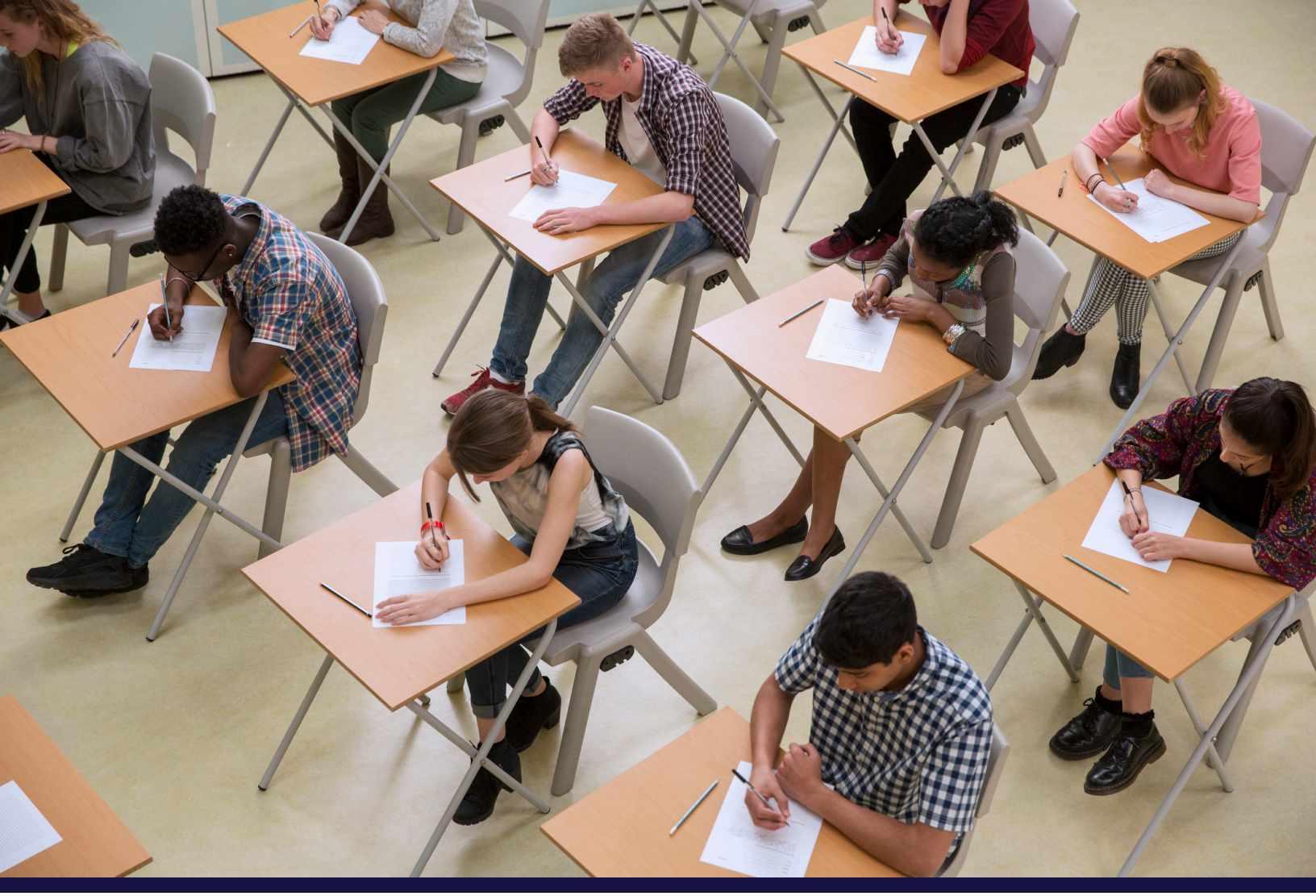

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Understanding the Link: The Correlation Between Student Mindsets and Chronic Absenteeism

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Abstract

This paper investigates the factors contributing to chronic absenteeism among students in U.S. schools utilizing data from Panorama Education. The analysis incorporates descriptive statistics, multilevel logistic regression, and correlational analyses to explore the relationship between chronic absenteeism and student and school-level factors. The findings indicate that while student attributes are significantly correlated with chronic absenteeism, schools also play an important role. Additionally, survey responses regarding school safety, climate, and student-teacher relationships were correlated with chronic absenteeism rates, with variations across different grade levels. The study underscores the importance of addressing school environment and relationships in mitigating chronic absenteeism and provides practical recommendations for collecting and using data to inform interventions.

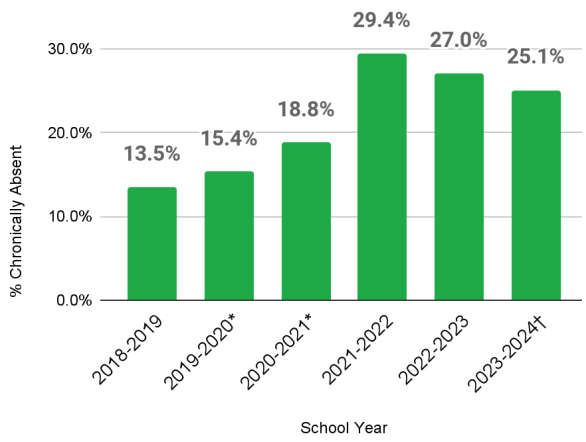
Introduction and Background

Chronic absenteeism, defined as missing 10% or more of school days, has grown since the pandemic. This escalation, described as a "crisis" and the "new normal," has made chronic absenteeism a high priority for researchers, advocates, trade unions, state legislators, and, of course, school and district leaders.

