Reverse Engineering Segregation in North Carolina Public Schools

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Elevate Through Education

APPENDIX

ELEMENTARY SCHOOL MODEL COEFFICIENTS 1

Figure 1 shows the top 75 model coefficient values used to distinguish between highly majority and minority segregated elementary school campuses. The coefficient values reflect both positive and negative correlations with an individual campus being classified as highly majority or minority segregated.
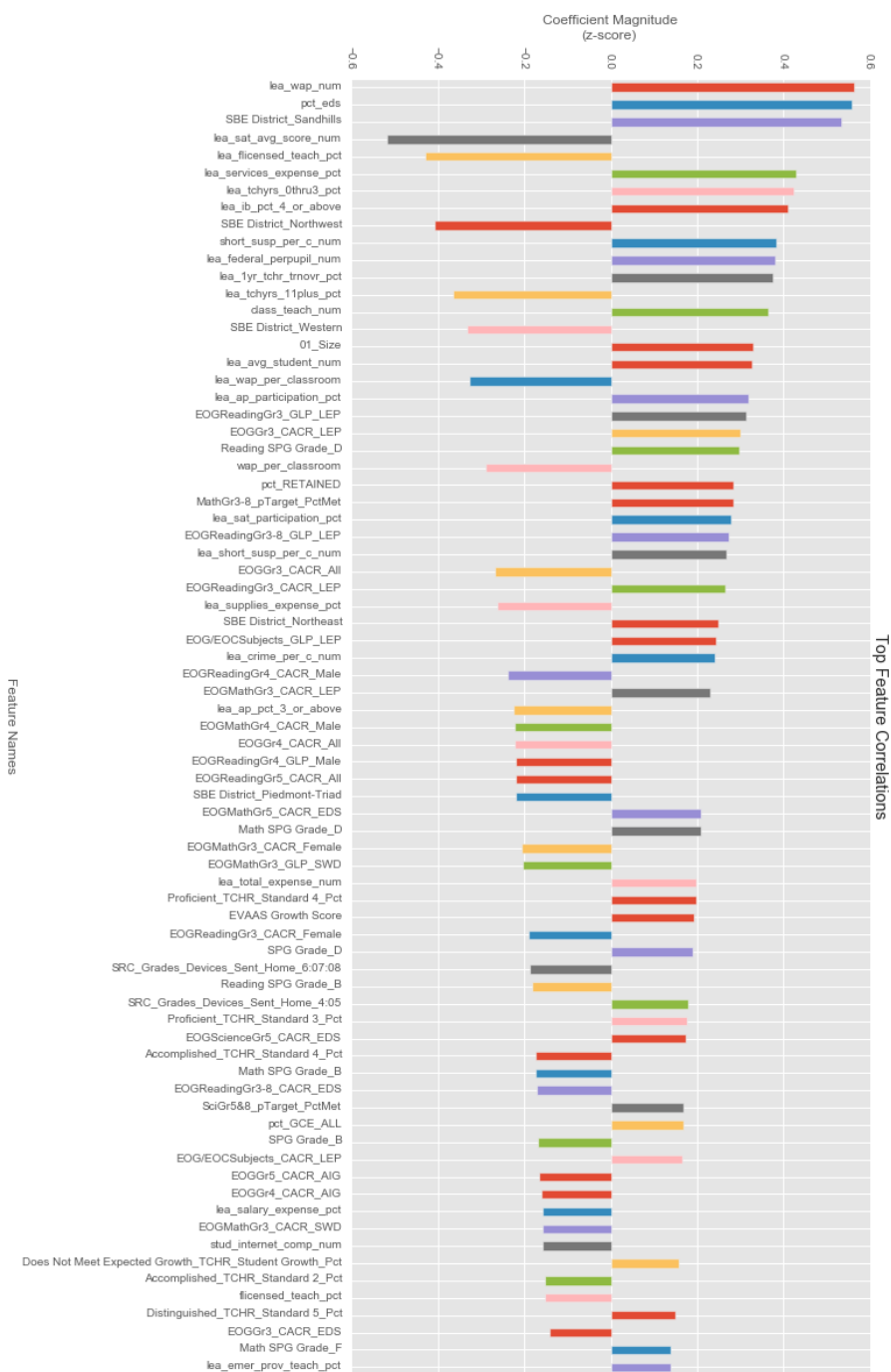

Figure 1 - Top 75 Model Coefficients for Distinguishing Between Highly Majority and Minority Segregated Elementary Schools.

