

THE RELATION BETWEEN ABSENTEEISM AND STUDENT LEARNING IN A POST-PANDEMIC CONTEXT

PART OF THE LEARNING RENEWAL SERIES

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THE RELATION BETWEEN ABSENTEEISM AND STUDENT LEARNING IN A POST-PANDEMIC CONTEXT

EXECUTIVE SUMMARY

This report, the last in a series on post-pandemic Learning Renewal in Illinois, focuses on the issue of increased student absenteeism in the wake of the pandemic. Previous reports in the series examined trends in student achievement outcomes, district use of emergency pandemic relief funds, district practices related to learning renewal, and the relationship between districts' strategies and achievement recovery. Throughout these reports, student absenteeism—and district responses to absenteeism—emerged as key issues. This report thus spotlights the issue of absenteeism, looking at trends in absenteeism, the relationship between absenteeism and student achievement outcomes, and whether that relationship has shifted following the pandemic (a key question for policy).

This report provides key findings in three areas:

First, we explored the student characteristics that correlated with an increase in absenteeism from pre-to-post pandemic. We found that **Black students saw the largest increase in absenteeism** from 2018-2019 to 2022-2023 (SY19 to SY23, respectively), followed by Latino students. We also saw important differences by grade. Specifically, **students in high school increased their absenteeism by more than 5 days** between SY19 and SY23. Similarly, **students in urban areas, especially in Chicago Public Schools (CPS), greatly increased the number of days they were absent** from school from SY19 to SY23. **Eligibility for Free or Reduced Priced Lunch (FRPL) was another factor** related to the increase in student absenteeism.

Second, we explored the relationship between days of absenteeism and student learning, controlling for student characteristics. We found a negative relationship between absenteeism and student learning. In other words, **with each additional day students are absent from school, their test scores decline, especially in Math**. Increased absenteeism may thus partially explain continued struggles with test scores in the post-pandemic period.

Finally, we identified that the relationship between absenteeism and test scores intensified over time, likely as a consequence of the COVID-19 pandemic and the irregularities it caused for all students. Controlling for student characteristics, **the relationship between test scores and absenteeism remains as strong as, or stronger than, it was pre-pandemic**.

These findings point to the critical importance of improving attendance, particularly for student groups that have been historically marginalized in K-12 schooling and experienced the poorest outcomes during the pandemic. Attendance is central to continued, strong learning recovery in Illinois K-12 schools.

INTRODUCTION

Absenteeism nationally, and in Illinois, increased considerably with the onset of the COVID-19 pandemic both in average attendance rates and proportion of chronically absent students (i.e., students missing more than 10% of the school year). Nationally, in school year 2022-2023 (SY23), 28% of students were chronically absent, up from 15% in SY19, before the COVID-19 pandemic (U.S. Department of Education, n.d.). In Illinois, chronic absenteeism reached 30% in the same time period (Barragan Torres et al., 2024).

Some have posited that this increase in absenteeism is due to changes in parent and student perceptions of the value of regular school attendance in the wake of the pandemic (Dee, 2024). However, not all increases in chronic absenteeism have been equivalent. While all district types saw an increase, higher poverty and lower achievement districts saw higher increases (Malkus, 2024). Unfortunately, it was these districts that already had higher rates of absenteeism before the COVID-19 pandemic (Balfanz & Byrnes, 2012; George, 2019; Malkus, 2024).

As of 2020, 36 states—including Illinois—and the District of Columbia included chronic absenteeism in their accountability systems (Hansen & Quintero, 2020) as part of the Every Student Succeeds Act (ESSA). As such, most studies of absenteeism have focused on chronic absenteeism, which indicates whether a student is absent from school more than 10% of the time. Indeed, chronic absenteeism is a warning indicator for student success (Allensworth et al., 2021) and for absenteeism itself; prior chronic absenteeism contributes the most to further chronic absenteeism even more than student characteristics (London et al., 2016).

Absenteeism rates, on the other hand, refer to the percentage of school days missed by students in a school year. Both measures are helpful, but absenteeism rates can provide more details on the variation of absenteeism, especially for chronically absent students. In addition, absenteeism rates are easy to convert into days of absenteeism, which is an interpretable measure for students, families, and education leaders.

Understanding absenteeism is important because it relates to a number of outcomes. For example, absenteeism is related to disengagement from education (Gottfried, 2014), increases in high school dropout rates (Balfanz & Byrnes, 2012; Hansen & Quintero, 2020), decreases in graduation rates (Balfanz & Byrnes, 2012), lower post-secondary acceptance rates (Tash, 2018), increases in health issues (Henderson et al., 2014), and even higher criminalization rates (Kearney, 2008).

Absenteeism also relates to student test scores, especially in Math and for minoritized students like Black and Hispanic students, students that experience low-income contexts, English Learner students, and students with disabilities (Coelho et al., 2015; Dunlap, 2016; García & Weiss, 2018; Gesherson et al., 2017; Gottfried, 2014; London et al., 2016). In California, London et al. (2016) found that multiple years of being chronically absent led to significantly lower growth in English Language Arts (ELA) and Math test scores. In New Jersey, Dunlap (2016) found a significant relation between test scores and attendance for students in low-income settings. Using data from the National Assessment of Educational Progress (NAEP), García and Weiss (2018) found that missing school more than three days a month decreased test scores in mathematics for eighth graders between -0.3 to -0.6 standard deviations compared to students who did not miss school at all. Similar effect sizes are reported by Coelho et al. (2015) for third grade using the Wisconsin state test, with -0.4 in Math and -0.02 in reading in terms of standard deviations. Gottfried and Ansari (2022) argue that the mechanism through which absenteeism influences learning is through a decline in executive function skills as students with more absences were linked to lower working memory and cognitive flexibility.

Unfortunately, absenteeism is observed with more frequency in some student groups than in others. Black students, Hispanic or Latino students, and students in low-income settings are more likely to be chronically absent (Black et al., 2014; García & Weiss, 2018; George, 2019; Gottfried et al., 2019; Hansen & Quintero, 2020; London et al., 2016). Scholars have also found differences in trends by grade. In kindergarten, London et al. (2016) found that parental education was correlated with chronic absenteeism status as students with parents with a college degree or higher were more likely to attend school regularly. In middle school, free-or-reduced priced lunch (FRPL) status was also related to a higher likelihood of chronic absenteeism (García & Weiss, 2018; London et al., 2016), and chronic absenteeism was higher for those students identifying as Black, Hispanic or Latino, or Native American (García & Weiss, 2018; George, 2019). However, absenteeism is found to be highest among high school students (Allensworth & Easton, 2007; Barragan Torres et al., 2024; George, 2019). Moreover, researchers have found that there is a difference between unexcused absences and excused absences (Gottfried, 2009). Often, as measured by test scores, a higher proportion of unexcused absences is related to decreases in student performance (Gee, 2018; Gottfried, 2009; Liu & Lee, 2022). Notably, Black and Hispanic students, as well as students in low-income settings, are more likely to accumulate unexcused absences at a higher rate (Liu & Lee, 2022).

Factors for absenteeism vary and are classified into four levels: student, family, school, and community (Black et al., 2014). Student-specific factors include low academic performance (George, 2019), anxiety, and negative feelings toward school (Kearney, 2008). Similarly, Derian (2016) found higher chronic absenteeism rates in students dealing with mental and physical health issues. Adding nuance to this student-level view, Freeman et al. (2020) noted different causes for absenteeism at different ages. For example, younger children attend school frequently if their family itself is concerned about school attendance, but older children are impacted more by safety and systemic barriers to attendance (e.g., safe routes to school and consistent public transportation). Specifically for secondary students, Brundage and Castillo (2017) found that chronically absent students reported health and transportation issues, higher personal stress, and/or a preference for activities outside of school.

Family-specific factors that promote absenteeism include low parental involvement, transitions like moving, and additional at-home responsibilities related to low-income contexts (Black et al., 2014). Non-economic family factors include low school-related values. School-related factors include a lack of school facilities, less qualified teachers, living far away from a school, and boredom (Black et al., 2014; Liu & Loeb, 2021). Finally, community-related factors include job opportunities outside of school that do not require formal education, legal status concerns, a lack of social and education support services, unsafe neighborhoods, and lack of transportation to and from school. These latter two have been identified by Kearney (2008) and Derian (2016) as important factors that promote excessive absenteeism.

Understanding the causes and patterns of absenteeism, as well as how they impact student outcomes, is important to promote school attendance. This report explores the student characteristics that correlate with absenteeism. It also explores the relationship between absenteeism and student achievement scores, controlling for student characteristics, and clustering standard errors at the school level. Finally, to understand how the pandemic may have influenced the importance of attendance for student success, we describe how the relation between test scores and absenteeism has changed over time.

METHOD

This report examines (a) how many days, on average, students have been absent each school year from 2018-19 (SY19) to 2022-23 (SY23); (b) what the relationship is between absenteeism and student learning—as measured by test scores, and (c) how that relationship has changed over time, from before to after the pandemic (SY19 to SY23). First, we use descriptive methods to highlight trends in absenteeism for the population of all students in Illinois. Second, we estimate the relationship between test scores and student attendance, and how it changed over time, using student-fixed effects models and linear regression models that control for student characteristics.

Data

We use student-level data obtained through a partnership between our research unit, IWERC at University of Illinois, and the Illinois State Board of Education (ISBE). This dataset includes monthly numbers of days present, days absent and days of school, which we then add to obtain yearly days of instruction and days of absenteeism. The data also includes student characteristics for SY19 through SY23. It also includes student test scores on the annual achievement exam administered by ISBE in the same period, except for SY20 when state testing did not take place. This is the Illinois Assessment of Readiness (IAR) in Grades 3 through 8 and the SAT in Grade 11. Data are composed of the student population in Illinois (2.08 million students in SY19, 1.98 million in SY21, 2.11 million in SY22 and 2.09 million students in SY23) for four years for all Illinois school districts (864 in SY19 and 868 in SY23). The descriptive characteristics of our sample are shown in Table A1 in the Appendix.

Analytic Method

First, we present descriptive graphs to exemplify (1) the changes in absenteeism for different student groups in terms of the average number of days absent each year; and (2) the changes in the relationship between the number of days absent and test scores across different years. We tested for significant differences using ANOVA models with Bonferroni corrections of pairwise comparisons (Haynes, 2013) among groups within each year. All differences were statistically significant unless otherwise indicated in the figures.

Second, to explore changes in the relationship between standardized test scores (IAR and SAT) and absenteeism rates from pre-pandemic to SY23, we estimated linear and panel regression models, controlling for student characteristics—including student fixed effects—and clustered standard errors at the school level.

There are many factors that correlate with both absenteeism and test scores, and therefore making causal claims about the relation between absenteeism and measures of student learning is problematic. However, given the structure of our data for Grades 3 through 8, we are able to use student-fixed effects¹ and control for time-invariant, unobservable measures related to each student, following prior research (Santibañez & Guarino, 2021).

¹Student fixed effects control for unobserved student characteristics that do not change over time, and that are correlated with both absenteeism and test scores. Including these fixed effects provides unbiased estimates of the effect of absenteeism on test scores if we assume that all the potential explanatory variables (including time-varying variables included in the regression) are controlled for. Examples of these factors include gender, race, intelligence, or genetic makeup at the individual level or practices at the school or district level (Yeung, R., & Nguyen-Hoang, 2014).

We also controlled for time-variant (i.e., changeable) characteristics for students, including eligibility for FRPL, English Learner (EL) status, and Individualized Education Program (IEP) status. Variables for grade and year were also included. We used clustered robust standard errors to the school level to account for heteroskedasticity. Student-fixed effects remove variance attributed to non-observable characteristics—such as self-efficacy and grit—and they also capture time-invariant observables such as gender and race/ethnicity. As such, we were not able to include time-invariant variables in our models to avoid overestimation (Giesselmann & Schmidt-Catran, 2022).

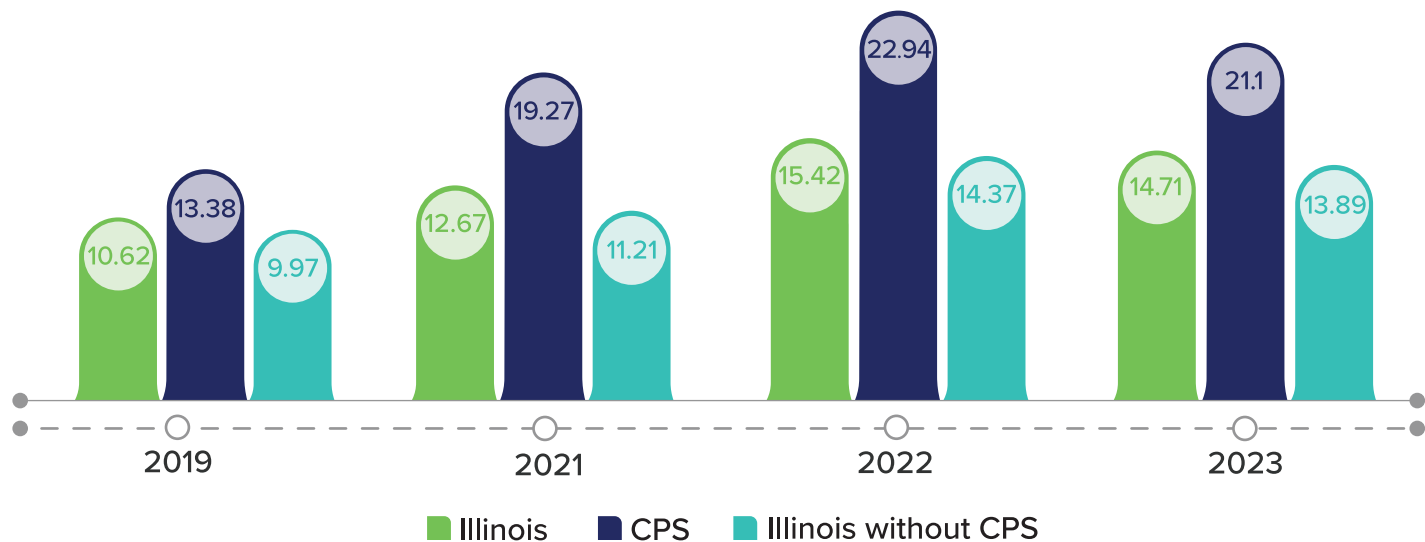
In contrast, we estimated high school findings using a cross-sectional model with time-fixed effects only using the same controls as for IAR models (Grades 3 through 8) but using SAT test scores as an outcome. Unlike IAR models, SAT models do not control for time-invariant factors that we cannot observe, so the relation between absenteeism and test scores in high school may be distorted. Other factors we do not observe include intrinsic motivation and/or social-emotional development (Panorama Education, 2024). However, for these models we were able to include differences by race/ethnicity and their relationship with absenteeism (see Table A14) and SAT scores.

