



Working Paper:

# The Fifth Indicator: Does School Climate Provide New Information on School Quality?

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ESSA requires that states add a fifth indicator to their accountability systems. The indicator must be a non-academic measure of “school quality or student success”. Several states chose school climate hoping to highlight strengths of schools struggling to meet the academic standards. Leveraging data from Virginia, we conduct a primer for design work that states would need should they elect to add school climate to their accountability systems. We confirm that survey-based school climate measures capture different dimensions of school quality and that most schools not meeting academic standards do meet the school climate standard. Our analysis also confirms that these measures are correlated with student characteristics in the same way as the academic measures, although somewhat less strongly.

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## Introduction

States were required by the *Every Student Succeeds Act* (ESSA), the 2015 reauthorization of the Elementary and Secondary Education Act, to add a fifth indicator to their accountability systems that were previously mandated under *No Child Left Behind* (NCLB). The law requires that the fifth indicator be a non-academic measure of “school quality or student success”. This change was in response to criticisms that NCLB’s sole focus on academic measures was harshly punishing already failing schools and vulnerable student populations (Korte, 2015). The non-academic fifth indicator was intended to highlight strengths of schools struggling to meet the existing system’s academic standards.

Proponents of the non-academic indicator reason that the new indicators are essential to understanding the school as a whole and its ability to foster student learning and development (Blank, 2016), while critics argue the new requirements will continue to punish historically underperforming schools, as non-academic measures will not adequately differentiate schools from traditional accountability measures (Battenfeld, 2015). The tension between these beliefs poses an interesting, policy-relevant question: will this additional indicator provide information about school quality above and beyond what we already know from traditional measures?

States were allowed to choose their fifth indicator, and several chose school climate. The benefit of incorporating school climate into accountability systems is that it characterizes the environment in which students learn. In doing so, these measures pinpoint specific areas of improvement on which schools can focus (Temkin & Harper, 2017). A limitation of school climate measures from a design perspective is that it can be challenging to identify a well-defined and achievable goal against which a school’s quality can be assessed (Schanzenbach, Bauer, & Mumford 2016). Another limitation is a pragmatic one: few states had pre-existing data on school climate to facilitate the quick action that the law required. This lack of data has made it difficult to assess school climate’s viability as a source of new information about school quality.

Virginia, however, provides such an opportunity. The Virginia Department of Criminal Justice Services (DCJS) and the Virginia Department of Education (VDOE) have administered the Virginia Secondary School Climate Survey since 2013, alternating yearly between middle and high schools. These data are well-suited, for several reasons, to helping us develop an understanding of school climate as a potential school quality indicator. First, the surveys capture four domains of students’ learning environment: engagement, relationships, expectations, and safety. Second, prior analyses have confirmed that the survey’s measures of each of these domains are valid and reliable

(Konold, Cornell, Huang, Meyer, Lacey, Nekvasil, Heilbrun, & Shukla, 2014) as required by ESSA. Third, this anonymous survey has no state-imposed consequences to the school and school-level results are not publicly reported, suggesting these measures are less prone to issues of social desirability bias (Lelkes, Krosnick, Marx, Judd, & Park, 2012).

In this analysis, we leverage these data from Virginia to begin to determine whether school climate has added value to states' accountability systems. We ask the following three research questions:

1. Do school climate measures capture different aspects of school quality than the academic state accountability measures?
2. Do school climate measures provide different (i.e., divergent) signals about school quality than the academic accountability measures? What percentage of school (not) meeting accountability standards receive a (positive) negative signal from the school climate measures?
3. How does the likelihood that a school receives a divergent signal about school quality vary with characteristics of the school's students? Among schools that do (not) meet accountability standards, how does the likelihood of receiving a (positive) negative signal from the school climate measures vary with the concentration of specific student subgroups?

Our analysis relies on several assumptions about how Virginia might incorporate school climate data and, thus, should be viewed as a primer for design work that Virginia and other states would need to conduct should they elect to add school climate data to their accountability systems.

