OLR White Paper: August 2022

Trends in student attendance and instructional mode during the 2020-2021 school year

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Researchers have studied student attendance since at least the mid-1990s (Caldas, 1993; Lamdin, 1996; Gottfried and Hutt, 2019). In this post, OLR describes selected patterns of monthly attendance (whether present or absent) and instructional mode (whether present remotely or in-person) across North Carolina during the 2020-2021 school year. Attendance and instructional mode varied widely between geographic regions, local education agencies (LEAs), schools, and students. We estimate that the statewide chronic absenteeism rate exceeded its pre-pandemic value well before the end of the year and provide evidence that students' attendance and instructional mode during their first month of school strongly predicts their attendance and instructional mode for the entire year. We conclude with policy considerations and recommendations for future research.

Data

This analysis utilizes statewide student-level monthly attendance data captured in PowerSchool. For each student, we observe the number of monthly remote, in-person, and absent days and generate monthly percentages for each category of attendance and instructional mode. For example, a student who is absent for 10 days out of a 20-day school month is absent for 50% of the month. We exclude students with potential attendance discrepancies, yielding 15,252,865 student-months across 1,534,228 total students (96%), and link these data to school-level characteristics from NC EDDIE and student grade-levels held in NCDPI's longitudinal data system.

Variation in school-level fully remote instruction between LEAs

At the LEA-level, the average school began the 2020-2021 school year with 61% fully remote students (Figures 1a and 1b). Initial participation in and the rate at which LEAs shifted away from fully remote instruction varied by region. Regions that began the year at higher LEA levels of fully remote instruction saw proportionally more students transition into hybrid and fully in-person instruction than LEAs that began the year at lower fully remote levels. For example, school-level fully remote instruction in the Northeast decreased from 79% to 13%, a decline of 83% or 66 percentage points. However, it decreased from 48% to 27% in the Southwest, a decline of 44% or 21 percentage points.

The shift to hybrid and fully in-person instruction can be categorized into three time periods. First, LEAs moved away from fully remote instruction between August and the end of October. Then, statewide LEA-level fully remote instruction remained relatively constant between November and the end of January. However, starting in February, LEAs consistently transitioned into hybrid and fully in-person instruction until the end of the year. LEAs still open in June saw a positive but statistically insignificant move back towards fully remote instruction.

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Between student variation in instructional mode

Most students experienced at least some in-person instruction (either fully in-person or hybrid) during most months of the school year (Figure 2a). However, not all students participated in the same blend of remote and in-person learning. The percent of days spent in each instructional mode varied widely between students throughout the year.

Figure 2b summarizes this variation. The average student spent less time in remote instruction as the year went on, transitioning into mostly in-person instruction by the end of April. However, many other students began mostly in-person instruction earlier in the year. For example, the top 25% of in-person participants began mostly fully in-person instruction sometime during March. On average, the monthly difference between students at the 25th and 75th percentile of remote and in-person instruction equates to roughly half a month (54% and 49% of days, respectively). In other words, during any given month of the 2020-2021 school year, many students were mostly remote while many others were mostly in-person.

Variation in instructional mode and attendance by grade-level and locale

Student attendance and instructional mode varied by many characteristics. Here, OLR presents two characteristics associated with meaningful variation: grade-level and locale (Figure 3). On average, students in lower grades and in more distant areas spent more time in-person and less time remote than their peers in higher grades or more densely populated areas; high schoolers and students in urban areas spent more time in remote instruction and less time in-person.

Existing research suggests that absenteeism increased nationally during the 2020-2021 school year, especially in areas with lower levels of in-person instruction (Carminucci et al., 2021). We corroborate this finding by presenting monthly absenteeism rates by grade and locale, given that in-person instruction varies by these characteristics. Absenteeism plateaued around December for most school groups. However, high-school absenteeism increased throughout the year regardless of locale. High school students were, on average, absent 18% of May, and were least likely to experience in-person instruction throughout the year. Finally, we estimate that North Carolina surpassed its pre-pandemic chronic absenteeism rate (16%) sometime during the month of March, or roughly three months prior to the end of the school year (Figure 4).

Association between first month and yearly attendance

Students' attendance and instructional mode during their first school month strongly predicts their attendance and instructional mode over the entire 2020-2021 year. Figure 5 displays this relationship for each category of attendance, instructional mode, and grade-level. In all cases, students with higher participation in an attendance or instructional mode category during their first month of school also end the year with higher overall participation in that attendance or instructional mode category.

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These results are taken from statistical models that compare students to their same-grade same-school peers, which mitigates concerns that these trends are due to between school, or within school between grade, differences in attendance and instructional mode. For example, even in schools that experienced great declines in remote participation, students with greater levels of remote instruction during their first month of school finished the year with more remote instruction overall than their same-grade peers who began the year with lower levels of remote instruction.