National Context

Utilizing Panorama's unique national data, we are able to provide some broad context for the state of chronic absenteeism in the United States. Our full sample of data containing complete attendance information includes over 7,000 schools representing over 11 million student and year records. Figure 1 shows the annual chronic absenteeism rates over time, which have notably increased since the pandemic in 2020 and have been near or over double the rates preceding the pandemic. Rates in the 2019-20 and 2020-21 school years are likely suppressed due to relaxed attendance policies.

Figure 1. *National Chronic Absenteeism Rates Over Time*



* Attendance data and policies were likely inconsistent during these years during the onset of the COVID-19 pandemic.
† 2023-24 only reflects data through May 31st, 2024.

When looking at chronic absenteeism across all grades (see Table A1), the rates of chronic absenteeism have increased across all grade levels and seemingly peaking in the 2022-23 school year. These figures parallel other findings for chronic absenteeism in the United States.

Understanding the Root Causes of Chronic Absenteeism

The simple truth is that the root causes of chronic absenteeism are hard to identify. Kearney and Graczyk (2022) described this challenge as complex, heterogeneous, and opaque.

- Chronic absenteeism is *complex* because the root causes can stem from family, community, student, and school factors. Pragmatically, only school factors and maybe a subset of student factors, are within the locus of control of school and district leaders.
- Chronic absenteeism is *heterogeneous* because absences can be both excused and unexcused. Research suggests that unexcused absences are associated with lower test scores while excused absences are not (Pyne, 2021). Conversely, unexcused absences (i.e., truancy) may be more malleable to interventions and school attendance strategies, and excused absences may not be (Liu & Lee, 2022).
- Lastly, chronic absenteeism is *opaque* because educators are not always aware of the family and community challenges students' may be facing. "Many factors underlying absenteeism appear to emanate outside of school" and may be related to student physical and mental health, socio-economic disparities and housing instability, community safety, and transportation (Hamlin, 2021, p. 317).

Addressing Chronic Absenteeism

The negative impacts of chronic absenteeism are well documented. Students who are chronically absent tend to perform worse on standardized tests, are more likely to drop out, and often have challenges later in life such as unemployment (see Liu & Lee, 2022 for a summary of the negative impacts of chronic absenteeism). However, research demonstrates there are no easy solutions:

- Early warning systems can accurately flag students with attendance challenges early in the school year (Stuit et al., 2016), but do not tell educators how to address needs. Recent evidence shows that these tools alone may have small to negligible direct effects on improving attendance, and effects may be minimal for students from low socio-economic backgrounds (Canbolat, 2024).
- Directly incentivizing students with symbolic awards has been shown to have null and negative effects on attendance (Robinson et al., 2021).
- One-way messaging to families about students' attendance has been shown to have small positive impacts on attendance when done in a specific manner[1] (Robinson et al., 2018; Rogers & Feller, 2018). Such approaches "are low-cost and easy-to-implement practices", but are unlikely to have large impacts in schools with high chronic absenteeism

[1] Family messaging that (a) includes up-to-date information about children's attendance relative to classmates, (b) targets misbeliefs and the potential negative impact of absences, and (c) provides resources and recommendations for addressing the challenge has been shown to have small effects on attendance (Robinson et al., 2018; Rogers & Feller, 2018).

rates (Singer, 2024). Further, they note these approaches may have downstream negative effects on family-school relationships because of the reliance on one-way communication that families can find punitive.

- Mentoring, home visits, and approaches that lean into community resources can be beneficial in a multitude of ways such as building positive relationships between students, families, and schools (see Jacob & Lovett, 2017 for a summary of different approaches). However, these case management approaches can be quickly overwhelmed, particularly when upwards of 30% or more of students are chronically absent.

Policies Require School and District Leaders to Focus on Attendance

Many federal and state policies require school and district leaders to address attendance challenges. A few are listed below, bearing in mind that policy makers are continuing to add additional pressure as 58 absenteeism bills were introduced by state legislators in 25 states during 2024 alone.

- Per guidelines within the Every Student Succeeds Act (ESSA), 36 states and Washington D.C. use attendance and chronic absenteeism measures as school quality and student success (SQSS) accountability measures.
- All states have policies that address "the establishment of early warning and intervention systems to address truancy and chronic absenteeism through the provision of non-academic supports" (cited from the NASBE State Policy Database).
- Many states include attendance as part of school funding formulas, placing added pressure on schools to ensure students attend.

School and District Leaders Can Positively Impact Attendance

Research conducted over several decades asserts that, after teachers, school leaders have the largest impacts on student outcomes including reducing absenteeism (Grissom et al., 2021; Leithwood et al., 2004). There are many root causes of chronic absenteeism (see Jacob & Lovett, 2017 for a list of factors associated with chronic absenteeism), and many of these factors are the responsibility of school and district leaders. Improving academic outcomes, the quality of teaching and coursework, school climate and culture, and much more cannot happen without district and school leaders.

- Researchers assessing the value add of school leadership on attendance found significant positive effects for high quality principals on par with their impact on test scores (Bartanen, 2020). Comparing low and high quality school principals, the authors found that the impact of high quality principals was roughly equivalent to an additional 1.4 instructional days for each student in each school.
- A meta-analysis on school leadership, a gold standard form of research for documenting "evidence-based" practices, showed that effective school principals have direct impacts

on student academic achievement, schools' organizational health (e.g., leadership, teacher relationships, use of resources, quality core programing), and teachers' instruction and well-being (Liebowitz & Porter, 2019).

