
DecisionTree Reg
RandomForest Reg
SupportVector Reg
GradientBoosting Reg
Model


Model Comparison (Mean Absolute Error) - Tensile Strength
MAE
0
5
10
15
Linear Reg
Ridge Reg
Lasso Reg
ElasticNet Reg
Poly Reg - Degree 4
KNeighbors Reg
DecisionTree Reg
RandomForest Reg
SupportVector Reg
GradientBoosting Reg
Model


Tensile Strength Predicted Values
120
110
100
90
80
0
2
4
6
8
Index
Models
Linear Reg
Ridge Reg
Lasso Reg
ElasticNet Reg
Poly Reg - Degree 4
KNeighbors Reg
DecisionTree Reg
RandomForest Reg
SupportVector Reg
GradientBoosting Reg
Actual Targets


Tensile Strength Predicted Values
120
110
100
90
80
Index
8
6
4
2
0
50
100
150
Tensile Strength Predicted Values
0
10
Index
Models
Linear Reg
Ridge Reg
Lasso Reg
ElasticNet Reg
Poly Reg - Degree 4
KNeighbors Reg
DecisionTree Reg
RandomForest Reg
SupportVector Reg
GradientBoosting Reg
Actual Targets