ELEMENTARY SCHOOL MISSING VALUES 2

The table below shows the percentage of missing values imputed to zero for the elementary school model's top 75 coefficients. There were 14 features in the top 75 which were one hot encoded and had no missing values.

Variable Name	Number Missing Values	Pct Missing
lea_wap_num	0	0
pct_eds	0	0
lea_sat_avg_score_num	4	0.003155
lea_flicensed_teach_pct	0	0
lea_services_expense_pct	0	0
lea_tchyrs_0thru3_pct	0	0
lea_ib_pct_4_or_above	717	0.565457
short_susp_per_c_num	0	0
lea_federal_perpupil_num	0	0
lea_1yr_tchr_trnovr_pct	0	0
lea_tchyrs_11plus_pct	0	0
class_teach_num	0	0
01_Size	78	0.061514
lea_avg_student_num	0	0
lea_wap_per_classroom	0	0
lea_ap_participation_pct	133	0.10489
EOGReadingGr3_GLP_LEP	61	0.048107
EOGGr3_CACR_LEP	60	0.047319
wap_per_classroom	2	0.001577
pct_RETAINED	741	0.584385
MathGr3-8_pTarget_PctMet	39	0.030757
lea_sat_participation_pct	4	0.003155
EOGReadingGr3-8_GLP_LEP	38	0.029968
lea_short_susp_per_c_num	0	0
EOGGr3_CACR_All	60	0.047319
EOGReadingGr3_CACR_LEP	61	0.048107
lea_supplies_expense_pct	0	0
EOG/EOCSubjects_GLP_LEP	35	0.027603
lea_crime_per_c_num	0	0
EOGReadingGr4_CACR_Male	65	0.051262
EOGMathGr3_CACR_LEP	61	0.048107
lea_ap_pct_3_or_above	33	0.026025
EOGMathGr4_CACR_Male	65	0.051262
EOGGr4_CACR_All	64	0.050473
EOGReadingGr4_GLP_Male	65	0.051262

EOGReadingGr5_CACR_All	129	0.101735
EOGMathGr5_CACR_EDS	129	0.101735
EOGMathGr3_CACR_Female	61	0.048107
EOGMathGr3_GLP_SWD	61	0.048107
lea_total_expense_num	0	0
Proficient_TCHR_Standard 4_Pct	2	0.001577
EVAAS Growth Score	36	0.028391
EOGReadingGr3_CACR_Female	61	0.048107
Proficient_TCHR_Standard 3_Pct	2	0.001577
EOGScienceGr5_CACR_EDS	129	0.101735
Accomplished_TCHR_Standard 4_Pct	2	0.001577
EOGReadingGr3-8_CACR_EDS	38	0.029968
SciGr5&8_pTarget_PctMet	167	0.131703
pct_GCE_ALL	59	0.04653
EOG/EOCSubjects_CACR_LEP	35	0.027603
EOGGr5_CACR_AIG	126	0.099369
EOGGr4_CACR_AIG	64	0.050473
lea_salary_expense_pct	0	0
EOGMathGr3_CACR_SWD	61	0.048107
stud_internet_comp_num	3	0.002366
Does Not Meet Expected Growth_TCHR_Student Gro...	6	0.004732
Accomplished_TCHR_Standard 2_Pct	2	0.001577
flicensed_teach_pct	0	0
Distinguished_TCHR_Standard 5_Pct	2	0.001577
EOGGr3_CACR_EDS	60	0.047319
lea_emer_prov_teach_pct	414	0.326498
SBE District_Sandhills	0	0
SBE District_Northwest	0	0
SBE District_Western	0	0
Reading SPG Grade_D	0	0
SBE District_Northeast	0	0
SBE District_Piedmont-Triad	0	0
Math SPG Grade_D	0	0
SPG Grade_D	0	0
SRC_Grades_Devices_Sent_Home_6:07:08	0	0
Reading SPG Grade_B	0	0
SRC_Grades_Devices_Sent_Home_4:05	0	0
Math SPG Grade_B	0	0
SPG Grade_B	0	0
Math SPG Grade_F	0	0

Figure 2 shows the top 75 model coefficient values used to distinguish between highly majority and minority segregated middle school campuses. The coefficient values reflect both positive and negative correlations with an individual campus being classified as highly majority or minority segregated.

Figure 2 - Top 75 Model Coefficients for Distinguishing Between Highly Majority and Minority Segregated Middle Schools.