- School principals can have significant impacts on school climate and culture (Grissom & Loeb, 2011)
- School systems are bureaucracies, and effective managers within this system can improve the quality of students' day-to-experiences within school buildings and classrooms (Grissom & Loeb, 2011; Hitt & Tucker, 2016; Marks & Printy, 2003).
- While much less studied, district leaders are critical to success within these bureaucratic systems. District leaders can enact larger structural changes to school systems and enable effective data use (Blazer & Schueler, 2022).

Current Study

Because chronic absenteeism can have many root causes from within and outside school walls, it is helpful to focus on the tools and resources available to district and school leaders. From a pragmatic perspective, what can school and district leaders do to address chronic absenteeism that is feasibly within their locus of control? Subsequently, the study addressed the following research questions:

1. Does the school a student attends relate to the probability of being chronically absent?
2. Using student survey data of more than 30 topics, do responses to questions and topics administered in the fall correlate with end-year chronic absenteeism?

Study Design and Data Analyses

This exploratory study relies on descriptive and correlational analyses. To address the first research question, a multilevel logistic regression analysis was estimated using methods outlined by Gelman and Hill (2007). The final model[2] used random effects for schools, as well as controls for student characteristics, learning needs, and schools' poverty level.

To address the second research question, correlational analyses were conducted. At the school-level, Spearman correlations (r_s) are calculated to estimate the bivariate association between student survey topics administered in the fall of 2022-23 and end-year chronic absenteeism rates (i.e., the percentage of students chronically absent). Focusing on fall survey results provides a possible path forward for school leaders to identify potential signals for

[2] Because of a large percentage of missing data for several covariates, 25 datasets were imputed using a random forest imputation with predictive mean matching using the missRanger package for R (Mayer, 2023; R Core Team, 2022). Subsequently, 25 separate multilevel logistic regression models were estimated using the lme4 package (Bates et al., 2015), and model estimates were pooled using methods outlined by Enders (2010).

absenteeism issues. The correlations in this study are from -1 to 1. Negative values indicate that when one variable increases the other decreases and positive values indicate that when one variable increases the other variable also increases. Zero indicates that the two variables are not related. Values further from zero indicate a stronger relationship between the two variables. We take the absolute value of the correlations and interpret the correlations as small or weak if the correlation is less than 0.2, moderate if the correlation is around 0.5, and large if the correlation is around 0.8 or higher. These thresholds are based on benchmarks suggested by Cohen (1988) for effect sizes that can also be used for correlations.

Data and Measures

Attendance Records, Student Learning Needs, and Demographics

Daily attendance records, English learner (EL) status, special education (SPED) services provided, and demographics were collected from the Panorama Student Success database. Daily attendance data were transformed into 2022-23 chronic absenteeism flags for students who missed 10% or more of the days for which they had attendance records during the same school year. For each school in the sample, chronic absenteeism rates (i.e., the percentage of students chronically absent per school year) were calculated by summing the number of students chronically absent during the 2022-23 school year, and dividing that number by the total students with data in each school. EL, SPED, and race/ethnicity fields were standardized across schools and districts. Using National Center for Education Statistics (NCES) definitions (2023), a school's poverty level was defined as being a mid-high/high poverty school if 50% or more of the students qualified for free or reduced-price lunch (FRPL).

Student, Employee, And Family Survey Topics

Survey topic scores were formed from Panorama surveys completed by students, school employees, and student family members during the fall of the 2022-23 school year[3]. Topic scores were formed by taking the average survey response across all items in a topic for respondents who completed at least half of the published items for that topic. Subsequently, school-level average topic scores were calculated by taking the average topic scores across respondents.

Sample

From the larger national database of school attendance records previously discussed, the final sample includes data from 3,116 schools and 1,734,870 students (see Table B1 for more sample details). Schools were chosen for the sample if they had attendance and academic records for the 2021-22 and 2022-23 school years. Because Student Success can be customized and configured based on client needs, data was retained for schools with attendance and academic

[3] Topics that focused primarily on specific classroom conditions or specific teachers (e.g., classroom teacher-student relationships, classroom climate) were not included in this report. The items for these topics focused primarily on conditions in one classroom rather than assessing perceptions of conditions across the entire school.

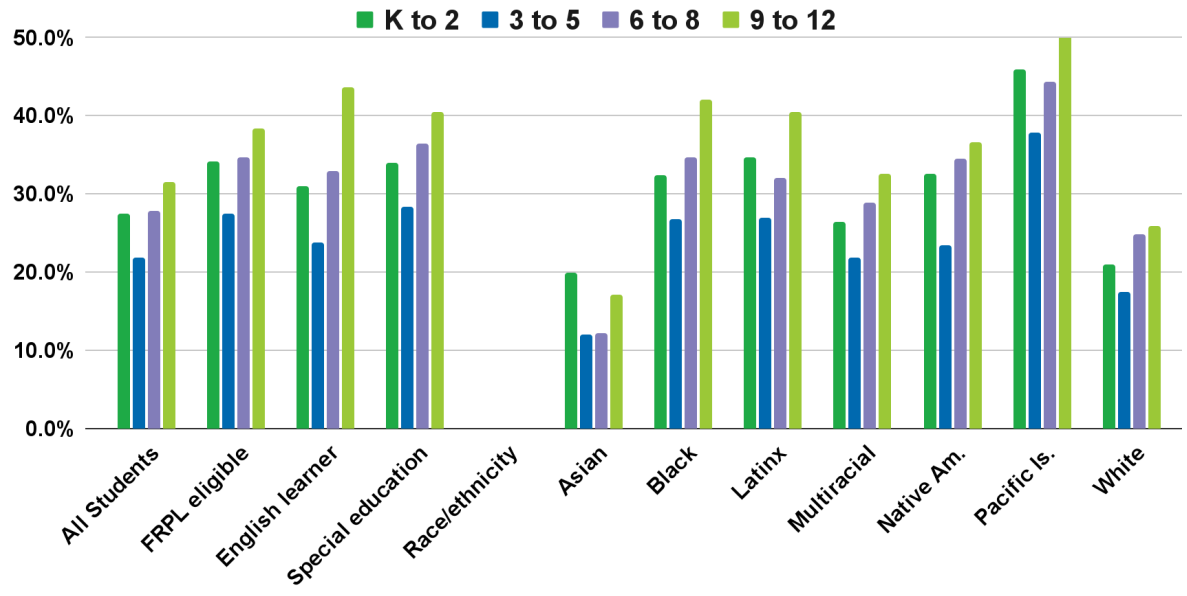
data that could feasibly be compared across school years. The study included schools from 43 states in the Midwest, Northeast, South, and West regions of the United States (see Table B2). Almost 30% of schools were located in urban communities, roughly a third were in suburban (34%) communities, and the remaining 36% were located in towns and rural communities. The majority (53%) of the schools were elementary schools, 20% were middle schools, and 25% were high schools.

