

ECO 310: Problem Set #9

Due: April 26, 2016

Kevin Liu

Problem 1

Overview of Regression		
Regression Type	r^2	RMSE
Elastic Net	0.815	4600
Lasso	0.815	4600
Ridge	0.810	4663
Ordinary Least Squares	0.801	4773
Random Forest	0.760	5234
K Nearest Neighbors	0.731	5564
Decision Tree	0.386	8375

	Rank	Institution Name	Residual
Ordinary Least Squares (NEG)	1	Rutgers University-Newark	-12387.28
	2	Pennsylvania State University-Penn State Lehigh	-11728.43
	3	Pennsylvania State University-Penn State York	-11050.88
	4	Rutgers University-Camden	-9411.65
	5	Swedish Institute a College of Health Sciences	-8643.17
	6	Florida National University-Main Campus	-8355.56
	7	Baker College of Flint	-8024.05
	8	SUNY at Purchase College	-7550.39
	9	South University-The Art Institute of Dallas	-7488.18
	10	Oklahoma City University	-7364.77

	Rank	Institution Name	Residual
Ordinary Least Squares (POS)	1	Westwood College-Los Angeles	12259.81
	2	Fairfield University	11905.85
	3	Savannah State University	11050.12
	4	Prescott College	8524.98
	5	Auburn University	6719.69
	6	Pacific Oaks College	6449.84
	7	Rose-Hulman Institute of Technology	6331.67
	8	Silver Lake College of the Holy Family	5702.42
	9	Daemen College	4529.33
	10	University of Colorado Boulder	4446.70

	Rank	Institution Name	Residual
Decision Trees (NEG)	1	Eastern Connecticut State University	-30900.00
	2	Southern University and A & M College	-26800.00
	3	Auburn University	-26000.00
	4	Savannah State University	-23600.00
	5	Touro College	-20116.67
	6	Hendrix College	-18692.31
	7	California College of the Arts	-15392.31
	8	Northwestern University	-15100.00
	9	Valley Forge Christian College	-13338.78
	10	Naropa University	-12325.00

	Rank	Institution Name	Residual
Decision Trees (POS)	1	Rose-Hulman Institute of Technology	31900.00
	2	Butler University	21200.00
	3	Bryan College of Health Sciences	18541.90
	4	University of Oklahoma-Health Sciences Center	17803.13
	5	Washington Adventist University	10862.69
	6	Pace University-New York	10403.13
	7	CUNY Bernard M Baruch College	9521.54
	8	The University of Texas at Dallas	8821.54
	9	Silver Lake College of the Holy Family	8820.00
	10	Stony Brook University	8721.54
	Rank	Institution Name	Residual
KNN (NEG)	1	Naropa University	-20060
	2	Florida National University-Main Campus	-16760
	3	California College of the Arts	-16720
	4	Metropolitan State University of Denver	-15960
	5	Eastern Connecticut State University	-14940
	6	Hendrix College	-14400
	7	Prescott College	-13000
	8	Thomas University	-10320
	9	Westmont College	-9480
	10	New York College of Health Professions	-9300
	Rank	Institution Name	Residual
KNN(POS)	1	Rose-Hulman Institute of Technology	24200
	2	University of Oklahoma-Health Sciences Center	21940
	3	New York School of Interior Design	15020
	4	Bryan College of Health Sciences	14800
	5	Butler University	11240
	6	CUNY Bernard M Baruch College	11240
	7	Michigan Technological University	10020
	8	Pace University-New York	8340
	9	The University of Texas at Dallas	8220
	10	Daemen College	7140
	Rank	Institution Name	Residual
Elastic Net (NEG)	1	Naropa University	-19025.82
	2	Caribbean University-Ponce	-15868.10
	3	Caribbean University-Vega Baja	-15846.24
	4	Universidad Metropolitana	-15624.29
	5	Hendrix College	-14336.91
	6	American University of Puerto Rico	-11460.36
	7	Baker College of Flint	-9918.07
	8	Grace College and Theological Seminary	-9868.67
	9	University of Alaska Southeast	-9678.56
	10	Lancaster Bible College	-9667.06

	Rank	Institution Name	Residual
Elastic Net (POS)	1	University of Oklahoma-Health Sciences Center	20867.00
	2	Rose-Hulman Institute of Technology	19831.42
	3	Bryan College of Health Sciences	16874.28
	4	New York School of Interior Design	16860.56
	5	Washington and Lee University	13324.51
	6	Washington Adventist University	10727.73
	7	Michigan Technological University	10599.53
	8	Butler University	10319.31
	9	Fairfield University	8142.88
	10	CUNY Bernard M Baruch College	7997.13
Feature Importance			
Variable	Meaning	Positive Coefficients	
pct_black	% of pop. from students' zip codes that is Black	576637.44	
SATMT25	25th percentile of SAT scores at the institution (math)	370664.54	
poverty_rate	Poverty rate, via Census data	329344.49	
SAT_AVG_ALL	Average SAT score of students admitted for all campuses	261633.53	
SATMTMID	Midpoint of SAT scores at the institution (math)	159806.83	
Variable	Meaning	Negative Coefficients	
GRAD_DEBT_MDN10YR	Median loan debt of completers in monthly payments	-980270.30	
PCTPELL	% of undergraduates who receive a Pell Grant	-922749.87	
pct_white	% of pop. from students' zip codes that is White	-592918.42	
pct_born_us	% of the pop. from students' zip codes that was born in US	-554285.29	
SAT_AVG	Average SAT equivalent score of students admitted	-343526.60	
Variable	Meaning	Magnitude of Coefficients	
GRAD_DEBT_MDN10YR	Median loan debt of completers in monthly payments	980270.30	
PCTPELL	% of undergraduates who receive a Pell Grant	922749.87	
pct_white	% of pop. from students' zip codes that is White	592918.42	
pct_black	% of pop. from students' zip codes that is Black	576637.44	
pct_born_us	% of the pop. from students' zip codes that was born in US	554285.29	
SATMT25	25th percentile of SAT scores at the institution (math)	370664.54	
SAT_AVG	Average SAT equivalent score of students admitted	343526.60	
poverty_rate	Poverty rate, via Census data	329344.49	
SAT_AVG_ALL	Average SAT score of students admitted for all campuses	261633.53	
SATMTMID	Midpoint of SAT scores at the institution (math)	159806.83	