## **Relevant Literature**

The current standards-and-accountability movement was jumpstarted in Charlottesville, Virginia, in 1989 at the Education Summit President George H. W. Bush hosted with governors. Over the next decade, momentum built behind a systemic reform movement which called for setting standards for students' academic performance, assessing their performance relative to those standards with standardized exams, and holding schools accountable for that performance (Elmore & Rothman, 1999; O'Day & Smith, 1993; Smith & O'Day, 1991). This culminated with the *No Child Left Behind Act* that required each state to annually test students in grades 3 through 8 in mathematics and reading and design an accountability system that uses those exams to reward schools that meet standards and sanction schools that do not. The goal was to ensure that all students, regardless of their background, meet the performance standards. While the evidence suggests school accountability had some positive effects on student performance in mathematics (Figlio & Loeb,

2011), the implementation of these policies left inequities largely unchanged (O'Day & Smith, 2016). Achievement gaps persist among Black, Hispanic, and White students and between economically and non-economically disadvantaged students (U.S. Department of Education, 2018a, 2018b).

Incorporating other indicators of school quality into school accountability systems could help close these achievement gaps if they incentivize schools to improve factors under their control that influence student achievement. A large body of research supports school climate as one of those factors. Dimensions of school climate such as academic expectations, student-teacher relationships, student engagement, disciplinary rules, and safety are predictive of student education outcomes such as academic achievement (Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Cornell, Shukla, & Konold, 2016; Lee & Smith, 1999; MacNeil, Prater, & Busch, 2009), dropout (Croninger & Lee, 2001; Pellerin, 2005), and absenteeism and truancy (Pellerin, 2005). Together these dimensions characterize the social and emotional conditions of the environment in which students learn.

While the literature supports school climate as an indicator of school quality, it also suggests that a student's likelihood of attending a school with a healthy school climate is correlated with the student's background in the same manner. Black and Hispanic students have less favorable perceptions of school climate than White students, even within the same school, on a number of dimensions including engagement, relationships with adults, and safety (Bottiani, Bradshaw, & Mendelson, 2016; Koth, Bradshaw, & Leaf, 2008; Voight, Hanson, O'Malley, & Adekanye, 2015). Given these student-level relationships, it is not surprising that schools with healthy school climates have higher proportions of White students and lower proportions of Black students than do schools with unhealthy school climates (De Pedro, Gilbreath, & Berkowitz, 2016).

In this study, we connect these literatures on test-based accountability and school climate to begin to understand how a state's decision to include school climate as the fifth indicator in its school accountability system might play out.

### **Data and Analytic Strategy**

Our sample includes the Virginia public high schools that participated in the 2015-16 survey (N=320) and the middle schools that participated in the 2016-17 survey (N=372). The school participation rates for these surveys were 99 and 98 percent, respectively (Cornell, Huang, Datta et al., 2016; Cornell, Huang, Konold et al., 2017). Each school chose to either select a random sample of 25 students per grade to complete the survey or surveyed all students. The student response rates

were 86 and 83 percent, respectively (Cornell et al., 2016; Cornell et al., 2017). To these survey data, we link the following school quality measures from Virginia’s school accountability and accreditation system for these two years: school-level passage rates on statewide exams in English, mathematics, science, and history, high schools’ graduation and completion rate, and schools’ fully accredited status. To be fully accredited, a school must meet all of Virginia’s accountability standards. We also merge in school-level demographic data such as race and ethnicity, economic disadvantaged status, and English learner status. (See Table 1 for descriptive statistics.)

{Insert Table 1 here}

School climate, while often talked about as a single construct, is almost always operationalized as a series of measures. We examine eight school-level measures of school climate culled from the survey, two from each of the four domains. Seven of the eight measures are average student responses across multiple survey questions—emotional engagement and academic engagement under the engagement domain, relationships with students and students’ willingness to seek help from adults under the relationships domain, school discipline structure and academic expectations under the expectations domain, and prevalence of teasing and bullying under the safety domain. The second safety measure we examine is a single question capturing the degree to which students feel safe at school. We also create an aggregate school climate measure that is the simple average of the eight standardized school-level measures. Reducing the eight measures into a single measure of school climate has particular appeal for states who, in designing their accountability systems, place a premium on simplification.

We created the school-level school climate measures by averaging student responses to the school level. The surveys captured student perceptions of school climate using a four-point response scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree)<sup>1</sup> such that higher values indicate healthier school climates. The school-level measures have means around 3.0, indicating students feel positively about their school’s climate. Students feel most positively about their academic engagement and least positively about their school’s discipline structure and the prevalence of teasing and bullying. For our analysis, we standardized each measure.