FINDINGS

Trends in Absenteeism in Illinois

Using the entire population of students in Illinois from SY19 to SY23 (N=2.08 million and 2.09 million, respectively), we found that the average annual number of days absent among Illinois students increased from 11 days in SY19 to 15 days in SY23. Specifically, Figure 1 shows that in SY19 students in Illinois had an average of 10.6 days absent, whereas this number reached 14.7 in SY23. We show that while absenteeism in Illinois increased overall, it was largely driven by the increase in absenteeism in Chicago Public Schools (CPS), the district in the largest city in the state. As such, we isolate trends from Illinois overall, CPS, and Illinois without CPS in Figure 1. While both groups follow similar trends over time, CPS had a larger average number of absent days since SY19. This gap, however, grew during the height of the pandemic years and remains higher.

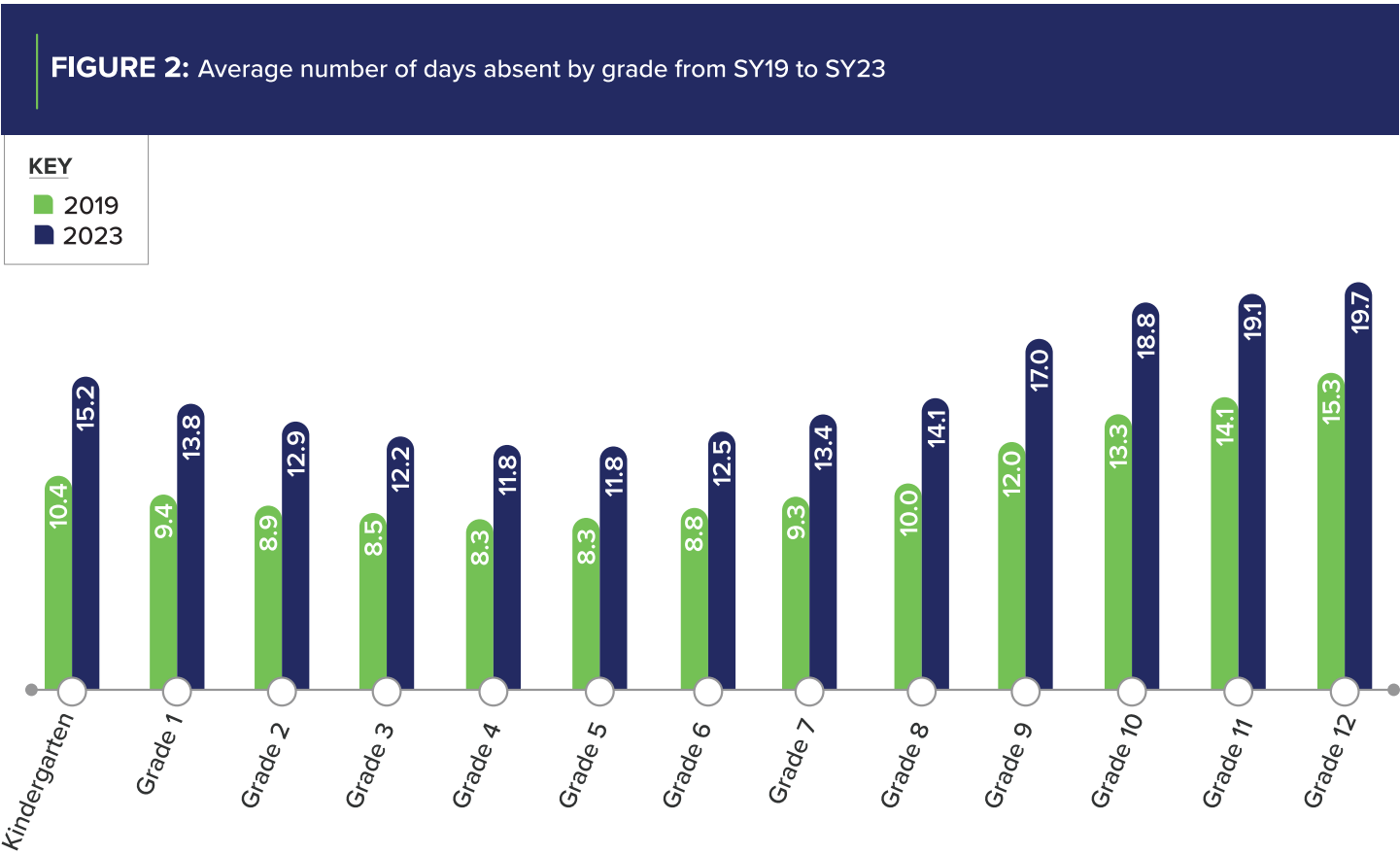
FIGURE 1: Trends in average number of absent days from SY19 to SY23 in Illinois, CPS, and Illinois without CPS



As a consequence of these increases, there were important differences in how absenteeism changed between students who were chronically absent (i.e., missed more than 10% of the school year or approximately 18 days) and those who were not. The number of students who were not chronically absent decreased from 82% of students in SY19 to 71% in SY23. These non-chronically absent students also missed more school, going from an average of six days in SY19 to seven days in SY23. On the other hand, chronically absent students increased from 18% of students in SY19 to 30% in SY23. These students missed on average 30 days of school in SY19 and 32 days in SY23. The average number of days absent for each school year can be found in Table A2 in the Appendix.

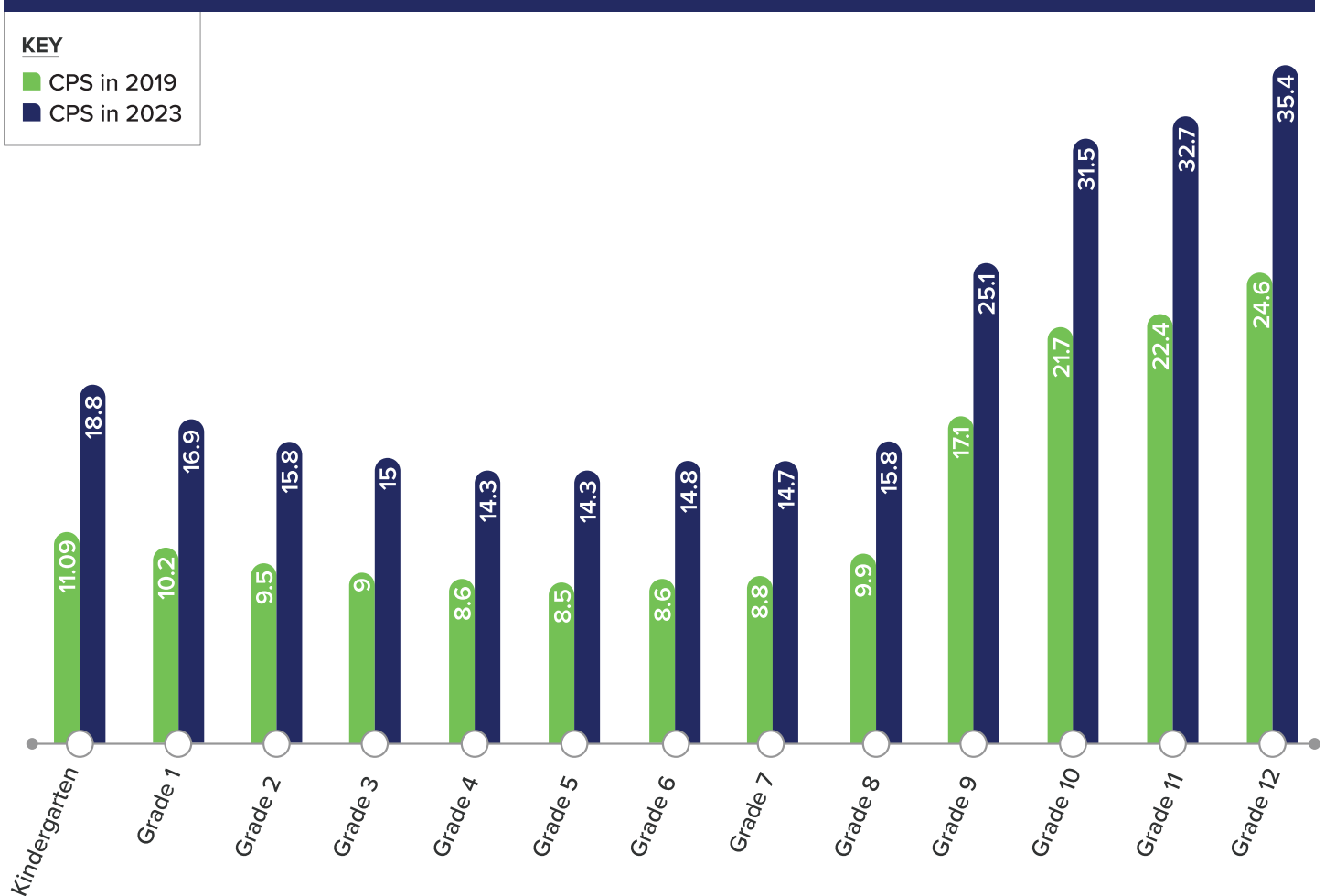
It is important to state that absenteeism in Illinois was highest in SY22, with SY23 representing the beginning of a decline in absenteeism. As such, all trends should be interpreted as the beginning of a potential correction in absenteeism. Even so, absenteeism remains a critical issue for Illinois K-12 schools.

The increase in the number of days absent was not the same for all student groups. Figure 2 shows that all grades had an increase in the average number of days absent from SY19 to SY23. While most grades increased about 4 days from SY19 to SY23, the increase was more than 5 days in the high school grades, which already had a higher number of days absent. Throughout the state, the average 10th, 11th, and 12th grader is chronically absent (See Table A7a).



In CPS (see Figure 3), the trends by grade were similar, but the magnitudes were much larger. In the high school grades, the differences were staggering. CPS high school students had nearly 10—or in some grades over 10—additional days absent compared to the overall Illinois population in SY23, as shown in Figure 3. In other words, the average high school student in CPS is chronically absent in SY23. Potential mechanisms for this increase in absences remain to be studied (See Table A7b).

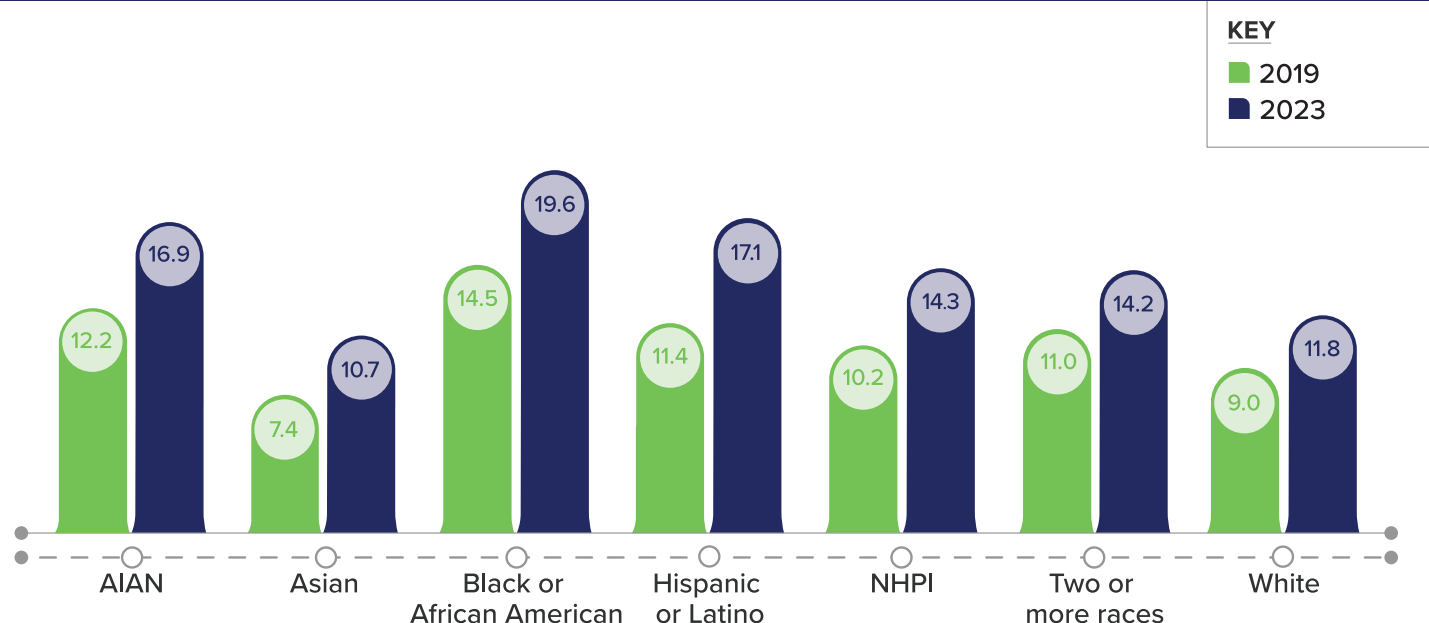
FIGURE 3: Average number of days absent from SY19 to SY23 in CPS



In Figure 4, we show the change in the average number of days absent across racial/ethnic groups from SY19 to SY23.² All differences between groups were statistically significant for both years. While all student groups experienced an increase in the number of days absent from SY19 to SY23, Hispanic/Latino students had the largest increase in absences (5.7 additional days) followed by Black or African American students (5.1 days). The group of American Indian and Alaskan Native students followed with a 4.7 increase in days absent. The racial/ethnic groups with the least increase were White students, with 2.8 extra days absent, and Asian students, with 3.3 additional days absent. Since the cutoff for chronic absenteeism is 10% of the school year, or an average of 18 days, the average Black or African American student was, on average, chronically absent in SY23; Hispanic or Latino students were close to this troubling distinction as well. Details are shown in Table A3.