Considerations for policy and practice

Acknowledging the need for additional research, these findings can inform policy and practice in at least four meaningful ways.

1. If remote learning is an at least semi-permanent option for traditional instruction (e.g., instruction occurring in classrooms within schools that are predominantly in-person), then policymakers will need to estimate participation before it happens in order to promote equitable schooling experiences for all students. The findings in Figure 1a and 1b suggest that this value may lie somewhere between 10% and 20%, although differences in context between May 2021 and today probably place these estimates near the upper bound of future optional participation. Additional research should determine this range more properly.
2. Attendance strategies that utilize group-level averages may be ineffective when attendance varies widely within groups. Educational agencies should rigorously monitor student-level attendance data to ensure support for all students. Furthermore, they should continuously evaluate interventions aimed to improve attendance.
3. It is possible that remote learning could be used to reduce absences and therefore improve student outcomes. However, it is unclear which students may benefit from such policies. The evidence in Figure 3 suggests that at least some are high schoolers. Further analysis should attempt to answer this question.
4. School personnel can use a students' first month attendance data to predict end-of-year attendance outcomes and design interventions accordingly. To continually inform the field, additional research should test whether the associations observed during the pandemic change over time.

Conclusion

Education uses attendance as both a predictor of outcomes and an indicator of educational quality. Attendance has become an increasingly salient issue during the pandemic, given sustained disruptions to traditional in-person schooling and concerns regarding student development and equity. OLR will continue to explore attendance to support decision-making at all levels of education policy.

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References

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Carminucci, J., Hodgman, S., Rickles, J., & Garet, M. (2021) Student Attendance and Enrollment Loss in 2020-2021. American Institutes for Research.

Gottfried, M., & Hutt, E. (2019). Absent from School: Understanding and Addressing Student Absenteeism. Harvard Education Press.

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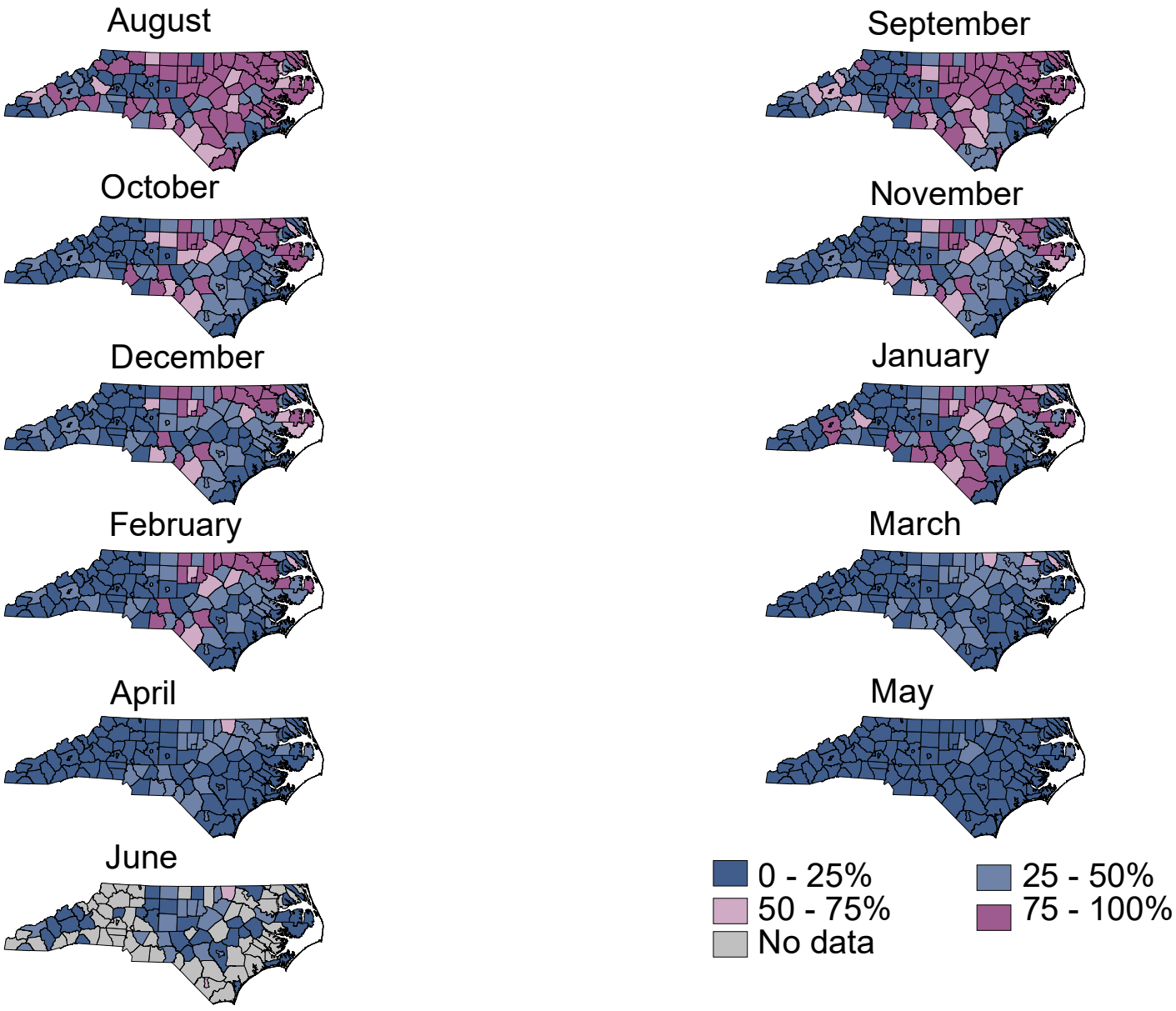
Figure 1a. Average school percent remote students, by LEA and month (2020-2021)