MIDDLE SCHOOL MISSING VALUES 4

The table below shows the percentage of missing values imputed to zero for the elementary school model's top 75 coefficients.

Variable Name	Number Missing Values	Pct Missing
pct_eds	0	0
lea_nbpts_num	0	0
lea_short_susp_per_c_num	0	0
lea_sat_avg_score_num	1	0.001901
SPG Score	0	0
short_susp_per_c_num	0	0
nbpts_num	0	0
EOG/EOCSubjects_CACR_EDS	0	0
07_Size	24	0.045627
lea_avg_student_num	0	0
EOGScienceGr5&8_GLP_LEP	8	0.015209
EOGScienceGr5&8_CACR_LEP	8	0.015209
EOGMathGr3-8_GLP_LEP	5	0.009506
EOGReadingGr7_CACR_All	22	0.041825
EOGGr8_CACR_All	18	0.034221
EOGGr6_CACR_All	34	0.064639
EOGReadingGr3-8_CACR_EDS	5	0.009506
EOGReadingGr7_CACR_Female	22	0.041825
wap_num	2	0.003802
EOG/EOCSubjects_CACR_LEP	0	0
EOGMathGr8_GLP_LEP	22	0.041825
06_Size	36	0.068441
EOGReadingGr8_GLP_LEP	22	0.041825
EOGMathGr7_GLP_SWD	22	0.041825
EOGScienceGr5&8_CACR_Male	8	0.015209
EOGReadingGr7_GLP_SWD	22	0.041825
EOGMathGr6_CACR_Female	36	0.068441
EOGReadingGr7_CACR_Male	22	0.041825
EOG/EOCSubjects_GLP_LEP	0	0
EOGReadingGr6_CACR_SWD	36	0.068441
EOGMathGr3-8_GLP_SWD	5	0.009506
EOGScienceGr5&8_CACR_Female	8	0.015209
EOGScienceGr5&8_CACR_EDS	8	0.015209
EOG/EOCSubjects_CACR_AIG	0	0
EOGMathGr6_GLP_LEP	36	0.068441
EOGScienceGr5&8_GLP_SWD	8	0.015209

EOGGr6_GLP_LEP	34	0.064639
Gr_6_Pct_Prof	32	0.060837
EOGMathGr8_CACR_LEP	22	0.041825
EOCMathI_CACR_Male	72	0.136882
EOGMathGr8_CACR_AIG	22	0.041825
EOGMathGr6_CACR_AIG	36	0.068441
avg_age_media_collection	5	0.009506
EOGReadingGr6_CACR_Male	36	0.068441
EOGScienceGr5&8_CACR_SWD	8	0.015209
EOGGr8_GLP_LEP	18	0.034221
st_avg_student_num	0	0
EOCMathI_CACR_All	72	0.136882
EOGMathGr7_CACR_EDS	22	0.041825
EOGReadingGr8_CACR_Male	22	0.041825
EOGReadingGr6_GLP_LEP	36	0.068441
EOGMathGr8_CACR_Male	22	0.041825
EOGMathGr6_CACR_LEP	36	0.068441
EOGSubjects_CACR_AIG	4	0.007605
EOGReadingGr6_CACR_LEP	36	0.068441
EOGGr6_CACR_AIG	34	0.064639
EOGScienceGr5&8_CACR_AIG	8	0.015209
EOGGr8_CACR_LEP	18	0.034221
EOGGr7_CACR_EDS	19	0.036122
EOGMathGr7_CACR_Male	22	0.041825
08_Size	24	0.045627
EOCMathI_CACR_Female	72	0.136882
EOGMathGr7_CACR_AIG	22	0.041825
EVAAS Growth Score	2	0.003802
EOGReadingGr8_GLP_EDS	22	0.041825
EOGGr6_CACR_LEP	34	0.064639
EOGGr6_CACR_SWD	34	0.064639
EOGScienceGr8_CACR_Male	22	0.041825
EOGMathGr6_GLP_SWD	36	0.068441
EOGGr7_GLP_SWD	19	0.036122
EOCMathI_CACR_AIG	72	0.136882
EOGMathGr8_GLP_SWD	22	0.041825
EOGReadingGr6_CACR_Female	36	0.068441
EOGReadingGr3-8_CACR_SWD	5	0.009506
EOGGr7_CACR_SWD	19	0.036122

Figure 3 shows the top 75 model coefficient values used to distinguish between highly majority and minority segregated high school campuses. The coefficient values reflect both positive and negative correlations with an individual campus being classified as highly majority or minority segregated.

