Online Appendix

The School to Prison Pipeline:

Long-Run Impacts of School Suspensions on Adult Crime

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Appendix Table A1. Tests of Covariate Balance by Race and Gender

	Students of Color		White		Male		Female	
	Suspensions	Test Scores	Suspensions	Test Scores	Suspensions	Test Scores	Suspensions	Test Scores
Prior-Year Days Suspended	0.002	-0.001	-0.001	-0.001	0.001	0.000	0.001	-0.002
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
Prior-Year Test Scores	-0.003	-0.005	-0.000	0.007	-0.000	0.002	0.002	0.002
	(0.003)	(0.006)	(0.003)	(0.005)	(0.004)	(0.003)	(0.003)	(0.005)
Black					0.007	0.008	0.005	0.006
					(0.008)	(0.015)	(0.011)	(0.015)
Hispanic					-0.029**	-0.010	0.008	0.010
					(0.014)	(0.016)	(0.013)	(0.017)
Male	0.001	-0.003	0.001	-0.002				
	(0.004)	(0.003)	(0.005)	(0.006)				
Special Education	-0.007	0.001	0.009	0.007	0.002	-0.002	-0.006	0.011
	(0.005)	(0.005)	(0.006)	(0.010)	(0.005)	(0.007)	(0.007)	(0.012)
Limited English Proficiency	0.002	-0.011	-0.001	0.008	0.016	0.002	0.005	-0.006
	(0.010)	(0.012)	(0.017)	(0.016)	(0.012)	(0.011)	(0.014)	(0.011)
Elementary School Susp. Indicator	-0.002	0.003	-0.008	-0.008	-0.008*	-0.002	-0.001	-0.000
	(0.005)	(0.004)	(0.006)	(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
P-value for joint hypothesis F-test	0.651	0.778	0.710	0.514	0.430	0.896	0.934	0.883
N	14493	14493	11753	11753	13345	13345	12901	12901

Notes: In this table, we present the results of regressions of school effects on a set of baseline variables. Each regression includes neighborhood by old school zone fixed effects and grade fixed effects. We present the results for school effects on suspensions in column (1) and school effects on test scores in column (2). In the second to last row, we present the p-value on an F-test for the joint hypothesis that all the coefficients in each column are equal to zero. Standard errors are clustered at the neighborhood by old school zone level. *** p<0.01, ** p<0.05, * p<0.10

Appendix Table A1. Tests of Covariate Balance by Race and Gender (continued)

	Students of Color Male		Students of Color Female		White Male		White Female	
	Suspensions	Test Scores	Suspensions	Test Scores	Suspensions	Test Scores	Suspensions	Test Scores
Prior-Year Days Suspended	0.002	0.000	0.002	-0.003*	-0.000	-0.001	-0.004	-0.001
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.003)	(0.005)
Prior-Year Test Scores	-0.004	-0.002	-0.001	-0.006	-0.003	0.003	0.004	0.012*
	(0.006)	(0.005)	(0.004)	(0.008)	(0.005)	(0.006)	(0.004)	(0.007)
Black								
Hispanic								
Male								
Special Education	-0.003	0.000	-0.012	0.006	0.010	0.006	0.012	0.020
	(0.006)	(0.010)	(0.008)	(0.019)	(0.008)	(0.012)	(0.014)	(0.020)
Limited English Proficiency	-0.007	-0.015	0.014	-0.010	0.002	0.003	-0.022	0.016
	(0.009)	(0.012)	(0.018)	(0.016)	(0.023)	(0.013)	(0.026)	(0.039)
Elementary School Susp. Indicator	-0.001	0.007	-0.002	0.000	-0.016	-0.013	0.017	-0.010
	(0.006)	(0.008)	(0.008)	(0.011)	(0.010)	(0.010)	(0.016)	(0.036)
P-value for joint hypothesis F-test	0.497	0.764	0.663	0.269	0.610	0.662	0.533	0.512
N	7320	7320	7173	7173	6025	6025	5728	5728

Notes: In this table, we present the results of regressions of school effects on a set of baseline variables. Each regression includes neighborhood by old school zone fixed effects and grade fixed effects. We present the results for school effects on suspensions in column (1) and school effects on test scores in column (2). In the second to last row, we present the p-value on an F-test for the joint hypothesis that all the coefficients in each column are equal to zero. Standard errors are clustered at the neighborhood by old school zone level. *** p<0.01, ** p<0.05, * p<0.10

Appendix Table A2. Tests of Non-Random Attrition

	Remained Enrolled in CMS in 2002-03	**Has Test Score in 2002-03**	**Remained Enrolled in CMS in High School**
Sch. Effect on Suspensions	-0.010	-0.004	0.005
	(0.008)	(0.009)	(0.010)
N	25848	25848	25848

Notes: In this table we present the relationship between assigned school suspension effects and indicators of student attrition. The sample includes all students in grades 5 through 7 in 2001-02 (i.e., the students who should have moved to a middle school in 2002-03). The outcome variable in column (1) is in indicator of enrollment in CMS in 2002-03. The outcome variable in column (2) is an indicator of having a non-missing test score in 2002-03. The outcome variable in column (3) is an indicator on enrollment in CMS in any high school grade. The results are interpreted as the effect of being assigned to a school with a 1 SD increase in estimated school effect on days suspended. Each regression includes neighborhood by 2002 school zone fixed effects. In addition to these fixed effects, all regressions control for lagged achievement on state tests, LEP status, SPED status, gender, race, and grade level. Standard errors are clustered at the neighborhood by old school zone level. * $p < 0.1$ ** $p<0.05$ *** $p < 0.01$