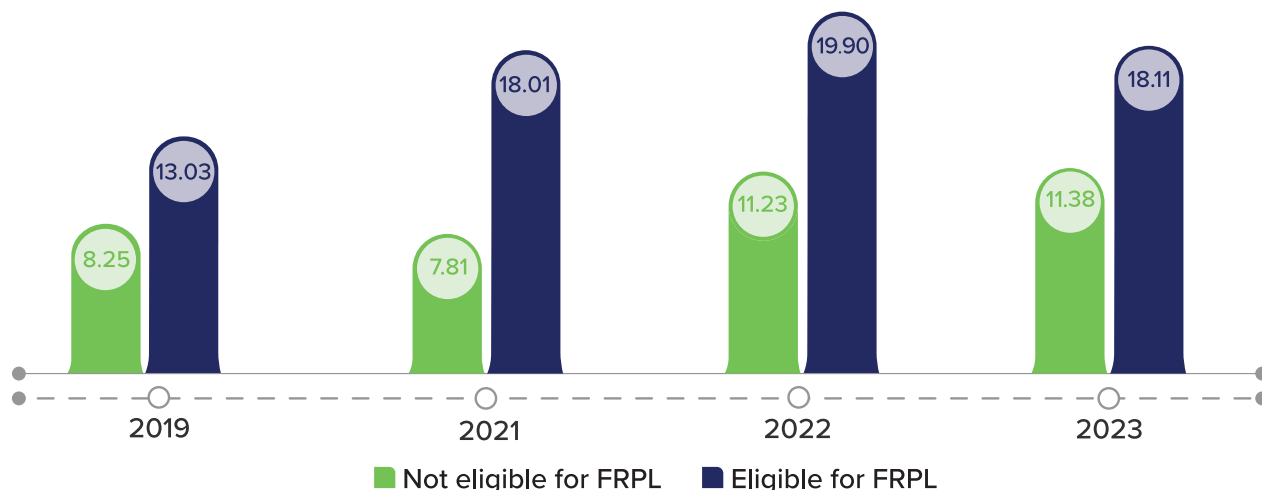
² As an organizational guideline, IWERC follows the data source's nomenclature in naming racial/ethnic groups. As such, we refer to the race/ethnicity groups as named in the Illinois [Report Card](#).

FIGURE 4: Average number of days absent by racial/ethnic group from SY19 to SY23.

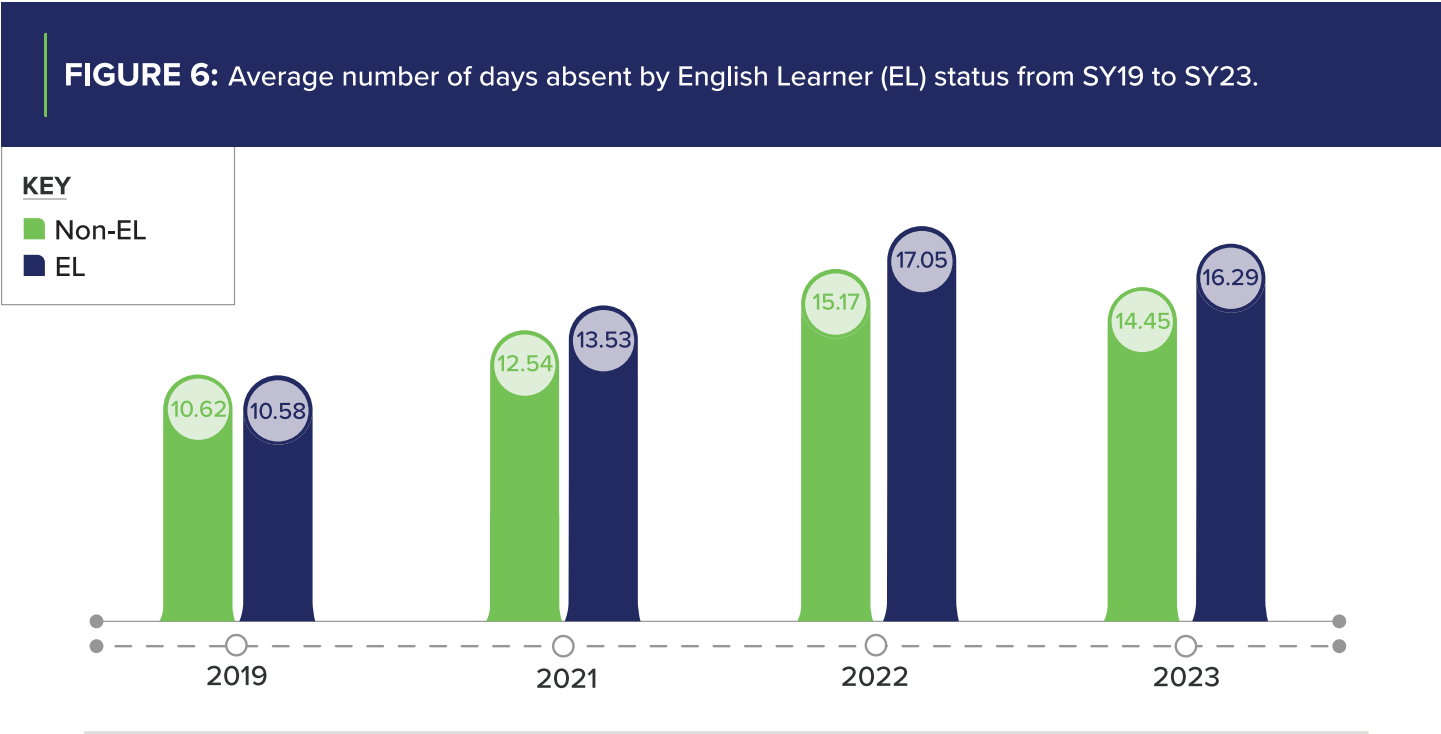


While absenteeism increased for all student groups, the average number of absent days rose heavily for students eligible for FRPL, as shown in Figure 5. Students eligible for FRPL increased their absences by more than 5 days from SY19 to SY23, while students who were not eligible for FRPL increased their absences by just over 3 days. As such, the already existing gap in absences between FRPL and non-FRPL students widened. Starting in SY21, students eligible for FRPL were, on average, chronically absent. Table A4 shows the data excluding students who had more than 50 days of absence.

FIGURE 5: Average number of days absent by students' eligibility for Free or Reduced-Price Lunch (FRPL) from SY19 to SY23



In contrast, differences in the number of days absent between students who were ELs and not ELs were less extreme than other group comparisons, as shown in Figure 6. In SY19, ELs had on average a smaller number of absent days. Starting in SY21, this changed. In SY23, ELs were absent, on average, 1.8 more days than non-EL students. In other words, there was previously no difference in the average number of days absent between EL students and non-EL students, but differences emerged after the pandemic. The average number of days absent for these two groups can be found on Table A5.



Note: Differences between EL groups were statistically significant only in SY23.

In terms of urbanicity, cities have consistently shown higher levels of absenteeism (see Table A6). Students in cities averaged more than 19 days absent from school in SY23, as depicted in Figure 7. Since SY21, students in cities were likely to be chronically absent. Students in other types of regions (rural, town, and suburb) had a much smaller number of days absent, on average. All differences were statistically significant in SY19 and SY23. Consistently, rural areas had the lowest number of days absent, followed by towns and suburbs, which showed similar levels of absenteeism.

FIGURE 7: Average number of days absent by urbanicity from SY19 to SY23.



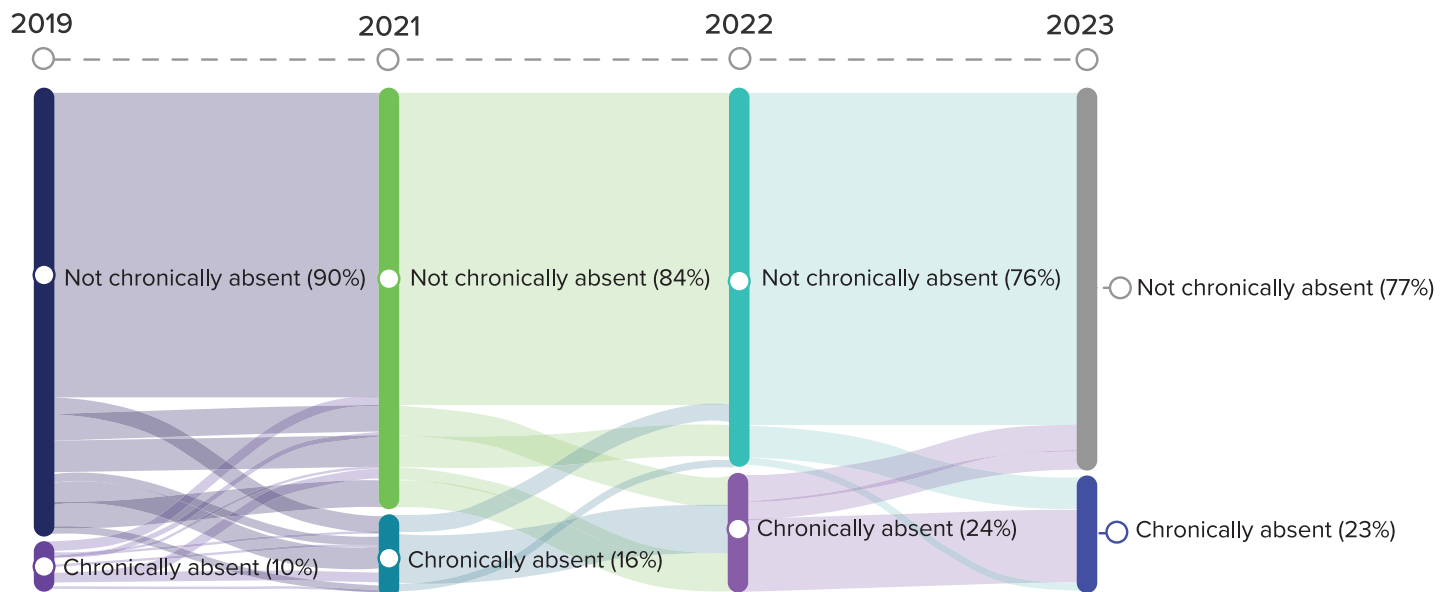
Note: We use [NCES designations](#) of urbanicity.

The Conditionality of Chronic Absenteeism

Chronic absenteeism is a warning indicator to monitor student progress, as students who are chronically absent are less likely to graduate, satisfy on-track requirements, and so forth (see Allensworth & Easton, 2007; DePaoli et al., 2018; Gottfried, 2014). Figures 8 and 9 help visualize how the number of chronically absent students (i.e., those who miss more than 10% of school days in a school year) increased considerably from SY19 and peaked in SY22. Given the differences in absenteeism rates observed across grades, we split these into two groups: students in elementary grades (1 through 5) at the start of the pandemic and students in middle grades (6 through 8) at the start of the pandemic.

In Figure 8, we show flows between chronic and non-chronic absenteeism status for students who were in elementary grades in SY19, following those same students through SY23. Beginning in SY19, 90% of students were not chronically absent. Within this group, by tracing their trajectories in blue, we show how 84% remained not chronically absent in SY21. This percentage then declined to 76% and 77% in SY22 and SY23 (in green and light teal, respectively). While some students do transition from chronically absent to non-chronically absent status, the width of the bands shows that most students who were chronically absent remained so each subsequent year. For example, the bottom band from SY19 to SY23 represents the students who were chronically absent throughout, and we see it thickening through time.

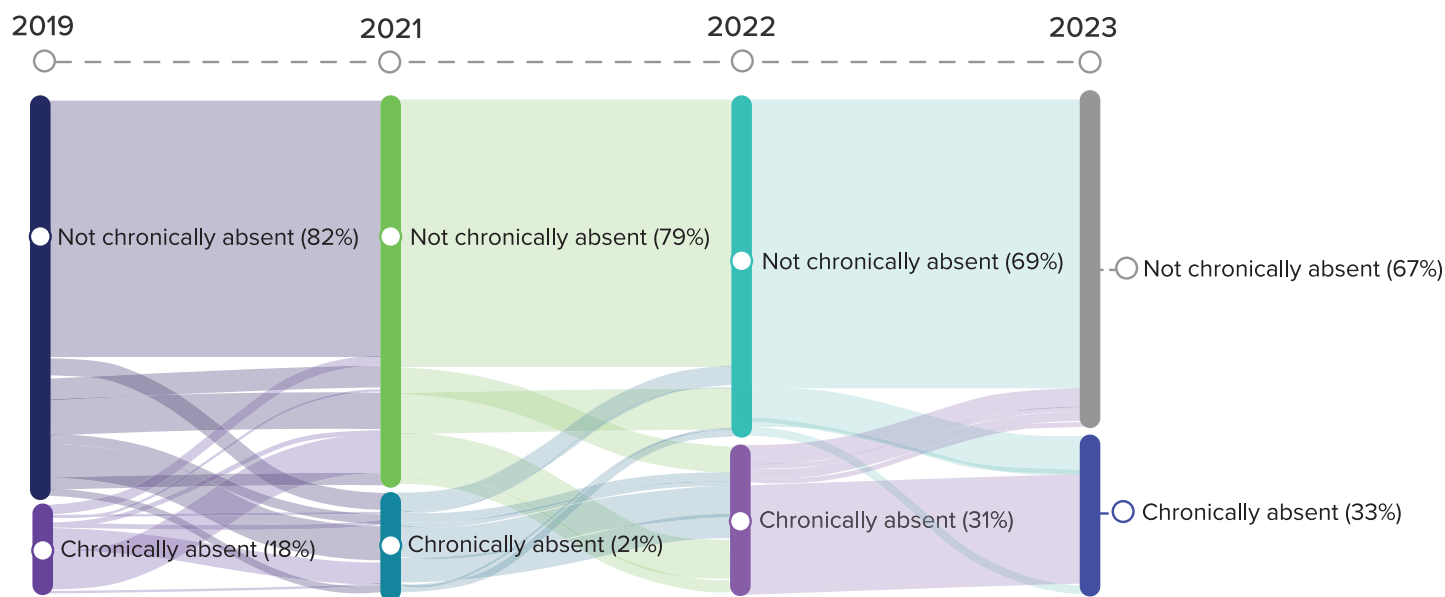
FIGURE 8: Patterns in chronic and non-chronic absenteeism from SY19 to SY23 for students who were in elementary grades (Grades 1-5) pre-pandemic (in SY19).