Notes: LEAs are grouped into four categories according to the unweighted average school percent fully remote students during each month. A student is "fully remote" if 100% of their present days are spent in remote instruction. Categories in legend include the upper bound (e.g., 25% for 0-25%). Many LEAs close during May. There are 115 traditional LEAs in North Carolina, and most are county-wide. Maps exclude charters.

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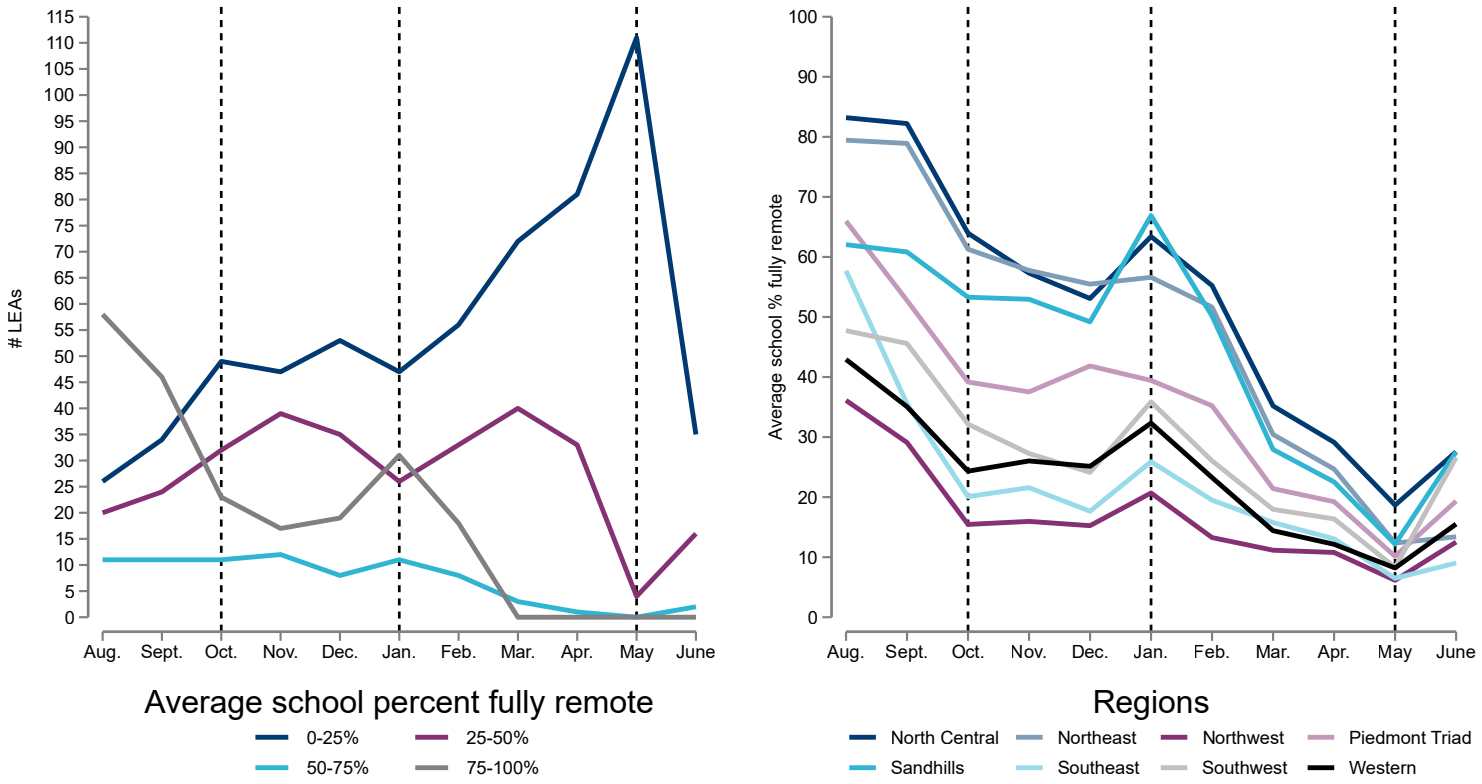
Figure 1b. School-level variation in fully remote instruction, by month (2020-2021)