Appendix Table A3. Non-Linear Impacts of Days Suspended on Suspensions, Achievement, Attainment and Crime

	Days Susp.	Days ISS	Days OSS	Susp. Indicator	Test Scores	Dropout	4-Year College	Arrested (16-21)	Incarc. (16-21)	Number Arrests (16-21)	Number Incarc. (16-21)
Sch. Effect Tercile 2	0.724**	0.131	0.593**	0.005	-0.026	0.023	-0.040	0.056***	0.044***	0.269**	0.243***
	(0.289)	(0.108)	(0.233)	(0.023)	(0.047)	(0.023)	(0.034)	(0.022)	(0.015)	(0.116)	(0.089)
Sch. Effect Tercile 3	0.892***	0.182*	0.710***	0.021	0.019	0.035	0.013	0.070***	0.052***	0.302***	0.259***
	(0.315)	(0.093)	(0.271)	(0.023)	(0.050)	(0.025)	(0.035)	(0.021)	(0.013)	(0.107)	(0.082)
N	26246	26246	26246	26246	21153	26246	17275	26246	26246	26246	26246

Notes: In each column we present the coefficients, standard errors, and sample size from a separate estimate of Equation 3, including indicators for school effect terciles. The results are interpreted as the effect of being assigned to a second (or third) tercile a school, relative to a school with suspension effects in the lowest tercile (i.e., the least strict schools). Each regression includes neighborhood by old school zone fixed effects. In this sense, we are comparing students who attended the same school in 2001-02 and lived in the same neighborhood but were assigned different schools in 2002-03. In addition to these fixed effects, all regressions control for lagged achievement on state tests, LEP status, SPED status, gender, race, and grade level. Test scores are the average of students' scores on the math and reading state tests and are standardized across the full sample by year and grade. Standard errors are clustered at the neighborhood by old school zone level. * $p < 0.1$ ** $p<0.05$ *** $p < 0.01$

Appendix Table A4. Impacts of Days Suspended on Crime Outcomes, by Age

	Arrested (16-18)	Arrested (19-21)	Incarc. (16-18)	Incarc. (19-21)	Number Arrests (16-18)	Number Arrests (19-21)	Number Incarc. (16-18)	Number Incarc. (19-21)
Sch. Effect on Suspensions	0.013	0.035***	0.014**	0.017***	0.041**	0.099***	0.045***	0.067***
	(0.008)	(0.008)	(0.006)	(0.006)	(0.018)	(0.025)	(0.015)	(0.021)
N	26246	26246	26246	26246	26246	26246	26246	26246

Notes: In this table we present the relationship between school suspension effects and crime outcomes, by age. We separately examining outcomes that occurred between the ages of 16 and 18 (even columns) and outcomes that occurred between the ages of 19 and 21 (odd columns). The results are interpreted as the effect of being assigned to a school with a 1 SD increase in estimated school effect on days suspended. Each regression includes neighborhood by old school zone fixed effects. In addition to these fixed effects, all regressions control for lagged achievement on state tests, LEP status, SPED status, gender, race, and grade level. Standard errors are clustered at the neighborhood by old school zone level. * $p < 0.1$ ** $p<0.05$ *** $p < 0.01$

Appendix Table A5. Impacts of Days Suspended on Type of Arrest

	Serious Violent Crime Arrest (16-21)	Serious Property Crime Arrest (16-21)	Other Arrest (16-21)	Number of Serious Violent Crime Arrests (16-21)	Number of Serious Property Crime Arrests (16-21)	Number of Other (Non-Serious) Arrests (16-21)
Sch. Effect on Suspensions	0.001	0.018***	0.013**	0.001	0.041**	0.099***
	(0.004)	(0.006)	(0.005)	(0.005)	(0.016)	(0.024)
N	26246	26246	26246	26246	26246	26246

Notes: In this table we present the relationship between school suspension effects and subsequent type of arrest. Serious violent crimes are murder, manslaughter, rape, robbery, and aggravated assault. Serious property crimes are arson, burglary, larceny, and motor vehicle theft. The results are interpreted as the effect of being assigned to a school with a 1 SD increase in estimated school effect on days suspended. Each regression includes neighborhood by old school zone fixed effects. In addition to these fixed effects, all regressions control for lagged achievement on state tests, LEP status, SPED status, gender, race, and grade level. Test scores are the average of students' scores on the math and reading state tests and are standardized across the full sample by year and grade. Standard errors are clustered at the neighborhood by old school zone level. * $p < 0.1$ ** $p<0.05$ *** $p < 0.01$

Appendix Table A6. Impacts of Suspension Likelihood on Suspensions, Achievement, Attainment and Crime

	Days Susp.	Days ISS	Days OSS	Susp. Indicator	Test Scores	Dropout	4-Year College	Arrested (16-21)	Incarc. (16-21)	Number Arrests (16-21)	Number Incarc. (16-21)
Sch. Effect on Pr(Suspend)	0.331**	0.062**	0.269**	0.017**	0.004	0.014	-0.021**	0.026***	0.021***	0.122***	0.092***
	(0.133)	(0.024)	(0.122)	(0.008)	(0.017)	(0.011)	(0.010)	(0.009)	(0.006)	(0.036)	(0.031)
	[0.01]	[0.04]	[0.03]	[0.10]	[0.87]	[0.10]	[0.04]	[0.00]	[0.00]	[0.00]	[0.00]
N	26246	26246	26246	26246	21153	26246	17275	26246	26246	26246	26246

