Factors Related to Testing Location during the 2020–2021 School Year

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Executive Summary

Learning environments during the 2020–2021 school year looked very different across the country due to varied responses to the COVID-19 pandemic. Research on school opening plans has pointed to political and demographic variables as driving school instructional modes, rather than COVID infection rates (Valant, 2020; Harris & Oliver, 2021; Lehrer-Small, 2021). In this study, we use a student-level measure of testing location to provide more fine-grained insight into which students were in school, remote, or hybrid during the 2020–2021 school year.

We found that in-school testing increased across the 2020–2021 school year, from fall to winter to spring. Students in lower grade levels, particularly Grade K, were more likely to test in school across all testing windows. White students were more likely to test in school than their peers, and in-school testing was higher in schools located farther from cities (i.e., in suburbs and towns and rural areas). Across all testing windows, in-school testing was more prevalent in schools in the Midwest and the South regions, relative to those in the Northeast and West.

A four-level logistic regression model revealed that more than 60% of the variation in whether or not a student tested in school was accounted for at the school, district, and state levels, with most of the variability occurring at the district and state levels. State and local politics were strong predictors of student testing location, while COVID case rates were only statistically significant predictors of testing location in two grade levels. Even after controlling for politics, COVID case rates, and school-level demographic variables, student race/ethnicity was still a significant predictor of testing in school, with White students more likely to test in school than all other racial/ethnic groups.

This study provides the most detailed overview of student testing location during the 2020–2021 school year to date. Additionally, our modeling results provide insight into the variables that were associated with testing in school and highlight how students from historically marginalized populations were more likely to test away from school during the pandemic.

Introduction

Learning environments during the 2020–2021 school year looked very different across the country due to varied responses to the COVID-19 pandemic. According to February 2021 survey data from the US Department of Education, only half of Grade 4 public school students nationally, and less than half of Grade 8 students, were offered in-person learning, while nearly 90% were offered a remote learning option. What's more, research from the Brookings Institution (Valant, 2020) showed that school re-opening plans were more highly correlated with local political attitudes than with county infection rates. School calendar data from Burbio (2021) also pointed at a correlation between school instructional model and political attitudes (Lehrer-Small, 2021). However, many other interrelated factors, such as demographics and COVID infection rates, were also correlated with school opening decisions (Harris & Oliver, 2021), making it difficult to point to one factor alone as the cause.

The available data suggest that differential learning environments during the 2020–2021 school year systematically left students from historically underserved communities more likely to be learning away from school (Harris & Oliver, 2021; US Department of Education; Waller, 2021). As researchers begin to assess the impact of the COVID-19 pandemic on student achievement (Curriculum Associates, 2021; Kuhfeld, Tarasawa, Johnson, Ruzek, & Lewis, 2020), it is important to consider how differential learning environments may have contributed to these effects and exacerbated existing historical inequalities.

To answer these timely questions about the differential effects of the COVID-19 pandemic on student learning, we must first understand where students were learning during the 2020–2021 school year. In this report, we constructed a nationally representative sample of students with self-reported location data, student- and school-level demographic data, county-level COVID-19 case rates, and state- and local-political data to understand students' testing environments during the 2020–2021 school year and how students from historically underserved communities may have been systematically disadvantaged by the disruption in learning caused by the COVID-19 pandemic. The data used in this study was sampled from more than nine million students enrolled in public, private, and charter schools nationwide who used the *i-Ready® Diagnostic* computerized adaptive formative assessment during the 2020–2021 school year.

Because we only have data on student testing locations, we are using testing location as an imperfect proxy for learning location. This is a noted limitation of this study.

Methodology

Research Questions

This report aims to answer the following research questions:

1. Where did students test during fall, winter, and spring of the 2020–2021 school year?
2. How did testing location differ by demographics?
    a. How did testing location differ by student ethnicity?
    b. How did testing location differ by school locale, region, and zip code income level?
3. What variables were most strongly associated with a student testing in or out of school?

Data

This report uses data from Curriculum Associates' *i-Ready Diagnostic*, an online adaptive assessment taken up to three times per academic year by approximately 25% of the Grades K–8 public school population. We also used publicly available data on schools and districts from the National Center for Education Statistics (NCES) Common Core of Data (CCD) from the 2019–2020 school year, median annual income by zip code data from the US Census (2019), and county-level COVID-19 case rates from *The New York Times* (2021).

Testing Location

During the 2020–2021 school year, Curriculum Associates asked students, "Are you working in your school building today?" at the start of each testing session, to which students could respond, "Yes" or "No." This student by testing session-level data allowed us to examine student location at a finer-grain size, relative to the school- and district-level data used in other reports (e.g., Valant, 2020; Burbio, 2021, Harris & Oliver, 2021). Additionally, due to the nature of *i-Ready Diagnostic* implementation—students usually test in both Reading and Mathematics and often split each Diagnostic into multiple testing sessions—we had multiple testing location data points for each student in each of the three testing windows: fall, winter, and spring[1].

Within each testing window, students were coded into three testing location groups. If all of a student's Diagnostic sessions were reported to be in school during a given testing window, the student was coded as in school for that testing window. If all of a student's Diagnostic sessions were reported to be not in school during a given testing window, the student was coded as remote for that testing window. If the student had a mixture of in-school and not-in-school testing locations within a testing window, the student was coded as hybrid. To remove instances where a student came into the school building only to take the Diagnostic, with the rest of their learning taking place remotely, we filtered out students who had fewer than two Diagnostic sessions in any testing window. This step removed between 3% and 8% of students from the eligible sampling frame in each grade level and testing window.

[1]The three *i-Ready* testing windows are defined as follows:
Fall: August 1, 2020, to November 15, 2020
Winter: November 16, 2020, to March 1, 2021
Spring: March 2, 2021, to June 15, 2021

Sample Selection

Sampling Frame

The sample used for this study was selected from 4,465,966 students in Grades K–5 who completed the *i-Ready Diagnostic* in either Reading or Mathematics (or both) during each testing window (i.e., fall, winter, and spring) in the 2020–2021 school year. To aid in the generalizability of this study, we selected a stratified sample, at the school level, that closely resembles the national demographics for each grade level. A student was eligible for inclusion in the sampling frame if they:

- Had non-missing race/ethnicity[2] in the *i-Ready* database
- Had non-missing *i-Ready Diagnostic* location data for at least two Diagnostic testing sessions during each of the fall, winter, and spring testing windows

After selecting eligible students, the school sampling frame was selected. Eligible schools:

- Had race/ethnicity and locale[3] data in the NCES database
- Were in a zip code with non-missing median annual household income data from the US Census database
- Had at least five students and at least 75% of their grade-level NCES enrollment qualify for the student sampling frame
- Had percentages of White, Black, and Hispanic students in the *i-Ready* database that matched within plus or minus five percentage points of the percentages reported for the same grade level by NCES

Sampling Targets

Sampling targets define the demographic distribution of the target population. They are used as the criterion against which we compare our stratified sample to ensure representativeness. To create the sampling targets, we calculated the percentage of Black, Hispanic, and White students, as well as the percentage of students in each combination of geographic region (i.e., East, Midwest, South, and West) and locale (i.e., City, Suburb, and Town/Rural), by grade level from the NCES CCD 2019–2020 data. We also merged median annual income data from the US Census with the schools' zip code to create median annual income averages.

Stratified Sampling

The stratified sampling was conducted at the school level to select a sample of schools such that the frequencies of students in each of the desired demographic categories in the sample matched within plus or minus five percentage points of the sampling targets and the sample median annual household income matched within +/- 5% of the population value. This was done as follows:

1. We compared the demographic distributions and median income of the sample (starting with the full sampling frame) against the sampling targets.

If the sample demographics did not match within plus or minus five percentage points of the sampling targets or the median income absolute difference proportion was greater than 5% of the population median income:

2. We selected a stratified sample with the sample size equal to 98% of the sample from Step 1.

We repeated Steps 1 and 2 until we arrived at a sample where the demographic distributions matched within plus or minus five percentage points of the sampling targets.

We repeated the sampling process 10 times (i.e., 10 iterations with different seeds) per grade level to select 10 nationally representative samples. After selecting the 10 samples for each grade level, we calculated the percentage of students who tested in school, remote, and hybrid by testing window. Upon reviewing the results for the 10 iterations, we determined that the results were

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[2]In the *i-Ready* database, race and ethnicity (Hispanic or Not Hispanic) are captured separately. For this study, we recoded students' race to "Hispanic" if the students' ethnicity was listed as Hispanic, to be consistent with the NCES definition of race/ethnicity.

[3]For the purposes of achieving sufficient sample sizes in each group, we condensed the NCES locale code into three levels: City, Suburb, and Town/Rural.

consistent enough across iterations that we felt comfortable selecting one iteration to use for the complete analyses. We selected the iteration that resulted in the largest average sample size across grade levels and testing windows.