Notes: Graphs represent unweighted average school percent fully remote students. The left panel's y-axis counts LEAs at each level of average school percent fully remote students, as displayed in the legend. For example, the average school in 58 LEAs (~50% of LEAs) was at least 75% fully remote during the month of August. The right panel gives the unweighted average school percent fully remote students for each region and month. For example, the average school in the North Central region during August was 83% fully remote. Tick mark above each month indicates the end of that month. Graphs exclude charters and summarize maps in Figure 1a.

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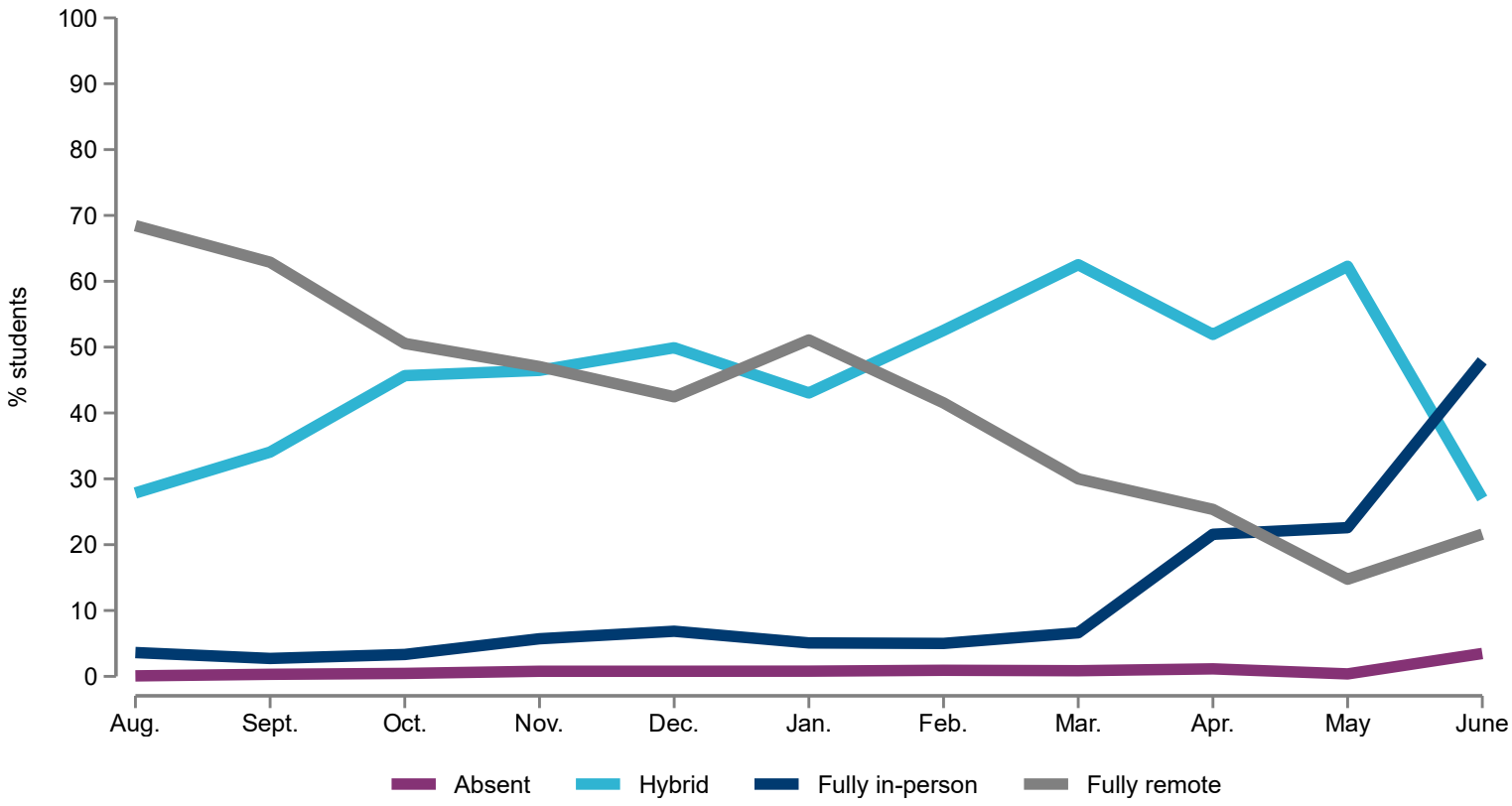
2a. Percent students in each instructional mode, by month (2020-2021)