Notes: Within each column and panel, we present the coefficient, standard error, and sample size from a separate estimate of Equation 3. The results are interpreted as the effect of being assigned to a school with a 1 SD increase in estimated school effect on suspension likelihood. Each regression includes neighborhood by old school zone fixed effects. In this sense, we are comparing students who attended the same school in 2001-02 and lived in the same neighborhood but were assigned different schools in 2002-03. In addition to these fixed effects, all regressions control for lagged achievement on state tests, LEP status, SPED status, gender, race, and grade level. Test scores are the average of students' scores on the math and reading state tests and are standardized across the full sample by year and grade. Standard errors are clustered at the neighborhood by old school zone level. Adjusted p-values are reported in square brackets. Specifically, we report False Discovery Rate (FDR) adjusted Q-values computed using the method proposed by Anderson (2008). These are interpreted similarly to p-values from a two-tailed test, and explicitly adjust for the increased likelihood of estimating extreme coefficients when making multiple comparisons.* $p < 0.1$ ** $p<0.05$ *** $p < 0.01$

Appendix Table A7. Impacts by School Effects on ISS and OSS

	Days Susp.	Days ISS	Days OSS	Susp. Indicator	ISS Indicator	OSS Indicator	Test Scores	Dropout	4-Year College	Arrested (16-21)	Incarc. (16-21)	Number Arrests (16-21)	Number Incarc. (16-21)
Days ISS	0.381***	0.085***	0.296***	0.017*	0.022**	0.006	-0.004	0.012	-0.016	0.029***	0.022***	0.145***	0.118***
	(0.117)	(0.029)	(0.109)	(0.009)	(0.010)	(0.006)	(0.019)	(0.012)	(0.010)	(0.007)	(0.005)	(0.036)	(0.029)
N	26246	26246	26246	26246	26246	26246	21153	26246	17275	26246	26246	26246	26246
Days OSS	0.119	0.003	0.116	0.003	-0.010	0.009	0.016	0.023	-0.029**	0.020	0.016*	0.029	0.020
	(0.126)	(0.026)	(0.123)	(0.010)	(0.008)	(0.008)	(0.020)	(0.014)	(0.014)	(0.013)	(0.010)	(0.041)	(0.037)
N	26246	26246	26246	26246	26246	26246	21153	26246	17275	26246	26246	26246	26246
Ever ISS	0.341***	0.060***	0.281***	0.015**	0.016**	0.007	-0.005	0.011	-0.013	0.023***	0.016***	0.128***	0.098***
	(0.113)	(0.023)	(0.107)	(0.007)	(0.007)	(0.006)	(0.018)	(0.013)	(0.010)	(0.007)	(0.005)	(0.037)	(0.030)
N	26246	26246	26246	26246	26246	26246	21153	26246	17275	26246	26246	26246	26246
Ever OSS	0.170	-0.004	0.174	0.009	-0.010	0.017**	0.017	0.021	-0.025*	0.019	0.017*	0.044	0.019
	(0.133)	(0.034)	(0.126)	(0.009)	(0.009)	(0.008)	(0.019)	(0.014)	(0.013)	(0.012)	(0.009)	(0.046)	(0.042)
N	26246	26246	26246	26246	26246	26246	21153	26246	17275	26246	26246	26246	26246

Notes: Each cell presents the coefficient, standard error, and sample size from a separate estimate of Equation 3. The results are interpreted as the effect of being assigned to a school with a 1 SD increase in estimated school effect on days suspended. Each regression includes neighborhood by old school zone fixed effects. In this sense, we are comparing students who attended the same school in 2001-02 and lived in the same neighborhood but were assigned different schools in 2002-03. In addition to these fixed effects, all regressions control for lagged achievement on state tests, LEP status, SPED status, gender, race, and grade level. Test scores are the average of students' scores on the math and reading state tests and are standardized across the full sample by year and grade. Standard errors are clustered at the neighborhood by old school zone level. * p < 0.1 ** p<0.05 *** p < 0.01

Appendix Table A8. Mean Outcomes by Race and Gender

	Days Susp.	Days ISS	Days OSS	Susp. Indicator	Test Scores	Dropout	4-Year College	Arrested (16-21)	Incarc. (16-21)	Number Arrests (16-21)	Number Incarc. (16-21)
Students of Color (N=14,493)	3.76	0.61	3.14	0.33	-0.50	0.16	0.17	0.26	0.18	0.87	0.61
White (N=11,753)	0.83	0.19	0.65	0.11	0.52	0.07	0.30	0.10	0.05	0.21	0.12
Male (N=13,345)	3.20	0.53	2.67	0.29	-0.13	0.14	0.20	0.26	0.19	0.90	0.65
Female (N=12,901)	1.66	0.30	1.36	0.17	0.03	0.10	0.26	0.11	0.06	0.23	0.13
Male Students of Color (N=7,320)	4.82	0.75	4.07	0.40	-0.62	0.19	0.14	0.35	0.27	1.37	1.02
White Male (N=6,025)	1.24	0.27	0.97	0.15	0.46	0.08	0.27	0.14	0.08	0.32	0.19
Female Students of Color (N=7,173)	2.67	0.47	2.20	0.26	-0.39	0.13	0.21	0.16	0.09	0.35	0.20
White Female (N=5,728)	0.41	0.10	0.31	0.06	0.58	0.05	0.32	0.05	0.03	0.09	0.05

Notes: Each cell indicates the mean value of the column heading for the subgroup of our sample indicated in the row headings.