Sampling Results

The sampling methodology described above was completed successfully for Grades K–5. All samples were sufficiently representative of student race/ethnicity and region by locale combination. Additionally, sampling on percentages of Black, Hispanic, and White students ended up yielding samples that were also representative of the other categories of race/ethnicity. Table 1a shows the number of students included in the sampling frame and the final samples by grade level. Tables 1b–1d summarize the demographic variables for the sampling targets (i.e., population) and the final samples by grade level.

Table 1a: Number and Percentage of Students in Sampling Frame and Sample

Grade	N Sampling Frame	N Sample	% in Sample
K	103,051	34,585	34%
1	171,542	82,835	48%
2	207,660	87,224	42%
3	217,072	87,671	40%
4	247,960	107,928	44%
5	231,734	89,520	39%

Table 1b: Race/Ethnicity Distributions for the Sampling Targets and Sample

	% White		% Black		% Hispanic		% Asian		% Hawaiian or Pacific Islander		% American Indian or Alaskan		% Two or More Races	
Grade	Target	Sample	Target	Sample	Target	Sample	Target	Sample	Target	Sample	Target	Sample	Target	Sample
K	46.0	48.2	14.4	13.6	27.6	26.0	5.3	5.3	.4	.8	.9	.4	5.4	5.7
1	45.8	47.2	14.9	14.3	27.4	28.3	5.5	5.0	.4	.4	.9	.4	5.1	4.3
2	45.6	46.2	14.9	14.7	27.6	28.0	5.5	5.9	.4	.6	.9	.3	5.0	4.3
3	45.5	46.2	15.2	14.4	27.9	28.8	5.3	5.6	.4	.6	.9	.4	4.8	4.0
4	45.7	46.2	15.1	14.7	27.9	29.2	5.3	5.1	.4	.6	.9	.4	4.7	3.8
5	45.7	47.4	15.3	14.5	28.1	28.4	5.2	5.1	.3	.5	.9	.4	4.5	3.8

Table 1c: Region by Locale Distributions for the Sampling Targets and Sample

	Midwest						Northeast					
	City		Suburb		Town/Rural		City		Suburb		Town/Rural	
Grade	Target	Sample	Target	Sample	Target	Sample	Target	Sample	Target	Sample	Target	Sample
K	5.5	3.0	7.2	7.7	7.9	7.3	4.3	0.9	7.6	5.9	2.7	2.7
1	5.5	3.6	7.2	6.5	7.6	6.9	4.4	1.3	7.9	7.6	2.8	2.4
2	5.4	3.3	7.3	6.8	7.6	6.7	4.5	1.4	8.0	7.5	2.8	2.2
3	5.4	3.1	7.3	7.3	7.6	6.1	4.4	1.5	8.1	7.7	2.8	2.3
4	5.3	3.4	7.3	6.9	7.7	6.8	4.4	1.3	8.1	8.3	2.9	2.2
5	5.2	3.3	7.4	7.9	7.7	6.9	4.3	1.7	8.1	8.3	2.8	2.6

	South						West					
	City		Suburb		Town/Rural		City		Suburb		Town/Rural	
Grade	Target	Sample	Grade	Target	Sample	Target	Sample	Target	Sample	Target	Sample	Target
K	11.4	14.3	13.7	18.6	13.6	18.0	10.3	5.8	10.3	12.3	5.3	3.4
1	11.8	13.9	14.3	19.2	14.1	16.1	9.6	8.7	9.6	10.4	5.1	3.5
2	11.7	14.0	14.4	19.2	13.8	14.5	9.6	9.6	9.7	10.7	5.1	4.1
3	11.6	13.5	14.5	19.5	13.8	14.5	9.7	9.7	9.8	10.5	5.1	4.3
4	11.5	12.6	14.4	19.4	13.9	15.1	9.6	9.4	9.8	10.5	5.1	4.2
5	11.5	12.1	14.7	19.5	14.1	14.5	9.4	8.9	9.6	10.1	5.1	4.1

Table 1d: Median Income by School Zip Code Distributions for the Sampling Targets and Sample

Grade	Target Median Income Mean	Target Median Income Standard Deviation	Sample Median Income Mean	Target Mean—Sample Mean	(Target Mean—Sample Mean) ÷ Target Standard Deviation
K	65,490	27,357	64,766	-725	-.03
1	65,590	27,594	65,024	-567	-.02
2	65,901	27,756	65,454	-447	-.02
3	66,037	27,893	65,526	-511	-.02
4	66,141	27,875	65,087	-1,055	-.04
5	66,020	27,759	65,727	-292	-.01

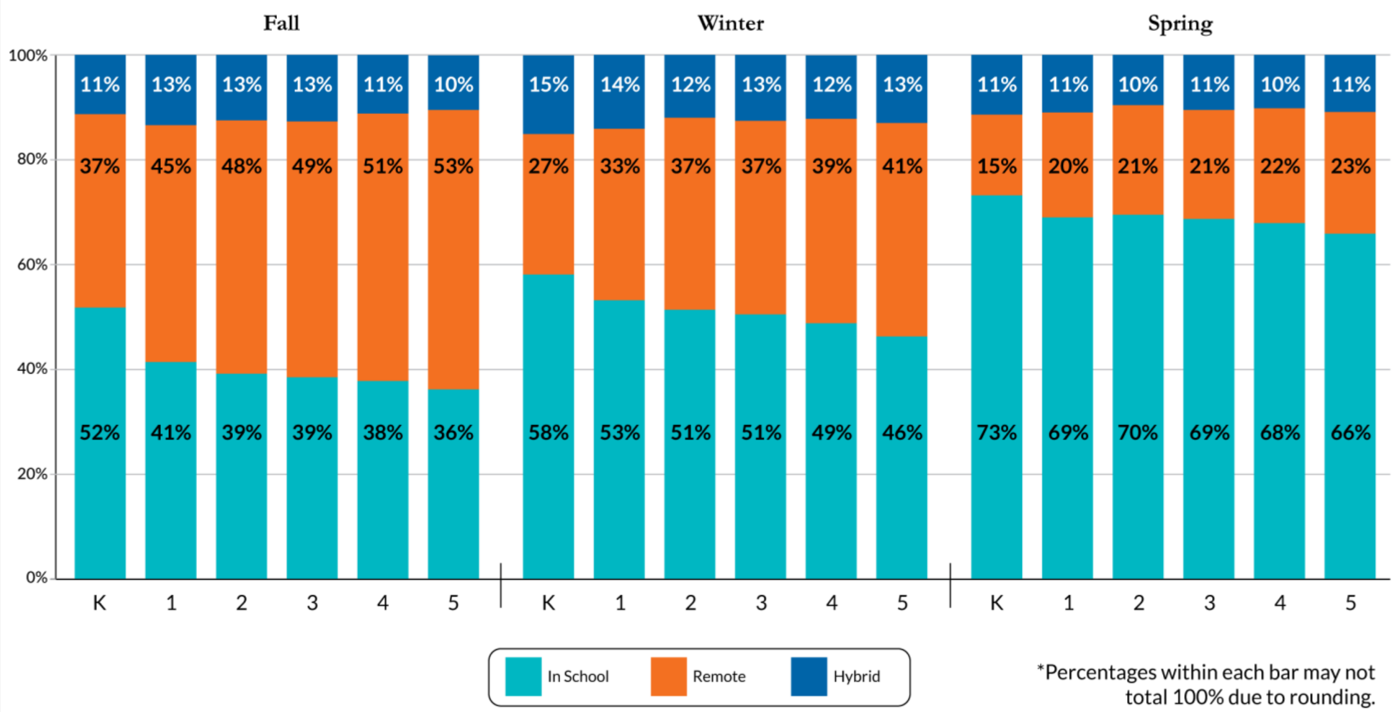
The nationally representative samples from Grades K–5 described above were used for the remaining analyses in this study.

Results

Research Question #1: Where did students test during fall, winter, and spring of the 2020–2021 school year?

The first research question was addressed descriptively by examining frequencies of testing location. Figure 1 shows the percentage of students testing in each location by testing window and grade level.