Notes: Graph displays the percent of state students in each instructional mode for each month in the school year. "Fully in-person" means that a student was in-person for all present days while "fully remote" means that a student was remote for all present days. "Hybrid" means that a student had some blend of in-person and remote days. "Absent" indicates a student who was absent for all days in that month. Tick mark above each month indicates the end of that month.

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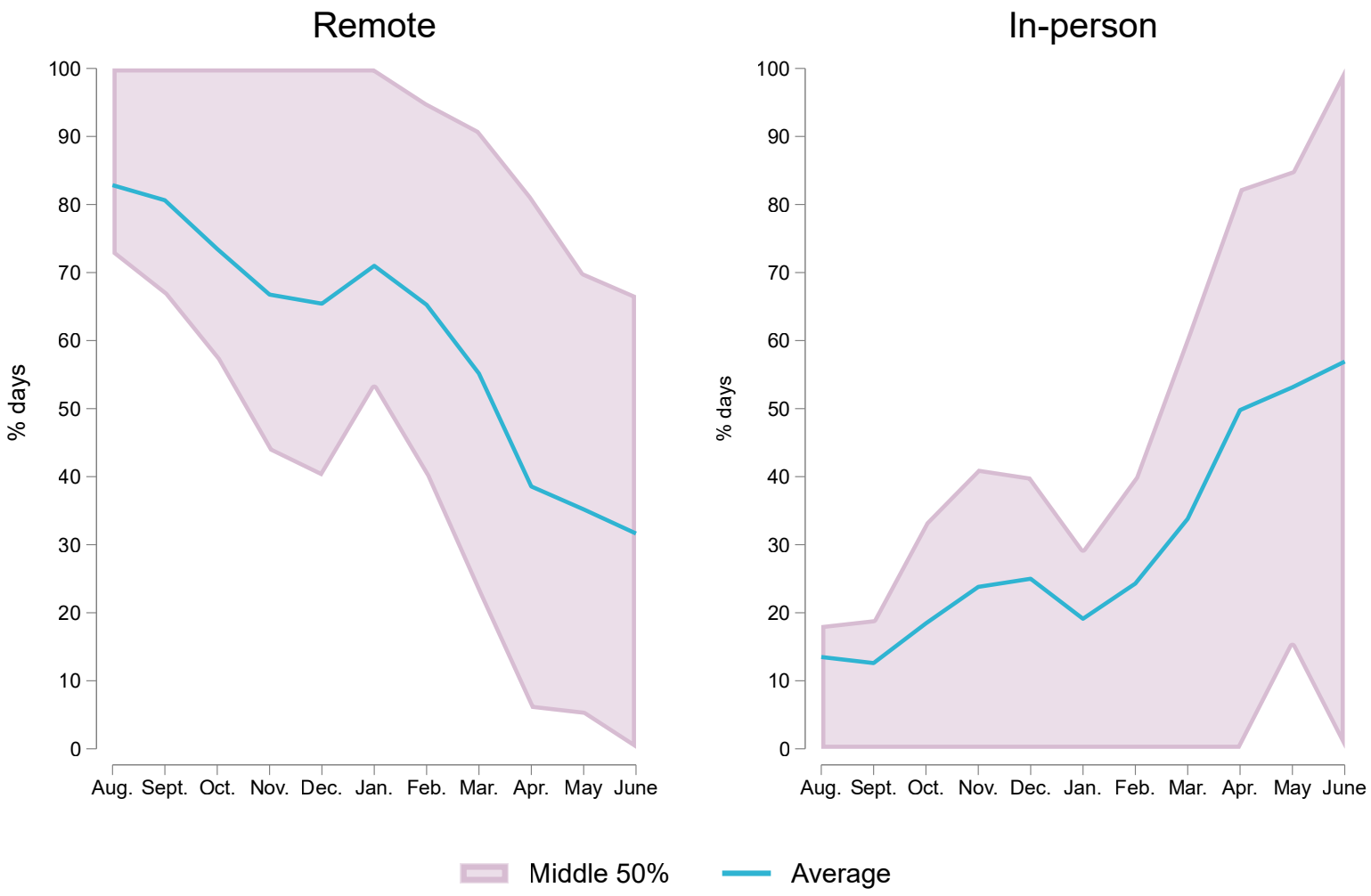
Figure 2b. Student-level variation in instructional mode, by month (2020-2021)