Appendix Table A9. Variation in School Suspension Effects by Suspension Risk Quartile

	Days Susp.	Days ISS	Days OSS	Susp. Indicator	Test Scores	Dropout	4-Year College	Arrested (16-21)	Incarc. (16-21)	Number Arrests (16-21)	Number Incarc. (16-21)
Risk Quartile 1	0.068	0.038	0.030	0.008	-0.002	-0.017	-0.090	-0.006	0.013	0.003	0.029
	(0.112)	(0.031)	(0.110)	(0.012)	(0.018)	(0.016)	(0.057)	(0.013)	(0.010)	(0.024)	(0.022)
Risk Quartile 2	-0.049	0.026	-0.075	-0.005	0.057**	0.014	-0.022	0.024	0.009	0.043	0.010
	(0.097)	(0.028)	(0.094)	(0.011)	(0.024)	(0.020)	(0.028)	(0.020)	(0.011)	(0.042)	(0.022)
Risk Quartile 3	0.401	0.106***	0.296	0.042***	-0.030	0.031*	-0.004	0.050***	0.030**	0.125***	0.071**
	(0.281)	(0.040)	(0.272)	(0.014)	(0.043)	(0.016)	(0.019)	(0.012)	(0.013)	(0.047)	(0.031)
Risk Quartile 4	0.802*	0.145	0.657*	0.014	-0.017	0.027	-0.013	0.036*	0.032**	0.263**	0.242**
	(0.458)	(0.114)	(0.381)	(0.027)	(0.020)	(0.017)	(0.013)	(0.021)	(0.015)	(0.128)	(0.104)
N	26246	26246	26246	26246	21153	26246	17275	26246	26246	26246	26246

Notes: Within each column and for each subsample, we estimate a separate regression of Equation 3. We present the coefficient, and standard error in parentheses. Risk quartiles are defined by generating four equal sized groups of students, based on the predicted number of days suspended. We predict days suspended using student demographics, prior achievement and elementary school suspensions. Quartile 1 indicates students least at risk of suspension; quartile 4 indicates those most at risk. The results are interpreted as the effect of being assigned to a school with a 1 SD increase in estimated school effect on suspension likelihood. Each regression includes neighborhood by old school zone fixed effects. In addition to these fixed effects, all regressions control for lagged achievement on state tests, LEP status, SPED status, gender, race, and grade level. Test scores are the average of students' scores on the math and reading state tests and are standardized across the full sample by year and grade. Standard errors are clustered at the neighborhood by old school zone level. * $p < 0.1$ ** $p<0.05$ *** $p < 0.01$

Appendix Table A10. Relationship Between School Effects and Peer Characteristics

	Mean Baseline Test Scores	Proportion Missing Baseline Test Scores	Proportion Black	Proportion Hispanic	Proportion White	Proportion Male	Proportion SPED In Prior Year	Proportion LEP In Prior Year	Proportion Missing SPED or LEP
Preferred Sch. Effect	-0.009	-0.002	-0.006	0.006	0.005	0.003*	-0.002	0.008	0.001
	(0.032)	(0.005)	(0.032)	(0.007)	(0.032)	(0.002)	(0.004)	(0.009)	(0.004)
Naïve Sch. Effect	-0.128***	0.011	0.095***	0.025***	-0.121***	0.002	-0.000	0.030***	-0.003
	(0.018)	(0.007)	(0.025)	(0.007)	(0.024)	(0.002)	(0.004)	(0.007)	(0.005)
N	26246	26246	26246	26246	26246	26246	26246	26246	26246

Notes: Within each column, we present the coefficient, standard error, and sample size from a separate estimate of Equation 3. The results are interpreted as the effect of being assigned to a school with a 1 SD increase in estimated school effect. Each column contains a different outcome, identified by all other students in the school and year. Each regression includes neighborhood by old school zone fixed effects and grade level indicators. Test scores are the average of students' scores on the math and reading state tests and are standardized across the full sample by year and grade. Standard errors are clustered at the neighborhood by old school zone level. * $p < 0.1$ ** $p<0.05$ *** $p < 0.01$

Appendix Table A11. Decomposition of Variance at School-, Teacher-, Year- and Student-Level

	Days Suspended	Test Scores
School-level standard deviation	0.160	0.090
Within-school teacher-level standard deviation	0.059	0.227
Within-teacher year-level standard deviation	0.312	0.179
Idiosyncratic (student-level) standard deviation	0.815	0.445
Total SD	0.889	0.538
N (student-year-course)	115967	115967

Notes: This table uses student-year-course level data from grades 6 through 8 math and reading classrooms in 2000 and 2001 to estimate the variance at the school, teacher, year, and student-level idiosyncratic error. Each column presents a separate regression. The outcome in the first column is the number of days suspended z-score. The outcome in the second column is the average math and reading z-score. In each column, we report the raw standard deviation of suspension and test score residuals and decompose this variation into components driven by idiosyncratic within-year student-level variation, within-teacher year shocks, and within-school teacher variation, and persistent school-level variation across years. The corresponding variances to the standard deviations in rows 1 – 4 sum to total variance in row 5.