We employ various bivariate statistics to answer our three research questions. To assess whether the school climate measures capture dimensions of school quality different than the test and graduation measures (first research question), we calculate pairwise correlations between the school

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<sup>1</sup> We reverse code the prevalence of teasing and bullying questions so that, like all the other measures, high values indicate healthy school climate; in this case, low prevalence of teasing and bullying.

climate and accountability measures. Small correlations indicate the school climate measures capture new information whereas large correlations indicate they do not.

Our remaining research questions require that we identify a threshold for the minimum level of school quality acceptable on each continuous measure from the accountability system and the school climate survey. Virginia, of course, identifies these thresholds on the accountability measures for us. To be fully accredited, a school must have at least a 75 percent pass rate in English, a 70 percent pass rate in each of the other subjects, and (if applicable) at least an 85 percent high school graduation and completion rate. Eighty-four percent of the schools in our sample were fully accredited.

As for the school climate measures, Virginia's Board of Education, while having expressed an interest in including school climate measures in their accountability system, has not yet provided explicit guidance on how they might be incorporated. We set the threshold at the 20<sup>th</sup> percentile for the purposes of this exploration. We considered two things in making this decision. First, we assume the Board would be under pressure to both set a threshold that is not too low such that every school is initially found to have a healthy climate but also not too high that a politically intolerable high number of schools are labeled as having unhealthy climate. Second, the thresholds the Board has set on other measures suggest a comfort with identifying 20 percent of schools as not meeting a given standard. Up to 24 percent of schools have not met individual standards in the past and up to 31 percent of schools have not been fully accredited. And, in fact, Virginia chose the 20<sup>th</sup> percentile as the baseline target for student subgroup academic achievement in its ESSA-mandated revisions to its accountability system. For completeness, we also explore setting the thresholds at the 5<sup>th</sup> and 10<sup>th</sup> percentiles. (See Table A1 in the online appendix for the values of each measure at these three thresholds.) We apply these thresholds to the continuous school climate measures (including the aggregate school climate measure) to create a set of indicator variables for a school having a healthy school climate.

To assess whether the school climate measures provide new (i.e., divergent) information than the accountability system (our second research question), we cross-tabulate the healthy school climate indicators with schools' full accreditation status as identified by Virginia's contemporaneous accountability system. We are interested in two statistics: the percent of fully accredited schools that do not meet a healthy school climate standard and the percent of schools not fully accredited that do meet a healthy school climate standard. The former represents new negative information on school quality, and the later represents new positive information. In addition to these, we calculate the

percent of all schools receiving a divergent signal and the percent of those divergent signals that are negative. We will contextualize these findings by placing them in the range of possible results given that 84 percent of schools currently receive a positive signal from Virginia's accountability system.

Having identified which schools for whom school climate provides new information about their school quality, we examine whether a school's likelihood of receiving a divergent signal (positive or negative) on school quality differs with the student population the school serves (our third research question). We begin by assigning schools to quartiles based on a single student body characteristic and then calculate the same statistics as for our second research questions for each quartile.

## **Results**

In Virginia, as with many other states, fully accredited schools are observably different than those that are not (see Table 1). The student body at the average fully accredited school compared to the average non-fully accredited school has a much higher concentration of White students (62.6 versus 34.5 percent) and a much smaller concentration of Black students (17.7 versus 46.8 percent) and economically disadvantaged students (37.4 versus 59.8 percent). They also have smaller concentrations of Hispanic students and English Learners although the differences are less stark. Students at the average fully accredited school also judge their school's climate to be healthier (0.6 standard deviation units). This difference in school climate is driven primarily by the emotional engagement, prevalence of teasing and bullying, and "I feel safe" measures.

Advocates of adding a fifth indicator argued it would add new information on school quality to state accountability systems. Our results suggest that school climate does just that. The correlations between the school climate and accountability measures (Table 2) are small on average (0.27), and only 9 percent of them are greater than 0.5. These moderate correlations, all less than 0.56, involve two of the nine school climate measures: emotional engagement and "I feel safe at this school." On the other hand, the correlations among the school climate measures themselves and the correlations among the accountability measures themselves tell a very different story. These correlations are much higher, 0.70 on average, with 91 percent exceeding 0.5 (see Tables A2 and A3 in the online appendix). Taken together, the high correlations among the school climate measures and among the accountability measures indicate that each set of measures captures an aspect of school quality, but the low correlations between the two sets of measures indicate they capture

different aspects of school quality. Incorporating these school climate measures into Virginia's accountability system can broaden its definition of school quality.