Notes: Left panel displays the mean (average) and interquartile range (middle 50%) of percent days spent in remote instruction while the right panel displays the mean and interquartile range of days spent in in-person instruction, by month. The lower edge of the purple area represents the 25th percentile and the upper edge of the purple area represents the 75th percentile. Tick mark above each month indicates the end of that month.

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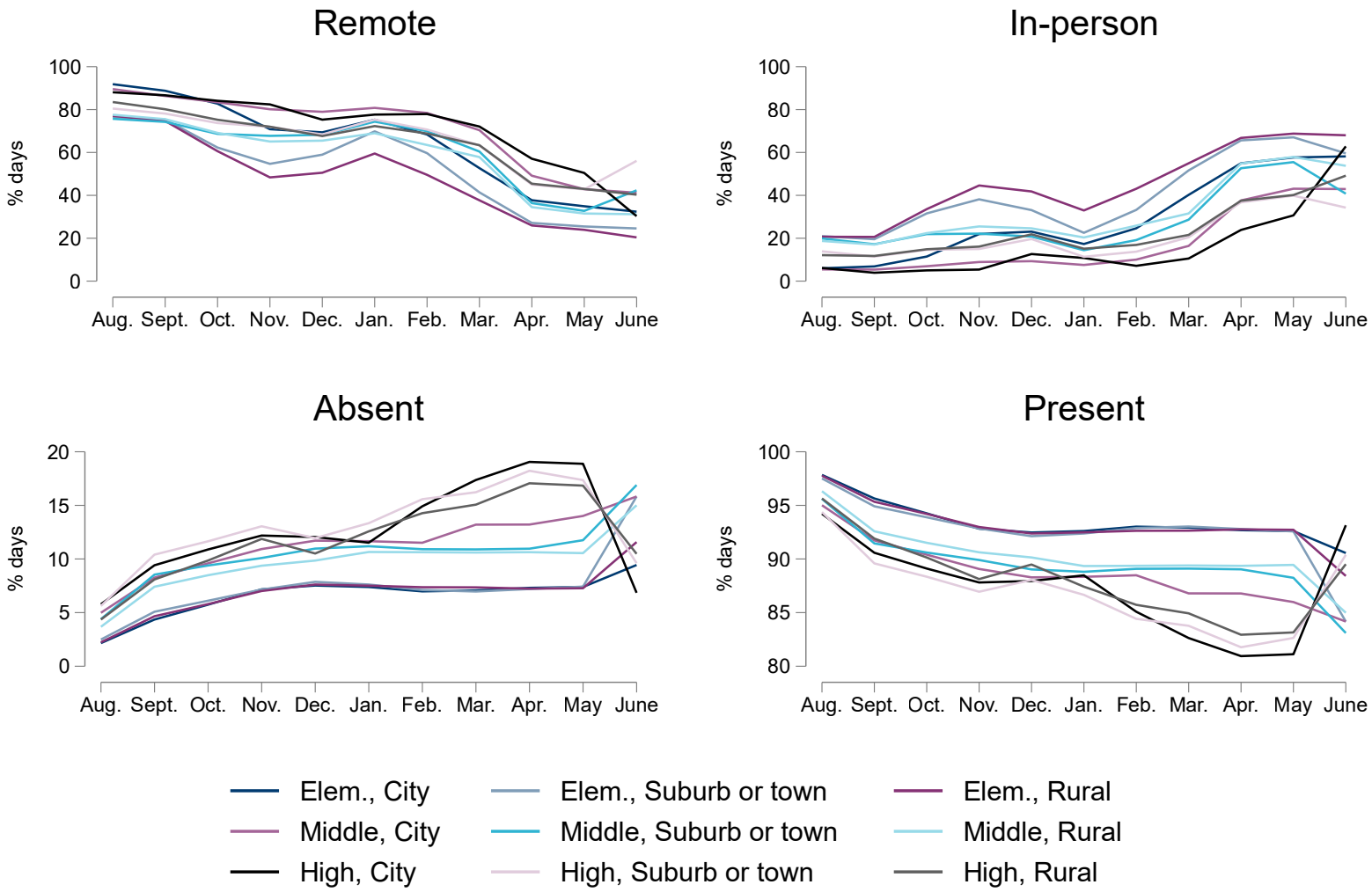
Figure 3. Attendance and instructional mode by month, grade-level, and locale (2020-2021)



Notes: Panels present each attendance and instructional mode category separately. Lines represent certain schools in a certain locale. Locales are taken from NC EDDIE and are collapsed according to their theme. For example, "City" includes all cities regardless of size. Tick mark above each month indicates the end of that month.