Note: The different shaded strands represent unique trajectories that students experienced between chronic and non-chronic absenteeism.

Similarly, in Figure 9, we show the trajectories of students who were in middle grades (grades 6 through 8) before the onset of the pandemic and enrolled from SY19 to SY23. Percentages of chronic absenteeism were larger in SY19 for these students than for elementary students, as only 82% of students were not chronically absent at the start. In SY21, 79% remained not chronically absent, and this percentage then declined to 69% in SY22 and to 67% in SY23 (in green and light teal, respectively). As before, students who were chronically absent largely remained so each year, with the band thickening each year.

FIGURE 9: Patterns in chronic and non-chronic absenteeism from SY19 to SY23 for students who were in middle grades (Grades 6-8) pre-pandemic (in SY19).



Note: These percentages include 1.2 million students in grades 6 through 10 from SY19 through SY23, or grades 7 through 11, or grades 8 through 12 in the same time period. The different shaded strands represent unique trajectories that students experienced between chronic and non-chronic absenteeism.

Together, these figures speak to the conditionality of chronic absenteeism, as students who become chronically absent are unlikely to improve their attendance enough to transition back to non-chronically absent status. Currently, systems are in place to prevent students from falling into chronic absenteeism; however, it is important to establish initiatives that create off-ramps from being chronically absent.

The Distribution of Absenteeism in Illinois

As stated previously, absenteeism is a student-level factor (NCES, 2009) and, as such, days of absenteeism varied more by student and student groups across years than across districts. Still, acknowledging the attention given by districts to absenteeism initiatives, it is important to describe how much absenteeism varied across districts in Illinois.

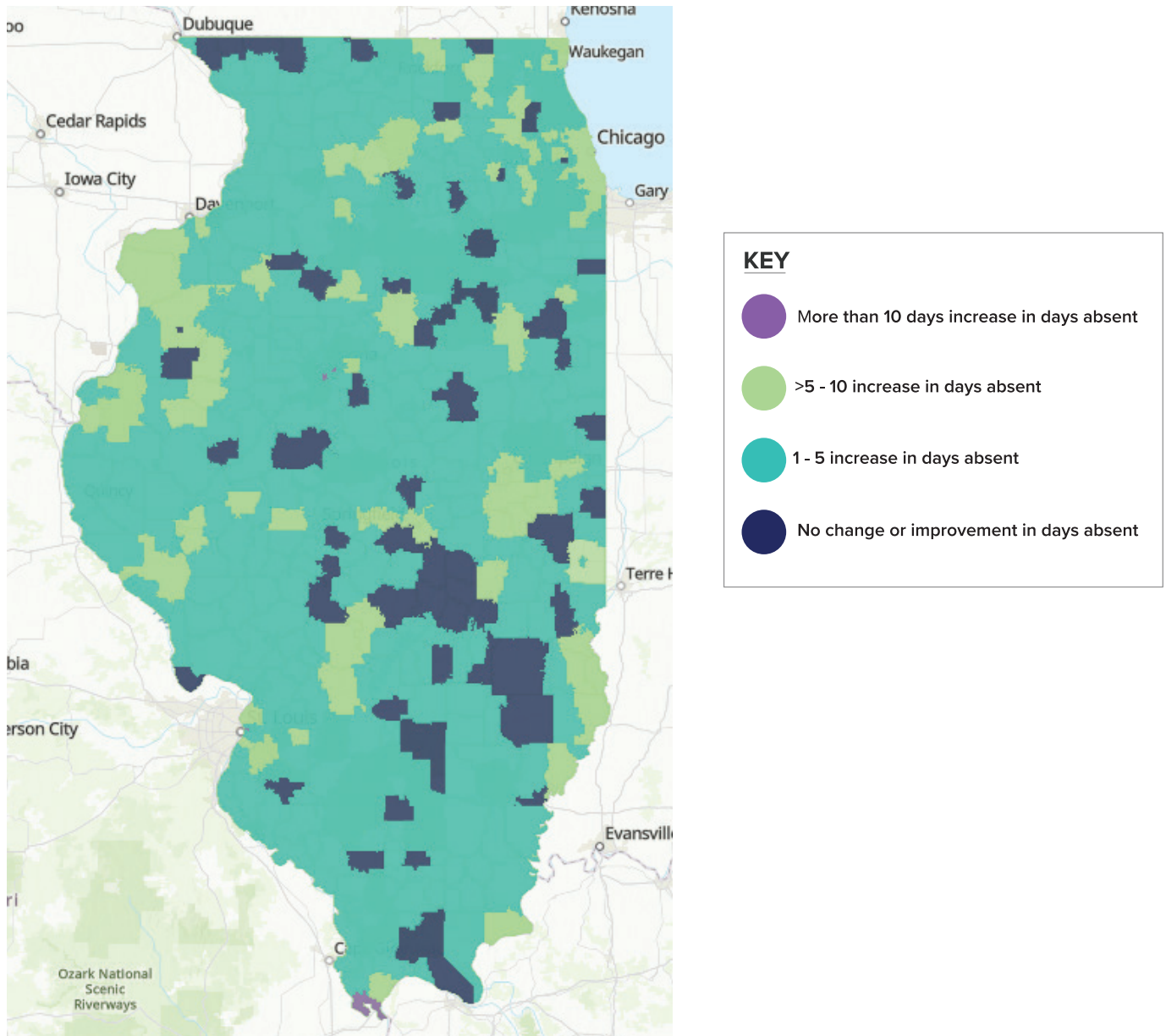
Variation in Absenteeism Across Districts

Across the state, and at the district level³, the average number of absent days in SY19 was 9.2 days, whereas in SY23 the average number of absent days across districts was 12.5. In other words, on average, districts increased the number of absent days by 3 additional days. When we look at the change in absenteeism days from SY19 to SY23 across the state in Figure 10, we see that most districts

³ Using the sample collapsed at the district level for each year.

increased their average number of absent days by at least one day (in teal), more than 5 days (in green) and more than 10 (in purple). Only 37 (4%) districts in Illinois did not increase in their average days absent (in navy).⁴

FIGURE 10. Difference in days of absenteeism across districts in Illinois from SY19 to SY23.



⁴ Akin CCSD 91; Astoria CUSD 1; Aurora East USD 131; Belleville Twp HSD 201; Bradford CUSD 1; Buncombe Cons SD 43; Carbondale CHSD 165; Central CHSD 71; Central CUSD 4; Centralia HSD 200; Cypress SD 64; Elverado CUSD 196; Evanston Twp HSD 202; Fairfield Comm H S Dist 225; Farrington CCSD 99; Frankfort CUSD 168; Grant Park CUSD 6; Hononegah CHD 207; Lake Forest CHSD 115; Lostant CUSD 425; Massac UD 1; McClellan CCSD 12; Meridian CUSD 15; New Holland-Middletown ED 88; New Simpson Hill SD 32; Oak Park - River Forest SD 200; Odell CCSD 435; Okaw Valley CUSD 302; Palatine CCSD 15; Pawnee CUSD 11; Raccoon Cons SD 1; Ridgeview CUSD 19; Rondout SD 72; Spring Lake CCSD 606; Vienna HSD 133; Waltonville CUSD 1; Windsor CUSD 1

As shown in prior sections, the number of absent days increased across the board since SY21. Increases were not equal across racial/ethnic groups, grades, and other student characteristics. Moreover, we observed a great deal of variation in the number of days students missed during a school year. As such, to better understand differences in absenteeism, we present descriptive findings that group absenteeism by categories of number of days absent. In other words, we calculated the percentage of students in different “buckets” of absenteeism, such as missing 0 days, missing 1-5 days, and so forth.

Figure 11 describes the differences across these categories for SY19 and SY23. First, we note that the categories that grew the most were those over 11 days of absences. In SY23, students were more likely than in SY19 to miss 11 or more days of school. Table A8 (in the Appendix) has these percentages for all school years.

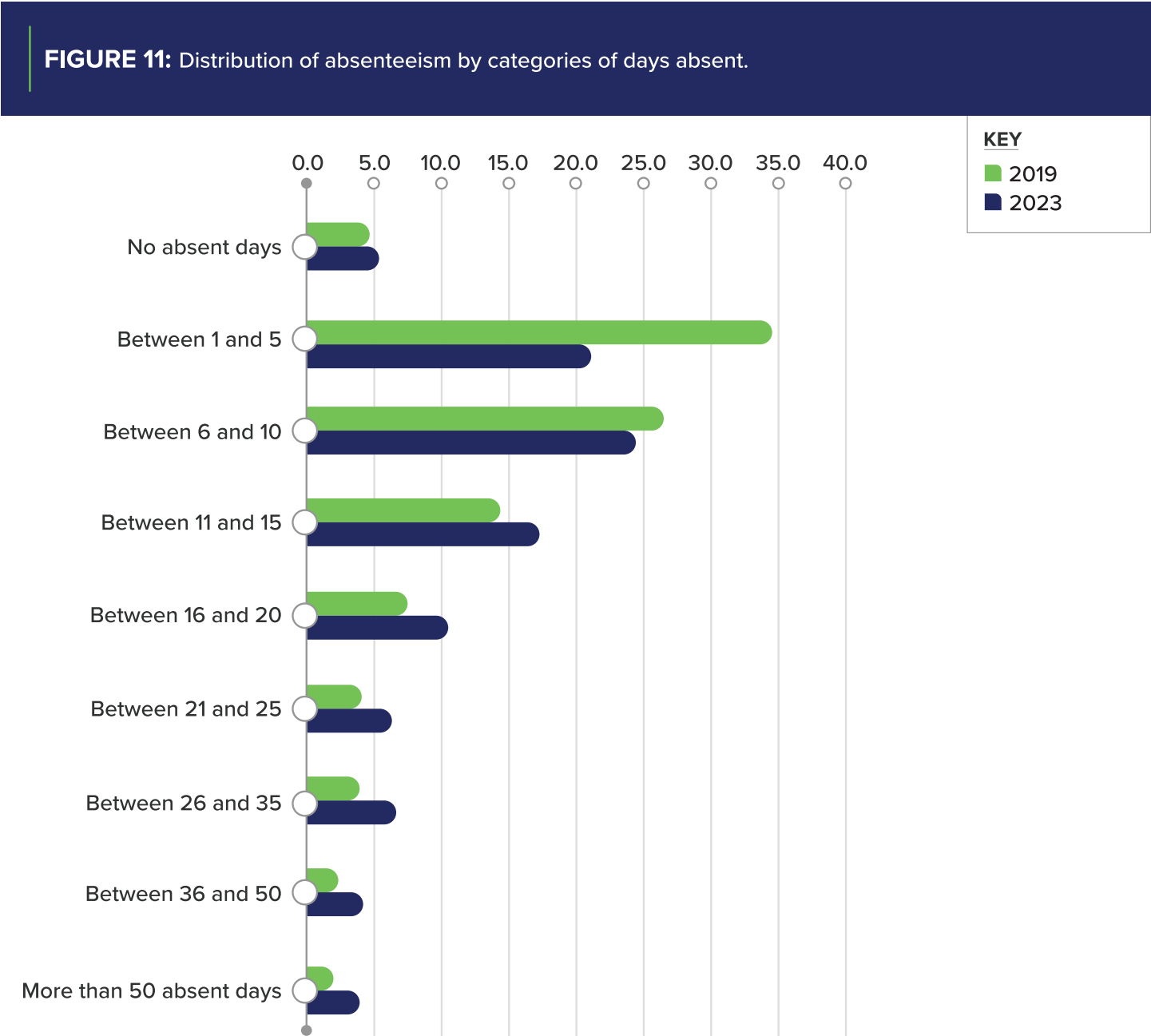


Table 1 describes the differences in student characteristics across categories of absenteeism in SY23. Students who were eligible for FRPL, students in urban settings (here defined as cities and suburbs), and Black and Hispanic or Latino students were more represented in categories of higher absenteeism.

TABLE 1: Student characteristics across categories in SY23.

CATEGORY	DESCRIPTOR	% White	% Black	% Hispanic	% FRPL	% EL	% Urban	% Rural	% Students
0	No absent days	41	22	24	44	10	79.4	20.6	5.4
1	Between 1 and 5	51	13	23	39	13	77.0	23.0	21.1
2	Between 6 and 10	52	13	25	41	13	78.5	21.5	24.4
3	Between 11 and 15	47	15	28	48	15	80.3	19.7	17.2
4	Between 16 and 20	41	18	31	56	16	82.2	17.8	10.6
5	Between 21 and 25	36	22	33	62	17	83.9	16.1	6.4
6	Between 26 and 35	31	26	35	69	18	85.5	14.4	6.7
7	Between 36 and 50	26	32	35	74	17	87.9	12.1	4.2
8	More than 50 absent days	21	34	38	76	17	91.9	8.1	4.0

Note: Urban includes cities and suburbs from the NCES designation of urbanicity. Rural includes rural areas and towns, including NSF ineligible towns.