{Insert Table 2 here}

Any change to a state's accountability system that is intended to broaden the definition of school quality ought to generate new signals about school quality. This divergent information could be positive (a signal of acceptable quality for schools previously judged to be of unacceptable quality) or negative (a signal of unacceptable quality for a school previously assessed as being of acceptable quality). To assess the rates of divergent information, we convert the school climate measures to dichotomous indicators of school quality and compare this signal to the school's full accreditation status.

When the threshold for healthy school climate is set at the 20<sup>th</sup> percentile, the overall school climate indicator produces divergent information on school quality for 22.8 percent of all schools (see Table 3, row 1, column 1). Almost three-fifths of these divergent signals, 59.5 percent, are negative, i.e. fully accredited schools receive a signal that they have an unhealthy school climate (row 1, column 2). Schools, by construction, are only at-risk for one type of divergent signal. Fully accredited schools can only receive a negative divergent signal, and non-fully accredited schools can only receive a positive divergent signal. While the majority of the divergent signals is negative, a non-fully accredited school is meaningfully more likely to receive a new positive signal (58.7 percent, row 1, column 3) about its quality than is a fully accredited school to receive a new negative signal (16.1 percent, row 1, column 4). There is some variation in these statistics across the school climate measures.

{Insert Table 3 here}

A full interpretation of the statistics in Table 3 requires placing them within the range of possible values. Each of these statistics is constrained by the fact that 84 percent of schools are fully accredited and that 20 percent of schools will have their school climate identified as unhealthy when the threshold is set at the 20<sup>th</sup> percentile. The share of schools receiving a divergent signal (22.8 percent) is just shy of the three-fifths mark between the minimum and maximum percent possible, 4 and 36 percent. And, while the fact that 59.5 percent of the divergent signals are negative, this is at the low end of the range of the possible percentages, 56 to 100 percent. The aggregate school climate measure, in other words, is close to producing the maximum amount of positive signal. Both of the conditional percentages (columns 3 and 4) are also at roughly the three-fifths mark between the minimum and maximum possible values (0-100 percent and 5-24 percent, respectively).



Dropping the threshold for healthy school climate to the 10<sup>th</sup> or the 5<sup>th</sup> percentiles mechanically generates fewer divergent signals and these divergent signals skew heavily toward the positive (see Tables A4 and A5 in the online appendix). At the 5<sup>th</sup> percentile, fully accredited schools have a very low risk of receiving a new negative signal (3-5 percent across the school climate indicators) while almost all non-fully accredited schools will receive a new positive signal (82-96 percent across the indicators).

Our findings to this point confirm that school climate measures do capture a dimension of school quality not captured by the test-based and graduation indicators of Virginia's accountability system and that school climate measures will generate divergent signals about school quality. What remains to be discovered is how schools that receive a divergent signal compare to schools that do not. The hope among proponents of non-test-based accountability measures is that they will provide positive signals of school quality for schools serving higher proportions of disadvantaged groups.

School climate is related to student characteristics in the same manner that the test-based accountability measures are. Students in schools serving more advantaged student populations report healthier school climates than do students in schools serving less advantaged student populations. Take the concentration of economically disadvantaged among a school's students, for example. Moving up the quartiles of economically disadvantaged status from schools with the lowest to the highest concentrations, the shares of schools fully accredited decreases from 100 to 61.3 percent while the shares of those receiving a positive signal from the aggregate school climate measure falls from 95.4 to 69.4 percent (Table 4, columns 1 and 2).

Despite this, many of the schools with the highest concentration of student poverty (i.e., more than 55.2 percent of students economically disadvantaged) would benefit from the inclusion of a school climate indicator. The majority (61.3 percent) of the divergent signals on school quality generated by the school climate indicator for these schools is positive (column 4). Among those non-fully accredited, 56.7 percent have a healthy school climate (column 5). Conversely, only 22.6 percent of fully accredited schools have an unhealthy school climate (column 6).