Figure 1: Testing Location by Testing Window and Grade Level*



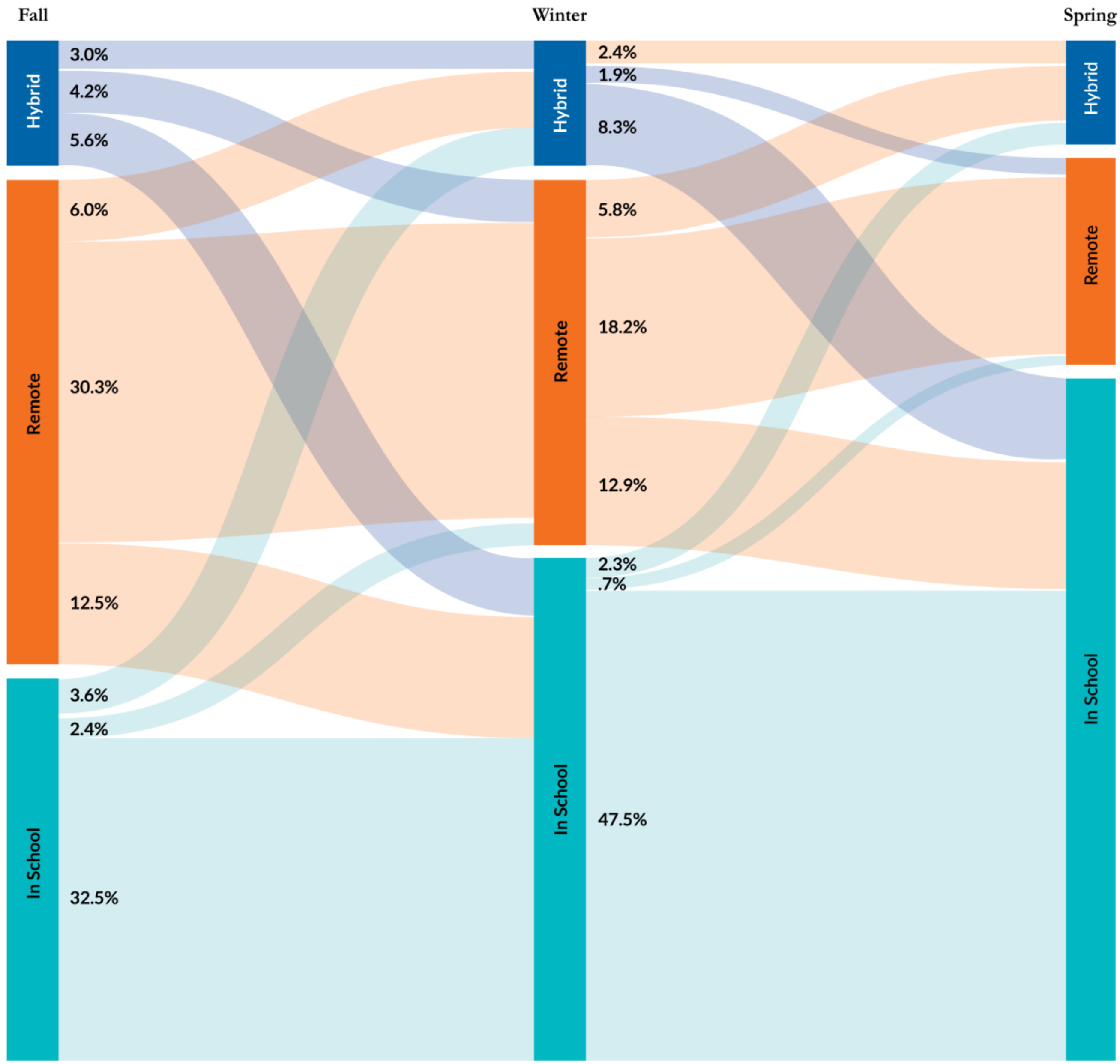
*Percentages within each bar may not total 100% due to rounding.

Within each testing window, the percentage of students who tested in school tended to be higher for students in lower grade levels. Grade K stands out as having had a noticeably higher percentage of students testing in school, compared to the other grades. In the fall, the difference in the percentage of in-school testers between Grades K and 1 (the next highest grade) was larger than the difference between Grades 1 and 5 (the grade with the lowest percentage of those testing in school). In the winter, the difference between Grade K and Grades 1–5 closed, but there was still a difference of more than 10 percentage points in the percentage of in-school testers between Grades K and 5. In spring, the difference closed considerably. The percentage of in-school testers was not meaningfully different between Grades 1 and 5, and the difference between Grades K and 5 was less than 10 percentage points. The trend of higher percentages of lower-grade students testing in school is consistent with the survey data reported by the US Department of Education. However, that data included only schools serving Grades 4–8 students.

Within each grade level, the percentage of students who tested in school increased across the school year. This increase was greatest in grades that started with the lowest percentage of students testing in school (i.e., Grades 1–5). The percentage of students who tested remotely decreased across the three testing windows, while the percentage of hybrid testers increased very slightly from fall to winter before decreasing from winter to spring.

Because we limited our sample to students who had location data in all three testing windows, we were able to examine how student testing location changed across the school year. Figure 2 shows how students changed testing locations across the three testing windows.

Figure 2. Movement in Testing Location across Testing Windows in Grade 3*



*Percentages within each bar may not total 100% due to rounding.

*Because the testing location distribution differed across grade levels, we felt it was not appropriate to report data aggregated across grade levels. As such, we focused on Grade 3 as an exemplar grade for ease of interpretation. A complete crosstab of fall, winter, and spring testing locations by grade can be found in the Appendix.

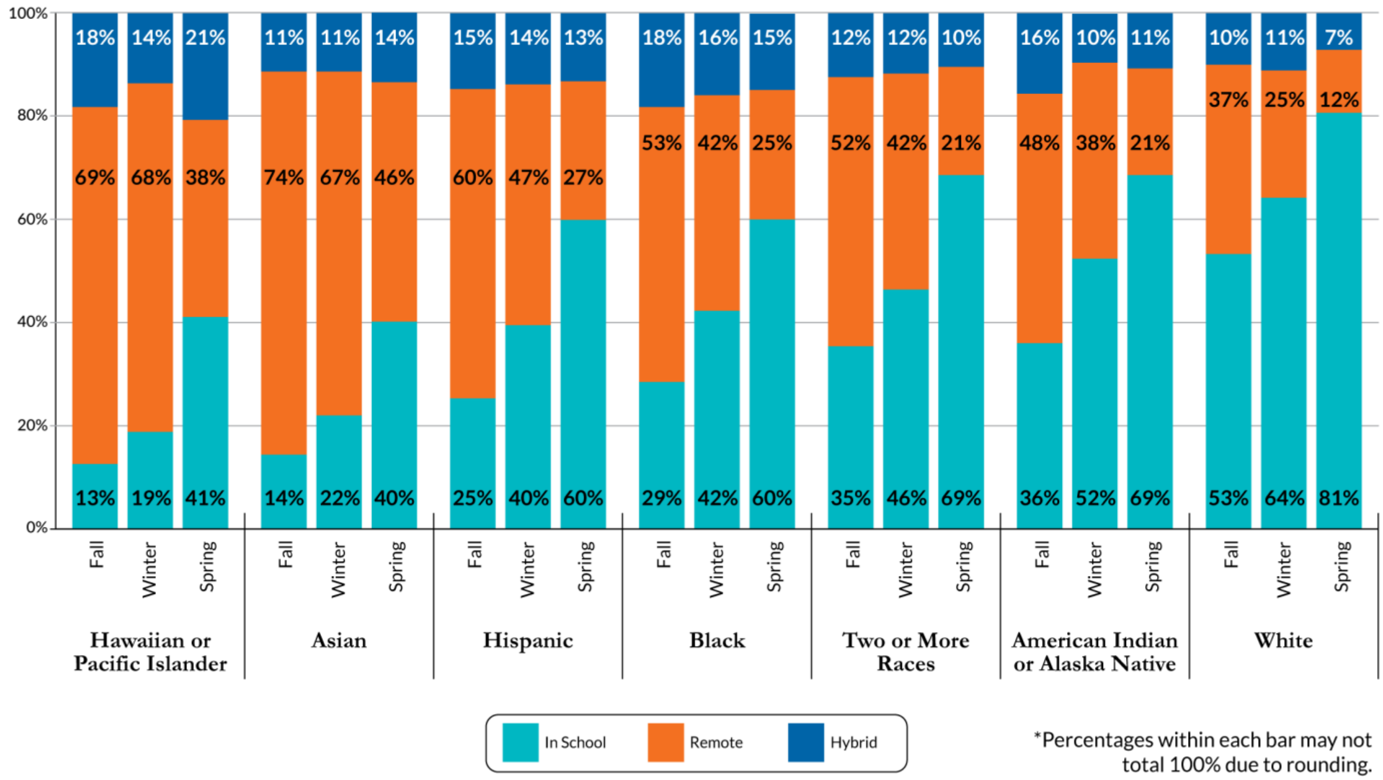
More than 60% of students had the same testing location in fall as they did in winter (i.e., 33% in school and 30% remote). Just under 50% of students had the same testing location in fall, winter, and spring (i.e., 31% in school and 16% remote).

Of those who changed locations from one testing window to the next, there tended to be a move toward in-school testing: From fall to winter, 13% of students went from remote to in-school testing, 6% of students went from remote to hybrid testing, and 6% went from hybrid to in-school testing. From winter to spring, 13% of students went from remote to in-school, 6% of students went from remote to hybrid, and 8% went from hybrid to in school.

Research Question #2: How did testing location differ by demographics?