The patterns are clear for all categories, except for the category for no days absent. It represents students with no absences at all, and it does not seem to follow the same trends as other categories. This may be because it includes a small percentage of students, but did contain more students in SY23 than in SY19, resulting in a shift in the category's demographics. In SY23, students in this "no absence" category were more likely to be Black and from urban areas than in SY19. While we do not know why this shift occurred, we can state that this category was small and idiosyncratic.

Descriptive Findings: The Relationship Between Absenteeism and Test Scores

Figures 12 and 13 show the relation between IAR test scores and absenteeism in ELA and Math, respectively. As highlighted in previous research (Santibañez & Guarino, 2021), this relation is challenging to capture due to the large number of unobserved characteristics that are likely associated with student learning. However, these descriptive findings are useful to illustrate the negative relation between absenteeism and test scores: as the number of absent days increases, the average scores decrease. These averages are shown in Table A9 (in the Appendix).

Interestingly, the category of students who missed no school and the category of students who missed the most school had the largest declines in average test scores from SY19 to SY23. This finding likely reflects changes in the size and demographic composition of these categories (see Table A10).

FIGURE 12: ELA IAR scores in SY19 and SY23 by category of absenteeism.

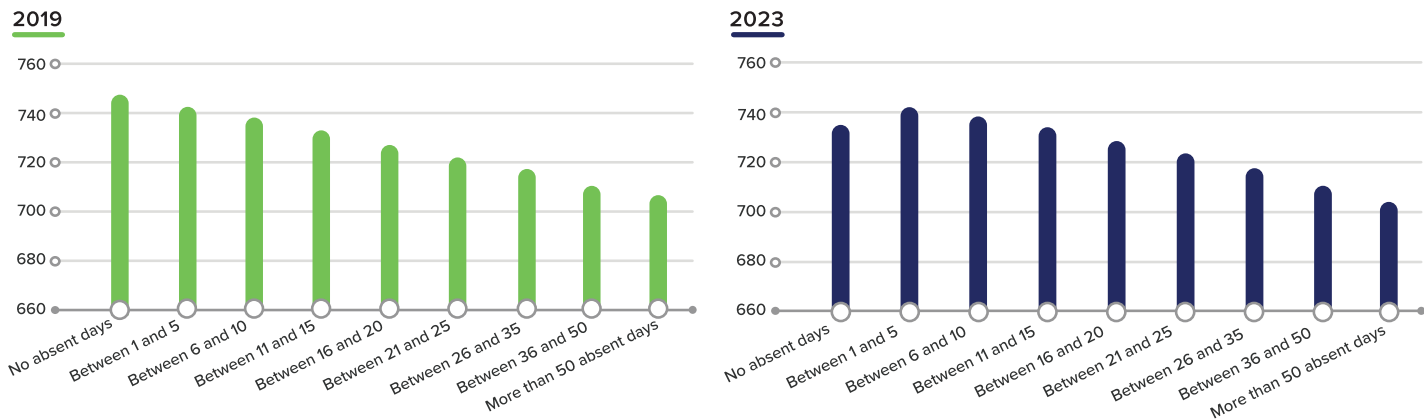
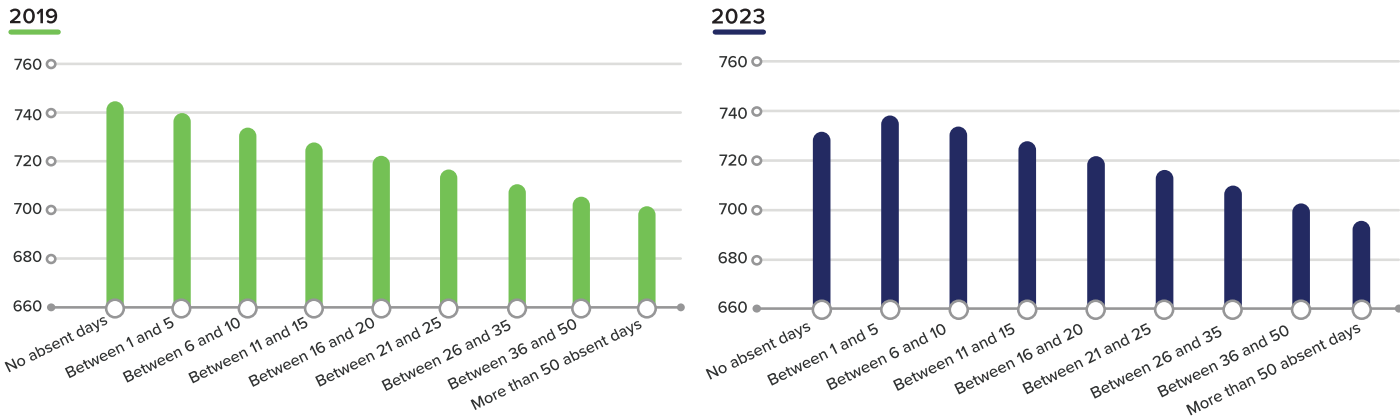


FIGURE 13: Math IAR scores in SY19 and SY23 by category of absenteeism.



Similarly, Figures 14 and 15 show that high school (Grade 11) SAT scores in Reading and Math are also negatively related to absenteeism—this relation seems to be larger than that with IAR, as the differences from SY19 to SY23 across categories of absenteeism are larger with larger standard deviations as well. Recovery in SAT scores is lagging, especially in Math. As before, students with no absences had the largest gap in terms of recovery, but not the lowest average SAT scores.

FIGURE 14: Reading SAT scores in SY19 and SY23 by category of absenteeism.

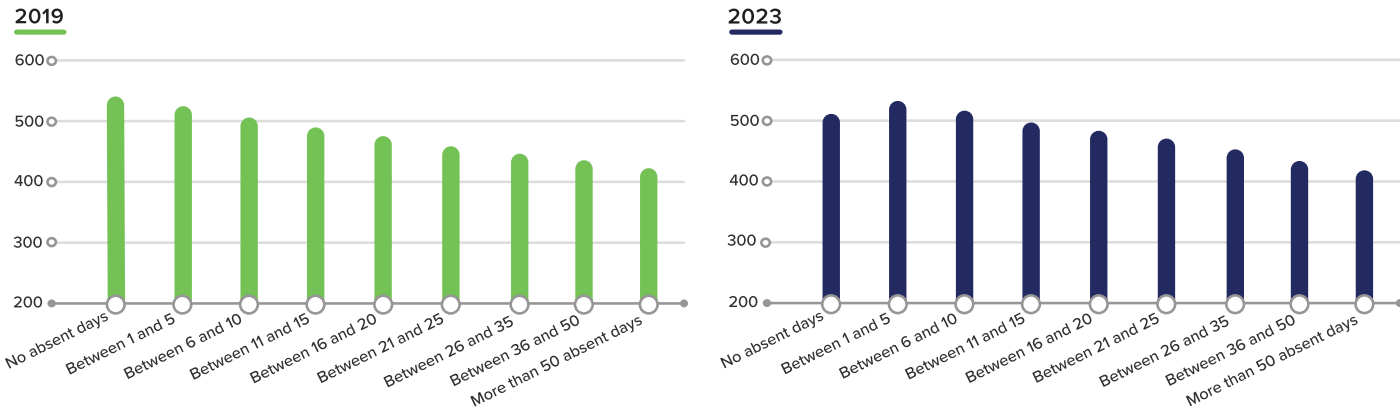
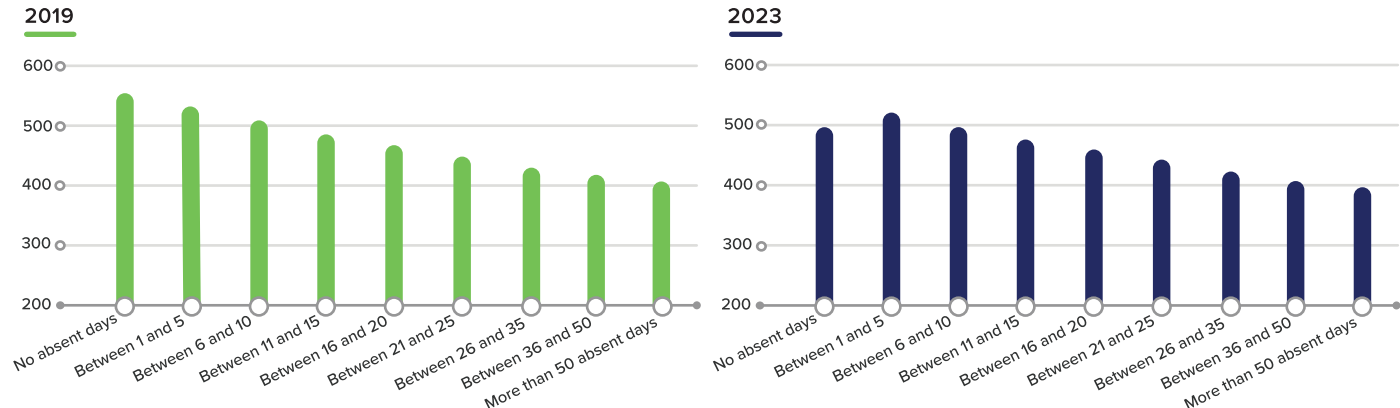


FIGURE 15: Math SAT scores in SY19 and SY23 by category of absenteeism.



Estimating the Relation Between Absenteeism and Student Learning

While the descriptive findings are useful to see where the largest changes in absenteeism and test scores occurred, here we estimate whether and how much the relationship between absenteeism and test scores changed from SY19 to SY23. Table 2 shows findings for Grades 3-8, giving estimates of a model with student fixed effects for each grade from SY19 to SY23.⁵ Findings from a model with student controls only can be found in Appendix Table A11. The complete regression table is in Table A12.

Regression results indicate that there is a clear negative relation between absenteeism and test scores in elementary and middle school grades and that this relationship became stronger over time. We find that for every additional day of absence, students are predicted to have lower test scores in both subjects in later years compared to pre-pandemic, except for ELA in SY21. The relation is much larger and grew more in math. In other words, we find that absenteeism is significantly related to lower test scores, and the relationship is stronger in Math than in ELA, and stronger in SY23 than it was in SY19.

How can we interpret regression results?

A regression helps us understand the marginal change of a variable given a unitary change in another variable, holding other variables constant. In this case, we estimate how much test scores change with every additional day of absenteeism, holding all observed student characteristics constant.

For example, Table 2 shows that scores in ELA for a student in Grade 3 declined -0.21 points for every additional day missing school in SY19. This change in test scores was -0.24 points for students in Grade 3 in SY23.

TABLE 2: Relation between absenteeism and test scores for students in Grades 3-8 from SY19 to SY23 for each additional day of absenteeism.

ELA							Math						
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8		Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
2019	-0.21	-0.08	-0.04	-0.03	-0.20	-0.22	2019	-0.26	-0.11	-0.11	-0.04	0.00	-0.29
2020	-0.19	-0.06	-0.02	-0.01	-0.18	-0.20	2020	-0.28	-0.13	-0.13	-0.05	-0.02	-0.30
2022	-0.23	-0.10	-0.07	-0.05	-0.22	-0.24	2022	-0.30	-0.15	-0.14	-0.07	-0.04	-0.32
2023	-0.24	-0.11	-0.08	-0.06	-0.23	-0.25	2023	-0.31	-0.16	-0.15	-0.08	-0.05	-0.33

Note: These numbers correspond to the coefficient of the relation between absenteeism and test scores for each grade and year derived from the full model that includes time-variant controls and student fixed effects. Discrepancies with Table A12 are due to decimals and rounding. The scale for the IAR tests in both subjects ranges from 650 to 850 with 750 and higher being proficient.

⁵ This model also included a quadratic term as research has shown that the relation between absenteeism and test scores is not linear. The quadratic term was statistically significant and negative, indicating a concave curve, but negligible in terms of magnitude.

The student’s grade in school is also a factor to account for as we examine the relationship between absenteeism and test score declines. As such, we included these interactions in the models as well (see Table A12). The negative relationship grows more between SY19 and SY23 for Math as compared to ELA for all grades, with the exception of Grade 7. In addition, Grades 3 and 8 showed the largest negative relation between absenteeism and test scores in both subjects. All other grades (Grades 4 through 7) also show a negative relation between absenteeism and test scores, although the magnitude is relatively smaller. Again, this does not mean that days of absence do not matter in other grades; rather, it means that absenteeism has a smaller negative relation with test scores. Others have shown that absenteeism has a negative relation to other outcomes that we do not include in this research (Gottfried, 2014; Gottfried & Ansari, 2022), and we highlight that absences do matter for all students.

Because SAT is only taken once per student, we estimated these findings using a cross-sectional model with time fixed effects. Table 3 shows results for ELA and Math test scores, whereas results from all models can be found in Table A13.

TABLE 3: Relation between absenteeism and SAT test scores for students in Grade 11 from SY19 to SY23 for each additional day of absenteeism.

School Year	ELA	Math
2019	-1.80	-3.82
2020	-1.69	-2.02
2022	-1.80	-2.21
2023	-1.84	-2.20

Note: The scale for the SAT tests in both subjects ranges from 200 to 800 points.