{Insert Table 4 here}

The patterns with respect to schools' percentage of White students are almost the mirror image of those for student poverty. Similar patterns, by and large, are present when schools are divided into quartiles based on their concentration of Black students with some notable differences. Schools with the highest concentration of Black students (i.e., more than 34.5 percent Black) would benefit less from adding school climate to the accountability system compared to schools with the

highest percentages of economically disadvantaged students. Slightly more than half (55.5 percent) receive a positive signal of school quality from the school climate indicator. Less than half (47.4 percent) of the new signals it generates are positive. Finally, a fully accredited school is almost as likely to receive a negative divergent signal of its school quality than is a non-fully accredited school to receive a positive divergent signal (40.0 versus 49.3 percent).

Given the skewed distribution of the concentration of Hispanic students and English Learners, we only show the first and fourth quartiles. The patterns are generally similar to those for the concentration of economically disadvantaged students, with one exception. While higher percentages of either Hispanics or English Learners are also associated with a lower likelihood of being fully accredited (column 1), it is also associated with a *higher* (not lower) likelihood of having a healthy school climate (78.6 vs. 85.5 percent for percent Hispanic and 75.3 versus 89.6 percent for percent English Learners, column 2).

## **Discussion**

ESSA's requirement that states add a fifth non-academic indicator to their accountability systems was intended to ensure that those systems would capture aspects of school quality that the test-based measures do not. Several states selected a measure of school climate, and other states, like Virginia, have expressed interest in doing the same. Our analyses confirm that Virginia's Secondary School Climate Survey produces measures that do reflect different dimensions of school quality not captured by the state's legacy test passage rates and graduation and completion index. Converted to an indicator, these survey measures identify a majority of non-fully accredited schools as having a healthy school climate. These are encouraging results for any state considering incorporating survey-based school climate measures into their accountability systems.

Less encouraging perhaps is the fact that these measures are correlated with student characteristics in the same way as the test-based measures, although somewhat less strongly. A criticism of test-based accountability systems is that they punish schools for serving poor students. The school climate measures we study are vulnerable to these criticisms as well. Non-fully accredited schools with higher concentrations of disadvantaged and vulnerable students are less likely than schools with lower concentrations of these students to be labeled as having a healthy school climate. Similarly, fully accredited schools with higher concentrations are more likely to be labeled as having an unhealthy school climate. Schools serving poor and minority students can benefit from the

incorporation of school climate measures, but they will benefit less than schools serving more advantaged students. This will likely be true for most measures of school quality, however.

Schools that serve poor and minority students face a set of challenges that other schools do not. The amount and type of resources needed to provide these students with a quality education also differ. With resources perennially in limited supply, these schools are, on average, of lower quality than schools serving more advantaged student populations. It is, therefore, unlikely that a school quality measure exists that will bestow greater benefits on schools serving disadvantaged and vulnerable population. Such a measure would lack face validity as it would appear to ignore the reality that the schools that struggle the most to provide a quality education serve more disadvantaged students than schools that struggle less. A more realistic goal is to find a measure that is less skewed in favor of the more advantaged schools. Our findings show that the relationship with the percent of economically disadvantaged students is less skewed than the test-based measures, but the relationship with percent black is mostly unchanged. Whether this is enough of a difference to be incorporated into a state's accountability system is a decision a state will need to make.

There are additional decisions which states must also make. One challenge is selecting a threshold value to distinguish between healthy and unhealthy school climate. We chose the 20<sup>th</sup> percentile based on the process Virginia has used to set other thresholds. In order to provide schools with a clear and consistent benchmark, this value should serve as the threshold in future survey administrations rather than re-identifying the 20<sup>th</sup> percentile value with each administration. Another option would be for states to convene a group of experts (researchers and educators) to determine the threshold.

In our design primer, we make no assumptions about how our school climate indicator will be combined with the other indicators to determine a school's accreditation status. Under Virginia's system in place during the years we analyze, a school must satisfy all indicators in order to be fully accredited. Adding school climate measures to that system would mean that some fully accredited schools could lose their accreditation and all schools non-fully accredited would remain so. Virginia's recent redesign moved away from this all-or-nothing approach.