We also used descriptive methods to examine testing location by student- and school-level demographics. Figure 3 shows the percentage of students who tested in school, remote, and hybrid by testing window and student race/ethnicity. As with Figure 2, Grade 3 is shown as the exemplar grade. The rank order of percentage of students testing in school by race/ethnicity remained mostly consistent across grade levels.

Figure 3: Testing Location by Testing Window and Student Race/Ethnicity in Grade 3*



*Percentages within each bar may not total 100% due to rounding.

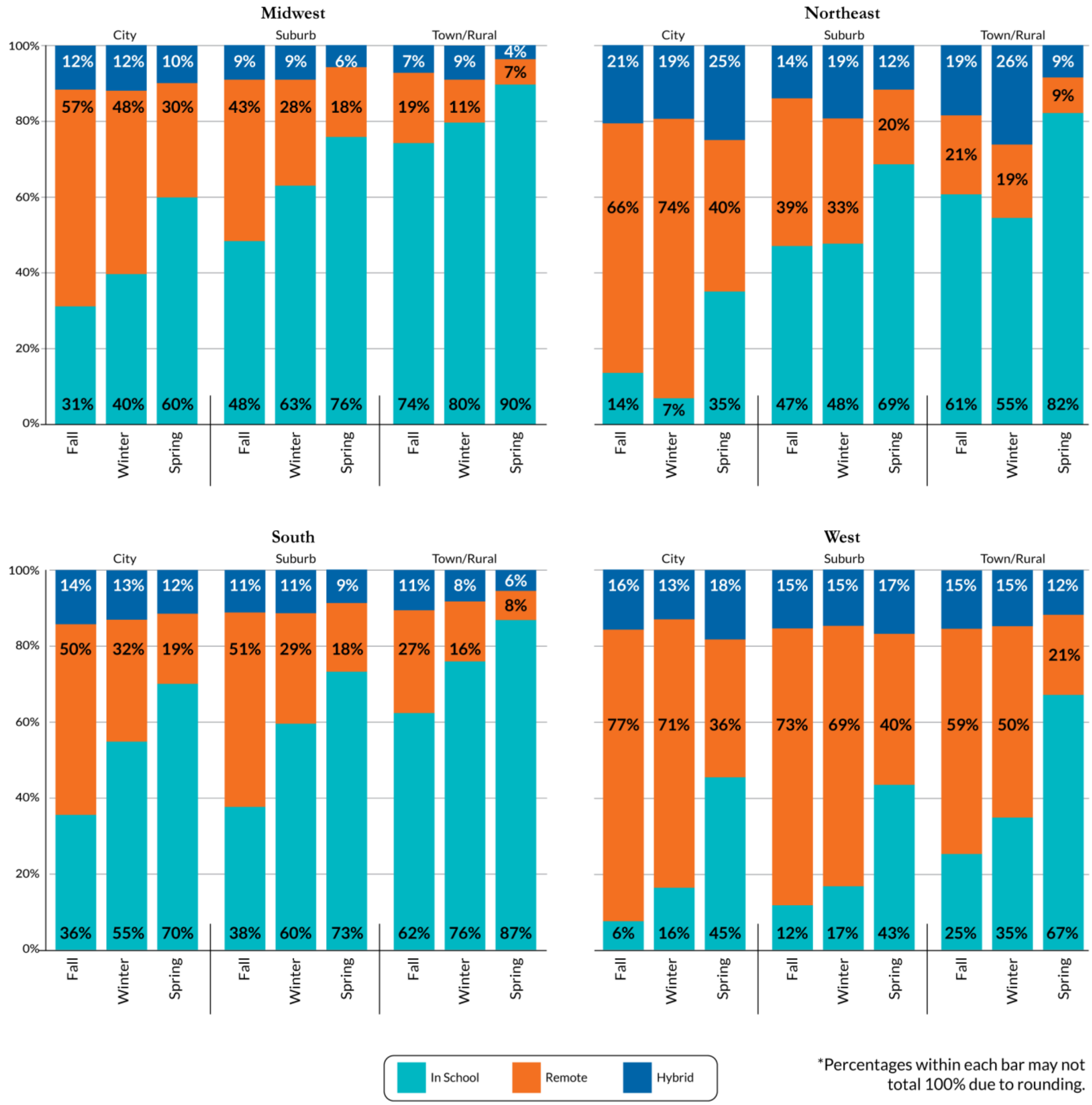
*Other grades are in the Appendix.

Across all grade levels and testing windows, a higher percentage of White students tested in school, relative to all other race/ethnicity groups. White students also saw increases in the percentage of students testing in school from both fall to winter and winter to spring that were comparable to other racial/ethnic groups. Subsequently, the differences in percentage of those testing in school between White students and students of other racial/ethnic groups did not meaningfully close as the school year progressed.

The increase in the percentage of Black and Hispanic students who tested in school from fall to winter and winter to spring was comparable to that of White students. However, at each testing window, the percentage of Black and Hispanic students testing in school was less than 75% of that of White students. Hawaiian/Pacific Islander and Asian students saw the lowest percentages of in-school testers across all testing windows. This finding was likely tied to the state-level clustering of testing location and demographics. Most of the Hawaiian and Asian students were clustered in states that, for the most part, closed schools statewide, resulting in very few students testing in school. Overall, the demographic results are consistent with the existing research on school learning modes (Harris & Oliver, 2021).

Figure 4 shows the percentage of students who tested in school, remote, and hybrid by testing window and combination of region and locale.

Figure 4: Testing Location by Testing Window and School Region/Locale in Grade 3*



*Percentages within each bar may not total 100% due to rounding.

*Other grades are in the Appendix.

Across all testing windows, the percentage of students testing in school was higher in the Midwest and South, relative to the Northeast and West. Aggregating across locales, the percentage of students testing in school in the winter, where the gaps were largest, was 65% and 63% in the Midwest and South, respectively, and just 44% and 20% in the Northeast and West. In the Northeast, the percentage of students testing in school decreased from fall to winter. In all other regions, the percentage of students testing in school increased from fall to winter to spring. The results by region are consistent with the school calendar data from Burbio (2021).

Research Question #3: What variables were most strongly associated with a student testing in or out of school?

To examine the factors that influenced testing location, we fit a multilevel logistic regression model for each testing window and grade level. Based on prior research on 2020–2021 instructional modes (Valant, 2020; Harris & Oliver, 2021; Lehrer-Small, 2021), we hypothesized that student testing location would be explained at the student, school, district, and state level.

Empty Model

We first fit an empty four-level model with no predictors to assess the amount of variation at each level. This random-intercepts-only model contained random intercepts for school (level 2), district (level 3), and state (level 4). Because we were primarily interested in predictors of the probability of testing in school, we dichotomized the testing location variable into in school (1) and not in school (0). This was the student-level outcome in the model.

The functional form of the unconditional model was:

Level 1 Model (Student Level): $\ln\left(\frac{p_{isdt}}{1-p_{isdt}}\right) = \eta_{isdt} = \beta_{0sdt}$

Level 2 Model (School Level): $\beta_{0sdt} = \gamma_{00dt} + v_{0sdt}$

Level 3 Model (District Level): $\gamma_{00dt} = \xi_{000t} + u_{00dt}$

Level 4 Model (State Level): $\xi_{000t} = \delta_{0000} + w_{000t}$

Full Model: $\eta_{isdt} = \delta_{0000} + w_{000t} + u_{00dt} + v_{0sdt}$

p_{isdt} represents the probability of student *i* in school *s* belonging to district *d* in state *t* testing in school in the given grade and testing window. Therefore, η_{isdt} is the corresponding log-odds of this outcome.

The mean terms are as follows: β_{0sdt} is the mean log-odds for the *sth* school in the *dth* district within the *tth* state. γ_{00dt} is the mean log-odds for the *dth* district within the *tth* state. π_{000t} is the mean log-odds for the *tth* state, and δ_{0000} is the overall mean intercept (log-odds) across all students in all clusters.

The random terms at each level are as follows: v_{0sdt} is the random intercept for the *sth* school in the *dth* district within the *tth* state with variance $\tau^2_{v_0}$. u_{00dt} is the random intercept for the *dth* district within the *tth* state with variance $\tau^2_{u_{00}}$, and w_{000t} is the random intercept for the *tth* state with variance $\tau^2_{w_{000}}$. The variance of the level 1 residual cannot be estimated and is replaced by the theoretical variance of the logistic density function ($\pi^2/3$).

The intra-class correlation (ICC) for this empty random-intercepts-only model is then computed as:

$$ICC = \frac{\tau^2_{w_{000}} + \tau^2_{u_{00}} + \tau^2_{v_0}}{\tau^2_{w_{000}} + \tau^2_{u_{00}} + \tau^2_{v_0} + \frac{\pi^2}{3}}$$

Table 2 shows the ICCs for the empty model for each testing window and grade level.