For this analysis, students were chosen if they had attendance data for the 2022-23 school year. A small percentage of records were missing some demographic values which were imputed for this analysis and are included in the following description. Approximately 64% of the student sample was enrolled in grades 6 to 12, with the remaining 36% composed of elementary-aged students. 48% of the students attended schools with 50% or more of students qualifying for FRPL (labeled mid-high/high poverty schools). About 18% of students were English learners, and about 23% received special education services. The sample was majority White (46.0%) followed by Latinx (20.9%), Black (12.3%) and Asian (4.4%). Roughly 6% of students were Multiracial, Native American, and Pacific Islander.

Descriptive Findings

For this sample, roughly 28.1% of the students in this study were chronically absent during the 2022-23 school year. As detailed in Figure 2, chronic absenteeism rates varied across grade-bands and student groups (results are also available in Table B3 in Appendix B). FRPL eligible students, English learners (EL), and students receiving special education (SPED) services had higher chronic absenteeism rates compared to the full sample. In this sample, Asian students had lower chronic absenteeism rates compared to White students, whereas all other race/ethnicity groups had higher chronic absenteeism rates than those two groups of students.

Figure 2. *2022-23 Chronic Absenteeism Rates by Grade Band and Student Groups*



Does the School a Student Attends Relate to the Probability of Being Chronically Absent?

The short answer to this question is yes. The school a student attends relates to the probability of being chronically absent, even when controlling for student-specific attributes. As expected, there were many student attributes that are significantly correlated with chronic absenteeism, for instance students receiving special education services were 1.4 times more likely to be chronically absent than general education students and Pacific Islanders are over 2 times more likely to be chronically absent than their white peers (Figure 2; Appendix Table B3). Controlling for these student characteristics and learning needs, as well as the school poverty level, the school attended still influenced the likelihood of a student being chronically absent by as much as 22%[4]. Put differently, after controlling for external factors related to chronic absenteeism, the probability that a student was chronically absent increased or decreased by as much as one-fifth based on the school attended (see Table B4 for detailed findings).

What Survey Topics Correlated With Chronic Absenteeism?

Student Survey Topics

We analyze student survey topics across subsamples of schools in the study for over 30 topics that measured student perceptions of their skills and competencies, school supports and

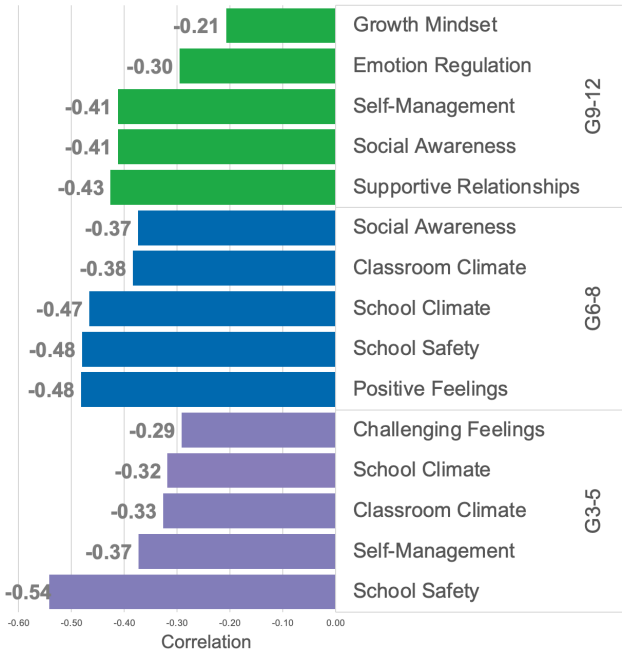
[4] This figure was calculated by taking the square root of the school-level variance, σ^2, and dividing by 4 (see Gelman & Hill, 2007, p. 82).

environments, and well-being. Of all the topics, we include a final set of 15 topics from fall in this analysis as fall scores had relatively stronger correlations with chronic absenteeism at the student and/or school level (see Appendix C for details on how these 15 topics were chosen). This analysis utilized correlations for the school level analysis and only includes results where there were at least 100 or more schools in the data for the fall of 2021-22. Notable trends about the correlations between topic scores and chronic absenteeism are reported here.

At the school level, there are differences in what topics are most correlated with chronic absenteeism.