Appendix Table A12. North Carolina (Statewide) Summary Statistics

	Mean	Std. dev.
Test Score	0.000	0.977
Baseline Test Scores	0.004	0.917
Days Suspended	1.372	5.664
Male	0.513	0.500
White	0.523	0.499
Black	0.269	0.443
Hispanic/Latinx	0.131	0.337
Asian	0.027	0.163
American Indian	0.014	0.117
Multiple Races	0.036	0.187
Economically Disadvantaged	0.443	0.497
Limited English Proficiency	0.049	0.217
Grades	6 through 8	
N (student-year)	4810510	

Notes: This table provides descriptive statistics for our sample from NCERDC, which provides students in grades 6 through 8 in North Carolina Public Schools from 2005-06 through 2018-19.

Appendix Table A13. Balance Checks for Principal Value-Added

	Intensive Margin (Value-Added on Days Suspended)		Extensive Margin (Value-Added on Suspended Indicator)	
	Individual Regressions	Joint Model	Individual Regressions	Joint Model
White	-0.071	-1.034	-0.005	-0.028
	(0.482)	(1.169)	(0.012)	(0.027)
Black	-0.021	-1.132	0.002	-0.027
	(0.451)	(1.144)	(0.012)	(0.029)
Hispanic	-0.304	-1.241	-0.003	-0.029
	(0.432)	(0.982)	(0.011)	(0.027)
Asian	0.048	-0.793	-0.016	-0.035
	(0.795)	(1.437)	(0.028)	(0.039)
Baseline Test Score	-0.022	-0.006	-0.005	-0.005
	(0.150)	(0.151)	(0.004)	(0.003)
Limited English Proficiency	-0.677	-0.602	-0.010	-0.010
	(0.831)	(0.846)	(0.020)	(0.022)
Economically Disadvantaged	0.453**	0.452**	0.005	0.004
	(0.186)	(0.203)	(0.007)	(0.007)
Male	-0.340	-0.320	-0.001	-0.001
	(0.451)	(0.473)	(0.010)	(0.011)
Joint hypothesis test p-value		0.296		0.697
N (school-year)	5454	5454	5454	5454

Notes: Standard errors are clustered by school. * p < 0.10 ** p < 0.05 *** p < 0.01

Appendix Table A14. Principal Effects on High School Dropout by Race and Gender

	Black | Hispanic	White | Asian	Male	Female
Panel A: Intensive Margin (Days Suspended)				
PVA	0.011**	0.010***	0.013***	0.006***
	(0.004)	(0.002)	(0.004)	(0.002)
Panel B: Extensive Margin Pr(Suspended)				
PVA	0.008***	0.006***	0.009***	0.005***
	(0.002)	(0.001)	(0.002)	(0.001)
Y Mean	0.058	0.041	0.056	0.04
Controls	Y	Y	Y	Y
N (Student-Year)	431486	603030	526684	507620

Notes: This table presents results of student-year level regressions of dropout indicators on the principal effect of their assigned principal I each of their three years of middle school. We estimate leave-out principal effects using the full panel of North Carolina data from 2005-06 through 2018-19. Student outcomes are restricted to students in North Carolina middle-school cohorts who would have graduated on-time (i.e., 2005-06 through 2011-12). Standard errors are clustered at the school level. * p < 0.1 ** p<0.05 *** p < 0.01

Appendix Table A15. Sensitivity of Main Results to Principal Switches

	Days Susp.	Days ISS	Days OSS	Susp. Indicator	Test Scores	Dropout	4-Year College	Arrested (16-21)	Incarc. (16-21)	Number Arrests (16-21)	Number Incarc. (16-21)
Sch. Effect on Suspensions	0.391**	0.077*	0.315*	0.015	-0.005	0.016	-0.015	0.023*	0.021***	0.131***	0.111***
	(0.188)	(0.040)	(0.173)	(0.014)	(0.023)	(0.010)	(0.011)	(0.013)	(0.007)	(0.047)	(0.036)
N	18833	18833	18833	18833	15180	18833	12397	18833	18833	18833	18833

Notes: Sample includes students in grades 6 through 8 in 2003 who were assigned schools that did not have a new principal. Within each column, we present the coefficient, standard error, and sample size from a separate estimate of Equation 3. The results are interpreted as the effect of being assigned to a school with a 1 SD increase in estimated school effect on days suspended. Each regression includes neighborhood by old school zone fixed effects. In addition to these fixed effects, all regressions control for lagged achievement on state tests, LEP status, SPED status, gender, race, and grade level. Test scores are the average of students' scores on the math and reading state tests and are standardized across the full sample by year and grade. Standard errors are clustered at the neighborhood by old school zone level. * $p < 0.1$ ** $p<0.05$ *** $p < 0.01$

Appendix Table A16. Correlations of Teacher Workforce Survey Items with School-Level Conditional Suspensions