Table 2: Intra-class Correlations for the Empty Model by Testing Window, Grade, and Cluster Level

	Fall				Winter				Spring			
Grade	School	District	State	All Levels	School	District	State	All Levels	School	District	State	All Levels
K	.11	.28	.22	.62	.11	.25	.21	.57	.13	.12	.16	.42
1	.06	.37	.23	.65	.05	.36	.22	.63	.08	.26	.17	.51
2	.05	.34	.30	.69	.08	.33	.25	.67	.09	.25	.17	.50
3	.05	.33	.26	.65	.08	.33	.22	.63	.08	.30	.13	.51
4	.05	.34	.27	.66	.07	.36	.20	.63	.08	.29	.12	.49
5	.07	.36	.24	.67	.09	.31	.23	.64	.09	.29	.11	.48

In Grades K–5 in the fall and all but Grade K in the winter, the four-level nesting (i.e., students within schools within districts within states) accounted for more than 60% of the unexplained variability in the probability of testing in school. In the spring, the four-level nesting accounted for between 42% and 51% of the unexplained variability in the probability of testing in school. In all grades and testing windows, most of the variability occurred at the district and state levels. In the fall and winter, we see 25% to 37% of the unexplained variability at the district level and 20% to 30% at the state level. An additional 5% to 11% of the variability occurred at the school level. In the spring, we see a smaller proportion of variability accounted for by this nesting structure due to a lower amount of variability at the district and state levels. This can likely be explained by the relatively high percentage of students who tested in school in the spring (i.e., less variability in the student-level outcome).

In this paper, we focus on the models for the fall testing window, because it was the window with the most unexplained variability in the probability of testing in school.

Table 3 shows the covariance parameter estimates and statistical significance values for the variance parameters in the empty random-intercepts-only models for Grades K–5 in the fall testing window. All covariance parameters were statistically significant at the .01 level, indicating that the modeled nesting structure accurately reflects the nesting in the data.

Table 3: Covariance Parameter Estimates and Standard Errors (SE) for the Empty Model in the Fall Testing Window

	Grade K			**Grade 1**			**Grade 2**		
Random Parameter	**Estimate**	**SE**	***p*-Value**	**Estimate**	**SE**	***p*-Value**	**Estimate**	**SE**	***p*-Value**
Level 2: School ($\tau^2_{v_0}$)	.95	.11	<.001	0.56	.05	<.001	.52	.04	<.001
Level 3: District ($\tau^2_{u_{00}}$)	2.40	.35	<.001	3.45	.29	<.001	3.66	.30	<.001
Level 4: State ($\tau^2_{w_{000}}$)	1.92	.66	.002	2.14	.65	<.001	3.21	.94	<.001

	Grade 3			**Grade 4**			**Grade 5**		
Random Parameter	**Estimate**	**SE**	***p*-Value**	**Estimate**	**SE**	***p*-Value**	**Estimate**	**SE**	***p*-Value**
Level 2: School ($\tau^2_{v_0}$)	.51	.04	<.001	.50	.04	<.001	.64	.05	<.001
Level 3: District ($\tau^2_{u_{00}}$)	3.14	.26	<.001	3.30	.26	<.001	3.59	.30	<.001
Level 4: State ($\tau^2_{w_{000}}$)	2.48	.73	<.001	2.60	.72	<.001	2.35	.70	<.001

Full Model

Based on the existing research (Harris & Oliver, 2021), we hypothesized that the following student-, school-, district-, and state-level predictors would allow us to explain some of the variability in the probability of testing in school.

Student level:

- ETH: Student-level ethnicity is the school-reported ethnicity of the student. The values of ethnicity were: American Indian or Alaskan, Asian, Black, Hispanic, Hawaiian or Pacific Islander, White, and Two or More Races. In our models, we considered White as the reference category.

School level:

- WHITE: Proportion of White students in the school for the given grade
- LOCALE: School locale obtained from NCES recoded into three categories: City, Suburban, and Town/Rural. In our models, we considered City as the reference category.
- INCOME: School zip code median income is the census-reported median annual household income for the school zip code in 2014–2018. This variable was rescaled so one unit represented $1,000 in median income.

District level:

- CASES: Average of the seven-day trailing average of new cases per 100,000 residents reported in the district's county using data from *The New York Times*, based on reports from state and local health agencies.[4] For each testing window, we averaged the rolling case rate data per 100,000 residents for the 30 days prior to the starting date of the testing window.
- CD: Political party affiliation of the congressional representative, as of May 2021, for the congressional district associated with the location of the district's administrative office as reported in the NCES CCD district files in 2021.[5] This variable was coded as 1 if the representative was affiliated with the Republican party and 0 otherwise.

State level:

- GOV: Political party affiliation of the state's governor (or mayor, for Washington, DC) in 2021. This variable was also coded as 1 if the governor was affiliated with the Republican party and 0 otherwise.[6]

The final full model includes random intercepts for school, district, and state and fixed main effects for the predictors listed above, resulting in the following model specification.

$$\eta_{isdt} = \delta_{0000} + \delta_{1000}\mathrm{ETH}_{isdt} + \delta_{0100}\mathrm{WHITE}_{0sdt} + \delta_{0200}\mathrm{LOCALE}_{0sdt} + \delta_{0300}\mathrm{INCOME}_{0sdt} + \delta_{0010}\mathrm{CASES}_{00dt} + \delta_{0020}\mathrm{CD}_{00dt} + \delta_{0001}\mathrm{GOV}_{000t} + w_{000t} + u_{00dt} + v_{0sdt}$$

We also hypothesized that interactions between ethnicity and median income, locale and median income, and ethnicity and locale might be meaningful. However, likelihood ratio tests indicated that these interaction terms did not significantly improve model fit. Therefore, the final full model is a main-effects-only model.

Table 4 shows the parameter estimates and corresponding standard errors and statistical significance for the predictors in the model. Table 5 shows odds ratio estimates and corresponding 95% confidence intervals for the same predictors.

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[4]For school districts located in more than one county, we average the cases by district.

[5]The congressional district code is based on the location of the administrative office and is the legislatively defined subdivision of the state for the purpose of electing representatives to the House of Representative of the United States Congress (NCES).

[6]Only one state—Montana—had a change in the political party affiliation of its governor from 2020 to 2021. Given that Montana represents less than 1% of our sample, we decided to use the 2021 party affiliation for all models (Ballotpedia).

Based on the full model results, even after accounting for the effects of the school-level percentage of White students, school-level median income, school locale, district COVID-19 caseload, and district and state politics, student race/ethnicity was still significantly associated with the probability of testing in school across all grades. Specifically, students of Asian, Black, and Hispanic backgrounds, and students of two or more races were significantly less likely to test in school when compared to White students across all grades. By inverting the odds ratios in Table 5 for the student-level ethnicity variable, we find that the odds of White students testing in school are about 2.3 times the odds of Black students and about 1.4 times the odds of Hispanic students testing in school after controlling for all other variables in the model.

The school-level predictors included in the model were significantly associated with the probability of testing in school for most grades. However, after analyzing the odds ratio estimates, we found that the proportion of White students in a school and the median household income of the school zip code did not seem to meaningfully impact the odds of testing in school. On the other hand, except for Grade K, school locale had a meaningful impact on the probability of testing in school. Specifically, the odds of students in schools located in Town/Rural areas testing in school were about 1.3 to 1.5 times greater than the odds of students in City schools. The odds of testing in school were not significantly different between students in Suburban schools and those in City schools.

At the district level, the seven-day trailing average in number of cases per 100,000 residents was only significantly associated with the probability of testing in school in Grades K and 3, but the effect size was very small. For these grades, the odds of testing in school decreased slightly with a one-unit increase in the seven-day trailing average of number of cases per 100,000 residents in the month prior to the testing window.

The predictors most strongly associated with the probability of testing in school in the fall were the political affiliation of the congressional district representative at the district level and the political affiliation of the state governor at the state level. Students in districts with a congressional district representative affiliated with the Republican party had between 2.5 and 4.4 times the odds of testing in school than their counterparts in districts with a congressional district representative affiliated with the Democratic party. Similarly, students in states with a governor (or, for Washington, DC, a mayor) affiliated with the Republican party had between 3.6 and 5.2 times the odds of testing in school than their counterparts in states with a governor affiliated with the Democratic party. These findings are consistent with those of Harris and Oliver (2021). However, as those authors point out, demographics, COVID-19 infection rates, urbanicity, and politics are correlated such that it is difficult to point to any one variable as completely explaining in school testing or learning.