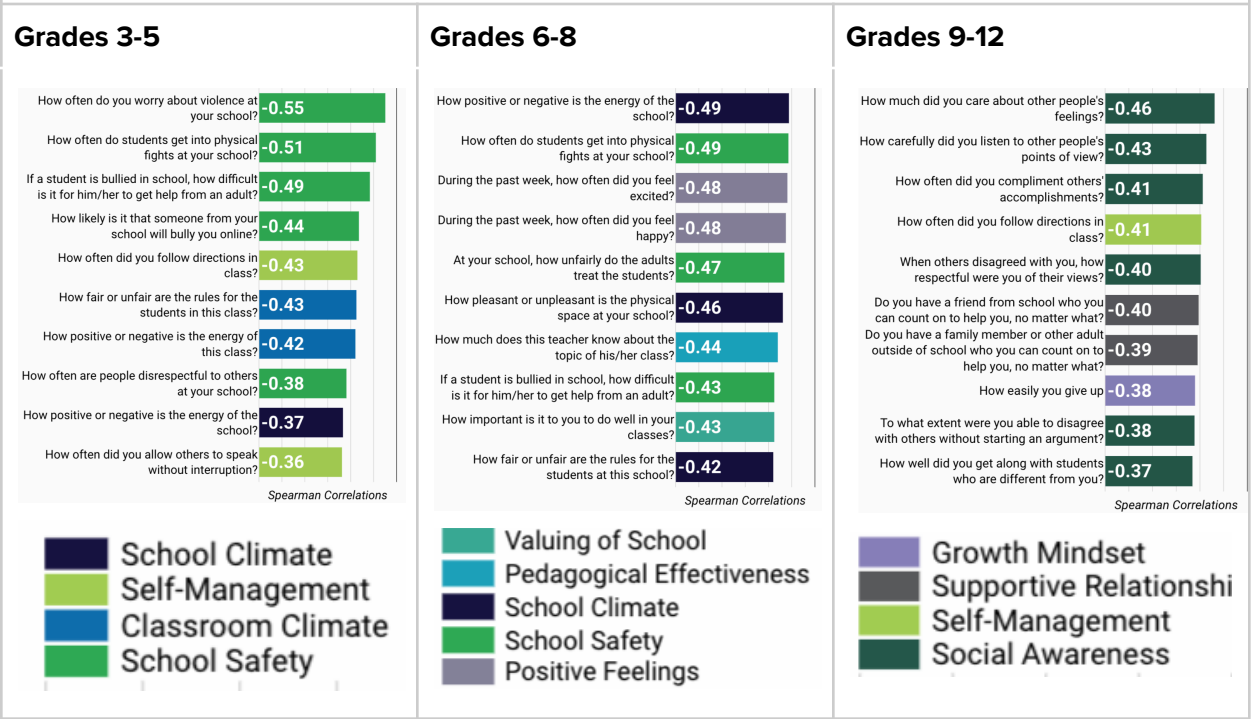
The correlations in Figure 3 comparing each school's percent favorable in Fall on a topic to the share of students who are chronically absent for the 2022-23 school year show a moderate negative correlation that also varied by grade band. For elementary schools, school safety shows a moderate correlation, and also the highest across all topics and grades, with chronic absenteeism. Middle schools similarly show a moderate correlation with school safety but also of equally important were positive feelings and school climate. For high schools, a totally different set of topics showed moderate correlations with chronic absenteeism rates with supportive relationships, social awareness, and self-management most highly correlated with chronic absenteeism rates (See Table B5 for details).

Figure 3. *Fall Topic Score Correlations with End-Year Chronic Absenteeism by Grade Band*



What Survey Items Are Correlated With Chronic Absenteeism?

Figure 4. *Top 10 Items with Highest Correlations with End-Year School Chronic Absenteeism Rates by Grade Level*

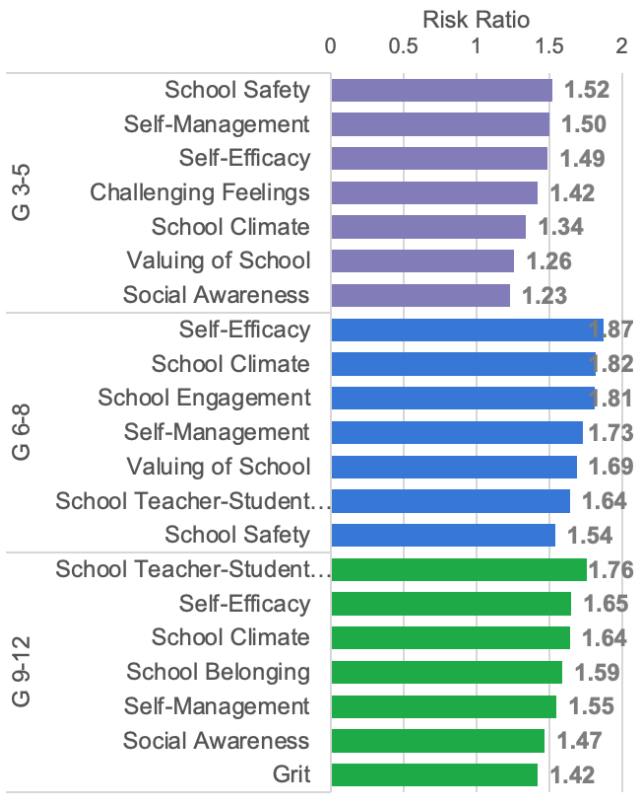


School safety and school climate questions are also the most highly correlated with chronic absenteeism in the school level analyses for elementary and middle school students but are supplanted by social awareness in high school (see Figure 4 above).

When looking at elementary schools' responses to individual questions and the correlation to that school's chronic absenteeism rates, the four questions with the highest correlation are all focused on school safety (with correlations ranging from -0.55 to -0.44) and eight out of the top ten are school safety and school climate related. For middle schools this pattern starts to diminish slightly, as only six of the top ten questions correlated with chronic absenteeism are related to school safety and school climate. More precisely, questions related to physical safety were more correlated with chronic absenteeism in elementary schools while questions related to positive feelings towards school and trusting adult relationships were more correlated by middle school. Questions for these topics are no longer present in the top 10 for high schools where questions related to social awareness make up six of the top ten items correlated with chronic absenteeism.