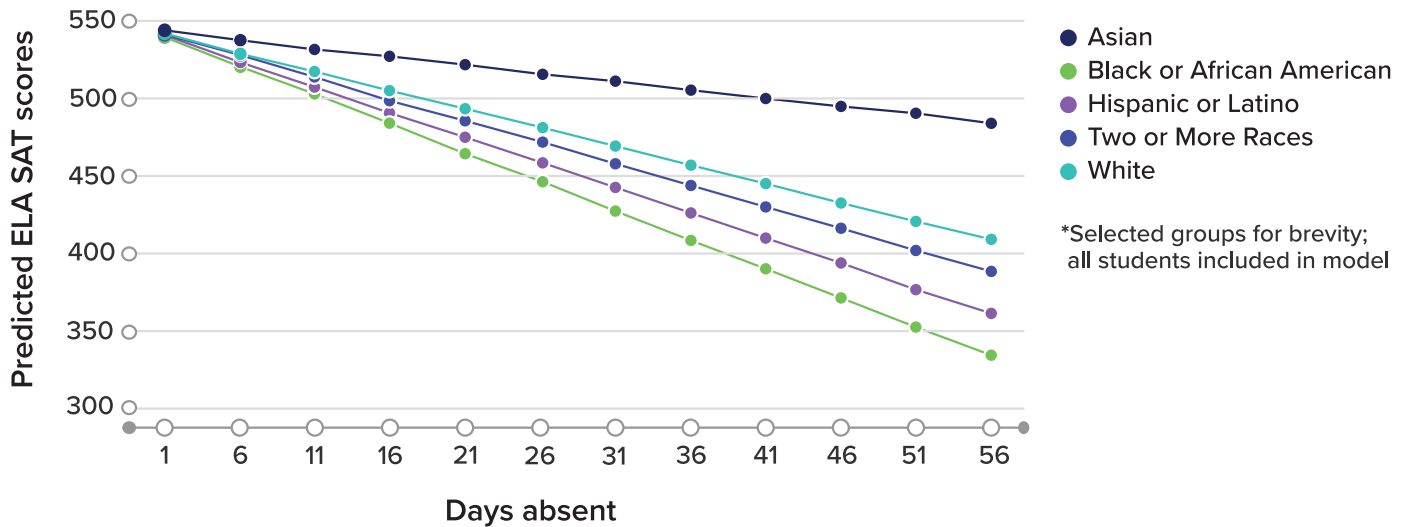
Table 3 shows that in high school, absenteeism is also associated with a reduced test score. However, the change across time does not vary in ELA. This could be a consequence of floor effects—scores are declining so much and are already so low that this may not necessarily serve as a reflection of absenteeism; the average ELA score in 2019 was 500.6 and in 2023 it was 490.3 (Barragan Torres et al., 2024). To clarify, this does not mean that there is not a relation between these variables, but, rather, it means that there has not been a meaningful change over time in this relation. In Math, on the other hand, the relationship is slightly weaker in SY23 than it was in SY19. For these models, we were able to include differences by race/ethnicity and their relationship with absenteeism (see Table A13) and SAT scores. Figure 16 describes these differences between SY19 and SY23 for some selected groups for brevity. Overall, we see that Black or African American students show the strongest relation between absenteeism and their test scores, followed by Hispanic or Latino students. Given that these student groups are also more likely to have higher absenteeism rates and show the largest increase in absenteeism, they seem to be affected the most by missing school. White students also show a negative relationship between absenteeism and test scores, but at a smaller magnitude. In contrast, Asian student achievement seems to be the least related to absenteeism. We illustrate changes for other student groups in Appendix B.

FIGURE 16: Relationship between days of absenteeism and SAT test scores in SY23 by select racial/ethnic groups.

a. ELA

Relationship between days of absenteeism and SAT test scores

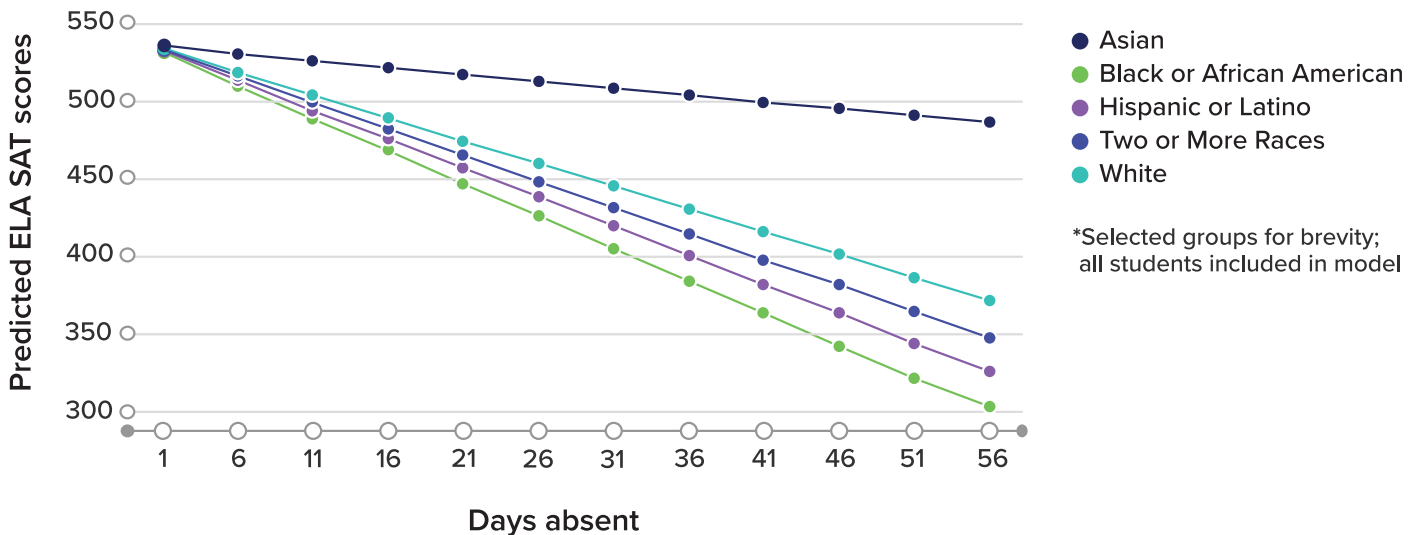
Adjusted predictions in SY23 by race/ethnicity*



b. Math

Relationship between days of absenteeism and SAT test scores

Adjusted predictions in SY23 by race/ethnicity*



CONCLUSION

In this report, we showed that absenteeism has increased considerably in Illinois since SY19. And while it peaked in SY22 and has seen slight declines in SY23, it remains at elevated levels. Absenteeism rates increased for all student groups, but we demonstrate that increases have not been homogeneous across student groups. Specifically, Black students, Hispanic students and students eligible for FRPL are more likely to miss school than all other groups of students. At the same time, their rates of absenteeism grew the most, highlighting a double disadvantage for these groups of students. In terms of grades, high school students experienced the highest absenteeism.

Our statistical models show that the relationship between absenteeism and test scores changed from SY19 to SY23 for grades 3 through 8. Specifically, the negative relation between absenteeism and test scores increased from SY19 to SY23, especially for students in grades 3 and grade 8; in other words, each day of absence implies a larger decrease in test scores in SY23 than it did in SY19. For high school students (in grade 11) the relationship has remained the same since before the pandemic for SAT scores in ELA but became slightly weaker in Math. This is our main finding and contrasts with prior beliefs that school attendance is perceived to be less important in promoting student outcomes (Dee, 2024).

Our findings have several implications: First, we show that, predominately, students should not miss school as it can decrease their student learning, as measured by test scores, and other student outcomes (see Gottfried, 2014). Second, we contribute to the design of targeted education policies by providing evidence on the student groups and grades that have the largest absenteeism rates in Illinois. Finally, given changes in legislation that allow students in Illinois to miss school due to mental health concerns, we invite separating the reporting of excused and unexcused absences, as excused absences may be attenuating the relationship between unexcused days missed of school and test scores (see Gee, 2018), as well as other student outcomes.

The key takeaway from this research is that school attendance still matters and that it matters more than it did before COVID-19. As such, continuing with the implementation of policies that promote school attendance for all students, regardless of grade, remains of vital importance.

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APPENDIX A

TABLE A1. Summary statistics of data.

	2019	2021	2022	2023	Total
Number of students	2,079,558	1,979,711	2,105,207	2,094,848	8,259,324**
Number of schools	3,980	3,969	3,995	3,951	4,056
Number of districts	864	866	869	868	869
Average Absenteeism rate*	0.070 (0.094)	0.081 (0.133)	0.104 (0.124)	0.099 (0.117)	0.088 (0.119)
Chronically Absent indicator					
0 (not chronically absent)	1,696,423 (81.6%)	1,542,320 (77.9%)	1,441,556 (68.5%)	1,476,415 (70.5%)	6,156,714 (74.5%)
1 (chronically absent)	383,135 (18.4%)	437,391 (22.1%)	663,651 (31.5%)	618,433 (29.5%)	2,102,610 (25.5%)
Average absent days	10.62	12.67	15.42	14.71	13.37
Average ELA IAR score*	737.433 (37.034)	729.217 (36.556)	729.174 (37.304)	733.654 (37.440)	732.682 (37.282)
Average Math IAR score*	733.582 (34.168)	725.947 (34.994)	726.765 (35.078)	728.313 (35.217)	728.943 (34.974)
Average Reading SAT score*	500.606 (102.704)	497.541 (101.126)	491.263 (102.025)	490.334 (106.009)	494.965 (103.071)
Average Math SAT score*	500.562 (112.883)	487.868 (106.296)	478.946 (109.943)	476.416 (112.840)	486.046 (110.957)
Female indicator					
0 (not female)	1,068,411 (51.4%)	1,015,972 (51.3%)	1,090,165 (51.8%)	1,085,331 (51.8%)	4,259,879 (51.6%)
1 (female)	1,011,147 (48.6%)	963,739 (48.7%)	1,015,042 (48.2%)	1,009,517 (48.2%)	3,999,445 (48.4%)
Grade (tested grades only)					
Grade 3	148,022 (9.5%)	137,445 (9.2%)	137,007 (8.8%)	138,635 (9.0%)	561,109 (9.1%)
Grade 4	150,749 (9.7%)	141,251 (9.4%)	138,545 (8.9%)	137,682 (8.9%)	568,227 (9.2%)
Grade 5	154,601 (9.9%)	142,684 (9.5%)	142,803 (9.1%)	139,385 (9.0%)	579,473 (9.4%)
Grade 6	157,505 (10.1%)	147,177 (9.8%)	144,847 (9.3%)	144,084 (9.3%)	593,613 (9.6%)
Grade 7	154,481 (9.9%)	152,004 (10.1%)	150,311 (9.6%)	146,270 (9.5%)	603,066 (9.8%)
Grade 8	153,842 (9.9%)	154,525 (10.3%)	158,465 (10.1%)	154,101 (10.0%)	620,933 (10.1%)
Grade 11	156,697 (10.1%)	154,996 (10.3%)	171,270 (11.0%)	169,957 (11.0%)	652,920 (10.6%)

Student demographics					
Proportion of white students*	0.465 (0.499)	0.462 (0.499)	0.451 (0.498)	0.445 (0.497)	0.456 (0.498)
Proportion of Black/African American students*	0.177 (0.382)	0.171 (0.376)	0.176 (0.381)	0.175 (0.380)	0.175 (0.380)
Proportion of Latinx/Hispanic students*	0.265 (0.441)	0.270 (0.444)	0.273 (0.446)	0.278 (0.448)	0.272 (0.445)
Proportion of American Indian American Native students*	0.003 (0.050)	0.003 (0.051)	0.003 (0.050)	0.003 (0.050)	0.003 (0.050)
Proportion of Asian students*	0.051 (0.221)	0.054 (0.225)	0.054 (0.225)	0.055 (0.227)	0.053 (0.225)
Proportion of Native Hawaiian/ Other Pacific Islands students*	0.001 (0.032)	0.001 (0.032)	0.001 (0.031)	0.001 (0.031)	0.001 (0.032)
Proportion of students indentedified as two or more races*	0.038 (0.191)	0.040 (0.196)	0.043 (0.202)	0.043 (0.203)	0.041 (0.198)
English Learner Indicator					
0 (not English learner)	1,831,148 (88.1%)	1,727,383 (87.3%)	1,827,973 (86.8%)	1,791,657 (85.5%)	7,178,161 (86.9%)
1 (English learner)	248,410 (11.9%)	252,328 (12.7%)	277,234 (13.2%)	303,191 (14.5%)	1,081,163 (13.1%)
Free/reduced Price Lunch indicator					
0 (not eligible)	1,049,136 (50.4%)	1,036,868 (52.4%)	1,083,786 (51.5%)	1,057,235 (50.5%)	4,227,025 (51.2%)
1 (eligible)	1,030,422 (49.6%)	942,843 (47.6%)	1,021,421 (48.5%)	1,037,613 (49.5%)	4,032,299 (48.8%)

Note: * denotes a continuous variable and parenthesis values correspond to standard deviations for each year across all students. For all other variables, parenthesis represents their proportion in the data. ** denotes the total number of students across all years are observed in the data.

TABLE A2. Average number of days absent for students in Illinois from SY19 to SY23.

	2019	2021	2022	2023
Not chronically absent	6.4 (4.5)	4.6 (4.4)	7.1 (4.8)	7.4 (4.8)
Chronically absent	29.5 (18.9)	41.1 (28.6)	33.4 (21.9)	32.2 (21.5)
Chronically absent (no outliers)	24.3 (9.6)	26.7 (10.5)	25.9 (9.8)	25.3 (9.6)

Note: Standard deviations in parentheses. Average number of absent days for chronically absent students includes all students in the sample, even those who were absent more than 50 days unless indicated as such (outliers).

TABLE A3. Average number of days absent for students in Illinois from SY19 to SY23 by race/ethnicity.

	2019	2021	2022	2023
AIAN	12.2	14.6	17.3	16.9
Asian	7.4	5.8	10.1	10.7
Black or African American	14.5	22.7	22	19.6
Hispanic or Latino	11.4	14.5	17.8	17.1
NHPI	10.2	11	14.2	14.3
Two or more races	11.0	13.4	15	14.2
White	9.0	8.6	12	11.8
Trends without outliers^a				
AIAN	10.4	9.4	13.6	13.9
Asian	6.9	4.5	9.0	9.6
Black or African American	12.0	12.8	16.2	14.8
Hispanic or Latino	9.9	9.5	14.00	13.6
NHPI	9.11	8.1	12.00	11.7
Two or more races	9.7	9.1	12.00	11.9
White	8.3	6.9	10.6	10.6

^aExcludes students who were absent more than 50 days.