In order to try and quantify the proportion of observed variation that is explained by the predictors in the full model, we calculate a pseudo-R^2 measure proposed by Snijders and Bosker (2012) for multilevel logistic regression using the threshold representation of the outcome variable. This measure of proportion of variation explained can be computed as:

$$R^2_{Binary} = \frac{\sigma_F^2}{\sigma_F^2 + \tau_{v_0}^2 + \tau_{u_{00}}^2 + \tau_{w_{000}}^2 + \frac{\pi^2}{3}}$$

σ_F^2 is the variance of the fixed-effects linear predictor, which is obtained by calculating the variance of the predicted log-odds of the outcome based on only the model-fixed effects, and the other terms are the same as in the ICC formula. Table 6 shows the estimated values of this pseudo-R^2 for all grades and their respective components. The pseudo-R^2 values indicate that the student-, school-, district-, and state-level predictors explain between 16% and 23% of the observed variability in the probability of testing in school in the fall. Therefore, even though some predictors in the model seem to have a strong association with the probability of testing in school, a large portion of the variability is still left unexplained by these variables.

Table 4: Parameter Estimates (and Standard Errors) of the Full Model in the Fall Testing Window

Level	Parameter	Category	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Student	Ethnicity (Reference = White)	American Indian or Alaskan	-.865 (.232)***	-.473 (.152)**	-.507 (.18)**	-.267 (.163) *ns*	-.235 (.165) *ns*	-.579 (.17)***
		Asian	-1.009 (.082)***	-1.043 (.06)***	-1.148 (.059)***	-.844 (.057)***	-.831 (.053)***	-1.043 (.059)***
		Black	-.813 (.053)***	-.837 (.036)***	-.884 (.036)***	-.86 (.035)***	-.894 (.032)***	-.871 (.036)***
		Hispanic	-.333 (.044)***	-.299 (.03)***	-.343 (.03)***	-.302 (.029)***	-.325 (.026)***	-.338 (.029)***
		Hawaiian or Pacific Islander	-.717 (.215)***	-.554 (.184)**	-.313 (.165) *ns*	-.759 (.193)***	-.133 (.151) *ns*	-.472 (.176)**
		Two or More Races	-.462 (.066)***	-.436 (.048)***	-.439 (.051)***	-.438 (.051)***	-.416 (.046)***	-.501 (.051)***
School	% White	N/A	.01 (.003)**	.007 (.002)***	.004 (.002) *ns*	.00 (.002) *ns*	.003 (.002) *ns*	.006 (.002)*
	Median Income	N/A	-.016 (.004)***	-.009 (.002)***	-.007 (.002)***	-.005 (.002)*	-.008 (.002)***	-.005 (.002)*
	Locale (Reference = City)	Suburban	.089 (.177) *ns*	.11 (.098) *ns*	.07 (.101) *ns*	.104 (.098) *ns*	.031 (.089) *ns*	.028 (.108) *ns*
		Town/Rural	.287 (.211) *ns*	.415 (.12)***	.497 (.131)***	.385 (.126)**	.313 (.114)**	.39 (.135)**
District	Case Rate	N/A	-.026 (.01)**	-.016 (.009) *ns*	-.017 (.009) *ns*	-.019 (.008)*	-.008 (.009) *ns*	-.004 (.009) *ns*
	Congressional District Representative (Reference = Democrat)	Republican	.894 (.265)***	1.084 (.2)***	1.147 (.202)***	1.476 (.181)***	1.458 (.194)***	1.445 (.203)***
State	State Governor (Reference = Democrat)	Republican	1.649 (.379)***	1.486 (.359) ***	1.549 (.59)**	1.472 (.53)**	1.556 (.558)**	1.282 (.396)**

Note: The symbols ***, **, and * indicate that the estimate is significant at <.001, <.01, and <.05, respectively; *ns* indicates the estimate has a *p*-value >= .05.

Table 5: Odds Ratio Estimates and 95% Confidence Intervals from the Full Model in the Fall Testing Window

Level	Parameter	Category	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Student	Ethnicity (Reference = White)	American Indian or Alaskan	.42 [.27, .66]	.62 [.46, .84]	.60 [.42, .86]	.77 [.56, 1.05]	.79 [.57, 1.09]	.56 [.40, .78]
		Asian	.36 [.31, .43]	.35 [.31, .40]	.32 [.28, .36]	.43 [.38, .48]	.44 [.39, .48]	.35 [.31, .40]
		Black	.44 [.40, .49]	.43 [.40, .46]	.41 [.38, .44]	.42 [.39, .45]	.41 [.38, .44]	.42 [.39, .45]
		Hispanic	.72 [.66, .78]	.74 [.70, .79]	.71 [.67, .75]	.74 [.70, .78]	.72 [.69, .76]	.71 [.67, .76]
		Hawaiian or Pacific Islander	.49 [.32, .74]	.57 [.40, .83]	.73 [.53, 1.01]	.47 [.32, .68]	.88 [.65, 1.18]	.62 [.44, .88]
		Two or More Races	.63 [.55, .72]	.65 [.59, .71]	.64 [.58, .71]	.65 [.58, .71]	.66 [.60, .72]	.61 [.55, .67]
School	% White	N/A	1.01 [1.00, 1.02]	1.01 [1.00, 1.01]	1.00 [1.00, 1.01]	1.00 [1.00, 1.00]	1.00 [1.00, 1.01]	1.01 [1.00, 1.01]
	Median Income	N/A	.98 [.98, .99]	.99 [.99, .1.00]	.99 [.99, .1.00]	1.00 [.99, .1.00]	.99 [.99, .1.00]	1.00 [.99, .1.00]
	Locale (Reference = City)	Suburban	1.09 [.77, 1.55]	1.12 [.92, 1.35]	1.07 [.88, 1.31]	1.11 [.92, 1.34]	1.03 [.87, 1.23]	1.03 [.83, 1.27]
		Town/Rural	1.33 [.88, 2.02]	1.52 [1.20, 1.92]	1.64 [1.27, 2.12]	1.47 [1.15, 1.88]	1.37 [1.09, 1.71]	1.48 [1.13, 1.92]
District	Case Rate	N/A	.97 [.96, .99]	.98 [.97, 1.00]	.98 [.97, 1.00]	.98 [.97, .1.00]	.99 [.97, 1.01]	1.00 [.98, 1.01]
	Congressional District Representative (Reference = Democrat)	Republican	2.45 [1.46, 4.11]	2.96 [2.00, 4.38]	3.15 [2.12, 4.67]	4.38 [3.07, 6.24]	4.30 [2.93, 6.29]	4.24 [2.85, 6.32]
State	State Governor (Reference = Democrat)	Republican	5.20 [2.47, 10.94]	4.42 [2.19, 8.93]	4.70 [1.48, 14.95]	4.36 [1.54, 12.30]	4.74 [1.59, 14.15]	3.60 [1.66, 7.83]

Table 6: Estimated Variance Components and Pseudo-R^2 Estimates of the Full Model in the Fall Testing Window

Parameter	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Level 2: School ($\tau^2_{v_0}$)	.85	.52	.51	.52	.49	.62
Level 3: District ($\tau^2_{u_{00}}$)	1.92	2.62	2.65	2.31	2.79	2.69
Level 4: State ($\tau^2_{w_{000}}$)	.47	.69	2.97	2.21	2.50	.95
Fixed-Effects Variance (σ^2_F)	1.83	1.90	1.79	1.80	1.63	1.87
R^2_{Binary}	.23	.20	.16	.16	.17	.19

Conclusion

During the 2020–2021 school year, the COVID-19 pandemic forced many students and teachers into a remote learning environment. These decisions were often made at the school, district, or even state level. In this study, we used self-reported location data from *i-Ready Diagnostic* testing sessions to gain insight into the factors that influenced where students were testing during the 2020–2021 school year.

We found that the percentage of students testing in school increased from fall to winter and winter to spring within all Grades K–5. In each testing window, students in lower grade levels, particularly Grade K, were more likely to have tested in school compared to students in higher grade levels. Looking longitudinally across all three testing windows, we found that nearly half of students tested in the same location (i.e., in school, remote, or hybrid) from fall to winter to spring. Of those who changed locations, there was a tendency to shift toward more in-school testing (i.e., remote to hybrid, remote to in school, or hybrid to in school).

When we examined testing location by student- and school-level demographics, we found that White students were more likely than any other racial/ethnic group to have tested in school. This was true across all grade levels and testing windows. Hawaiian/Pacific Islander and Asian students were least likely to have tested in school. Testing location was also related to school region and locale. Students in schools that are closer to cities were less likely to test in school, compared to students in towns and rural areas. Finally, students in the Midwest and South were more likely to have tested in school, compared to students in the Northeast and West.

To examine the factors related to student testing location, we fit a four-level logistic model with students nested within schools, districts, and states. In the fall, the four-level nesting structure explained more than 60% of the variability in the probability of testing in school at each grade level. The most powerful predictors of testing in school were the political party affiliation of the congressional district representative and of the state governor, respectively. However, even after controlling for state and local politics, county infection rates, school-level percentage of White students, locale, and median annual income, student-level race/ethnicity was still a significant predictor of testing in school. Specifically, White students were significantly more likely to have tested in school than students in other racial/ethnic groups. Thus, while state and local politics seemed to have a large influence on whether or not students tested in school, politics were not the only factor influencing whether or not students were in school during the 2020–2021 school year.