Risk Ratios and Survey Responses

Figure 5. *Topics with Highest Risk Ratios by School Level and Analysis Level*



The final analysis we present are the "risk ratios" associated with each of the survey topics (Figure 5). For this study, we calculate the risk ratio by comparing the percentage of students chronically absent who rated the topic in the bottom quartile and divide that by the percentage of students chronically absent who rated the topic in the top quartile of the score distribution. This provides a multiplier metric that helps illustrate which topics are of relative importance in anticipating chronic absenteeism.

From this first set of analysis, we highlight some topics with the largest risk ratios (RRs) for each grade-band from the student-level analysis. Across all topics that we analyzed, students in the bottom quartile of the items' responses always reported chronic absenteeism rates greater than those who responded in the highest quartile. Based on the RRs, we see the probability of being chronically absent is substantially larger for students who rated survey topics in the bottom quartiles of the distribution as compared to students whose perceptions were in the highest quartile in fall 2022-23.Comparing students in the lowest quartile to the highest quartile:

<u>Elementary:</u>

Self-efficacy: **1.5X** more likely to be chronically absent
Self-management: **1.5X** more likely to be chronically absent
School safety: **1.5X** more likely to be chronically absent

<u>Middle:</u>

Self-efficacy: **1.9**x more likely to be chronically absent
School climate: **1.8x** more likely to be chronically absent
School engagement: **1.8x** more likely to be chronically absent

<u>High:</u>

School teacher-school relationships: **1.8x** more likely to be chronically absent
Self-efficacy: **1.7x** more likely to be chronically absent
School climate: **1.6x** more likely to be chronically absent

Implications and Recommendations for School and District Leaders

This study supports two important key findings about chronic absenteeism. First, findings showed that the probability of a student being chronically absent was, in part, a function of the school attended. Second, schools with a high reported level of concern around safety and low school climate were correlated with higher percentages of chronically absent students

How can school and district leaders understand high rates of chronic absenteeism?

This study documented that schools with lower average scores on a number of survey topics in the Fall tended to have higher chronic absenteeism rates for the rest of the school year. Importantly, though, these specific school characteristics varied by grade level. Pragmatically, these findings suggest that improvement strategies to tackle attendance challenges should try to target some root causes outlined in this research.

School Safety

- This study documents the strongest correlation between chronic absenteeism in elementary schools with the lowest reported sense of school safety. Notably at this youngest age level, questions about physical safety above all else are leading indicators of if a school would have higher levels of chronic absenteeism for the school year. While school safety continues to be important for middle schools, the specific questions show a shifting priority from physical safety to adults providing safe spaces.

Positive School Climate and Relationships

- Aligned with prior research (Gubbels et al., 2019; Hamlin, 2021), this study finds that chronic absenteeism is related to perceptions of school climate. Lower perceptions of school climate, whether measured at school or student level, correlate with increasing chronic absenteeism, especially for middle schools. For high schools, the extent to which students perceive they have positive relationships with teachers and peers (e.g., school teacher-student relationships, supportive relationships) as well as being positively supportive of their peers (creating and supporting positive relationships within their school) correlated to decreasing chronic absenteeism which aligns with prior research (see Liu & Lee, 2022 for a good summary of engagement research).

Engaging Core Programming

- School engagement, as well as self-management and self-efficacy topics, correlate with chronic absenteeism. Respectively, these topics measure the extent to which students are attentive and invested in school, behaviors associated with school success (e.g., come to class prepared, follow directions, work independently), and their belief they can be successful in school. These findings imply that school programming that is not engaging might contribute to a school or district's chronic absenteeism problem. Bolstering core

programs with curriculum and instruction that teaches and reinforces active participation and involvement in daily classwork and activities, and presents many opportunities to be successful, may help alleviate the ripple effects of low quality programming on student outcomes.

- This study documented correlations between chronic absenteeism and several life skills. Core programs that include a curriculum that bolsters students' emotional regulation, social awareness, and grit have been shown to bolster social skills, as well as improve behavior and academic outcomes (Durlak et al., 2022).

Practical Advice for Choosing Survey Topics for Understanding Chronic Absenteeism

The patterns of findings reported in the previous section provide some practical survey administration direction for school and district leaders who want to use survey measures to better understand their chronic absenteeism challenges.

1. School and district leaders should consider administering different survey topics to elementary, middle, and high school students.
2. School and district leaders should consider utilizing survey items that can help anticipate possible chronic absenteeism at the school and individual level.
    a. For elementary students, we see evidence that school safety is a good indicator for possible chronic absenteeism issues.
    b. For middle school students, school safety continues to be an important indicator but other topics such as self-efficacy and school engagement also have moderate relationships with chronic absenteeism.
    c. For high school students, topics such as student-teacher relationships, self-efficacy and school climate have moderate relationships with chronic absenteeism.

Limitations and Future Study

This analysis provides the first level of analysis that is possible with the data we have on hand. What we do not address but believe is an important next step is how these correlations between chronic absenteeism and life skills survey results vary based on student attributes like race, gender, special education status and English language learning status. Additionally, we hope to explore geographic variations that might be hidden by national level study.

While we believe chronic absenteeism is a vital first step in understanding student outcomes, we do hope to expand this work. We plan to look at the correlations between all of our life skill topics and items with student assessments and academic performance in order to continue to support and guide educators.