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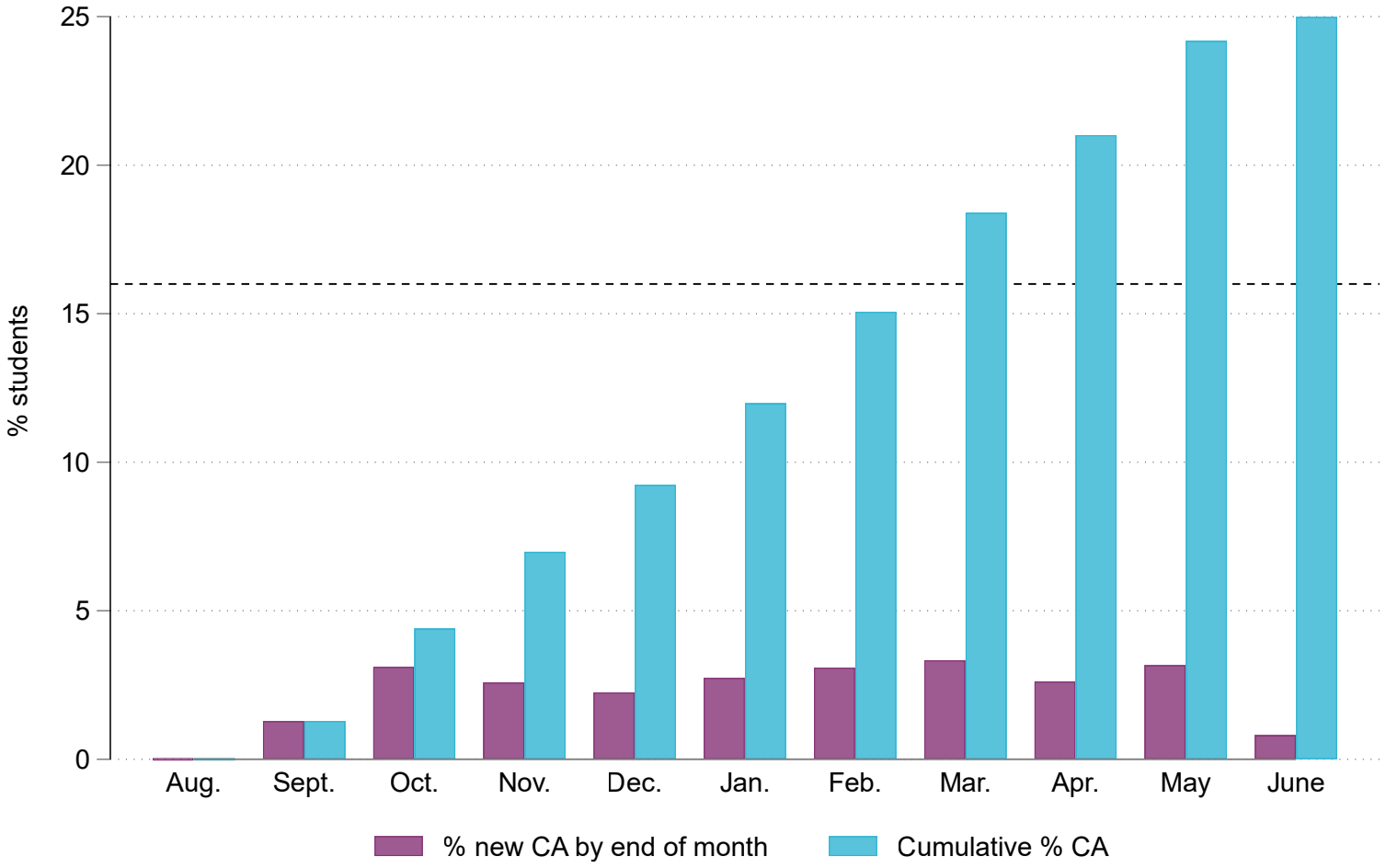
Figure 4. Accumulation of chronic absenteeism, by month (2020-2021)



Notes: purple bars represent the percent of students who became chronically absent for the year during each month. Blue bars give the total yearly percent of chronically absent students by the end of each month. Dashed horizontal line represents North Carolina's chronic absenteeism rate in 2019 (16%). The official state rate was 26% in 2021. Yearly school-level chronic absenteeism statistics are publicly available through NCDPI's School Report Card platform.