The findings here provide new insight into where students were testing during the 2020–2021 school year and the factors that were related to testing in school. Because *i-Ready* captured testing locations at the student level, down to individual testing sessions, this report provides the most fine-grained insight yet into students' testing environments during the COVID-19 pandemic.

Limitations

There were several limitations worth noting in this study. First, we captured student-level testing locations via self-reporting. While the advantage of this data is that it is at the student level, we recognize that there are several reasons why students may have answered this question incorrectly. We did not take any steps to attempt to correct answers to the location questions.

Additionally, because we only captured location data when students took a Diagnostic, we are only able to report on testing location. We realize that what is most of interest is the students' learning location (i.e., where the student was learning each day of the school year). Related to this, our choice to define testing location at the student level by testing window was a simplified version of what really happened in schools during the 2020–2021 school year. In many cases, whether students were in school or remote varied on a week-to-week—rather than season-to-season—basis. This student-by-testing-window analysis also created some conflict with the political variables, as one state—Montana (less than 1% of the sample)—had a change in the political affiliation of the governor within a testing window.

While we selected a sample of students that was nationally representative at each grade level from Grades K–5, our sample was not necessarily representative at the state or district level. This could impact the interpretations from our results. For example, the fact that Hawaiian/Pacific Islander and Asian students were least likely to have tested in school is likely influenced by the fact that most of the Hawaiian/Pacific Islander and Asian students in our sample were clustered within states that, at the state level, had a very small number of students testing in school. As such, district- and state-level findings should be interpreted with caution. We also did not sample on any of the political variables. This could impact the interpretations of the results, as we know that politics is related to race/ethnicity, COVID-19 rates, and urbanicity.

Finally, the multilevel models did not necessarily contain all possible covariates related to testing in school. For instance, Harris and Oliver (2021) included enrollment data, instruction expenditures per pupil, population density, and broadband access in their models. However, they found that none of those variables were significantly related to school instructional modes. The variables included in this study may help understand the factors that were associated with testing in school during the 2020–2021 school year, but they should not be considered an exhaustive list of potential contributing variables.

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Appendix

Table A1: Crosstab of Fall, Winter, and Spring Testing Locations by Grade

		Winter in School			Winter Remote			Winter Hybrid		
Grade	**Fall Testing Location**	Spring in School	Spring Remote	Spring Hybrid	Spring in School	Spring Remote	Spring Hybrid	Spring in School	Spring Remote	Spring Hybrid
K	In School	39.2%	.2%	2.7%	2.4%	.3%	.3%	5.2%	.1%	1.3%
	Remote	8.8%	.3%	.9%	6.3%	12.1%	2.8%	3.2%	1.1%	1.3%
	Hybrid	5.2%	.1%	.7%	1.2%	.9%	.5%	1.7%	.2%	.8%
1	In School	33.2%	.2%	1.7%	1.4%	.3%	.2%	3.5%	.2%	.8%
	Remote	10.8%	.3%	.8%	7.9%	15.5%	3.7%	3.4%	1.3%	1.5%
	Hybrid	5.5%	.1%	.6%	1.4%	1.6%	.7%	2.0%	.5%	1.0%
2	In School	32.4%	.2%	1.2%	1.5%	.4%	.2%	2.7%	.1%	.4%
	Remote	11.0%	.3%	.7%	10.2%	16.5%	3.8%	3.3%	1.2%	1.2%
	Hybrid	5.0%	.1%	.5%	1.6%	1.7%	.8%	1.8%	.4%	.7%
3	In School	31.2%	.2%	1.1%	1.5%	.6%	.3%	2.9%	.2%	.5%
	Remote	11.3%	.4%	.8%	9.8%	15.9%	4.6%	3.6%	1.3%	1.2%
	Hybrid	5.0%	.1%	.5%	1.6%	1.7%	.9%	1.8%	.4%	.7%
4	In School	29.9%	.2%	1.1%	2.1%	.6%	.3%	2.9%	.2%	.4%
	Remote	11.4%	.3%	.8%	10.6%	17.4%	4.4%	3.5%	1.2%	1.3%
	Hybrid	4.5%	.1%	.4%	1.4%	1.5%	.7%	1.5%	.4%	.7%
5	In School	28.4%	.3%	1.1%	2.1%	.6%	.3%	3.0%	.2%	.5%
	Remote	10.7%	.5%	.9%	10.7%	18.8%	4.9%	4.0%	1.2%	1.4%
	Hybrid	4.0%	.1%	.4%	1.3%	1.3%	.7%	1.6%	.3%	.7%

Table A2: Testing Location by Grade, Testing Window, and Student Race/Ethnicity

Grade	Testing Window	American Indian or Alaskan			Asian			Black			Hispanic			Native Hawaiian or Pacific Islander			Two or More Races			White		
		In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid
K	Fall	43.4%	44.7%	11.8%	21.5%	66.0%	12.5%	46.2%	42.2%	11.6%	37.1%	48.4%	14.5%	19.9%	64.7%	15.4%	44.8%	43.9%	11.3%	66.1%	24.5%	9.4%
	Winter	51.3%	34.9%	13.8%	32.9%	53.9%	13.1%	54.2%	26.6%	19.2%	48.5%	34.8%	16.7%	44.9%	38.7%	16.4%	55.1%	30.6%	14.3%	67.9%	18.9%	13.2%
	Spring	62.5%	19.7%	17.8%	46.8%	40.5%	12.7%	67.4%	17.3%	15.3%	64.7%	20.6%	14.7%	62.0%	24.3%	13.7%	72.3%	17.5%	10.2%	82.6%	8.9%	8.4%
1	Fall	41.7%	41.1%	17.2%	14.7%	71.0%	14.3%	31.5%	50.5%	17.9%	25.7%	57.7%	16.7%	23.3%	61.1%	15.6%	39.3%	49.5%	11.2%	57.1%	32.8%	10.1%
	Winter	53.8%	32.5%	13.6%	22.2%	64.3%	13.5%	44.4%	36.3%	19.3%	40.1%	43.7%	16.2%	33.9%	49.7%	16.4%	50.4%	35.5%	14.1%	67.4%	21.3%	11.3%
	Spring	70.1%	20.4%	9.5%	40.1%	46.9%	13.0%	60.3%	24.6%	15.1%	57.9%	27.6%	14.5%	53.3%	27.2%	19.4%	68.8%	20.9%	10.3%	81.5%	11.1%	7.4%
2	Fall	34.3%	52.5%	13.1%	12.7%	74.4%	12.9%	29.8%	53.8%	16.4%	25.1%	60.4%	14.5%	16.2%	67.6%	16.2%	34.3%	52.1%	13.6%	54.9%	35.3%	9.8%
	Winter	45.5%	42.1%	12.5%	23.0%	65.0%	12.0%	42.1%	42.3%	15.6%	39.0%	48.1%	12.9%	26.4%	57.0%	16.6%	47.0%	40.5%	12.5%	66.2%	23.6%	10.1%
	Spring	72.1%	18.2%	9.8%	44.6%	44.2%	11.1%	59.4%	27.6%	12.9%	59.5%	27.7%	12.8%	62.8%	25.3%	11.9%	68.3%	22.4%	9.2%	82.1%	11.6%	6.4%
3	Fall	36.0%	48.4%	15.6%	14.4%	74.3%	11.3%	28.5%	53.3%	18.2%	25.3%	60.0%	14.7%	12.6%	69.2%	18.2%	35.4%	52.2%	12.4%	53.3%	36.7%	10.0%
	Winter	52.4%	38.0%	9.5%	22.0%	66.7%	11.3%	42.3%	41.8%	15.9%	39.5%	46.7%	13.8%	18.8%	67.6%	13.6%	46.4%	41.9%	11.7%	64.2%	24.7%	11.1%
	Spring	68.6%	20.7%	10.7%	40.2%	46.4%	13.5%	60.0%	25.1%	14.8%	59.9%	26.9%	13.2%	41.1%	38.2%	20.7%	68.6%	21.0%	10.4%	80.7%	12.2%	7.1%
4	Fall	33.8%	55.4%	10.8%	15.2%	73.7%	11.2%	27.7%	56.2%	16.1%	24.5%	63.7%	11.9%	16.1%	68.7%	15.2%	36.2%	52.9%	10.9%	52.4%	38.4%	9.2%
	Winter	45.9%	44.6%	9.5%	22.2%	65.9%	11.9%	41.2%	44.6%	14.2%	36.7%	50.9%	12.4%	26.3%	58.2%	15.5%	46.3%	42.0%	11.7%	62.4%	26.2%	11.4%
	Spring	70.2%	19.8%	10.0%	43.8%	44.4%	11.8%	58.9%	27.7%	13.3%	56.5%	30.3%	13.3%	53.2%	30.5%	16.4%	67.7%	21.9%	10.4%	80.8%	12.1%	7.0%
5	Fall	31.0%	56.8%	12.2%	14.2%	77.9%	7.9%	23.4%	63.3%	13.3%	22.7%	66.9%	10.4%	23.7%	68.1%	8.2%	34.0%	55.4%	10.6%	51.0%	39.2%	9.9%
	Winter	41.7%	45.2%	13.0%	20.5%	67.8%	11.7%	37.7%	48.1%	14.3%	33.8%	52.9%	13.2%	31.9%	53.7%	14.4%	44.7%	42.9%	12.4%	59.6%	27.8%	12.7%
	Spring	65.2%	20.6%	14.2%	42.4%	44.3%	13.3%	54.7%	31.9%	13.4%	54.6%	31.3%	14.1%	53.7%	24.9%	21.3%	65.7%	23.7%	10.6%	78.7%	13.4%	7.9%