TABLE A4. Average number of days absent for students in Illinois from SY19 to SY23 by eligibility for FRPL.

	2019	2021	2022	2023
Not eligible for FRPL	8.25	7.81	11.23	11.38
Eligible for FRPL	13.03	18.01	19.90	18.11
Without outliers^a				
Not eligible for FRPL	7.63	6.16	9.91	10.10
Eligible for FRPL	11.16	11.21	15.24	14.33

^aExcludes students who were absent more than 50 days.

TABLE A5. Average number of days absent for students in Illinois from SY19 to SY23 by EL status.

	2019	2021	2022	2023
Non-EL	10.62	12.54	15.17	14.45
EL	10.58	13.53	17.05	16.29
Without outliers^a				
Non-EL	9.34	8.34	12.17	11.94
EL	9.47	9.30	14.02	13.38

^aExcludes students who were absent more than 50 days.

TABLE A6. Average number of days absent for students in Illinois from SY19 to SY23 by urbanicity.

	2019	2021	2022	2023
Rural	8.67	9.05	12.2	11.36
City	12.97	18.2	21.3	19.41
Town	9.64	10.4	13.26	12.71
Suburbs	9.79	10.61	14.03	13.95
Without Outliers^a				
Rural	8.12	7.7	11.08	10.57
City	10.76	10.27	15.7	14.68
Town	8.81	8.41	11.61	11.43
Suburbs	8.88	7.66	11.93	12.07

^aExcludes students who were absent more than 50 days.

TABLE A7a. Average number of days absent for students in Illinois from SY19 to SY23 by grade.

	2019	2021	2022	2023
Kindergarten	10.36	11.41	15.37	15.15
Grade 1	9.39	10.91	14.37	13.79
Grade 2	8.9	10.07	13.56	12.9
Grade 3	8.51	9.43	12.89	12.21
Grade 4	8.26	9.27	12.54	11.81
Grade 5	8.29	9.25	12.56	11.75
Grade 6	8.79	10.78	13.34	12.48
Grade 7	9.33	12.12	13.83	13.35
Grade 8	9.97	12.48	14.35	14.07
Grade 9	12.01	15.73	17.77	16.98
Grade 10	13.32	16.78	19.48	18.75
Grade 11	14.14	17.18	20.40	19.14
Grade 12	15.33	17.66	20.58	19.74
Without outliers^a				
Kindergarten	9.94	8.35	13.84	13.97
Grade 1	9.11	8.13	13.03	12.92
Grade 2	8.64	7.77	12.37	12.13
Grade 3	8.27	7.45	11.81	11.50
Grade 4	8.03	7.37	11.48	11.12
Grade 5	8.02	7.40	11.40	11.00
Grade 6	8.33	7.99	11.84	11.31
Grade 7	8.69	8.59	11.93	11.86
Grade 8	9.16	8.89	12.22	12.26
Grade 9	9.48	8.85	12.67	12.38
Grade 10	10.35	9.17	13.31	13.01
Grade 11	11.04	9.50	13.68	13.30
Grade 12	12.32	10.44	14.43	14.03

^aExcludes students who were absent more than 50 days.

TABLE A7b. Average number of days absent for students in CPS from SY19 to SY23 by grade.

	2019	2021	2022	2023
Kindergarten	11.1	16.3	20.6	18.8
Grade 1	10.2	14.8	19.3	16.9
Grade 2	9.5	13.4	18.0	15.8
Grade 3	9.0	11.9	17.3	15.0
Grade 4	8.6	12.1	16.9	14.3
Grade 5	8.5	11.5	17.0	14.3
Grade 6	8.6	11.6	16.5	14.8
Grade 7	8.8	12.6	16.3	14.7
Grade 8	9.9	12.3	16.5	15.8
Grade 9	17.1	27.2	27.0	25.1
Grade 10	21.7	32.3	32.3	31.5
Grade 11	22.4	33.9	35.5	32.7
Grade 12	24.6	35.4	36.5	35.4

TABLE A8. Distribution of students in category of absenteeism across years.

		Percentage of students in each category			
Category	Descriptor	2019	2021	2022	2023
0	No absent days	4.7	11.6	5.7	5.4
1	Between 1 and 5 days	34.4	39.4	22.1	21.1
2	Between 6 and 10 days	26.5	17.3	22.7	24.4
3	Between 11 and 15 days	14.5	8.9	15.9	17.2
4	Between 16 and 20 days	7.5	5.3	10.1	10.6

		Percentage of students in each category			
Category	Descriptor	2019	2021	2022	2023
5	Between 21 and 25 days	4.1	3.5	6.5	6.4
6	Between 26 and 35 days	3.9	4.4	7.3	6.7
7	Between 36 and 50 days	2.3	3.7	4.9	4.2
8	More than 50 absent days	2.0	5.9	4.8	4.0

TABLE A9. Distribution of test scores by category of absenteeism across years.

ELA IAR

	2019	2021	2022	2023
0	746.41	740.09	735.23	734.78
1	742.95	736.03	739.65	741.71
2	738.14	727.85	734.15	737.98
3	732.89	721.33	728	733.35
4	727.51	715.95	722.15	728.13
5	722.16	712.06	717.31	723.21
6	717.34	707.37	711.65	717.35
7	710.95	701.33	705.37	710.52
8	706.86	695.81	699.55	704.35

Math IAR

	2019	2021	2022	2023
0	744.33	738.38	735.02	731.31
1	739.84	733.15	738.44	737.69
2	734.21	723.97	731.99	733.23
3	728.1	716.87	725.28	727.61
4	722.17	711.14	718.65	721.63
5	716.69	706.91	713.57	716.11
6	711.5	702.25	707.4	709.64
7	705.68	696.67	701.03	702.47
8	701.74	691.46	695.13	695.22

ELA SAT

	2019	2021	2022	2023
0	542.76	530.27	512.23	504.83
1	525.8	523.32	528.8	524.78
2	507.94	495.56	512.15	510.08

Math SAT

	2019	2021	2022	2023
0	556.23	526.54	507.77	497.79
1	532.45	516.71	523.85	518.44
2	508.44	483.68	502.91	497.84

ELA SAT

3	491.08	479.13	495.22	494.28
4	475.85	465.94	479.73	480.22
5	461.31	457.76	465.63	464.59
6	448.97	448.55	450.92	447.92
7	437.29	441.45	435.34	430.95
8	425.49	436.75	420.49	417.45

Math SAT

3	487.35	465.08	481.8	478.3
4	469.26	452.08	462.43	461.6
5	451.8	443.79	447.62	446.36
6	437.28	433.6	431.75	426.89
7	424.3	425.81	415.82	410.87
8	409.52	424.2	399.37	397.69

TABLE A10. Differences across students with no absences in SY19 and SY23.

	2019	2023
White (%)	44.9	41.3
Asian (%)	10.5	6
Hispanic or Latino (%)	25.4	24.3
Black or African American (%)	15.5	21.5
Two or more races (%)	3.3	6.4
Native Hawaiian or Native American (%)	3	3
Proportion FRPL (%)	42.5	43.5
Proportion EL (%)	11.7	9.8
Urban (%)	30.5	31.4
Rural (%)	8.3	9.5
N	97,664	113,692

TABLE A11. Comparing the relation between absenteeism and test scores by grade for models with student controls and student fixed effects.

A. Student Controls only

ELA

	3	4	5	6	7	8
2019	-0.72	-0.54	-0.47	-0.45	-0.61	-0.63
2021	-0.55	-0.38	-0.31	-0.29	-0.45	-0.47
2022	-0.61	-0.43	-0.36	-0.34	-0.50	-0.53
2023	-0.62	-0.45	-0.38	-0.36	-0.52	-0.54

Math

	3	4	5	6	7	8
2019	-0.81	-0.61	-0.58	-0.60	-0.47	-0.76
2021	-0.65	-0.45	-0.42	-0.33	-0.31	-0.60
2022	-0.69	-0.50	-0.47	-0.38	-0.35	-0.64
2023	-0.72	-0.53	-0.50	-0.41	-0.38	-0.67

Note: These numbers correspond to the coefficient of the relation between absenteeism and test scores for each grade and year derived from the model that has student controls.

B. Student fixed effects

ELA

	3	4	5	6	7	8
2019	-0.21	-0.08	-0.04	-0.03	-0.20	-0.22
2021	-0.19	-0.06	-0.02	-0.01	-0.18	-0.20
2022	-0.23	-0.10	-0.07	-0.05	-0.22	-0.24
2023	-0.24	-0.11	-0.08	-0.06	-0.23	-0.25

Math

	3	4	5	6	7	8
2019	-0.26	-0.11	-0.11	-0.04	0.00	-0.29
2021	-0.28	-0.13	-0.13	-0.05	-0.02	-0.30
2022	-0.30	-0.15	-0.14	-0.07	-0.04	-0.32
2023	-0.31	-0.16	-0.15	-0.08	-0.05	-0.33

Note: These numbers correspond to the coefficient of the relation between absenteeism and test scores for each grade and year derived from the full model that includes time-variant controls and student fixed effects.

TABLE A12. Regression results for all models between the relationship of absenteeism and test scores.

	(1)	(2)	(3)	(1)	(2)	(3)
Variables	<u>ELA</u>			<u>Math</u>		
Days absent	-0.611*** (0.00411)	-0.717*** (0.00481)	-0.206*** (0.00591)	-0.688*** (0.00370)	-0.809*** (0.00431)	-0.262*** (0.00510)
Days absent squared	0.00263*** (4.19e-05)	0.00244*** (4.13e-05)	0.000560*** (4.59e-05)	0.00294*** (3.82e-05)	0.00280*** (3.76e-05)	0.000642*** (4.05e-05)
SY21	-10.30*** (0.0494)	-11.68*** (0.0506)	7.797*** (0.618)	-12.10*** (0.0436)	-11.41*** (0.0452)	5.660*** (0.531)
SY22	-4.997*** (0.0524)	-7.636*** (0.0558)	20.43*** (0.925)	-7.722*** (0.0462)	-6.099*** (0.0505)	18.01*** (0.796)
SY23	1.512*** (0.0557)	-2.232*** (0.0612)	35.34*** (1.233)	-6.628*** (0.0492)	-3.726*** (0.0562)	28.15*** (1.060)

Interactions year and days absent

SY21 * days absent	0.170*** (0.00419)	0.163*** (0.00410)	0.0173*** (0.00551)	0.215*** (0.00376)	0.161*** (0.00370)	-0.0163*** (0.00476)
SY22 * days absent	0.0924*** (0.00407)	0.109*** (0.00403)	-0.0218*** (0.00569)	0.153*** (0.00363)	0.116*** (0.00364)	-0.0342*** (0.00491)
SY23 * days absent	0.0671*** (0.00428)	0.0927*** (0.00433)	-0.0327*** (0.00644)	0.127*** (0.00383)	0.0854*** (0.00394)	-0.0453*** (0.00556)
Eligibility FRPL		-12.71*** (0.0408)	-0.0595 (0.0594)		-12.24*** (0.0372)	0.213*** (0.0509)
English Learner status		-21.40*** (0.0671)	-5.580*** (0.126)		-14.47*** (0.0625)	-1.572*** (0.107)
Individualized Education Program IEP status		-24.42*** (0.0614)	-0.987*** (0.105)		-17.81*** (0.0570)	0.729*** (0.0895)
Grade 4		3.111*** (0.0613)	-5.854*** (0.314)		-7.153*** (0.0537)	-14.45*** (0.270)
Grade 5		3.361*** (0.0632)	-14.14*** (0.618)		-8.649*** (0.0558)	-23.23*** (0.532)
Grade 6		2.380*** (0.0665)	-24.33 (0.925)		-12.32*** (0.0595)	-34.71*** (0.795)
Grade 7		5.188*** (0.0696)	-30.86*** (1.232)		-5.965*** (0.0631)	-36.17*** (1.060)
Grade 8		5.710*** (0.0755)	-38.64*** (1.539)		-10.82*** (0.0693)	-48.93*** (1.324)

Interactions grade and days absent

	(1)	(2)	(3)	(1)	(2)	(3)
<u>ELA</u>				<u>Math</u>		
Grade 4 * days absent		0.175*** (0.00433)	0.128*** (0.00465)		0.195*** (0.00382)	0.149*** (0.00402)
Grade 5 * days absent		0.244*** (0.00449)	0.163*** (0.00509)		0.227*** (0.00399)	0.152*** (0.00441)
Grade 6 * days absent		0.270*** (0.00439)	0.177*** (0.00530)		0.309*** (0.00393)	0.226*** (0.00459)
Grade 7 * days absent		0.107*** (0.00439)	0.0100* (0.00565)		0.343*** (0.00395)	0.254*** (0.00490)
Grade 8 * days absent		0.0827*** (0.00454)	-0.0149** (0.00616)		0.0511*** (0.00412)	-0.0267*** (0.00534)
Constant	739.8*** (0.0474)	750.3*** (0.0619)	738.2*** (0.123)	739.6*** (0.0430)	755.9*** (0.0558)	744.0*** (0.105)
Observations	3,010,014	3,010,014	3,010,014	2,997,909	2,997,909	2,997,909
R-squared	0.061	0.045	0.082	0.068	0.076	0.123
Number of students	1,429,814	1,429,814	1,429,814	1,427,817	1,427,817	1,427,817
Individual FE	NO	NO	YES	NO	NO	YES
Year FE	YES	YES	YES	YES	YES	YES
Student controls	NO	YES	YES	NO	YES	YES

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Baseline SY19 and grade 3. All models account for cluster standard errors at the school level.

TABLE A13. Estimated Models for SAT scores.