Virginia's current school accountability system assesses a school's performance on each indicator at one of three levels. A school that meets or exceeds the indicator's standard is rated at Level One. Schools that are near the standard or make sufficient improvement toward the standard are rated at Level Two. Level Three is reserved for schools below the standard and not making sufficient improvement. To be fully accredited, all the school-quality indicators for the school must

be at Level One or Level Two. Even within such a system, Virginia and other states might want to treat these school climate measures differently.

The measures we examine here are based on student surveys. While this is a very common way to assess school climate, states should consider treating survey-based measures differently than other measures. When respondents are aware of the high stakes connected to the surveys, their responses can change. Students may feel pressure, implicitly or explicitly, from themselves or from their principal, teachers, or parents to describe their school in more positive terms than they would absent such pressure. This weakens the case that a survey-based measure is an objective indicator of school quality. Several high-profile cases of cheating on tests demonstrate the pressure some schools feel from state accountability systems. Yet, whereas there are ways to detect cheating on tests, detecting less-than-truthful answers to a survey is much more difficult given that the survey is asking students for their opinions. Opinions might not be based on fact or reflect reality, but they cannot be wrong.

As states continue to adjust their accountability systems, careful attention needs to be paid to the contributions of any potential new measure. If the measure provides no new information on school quality, its inclusion will simply increase the system's administrative burden, thus weakening the system. Redesigning accountability systems in order to more holistically assess school quality is an admirable goal. State efforts in this area will be wasted, however, if they are not accompanied by additional assistance and guidance to schools on how they can improve their performance relative to the accountability standard and thus improve their school's quality. Without a sense that they can improve, schools serving disadvantaged and vulnerable student populations will continue to feel unsupported. They will continue to view their state's accountability system as punishing them on account of the students they serve.

**Table 1.** Descriptive Statistics of the Analytic Sample

	All Schools (N=692)		Fully Accredited (N=583)		Non-Fully Accredited (N=109)	
	Mean	SD	Mean	SD	Mean	SD
<b><i>School Climate Measures (Cronbach's alpha)</i></b>						
Emotional Engagement ( $\alpha=0.70$ )	3.0	0.2	3.0	0.2	2.8	0.2
Academic Engagement ( $\alpha=0.71$ )	3.4	0.1	3.4	0.1	3.4	0.1
Adult Respect for Students ( $\alpha=0.73$ )	3.0	0.2	3.0	0.2	2.9	0.2
Students' Willingness to Seek Help ( $\alpha=0.68$ )	3.1	0.1	3.1	0.1	3.1	0.1
School Discipline Structure ( $\alpha=0.74$ )	2.6	0.1	2.6	0.1	2.6	0.1
Academic Expectations ( $\alpha=0.88$ )	3.2	0.1	3.2	0.1	3.2	0.1
Prevalence of Teasing and Bullying ( $\alpha=0.82$ )	2.5	0.2	2.6	0.2	2.3	0.2
I Feel Safe (single item)	3.0	0.3	3.0	0.2	2.7	0.2
School Climate Aggregate ( $\alpha=0.94$ ) <sup>a</sup>	0.0	0.8	0.1	0.8	-0.5	0.7
<b><i>Accountability Measures (%)</i></b>						
English Pass Rate	82.7	9.6	85.2	6.8	69.1	11.1
Mathematics Pass Rate	81.4	10.3	83.9	7.4	68.1	12.8
History Pass Rate (N=689)	86.1	8.5	87.9	6.4	76.8	11.4
Science Pass Rate (N=690)	82.9	9.6	85.4	7.0	69.7	11.7
Graduation and Completion Index (GCI) (N=319)	92.4	7.6	92.9	6.8	86.2	12.5
Fully Accredited <sup>b</sup>	84.2		100.0		0.0	
<b><i>School Characteristics (%)</i></b>						
Economically Disadvantaged (ED)	40.9	20.4	37.4	19.5	59.8	14.1
White	58.3	26.8	62.6	24.2	34.5	27.6
Black	22.2	22.9	17.7	18.4	46.8	28.2
Hispanic	10.5	11.8	10.2	10.9	12.7	15.5
Other <sup>c</sup>	9.0	8.0	9.6	8.5	5.9	3.7
English Learners (EL)	8.4	13.7	7.9	12.4	11.4	19.1

<sup>a</sup> This is an average of the eight (standardized) school climate measures.