Conclusion

When addressing school-level needs, leaning into evidence-based approaches for data-based decision making can help ensure solutions have a chance of improving outcomes (Deno, 2016). High rates of chronic absenteeism are relatively easy to flag, but identifying the root causes of those issues from school to school presents a real challenge. Based on the results of this study and prior research unpacking the mechanisms underlying chronic absenteeism, school and district leaders have additional insights that may help them more holistically address school quality issues that are adding to chronic absenteeism challenges.

Like many real-world challenges, however, chronic absenteeism is probably not going to be ameliorated by choosing one solution in lieu of another. Rather, district and school leaders will probably have to adopt a multi-faceted approach that might incorporate multiple evidence-based approaches, as well as proactive community and family partnering. That said, the results of this study highlight the importance of ensuring the physical and psychological safety felt by our youngest students and supporting high school students in developing meaningful and deep relationships in their schools.

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Appendix A: National Chronic Absenteeism Rates

Table A1. *National Share of Students Chronically Absent by Grade Over Time*

School Year	K	1	2	3	4	5	6	7	8	9	10	11	12
2018-2019	12.9	12.0	10.3	9.5	9.1	8.6	10.1	13.7	15.7	12.4	17.5	20.0	20.5
2019-2020	18.3	14.4	12.9	12.0	12.0	12.2	12.9	15.2	16.8	16.6	18.1	19.1	21.2
2020-2021	17.7	17.9	17.0	16.2	16.5	17.1	16.9	18.9	22.2	20.6	22.1	22.3	20.2
2021-2022	30.5	28.7	26.6	25.0	24.7	24.7	27.8	29.9	31.6	31.7	32.7	33.5	32.8
2022-2023	29.0	25.5	22.6	20.9	20.6	20.4	24.0	27.8	30.4	30.6	32.0	32.3	31.6
2023-2024†	26.4	22.6	20.6	19.3	19.2	19.4	21.6	25.1	27.5	29.0	29.9	30.2	30.0

Table A2. *National Share of Students Chronically Absent by Race Over Time*

School Year	Asian	Black	Latinx	Multiracial	Native American	Pacific Islander	White
2018-2019	7.3	16.9	14.8	15.5	19.7	11.0	13.5
2019-2020	8.8	25.4	17.4	15.9	15.1	22.8	12.8
2020-2021	7.4	31.7	22.2	20.2	25.5	30.4	15.7
2021-2022	18.9	39.0	33.9	30.8	37.4	53.7	25.4
2022-2023	16.0	34.9	35.1	29.6	34.7	45.3	21.6
2023-2024†	14.7	33.2	29.6	27.8	29.6	38.4	20.8

* Attendance data and policies were likely inconsistent during these years during the onset of the COVID-19 pandemic.

† Data for the 2023-24 school year only reflect data through May 31st, 2024.

Appendix B: Detailed Study Results

Table B1. *Descriptive Statistics for Raw and Imputed Data*

	Raw Data	Imputed Data
Sample Size	1,734,870	
Chronically Absent 2022-23	28.1%	
Mid-high/high poverty school	46.6%	48.0%
Grade band		
K to 2	17.7%	17.7%
3 to 5	18.6%	18.7%
6 to 8	24.5%	24.5%
9 to 12	39.2%	39.1%
Student learning needs		
English learner (EL)	15.8%	18.3%
Special education (SPED)	19.1%	22.8%
Race/ethnicity		
Asian	3.9%	4.4%
Black	12.0%	12.3%
Latinx	20.9%	20.9%
Multiracial	2.3%	2.5%
Native American	2.2%	2.5%
Pacific Islander	0.7%	0.8%
White	47.1%	46.0%

Note. Chronically absent was not calculated for the imputed data because the dataset was compiled with data for students who had attendance data from the 2022-23 school year. Mid-high/high poverty schools were defined as schools with 50% or more of students qualifying for free and reduced-price lunch (FRPL).

Table B2: *Distribution of Schools Included in Research Sample*

	# of Schools	% of Schools
U.S. region (there are 7 total regions)		
Midwest	846	32.5%
Northeast	380	14.6%
South	623	23.9%
West	754	29.0%
School locale		
City	765	29.4%
Suburb	889	34.1%
Town	335	12.9%
Rural	615	23.6%
School level		
Elementary	1367	52.5%
Middle	522	20.0%
High	672	25.8%
Other	43	1.7%

Note. 512 (16.4%) of the 3,116 schools could not be joined to the CCD.

Table B3. *2022-23 Chronic Absenteeism Rates by Grade Band and Student Groups*

Student Group	K to 2	3 to 5	6 to 8	9 to 12
All Students	27.5%	21.8%	27.8%	31.5%
FRPL eligible	34.1%	27.4%	34.7%	38.3%
Student learning needs				
English learner (EL)	31.0%	23.8%	33.0%	43.7%
Special education (SPED)	34.0%	28.3%	36.4%	40.4%
Race/ethnicity				
Asian	19.9%	12.1%	12.2%	17.1%
Black	32.4%	26.8%	34.7%	42.0%
Latinx	34.7%	27.0%	32.1%	40.4%
Multiracial	26.4%	21.9%	28.9%	32.6%
Native American	32.6%	23.5%	34.5%	36.7%
Pacific Islander	45.9%	37.8%	44.4%	51.2%
White	21.0%	17.4%	24.9%	25.9%

Table B4. *Multilevel Logistic Regression Model Estimates Predicting Chronic Absenteeism*