	(1)	(2)	(1)	(2)
Variables	<u>Reading</u>		<u>Math</u>	
Days absent	-3.118*** (0.0228)	-1.804*** (0.0551)	-3.284*** (0.0243)	-2.339*** (0.0668)
Days absent	0.0183*** (0.000190)	0.0118*** (0.000594)	0.0222*** (0.000203)	0.0147*** (0.000682)
SY21	-6.203*** (0.474)	-6.872*** (0.802)	-19.30*** (0.505)	-19.52*** (0.959)
SY22	0.613 (0.505)	-0.762 (0.954)	-11.80*** (0.538)	-13.66*** (1.079)
SY23	-1.495*** (0.506)	-0.442 (0.835)	-16.50*** (0.539)	-15.81*** (0.992)

Interactions year and days absent

Year 2019 X days absent	0 (0)	0 (0)	0 (0)	0 (0)
Year 2021 X days absent	0.187*** (0.0236)	0.117*** (0.0566)	0.443*** (0.0251)	0.324*** (0.0631)
Year 2022 X days absent	0.0484** (0.0240)	-0.000159 (0.0420)	0.201*** (0.0255)	0.131*** (0.0417)
Year 2023 X days absent	0.0351 (0.0244)	-0.0338 (0.0397)	0.236*** (0.0260)	0.143*** (0.0411)
Eligibility FRPL		-39.56*** (1.649)		-40.88*** (1.912)
English Learner status		-72.40*** (1.937)		-60.97*** (2.052)
Individualized Education Program (IEP) status		-73.15*** (1.313)		-79.26*** (1.502)
American Indian or Alaska Native		-20.15*** (2.870)		-23.61*** (3.332)
Asian		47.97*** (4.668)		75.46*** (5.930)
Black or African American		-51.47*** (2.451)		-55.60*** (2.608)
Hispanic or Latino		-25.40*** (2.147)		-26.92*** (2.516)
Native Hawaiian or Other Pacific Island		5.384 (6.129)		11.48 (7.694)
Two or More Races		-0.648 (1.951)		-4.028* (2.170)
Female		11.65*** (0.354)		-7.464 (0.500)

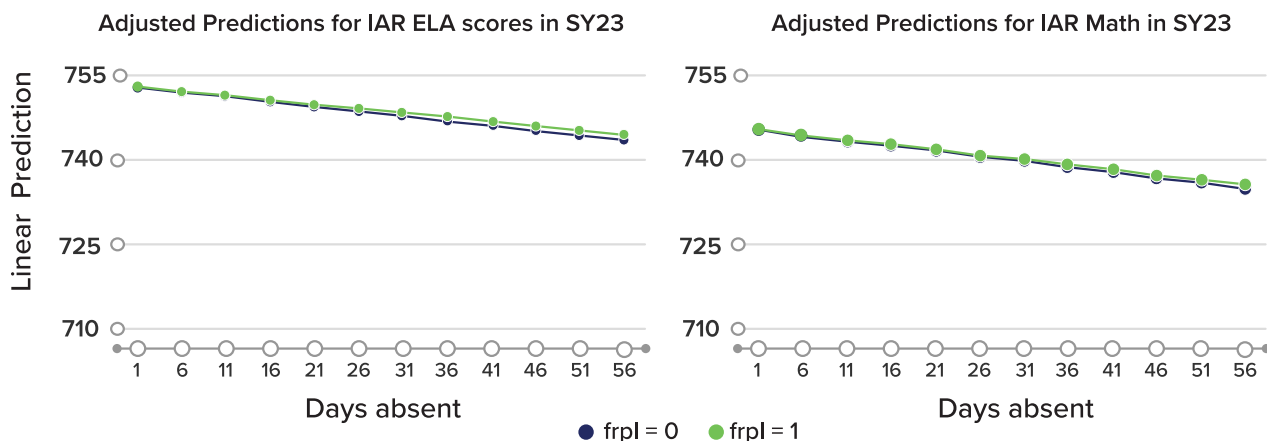
	(1)	(2)	(1)	(2)
Variables	<u>Reading</u>		<u>Math</u>	
Constant	531.2*** (0.358)	551.9*** (2.511)	538.2*** (0.382)	567.1*** (3.214)
Observations	533,189	520,777	532,795	520,416
R-squared	0.093	0.323	0.113	0.335
Student controls	NO	YES	NO	YES
Year FE	YES	YES	YES	YES

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Baseline white male. All models account for cluster standard errors at the school level.

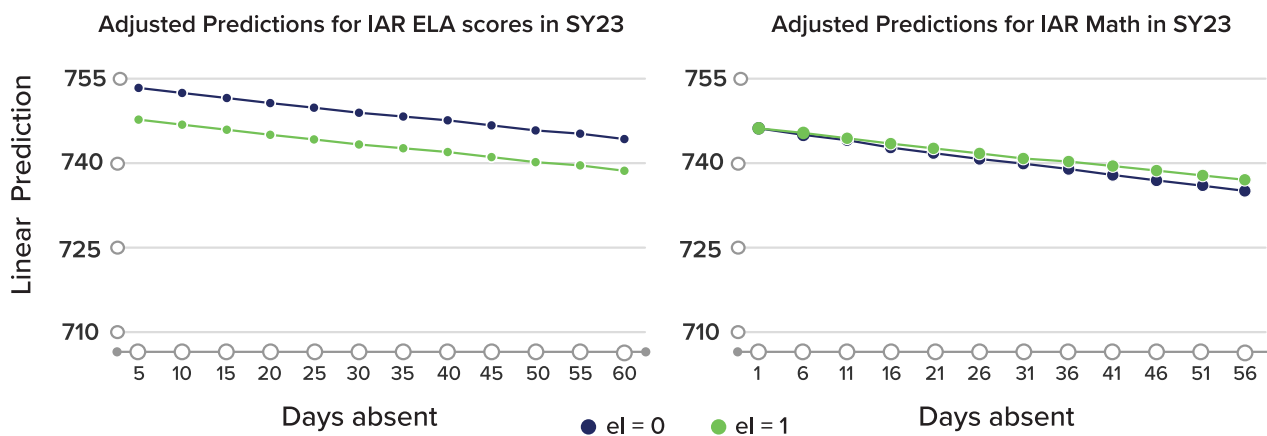
APPENDIX B

FIGURE B1: Differences in predicted outcomes for IAR models.

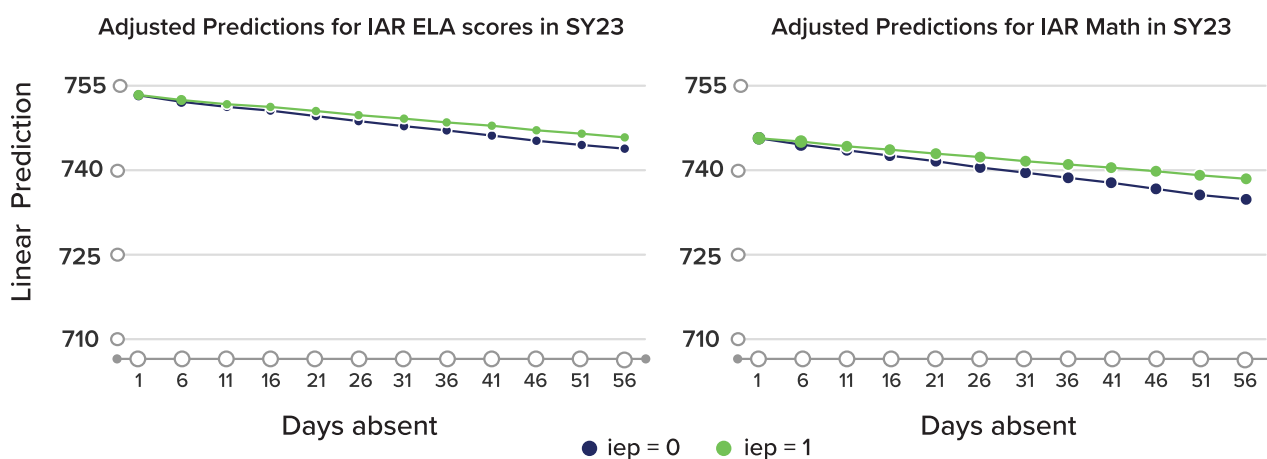
a. Free or Reduced-Price Lunch (FRPL)



b. English Learner (EL) status



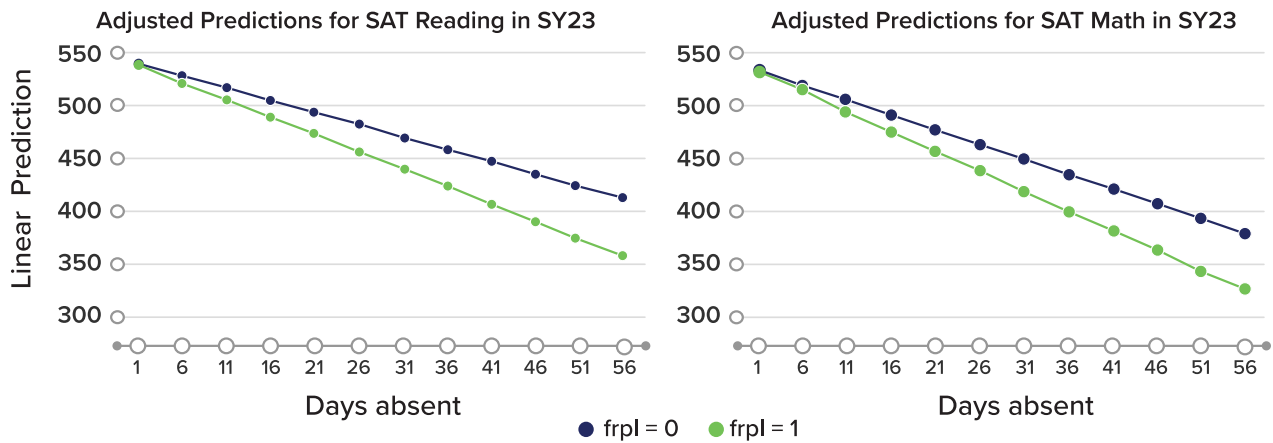
c. Individualized Educational Program (IEP)



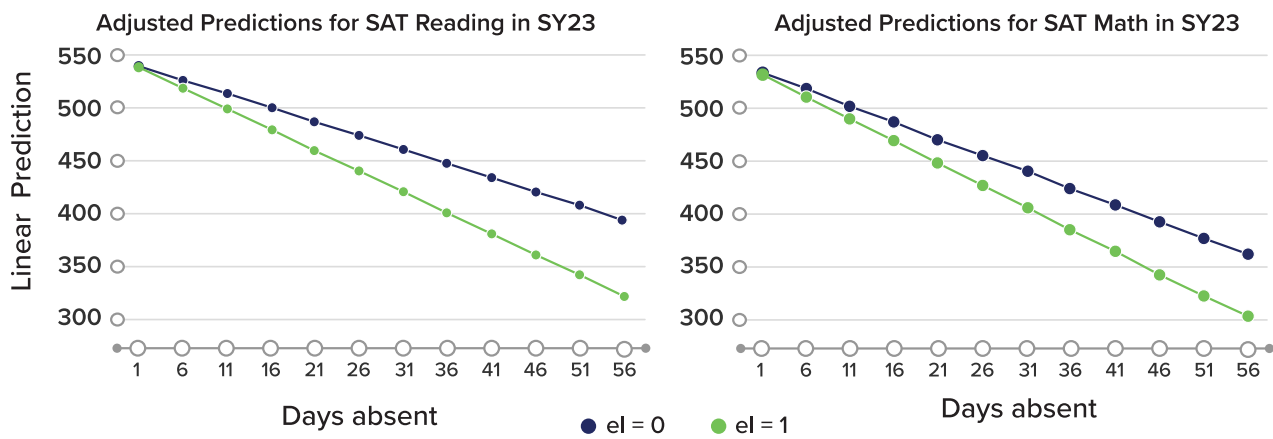
Note: Differences shown for SY23 for all groups. SY19 graphs available upon request.

FIGURE B2: Differences in predicted outcomes for SAT models.

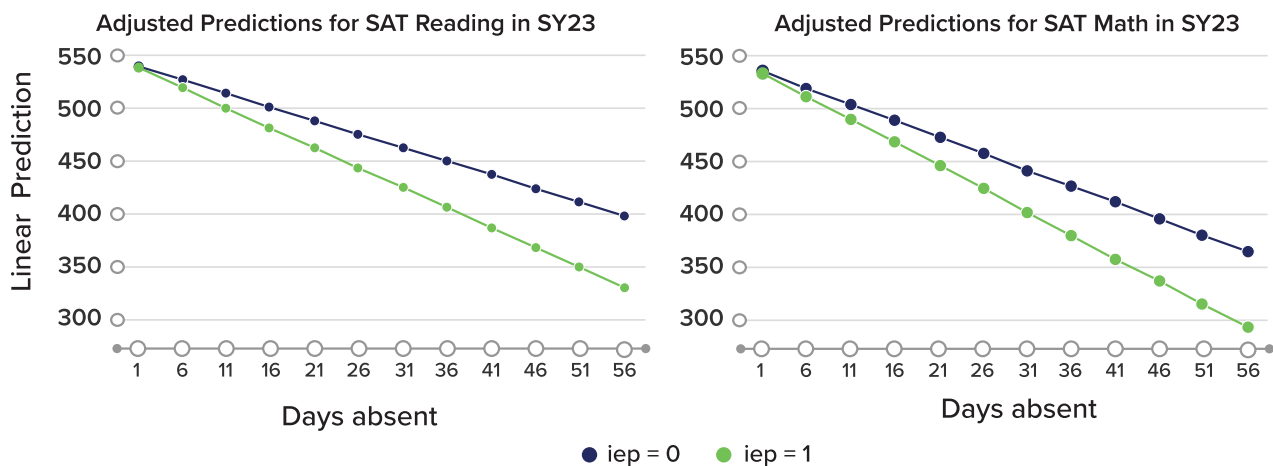
a. Free or Reduced-Price Lunch (FRPL)



b. English Learner (EL) status



c. Individualized Educational Program (IEP)



Note: Differences shown for SY23 for all groups. SY19 graphs available upon request.