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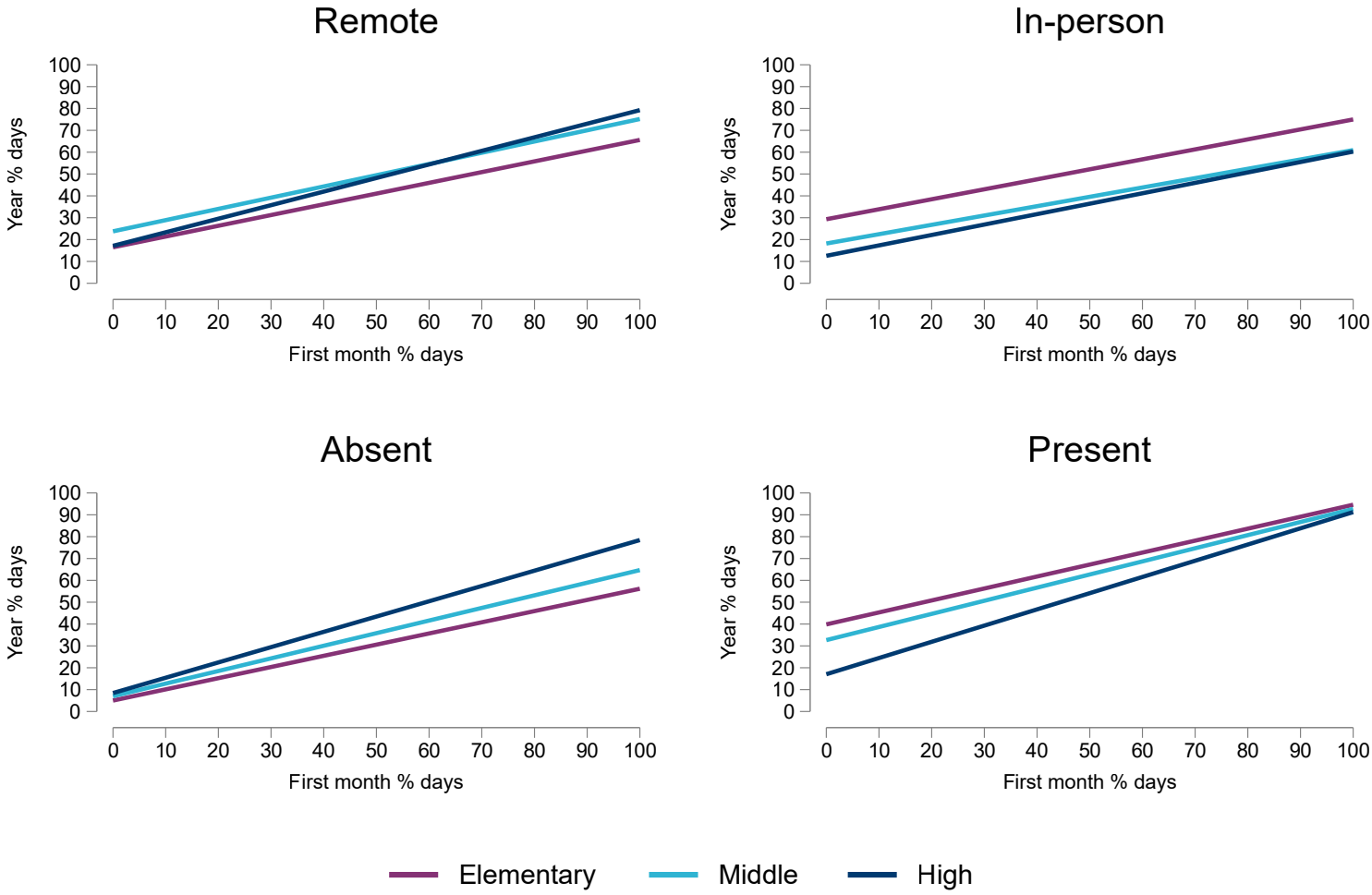
Figure 5. Association between first month attendance/instructional mode and yearly attendance/instructional mode, by grade-level (2020-2021)



Notes: Panels present each attendance/instructional mode category separately. Lines represent the association between first month (whether August or another) attendance/instructional mode and yearly attendance/instructional mode for certain grade categories. Elementary = K-5; Middle = 6-8; High = 9-12. Results taken from student-level regressions of yearly attendance/instructional mode on first month attendance/instructional mode, measured in percent days. Models include school-grade fixed effects with standard errors clustered by school-grade. First month attendance/instructional mode and school-grade of membership account for between 39% and 66% of overall variation in yearly attendance/instructional mode.