Domain	Item Description	Corr
Community	Parents/guardians are influential decision makers in this school.	-0.73***
Community	This school maintains clear, two-way communication with the community.	-0.58***
Community	This school does a good job of encouraging parent/guardian involvement.	-0.47***
Community	Teachers provide parents/guardians with useful information about student learning.	-0.56***
Community	Parents/guardians know what is going on in this school.	-0.64***
Community	Parents/guardians support teachers, contributing to their success with students.	-0.69***
Community	Community members support teachers, contributing to their success with students.	-0.59***
Community	The community we serve is supportive of this school.	-0.70***
Student Conduct	Students at this school understand expectations for their conduct.	-0.44***
Student Conduct	Students at this school follow rules of conduct.	-0.69***
Student Conduct	Policies and procedures about student conduct are clearly understood by the faculty.	-0.25***
Student Conduct	School administrators consistently enforce rules for student conduct.	-0.28***
Student Conduct	School administrators support teachers' efforts to maintain discipline in the classroom.	-0.35***
Student Conduct	Teachers consistently enforce rules for student conduct.	-0.27***
Student Conduct	The faculty works in a school environment that is safe.	-0.61***
Tchr. Empowerment	Role of teachers: Selecting instructional materials and resources.	-0.32***
Tchr. Empowerment	Role of teachers: Devising teaching techniques.	-0.40***
Tchr. Empowerment	Role of teachers: Setting grading and student assessment practices.	-0.24***
Tchr. Empowerment	Role of teachers: Determining the content of in-service professional development programs.	-0.15***
Tchr. Empowerment	Role of teachers: The selection of teachers new to this school	-0.24***
Tchr. Empowerment	Role of teachers: Establishing student discipline procedures.	-0.22***
Tchr. Empowerment	Role of teachers: Providing input on how the school budget will be spent.	-0.25***
Tchr. Empowerment	Role of teachers: School improvement planning.	-0.17***
Tchr. Empowerment	Teachers have an appropriate level of influence on decision making in this school.	-0.27***
Resources/Facilities	Teachers have sufficient access to appropriate instructional materials.	-0.25***
Resources/Facilities	Teachers have sufficient access to instructional technology, including computers, printers, software and internet access.	-0.07*
Resources/Facilities	Teachers have access to reliable communication technology, including phones, faxes and email.	-0.28***
Resources/Facilities	Teachers have sufficient access to office equipment and supplies such as copy machines, paper, pens, etc.	-0.35***
Resources/Facilities	The reliability and speed of Internet connections in this school are sufficient to support instructional practices.	-0.08*
Resources/Facilities	Teachers have adequate space to work productively.	-0.18***
Resources/Facilities	The school environment is clean and well maintained.	-0.24***
Resources/Facilities	The physical environment of classrooms in this school supports teaching and learning.	-0.28***
Resources/Facilities	Teachers have sufficient access to a broad range of professional support personnel.	-0.17***
Sch. Leadership	There is an atmosphere of trust and mutual respect in this school.	-0.34***
Sch. Leadership	The school leadership consistently supports teachers.	-0.27***
Sch. Leadership	The school improvement team provides effective leadership at this school.	-0.22***
Sch. Leadership	The faculty and staff have a shared vision.	-0.26***
Sch. Leadership	Teachers are held to high professional standards for delivering instruction.	-0.34***
Sch. Leadership	Teacher performance is assessed objectively.	-0.22***
Sch. Leadership	The procedures for teacher evaluation are consistent.	-0.16***
Sch. Leadership	Teachers receive feedback that can help them improve teaching.	-0.14***
Sch. Leadership	Teachers feel comfortable raising issues and concerns that are important to them.	-0.26***
Sch. Leadership	The school leadership facilitates using data to improve student learning.	-0.15***
Sch. Leadership	The faculty are recognized for accomplishments.	-0.26***
Tchr. Leadership	Teachers are recognized as educational experts.	-0.30***
Tchr. Leadership	Teachers are trusted to make sound professional decisions about instruction.	-0.29***
Tchr. Leadership	Teachers are relied upon to make decisions about educational issues.	-0.25***
Tchr. Leadership	Teachers are encouraged to participate in school leadership roles.	-0.29***
Tchr. Leadership	The faculty has an effective process for making group decisions to solve problems.	-0.20***
Tchr. Leadership	In this school we take steps to solve problems.	-0.27***
Tchr. Leadership	Teachers are effective leaders in this school.	-0.36***