<sup>b</sup> Another 11 percent of schools are partially accredited.

<sup>c</sup> Other race includes American Indian/Native Alaskan, Asian, Native Hawaiian/ Pacific Islander, and multi-race.

**Table 2.** Correlations of Accreditation and School Climate Measures

	<b>English</b>	<b>Math</b>	<b>History</b>	<b>Science</b>	<b>GCI</b>
	<i>Test Pass Rates</i>				
School Climate Aggregate	0.24	0.39	0.45	0.35	0.10
Emotional Engagement	0.39	0.51	0.56	0.51	0.31
Academic Engagement	-0.02	0.20	0.26	0.11	0.05
Respect for Students	0.12	0.30	0.37	0.26	0.03
Willingness to Seek Help	0.13	0.26	0.30	0.20	-0.10
School Discipline Structure	0.06	0.23	0.30	0.17	0.07
Academic Expectations	0.02	0.27	0.34	0.18	0.14
Prevalence of Teasing and Bullying	0.46	0.38	0.42	0.41	-0.02
I Feel Safe	0.45	0.48	0.52	0.52	0.13

**Table 3.** Divergent Signals on School Quality by School Climate Measure when Healthy School Climate Threshold set to the 20<sup>th</sup> Percentile

	<b>% of Schools Receiving Divergent Signal</b>	<b>% of Divergent Signals that are Negative</b>	<b>% of Non-Fully Accredited Schools Receiving Positive Divergent Signal</b>	<b>% of Fully Accredited Schools Receiving Negative Divergent Signal</b>
	(1)	(2)	(3)	(4)
School Climate Aggregate	22.8	59.5	58.7	16.1
Emotional Engagement	20.2	60.7	50.5	14.6
Academic Engagement	29.5	57.4	79.8	20.1
Respect for Students	24.9	58.7	65.1	17.3
Willingness to Seek Help	23.4	59.3	60.6	16.5
School Discipline Structure	26.9	58.1	71.6	18.5
Academic Expectations	28.0	57.7	75.2	19.2
Prevalence of Teasing & Bullying	19.7	61.0	48.6	14.2
I Feel Safe	18.2	61.9	44.0	13.4
N	692		109	583

**Table 4.** New information generated by the school climate aggregate measure by school characteristic quartile

	<b>% of Schools Fully Accredited</b> (1)	<b>% of Schools Receiving Positive Signal from School Climate</b> (2)	<b>% of Schools Receiving Divergent Signal</b> (3)	<b>% of Divergent Signals that are Positive</b> (4)	<b>% of Non-Fully Accredited Schools Receiving Positive Divergent Signal</b> (5)	<b>% of Fully Accredited Schools Receiving Negative Divergent Signal</b> (6)
<b><i>% Economically Disadvantaged</i></b>						
Q1: < 26.1%	100.0	95.4	4.6	0.0	----	4.6
Q2: < 41.4%	94.8	82.1	20.8	19.4	77.8	17.7
Q3: < 55.2%	80.8	72.7	30.2	36.5	57.6	23.7
Q4	61.3	69.4	35.8	61.3	56.7	22.6
<b><i>% Black</i></b>						
Q1: < 5.0%	94.2	90.1	15.7	37.0	100.0	10.5
Q2: < 13.2%	94.8	92.5	11.6	40.0	88.9	7.3
Q3: < 34.5%	90.2	81.6	20.1	28.6	58.8	15.9
Q4	57.8	55.5	43.9	47.4	49.3	40.0
<b><i>% White</i></b>						
Q1: < 37.3%	60.3	63.2	35.1	54.1	47.8	26.7
Q2: < 60.4%	87.9	82.1	23.1	37.5	71.4	16.4
Q3: < 81.1%	96.0	85.0	15.6	14.8	57.1	13.9
Q4	93.0	89.5	17.4	40.0	100.0	11.3
<b><i>% Hispanic</i></b>						
Q1: < 3.3%	86.7	78.6	24.3	33.3	60.9	18.7
Q4: > 12.5%	82.1	85.5	19.7	58.8	64.5	9.9
<b><i>% English Learners</i></b>						
Q1: < 1.0%	88.5	75.3	27.0	25.5	60.0	22.7
Q4: > 9.0%	84.4	89.6	17.9	64.5	74.1	7.5

*Note:* Quartiles defined on the full sample.