Figure 3 - Top 75 Model Coefficients for Distinguishing Between Highly Majority and Minority Segregated High Schools.

HIGH SCHOOL MISSING VALUES 6

The table below shows the percentage of missing values imputed to zero for the elementary school model's top 75 coefficients.

Variable Name	Number Missing Values	Pct Missing
lea_short_susp_per_c_num	0	0
lea_avg_student_num	0	0
lea_sat_avg_score_num	1	0.002128
pct_eds	0	0
short_susp_per_c_num	0	0
nbpts_num	2	0.004255
SPG Score	0	0
ACTWorkKeys_SilverPlus_Female	108	0.229787
ACT WorkKeys Score	89	0.189362
GraduationRate_5yr_SWD	24	0.051064
GraduationRate_4yr_LEP	14	0.029787
Number_Industry_Recognized_Crede	57	0.121277
GraduationRate_4yr_EDS	14	0.029787
ACTScience_ACTBenchmark_Female	13	0.02766
ACTReading_ACTBenchmark_Female	13	0.02766
GraduationRate_5yr_LEP	24	0.051064
EOCBiology_GLP_LEP	19	0.040426
lea_federal_perpupil_num	0	0
GraduationRate_4yr_SWD	14	0.029787
ACTMath_ACTBenchmark_Male	13	0.02766
EOCEnglish2_CACR_EDS	19	0.040426
student_num	0	0
EOCBiology_CACR_AIG	19	0.040426
12_Size	103	0.219149
st_avg_student_num	0	0
AGNR_Concentrator_Ct	147	0.312766
EOCBiology_CACR_EDS	19	0.040426
ACTWorkKeys_SilverPlus_Male	108	0.229787
ACTMath_ACTBenchmark_AIG	13	0.02766
ACTScience_ACTBenchmark_All	13	0.02766
EVAAS Growth Score	11	0.023404
ACTScience_ACTBenchmark_AIG	13	0.02766
MANU_Concentrator_Ct	228	0.485106
ACTWorkKeys_SilverPlus_All	108	0.229787
ACTScience_ACTBenchmark_Male	13	0.02766

EOCMathI_GLP_LEP	13	0.02766
EOCMathI_CACR_LEP	13	0.02766
EOCBiology_CACR_SWD	19	0.040426
M_Male_ENROLL_sch_pct	31	0.065957
ACTMath_ACTBenchmark_Female	13	0.02766
ECODIS_Economically Disadvantaged_ENROLL_sch_pct	112	0.238298
ARCH_Concentrator_Ct	164	0.348936
ACTWorkKeys_SilverPlus_AIG	108	0.229787
avg_age_media_collection	85	0.180851
ACTCompositeScore_UNCMin_AIG	13	0.02766
wap_num	11	0.023404
EOCBiology_CACR_LEP	19	0.040426
Gr_9_Pct_Prof	13	0.02766
TRAN_Concentrator_Ct	268	0.570213
ACTCompositeScore_UNCMin_Female	13	0.02766
ACTSubtests_BenchmarksMet_AIG	9	0.019149
EOCSubjects_CACR_LEP	10	0.021277
ACTMath_ACTBenchmark_All	13	0.02766
EOCSubjects_GLP_LEP	10	0.021277
ACTEnglish_ACTBenchmark_Female	13	0.02766
English II Score	17	0.03617
Passing NC Math 3	14	0.029787
ACT Score	11	0.023404
EOCEnglish2_CACR_SWD	19	0.040426
GraduationRate_5yr_AIG	24	0.051064
EOG/EOCSubjects_GLP_LEP	9	0.019149
F_Female_ENROLL_sch_pct	30	0.06383
EOCEnglish2_CACR_Male	19	0.040426
ACTReading_ACTBenchmark_SWD	13	0.02766
HOSP_Concentrator_Ct	140	0.297872
ACTCompositeScore_UNCMin_EDS	13	0.02766
EOCEnglish2_CACR_Female	19	0.040426
AAVC_Concentrator_Ct	247	0.525532
EOCEnglish2_CACR_AIG	19	0.040426
INFO_Concentrator_Ct	143	0.304255
GraduationRate_5yr_Male	24	0.051064
GraduationRate_5yr_All	24	0.051064
4-Year Cohort Graduation Rate Score	13	0.02766
BMA_Concentrator_Ct	150	0.319149
GraduationRate_4yr_Male	14	0.029787