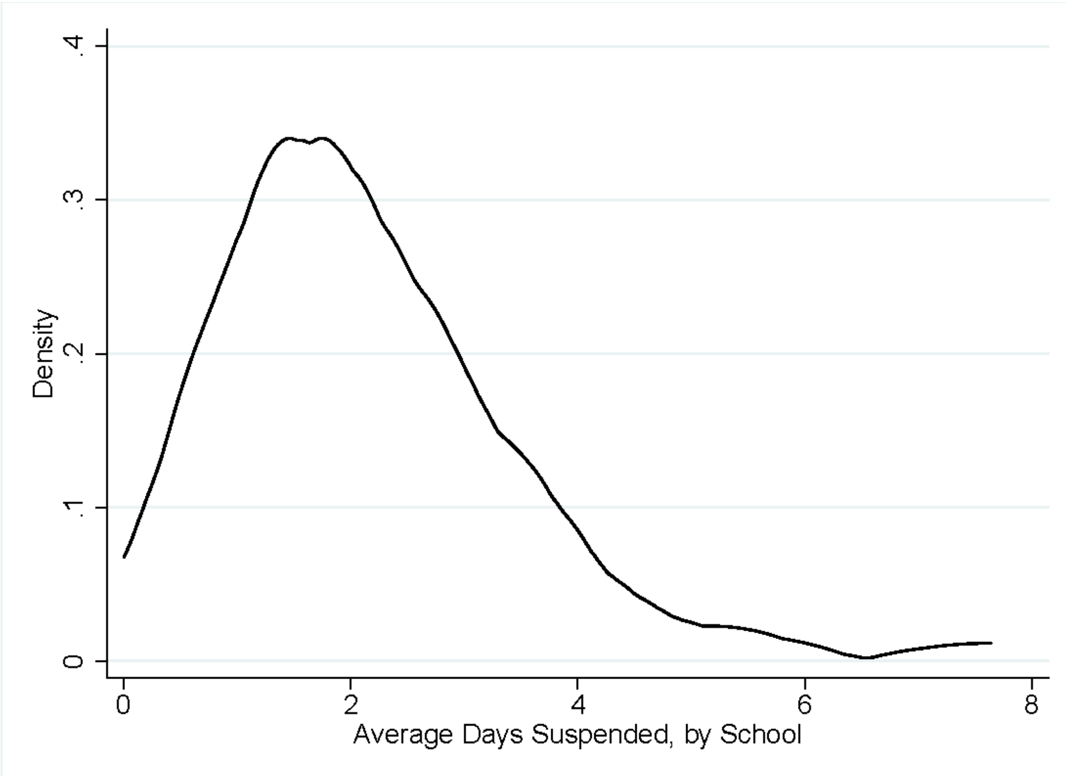
Notes: Sample includes 878 schools serving students in grades 6 through 8. Each row presents an item from North Carolina's 2010, 2012, and 2014 teacher workforce survey. The six domains come directly from the surveys themselves. We present correlations between average responses across all teachers within a school and school-level residual suspensions from 2010, 2012, and 2014. Correlations are weighted by the number of students in the school. * $p < 0.1$ ** $p<0.05$ *** $p < 0.01$

Appendix Table A17. Correlations of Indices from the Teacher Workforce Survey with Conditional Suspensions.

	Conditional Suspensions	Community Connection	Resources and Facilities	Student Conduct	School Leadership	Teacher Empowerment	Teacher Leadership
Conditional Suspensions	1.00						
Community Connection	-0.69***	1.00					
Resources and Facilities	-0.26***	0.51***	1.00				
Student Conduct	-0.47***	0.73***	0.60***	1.00			
School Leadership	-0.28***	0.66***	0.61***	0.81***	1.00		
Teacher Empowerment	-0.30***	0.61***	0.58***	0.69***	0.82***	1.00	
Teacher Leadership	-0.29***	0.68***	0.62***	0.76***	0.93***	0.88***	1.00

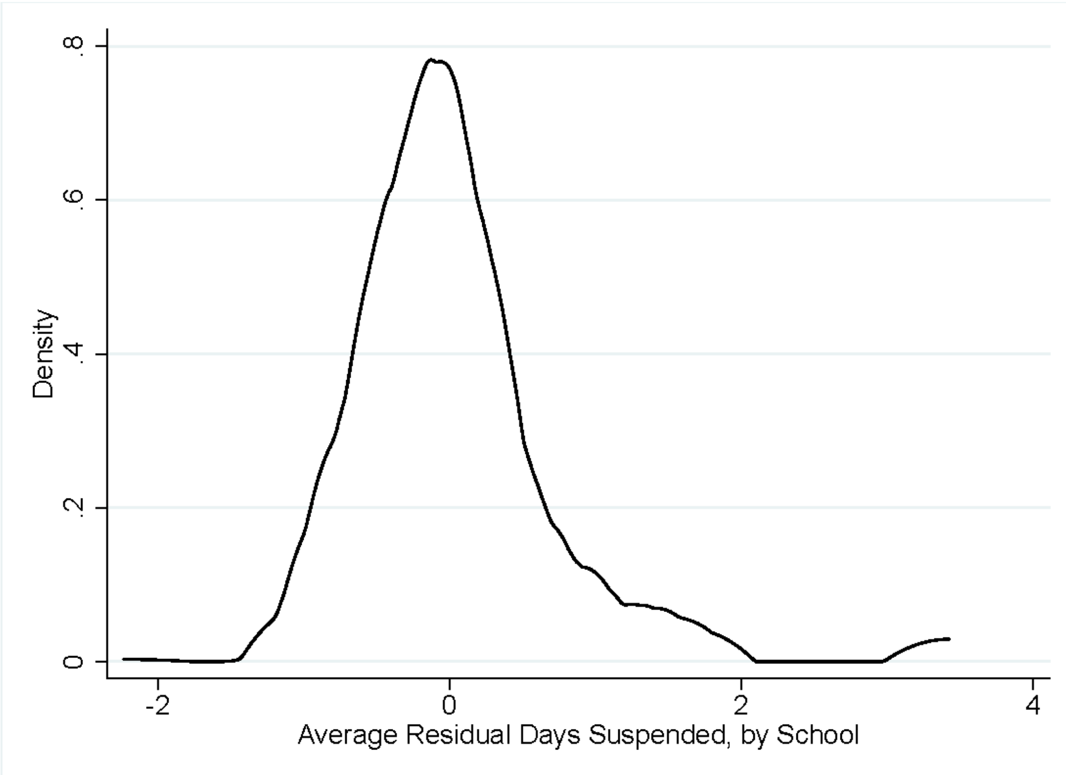
Notes: Sample includes 878 schools serving students in grades 6 through 8. We present correlations between six school-level indices from North Carolina's biennial teacher workforce survey and school-level residual suspensions. The six domains come directly from the surveys themselves. Data come from 2010, 2012, and 2014. Correlations are weighted by the number of students in the school. * $p < 0.1$ ** $p<0.05$ *** $p < 0.01$