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**APPENDIX: ONLINE SUPPLEMENTAL MATERIALS**

**Table A1.** Values of School Climate Measures at the 20<sup>th</sup>, 10<sup>th</sup>, and 5<sup>th</sup> Percentiles

<b>Measure</b>	<b>20<sup>th</sup> Percentile</b>	<b>10<sup>th</sup> Percentile</b>	<b>5<sup>th</sup> Percentile</b>
Emotional Engagement	2.86	2.75	2.67
Academic Engagement	3.55	3.55	3.55
School Discipline Structure	2.70	2.68	2.65
Academic Expectations	3.32	3.30	3.29
Respect for Students	3.11	3.11	2.88
Willingness to Seek Help	3.25	3.25	3.23
Prevalence of Teasing and Bullying	2.75	2.71	2.46
I Feel Safe	3.18	3.18	3.18
School Climate Aggregate	0.00	0.30	0.57

**Table A2.** Correlations among School Climate Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Emotional Engagement	1.00								
(2) Academic Engagement	0.51	1.00							
(3) School Discipline Structure	0.76	0.58	1.00						
(4) Academic Expectations	0.68	0.71	0.74	1.00					
(5) Respect for Students	0.80	0.62	0.86	0.81	1.00				
(6) Willingness to Seek Help	0.72	0.60	0.74	0.75	0.83	1.00			
(7) Prevalence of Teasing and Bullying	0.68	0.32	0.61	0.49	0.67	0.61	1.00		
(8) I feel safe	0.85	0.40	0.68	0.59	0.76	0.71	0.76	1.00	
(9) School Climate Aggregate	0.89	0.70	0.88	0.85	0.94	0.88	0.76	0.85	1.00

**Table A3.** Correlations among Accountability Measures

	(1)	(2)	(3)	(4)	(5)
(1) English Pass Rate	1.00				
(2) Mathematics Pass Rate	0.70	1.00			
(3) History Pass Rate	0.61	0.70	1.00		
(4) Science Pass Rate	0.80	0.75	0.75	1.00	
(5) Graduation and Completion Index	0.51	0.49	0.55	0.61	1.00

**Table A4.** Divergent Signals on School Quality by School Climate Measures when Healthy School Climate Threshold Set to the 10<sup>th</sup> Percentile

	<b>% of Schools Receiving Divergent Signal</b>	<b>% of Divergent Signals that are Negative</b>	<b>% of Non-Fully Accredited Schools Receiving Positive Divergent Signal</b>	<b>% of Fully Accredited Schools Receiving Negative Divergent Signal</b>
School Climate: Aggregate	19.2	35.3	78.9	8.1
Emotional Engagement	16.9	33.3	71.6	6.7
Academic Engagement	22.7	37.6	89.9	10.1
Respect for Students	18.4	34.6	76.1	7.5
Willingness to Seek Help	18.1	34.4	75.2	7.4
School Discipline Structure	22.4	37.4	89.0	9.9
Academic Expectations	21.5	36.9	86.2	9.4
Prev. of Teasing & Bullying	15.8	32.1	67.9	6.0
I Feel Safe	15.2	31.4	66.1	5.7
N	692		109	583

**Table A5.** Divergent Signals on School Quality by School Climate Measure when Healthy School Climate Threshold Set to the 10<sup>th</sup> Percentile

	<b>% of Schools Receiving Divergent Signal</b>	<b>% of Divergent Signals that are Negative</b>	<b>% of Non-Fully Accredited Schools Receiving Positive Divergent Signal</b>	<b>% of Fully- Accredited Schools Receiving Negative Divergent Signal</b>
School Climate: Aggregate	16.8	18.1	87.2	3.6
Emotional Engagement	15.0	14.4	81.7	2.6
Academic Engagement	19.7	22.8	96.3	5.3
Respect for Students	17.6	19.7	89.9	4.1
Willingness to Seek Help	17.9	20.2	90.8	4.3
School Discipline Structure	19.7	22.8	96.3	5.3
Academic Expectations	19.5	23.0	95.4	5.3
Prev. of Teasing & Bullying	16.2	17.0	85.3	3.3
I Feel Safe	15.3	15.1	82.6	2.7
N	692		109	583