	Unconditional Model		Final Model		
	Coefficient	***SE***	**Coefficient**	***SE***	***OR***
Fixed Effects					
Intercept	-1.09***	0.02	-1.75***	0.04	-
Mid-high/high poverty school			0.26***	0.07	1.30
Grade band					
K to 2			0.36***	0.01	1.43
6 to 8			0.23***	0.02	1.25
9 to 12			0.63***	0.04	1.88
Student learning needs					
English learner (EL)			0.06*	0.02	1.06
Special ed. services			0.35***	0.02	1.41
Race/ethnicity					
Asian			-0.39***	0.07	0.67
Black			0.34***	0.02	1.41
Latinx			0.33***	0.02	1.39
Multiracial			0.28***	0.03	1.32
Native American			0.17**	0.06	1.19
Pacific Islander			0.76***	0.09	2.13
Random Effects					
School σ^2	0.91		0.79		
Model Fit					
AIC	1,877,702		1,854,155		
BIC	1,877,727		1,854,328		
Deviance	1,877,698		1,854,127		

Note. All models were estimated using maximum likelihood. The final model was estimated using 25 imputed datasets, and the reported coefficient estimates and standard errors are pooled parameter estimates calculated using methods outlined by Enders (2010). The odds ratio (OR) is the exponentiated coefficient estimate. Mid-high/high poverty schools were defined as schools with 50% or more students receiving free and reduced priced lunch (FRPL). Grade-band was dummy coded with grades 3 to 5 as the reference group. Special ed. services refers to students receiving special education services, typically implying that a student has an individualized education plan. Race/ethnicity was dummy coded with White as the reference category.

Table B5. *School-level Correlations of Fall Average Student Survey Topic Scores with End-year Chronic Absenteeism Rates*

	Grades 3 to 5			Grades 6 to 8			Grades 9 to 12		
Topic	*j*	r_s	RR	*j*	r_s	RR	*j*	r_s	RR
Domain: Skills and Competencies									
Emotion Regulation	821	-0.12	1.20	534	-0.29	1.42	341	-0.30	1.56
Grit	531	0.20	0.70	314	-0.09	1.11	211	-0.13	1.13
Self-Efficacy	694	-0.23	1.28	451	-0.31	1.55	271	-0.20	1.20
Self-Management	817	-0.37	1.76	505	-0.32	1.40	314	-0.41	1.82
Social Awareness	892	-0.21	1.36	583	-0.37	1.59	342	-0.41	1.75
Domain: Supports and Environments									
Cultural Awareness and Action	-	-	-	60	-0.37	1.33	61	-0.35	1.66
Diversity and Inclusion	-	-	-	58	-0.41	2.26	65	-0.09	1.07
School Belonging	854	-0.11	1.20	546	-0.25	1.37	294	-0.17	1.19
School Climate	275	-0.32	1.59	167	-0.47	1.56	87	-0.11	1.20
School Engagement	60	-0.35	1.49	136	-0.28	1.39	71	-0.28	1.45
School Teacher-Student Relationships	-	-	-	184	-0.33	1.38	93	-0.32	1.71
Valuing of School	234	-0.21	1.28	152	-0.25	1.29	63	-0.30	1.60
Domain: Well-being									
Positive Feelings	205	-0.15	1.38	138	-0.48	1.82	88	-0.45	2.13
School Safety	489	-0.54	2.17	318	-0.48	1.91	144	-0.08	0.87
Supportive Relationships	363	-0.19	1.35	241	-0.32	1.52	193	-0.43	1.93

Note. For each grade band and topic, *j* is the number of schools and r_s is the Spearman rank-order correlation between fall topic scores and school chronic absenteeism rates (i.e., the percentage of students chronically absent). RR is the risk ratio comparing the chronic absenteeism rates for schools with average topic scores in the bottom quartile, divided by the chronic absenteeism rates for schools with average topic scores in the top quartile of the score distribution. Panorama does not recommend administering the cultural awareness and action and diversity and inclusion topics for grades 3 to 5, which is why they are not reported here. Student teacher-student relationship is not reported for grades 3 to 5 because the subsample included fewer than 50 schools.

Appendix C: Survey Topic Filtering Process

From over 30 initial survey topics, a final set of 15 topics was chosen to include in this report based on the following process.

The first step filtered topics across three grade bands (i.e., grades 3 to 5, grades 6 to 8, and grades 9 to 12) and two levels of analysis (i.e., student and school levels). A topic was included in this initial filter if it met the inclusion criteria for one of these six grade band/level of analysis groupings.

- At the student level, topics were chosen by grade band (i.e., grades 3 to 5, grades 6 to 8, and grades 9 to 12) if (a) the subsample included at least 500 student responses from at least 50 schools for each grade band (i.e., grades 3 to 5, grades 6 to 8, and grades 9 to 12); and (b) the biserial correlation (r_b) between fall topics scores and end-year chronic absenteeism was less than -0.1.

- At the school level, topics were chosen by grade band (i.e., grades 3 to 5, grades 6 to 8, and grades 9 to 12) if (a) the subsample for each topic and grade band included data from at least 50 schools, and each school administered the survey topic to at least 30 students; and (b) the Spearman correlation (r_s) between fall school-level average topic scores and end-year chronic absenteeism rates (i.e., the percentage of students chronically absent) was less than -0.3.

Subsequently, 19 topics were initially filtered that met the inclusion criteria for at least one of three grade-bands for at least one level of analysis. Of these 19 topics initially filtered, four more topics were excluded from the final reporting.

- 3 topics (challenging feelings, pedagogical effectiveness, and school rigorous expectations) were dropped because these topics met the inclusion criteria for only one grade band and level of analysis.

- One additional topic (school learning strategies) was dropped because the survey questions may be too difficult for younger students. While the school learning strategies met the inclusion criteria for two grade-bands, grades 3 to 5 and grades 6 to 8, at the the student level of analysis, the survey questions were developmentally challenging for students in grades 3 to 5.