Appendix Figure A1. Distribution of Average Days Suspended, by School



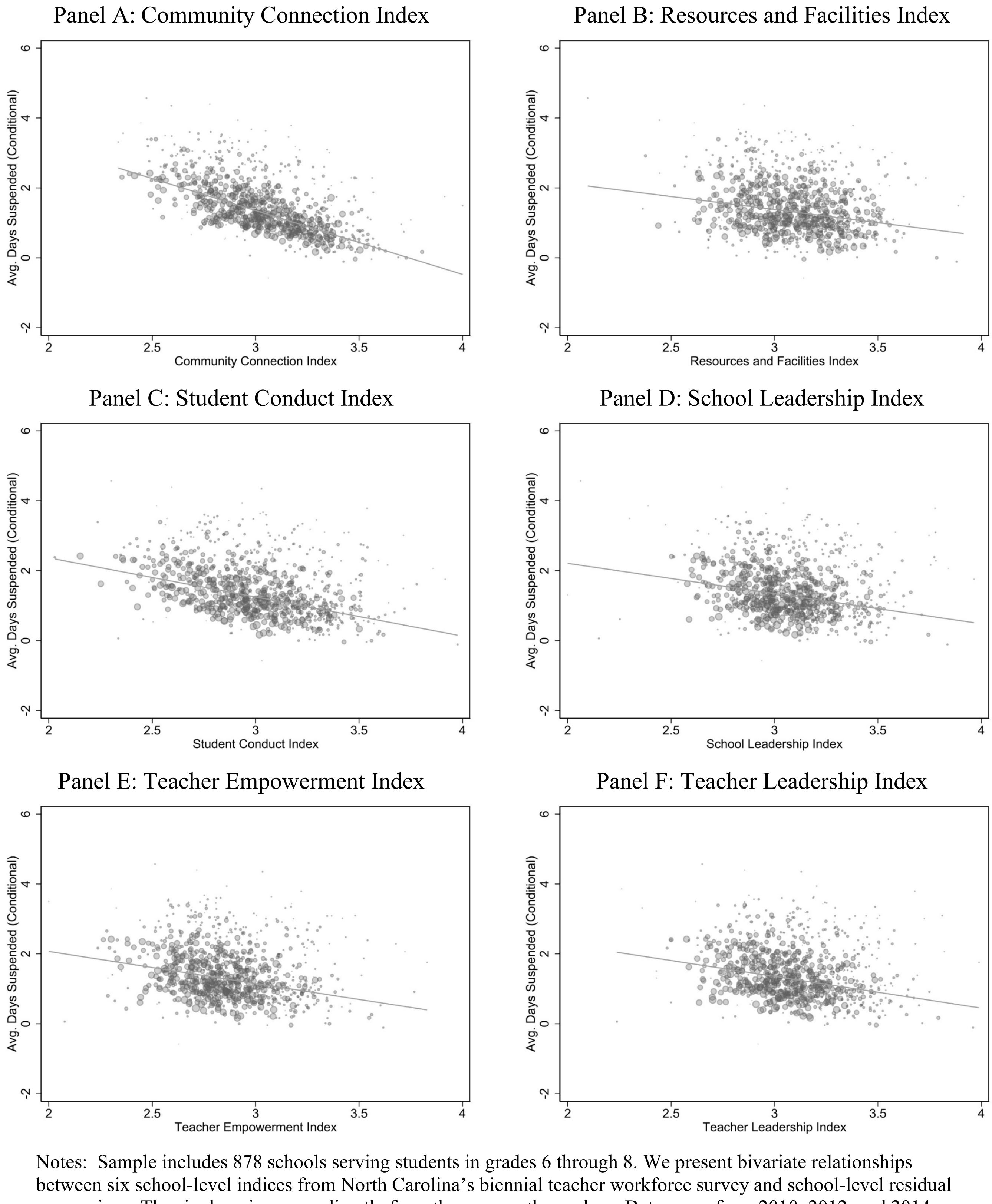
Notes: This figure plots the distribution of average number of days suspended, weighted by the number of students in each school. Sample includes all schools serving students in grades 6 through 8 in 2003. The distribution has a mean of 2.158 and standard deviation of 1.332.

Appendix Figure A2. Distribution of Average Residual Days Suspended, by School



Notes: This figure plots the distribution of average residual number of days suspended, weighted by the number of students in each school. Residuals are calculated at the student-level, by conditioning on student demographics, baseline test scores, grade, and year. Sample includes all schools serving students in grades 6 through 8 in 2003. The distribution has a mean of 0.029 and standard deviation of 0.719.

Appendix Figure A3. Relationship between Suspensions and School Climate Measures



Notes: Sample includes 878 schools serving students in grades 6 through 8. We present bivariate relationships between six school-level indices from North Carolina's biennial teacher workforce survey and school-level residual suspensions. The six domains come directly from the surveys themselves. Data come from 2010, 2012, and 2014. OLS best-fit lines are weighted by the number of students in the school.