Table A3: Testing Location by Grade, Testing Window, and Region/Locale

Grade	Testing Window	Midwest									Northeast								
		City			Suburb			Town/Rural			City			Suburb			Town/Rural		
		In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid
K	**Fall**	42.1%	49.0%	8.9%	54.9%	35.2%	10.0%	69.2%	21.9%	8.9%	15.3%	66.1%	18.7%	60.9%	30.9%	8.2%	67.7%	17.0%	15.3%
	Winter	40.6%	43.8%	15.5%	58.5%	27.0%	14.5%	68.9%	15.7%	15.4%	18.7%	52.6%	28.7%	53.8%	28.3%	18.0%	45.5%	26.8%	27.8%
	Spring	63.6%	24.2%	12.2%	68.4%	20.2%	11.4%	80.9%	9.6%	9.5%	64.2%	17.1%	18.7%	70.8%	17.5%	11.7%	74.4%	7.5%	18.1%
1	**Fall**	35.1%	52.1%	12.8%	47.5%	42.2%	10.2%	73.8%	18.4%	7.8%	6.9%	68.2%	24.9%	45.5%	40.2%	14.4%	53.3%	26.4%	20.2%
	Winter	42.2%	42.2%	15.6%	61.2%	26.9%	11.9%	78.4%	10.9%	10.7%	6.1%	66.7%	27.3%	45.6%	33.1%	21.3%	45.6%	27.5%	26.9%
	Spring	64.6%	24.6%	10.9%	73.4%	19.1%	7.4%	86.9%	6.7%	6.4%	38.4%	36.1%	25.5%	67.5%	19.9%	12.6%	78.4%	8.8%	12.8%
2	**Fall**	38.9%	49.4%	11.7%	43.0%	49.4%	7.6%	79.0%	13.9%	7.1%	13.4%	63.6%	23.0%	44.3%	37.5%	18.2%	59.9%	26.7%	13.4%
	Winter	46.8%	41.9%	11.3%	57.6%	33.9%	8.4%	81.6%	10.7%	7.7%	8.8%	66.4%	24.7%	47.0%	33.5%	19.5%	52.0%	27.4%	20.6%
	Spring	66.3%	22.6%	11.1%	71.8%	23.0%	5.2%	89.0%	6.0%	5.0%	48.5%	29.4%	22.1%	70.1%	20.4%	9.5%	82.9%	8.7%	8.3%
3	**Fall**	31.2%	57.1%	11.6%	48.4%	42.5%	9.1%	74.2%	18.5%	7.3%	13.7%	65.7%	20.6%	47.1%	38.9%	13.9%	60.7%	20.8%	18.5%
	Winter	39.7%	48.3%	12.0%	63.0%	27.9%	9.0%	79.6%	11.3%	9.0%	7.0%	73.6%	19.3%	47.7%	33.0%	19.3%	54.5%	19.3%	26.2%
	Spring	59.9%	30.1%	9.9%	75.8%	18.4%	5.8%	89.6%	6.7%	3.7%	35.1%	39.9%	25.0%	68.6%	19.7%	11.7%	82.1%	9.4%	8.5%
4	**Fall**	32.6%	55.8%	11.6%	50.5%	41.5%	8.0%	76.9%	17.0%	6.1%	12.9%	68.2%	18.9%	41.6%	44.0%	14.4%	52.0%	30.7%	17.3%
	Winter	42.3%	46.9%	10.8%	60.9%	28.9%	10.2%	79.4%	11.5%	9.1%	10.5%	74.0%	15.5%	42.6%	37.4%	20.0%	46.7%	23.7%	29.6%
	Spring	66.3%	25.3%	8.4%	80.0%	15.0%	5.0%	89.5%	6.8%	3.6%	41.3%	40.1%	18.6%	66.5%	20.8%	12.8%	79.7%	11.6%	8.7%
5	**Fall**	26.9%	62.6%	10.5%	46.3%	42.9%	10.8%	71.3%	21.3%	7.4%	10.9%	72.6%	16.5%	38.7%	46.2%	15.1%	48.6%	34.5%	16.9%
	Winter	25.2%	64.7%	10.1%	56.9%	31.8%	11.3%	75.7%	13.7%	10.6%	11.3%	73.4%	15.3%	37.7%	39.0%	23.3%	45.5%	24.9%	29.5%
	Spring	56.0%	34.9%	9.1%	76.0%	18.2%	5.9%	86.6%	8.6%	4.8%	33.7%	41.1%	25.2%	64.0%	22.6%	13.4%	79.2%	12.2%	8.6%

		South									West								
Grade	**Testing Window**	**City**			**Suburb**			**Town/Rural**			**City**			**Suburb**			**Town/Rural**		
		In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid	In School	Remote	Hybrid
K	**Fall**	56.1%	33.7%	10.3%	54.4%	34.1%	11.5%	65.4%	24.0%	10.6%	16.0%	69.1%	14.9%	27.7%	58.7%	13.5%	42.2%	42.2%	15.6%
	Winter	70.7%	16.7%	12.6%	68.4%	18.2%	13.4%	70.8%	16.5%	12.7%	26.3%	54.3%	19.4%	31.3%	52.4%	16.4%	54.2%	30.4%	15.4%
	Spring	77.4%	12.7%	10.0%	78.7%	12.5%	8.8%	85.5%	6.8%	7.7%	43.8%	36.1%	20.1%	56.5%	26.4%	17.1%	78.7%	10.2%	11.1%
1	**Fall**	40.7%	45.9%	13.5%	39.9%	47.4%	12.7%	64.8%	24.2%	11.0%	6.7%	76.6%	16.7%	18.2%	64.2%	17.6%	27.8%	58.2%	14.1%
	Winter	59.6%	27.0%	13.4%	62.1%	26.4%	11.5%	77.6%	12.5%	9.9%	16.1%	68.5%	15.3%	22.4%	60.5%	17.0%	33.8%	47.4%	18.8%
	Spring	71.4%	19.4%	9.2%	72.5%	19.4%	8.1%	87.4%	6.6%	6.0%	38.7%	37.6%	23.7%	46.4%	37.4%	16.1%	66.7%	18.2%	15.1%
2	**Fall**	38.2%	49.3%	12.5%	38.5%	50.7%	10.8%	65.4%	23.9%	10.7%	4.2%	81.0%	14.8%	11.6%	72.5%	15.9%	23.3%	60.8%	15.9%
	Winter	57.0%	31.1%	11.8%	58.6%	30.7%	10.7%	78.1%	13.7%	8.2%	13.9%	72.5%	13.6%	20.8%	65.4%	13.9%	37.4%	48.9%	13.7%
	Spring	71.1%	20.8%	8.1%	70.0%	21.5%	8.4%	87.6%	7.3%	5.1%	45.3%	36.1%	18.6%	51.5%	34.1%	14.3%	66.3%	21.3%	12.5%
3	**Fall**	35.5%	50.2%	14.3%	37.6%	51.2%	11.2%	62.3%	27.1%	10.6%	7.5%	76.8%	15.8%	11.7%	72.9%	15.4%	25.2%	59.3%	15.4%
	Winter	54.8%	32.1%	13.0%	59.5%	29.1%	11.4%	75.9%	15.8%	8.3%	16.3%	70.7%	13.0%	16.7%	68.6%	14.8%	34.8%	50.4%	14.8%
	Spring	70.0%	18.5%	11.5%	73.2%	18.1%	8.8%	86.8%	7.7%	5.5%	45.4%	36.3%	18.3%	43.4%	39.8%	16.8%	67.1%	21.1%	11.8%
4	**Fall**	34.7%	54.1%	11.1%	37.5%	52.4%	10.1%	58.0%	31.7%	10.3%	8.0%	80.7%	11.4%	12.2%	74.1%	13.7%	19.0%	66.0%	15.1%
	Winter	52.6%	36.1%	11.2%	57.7%	31.8%	10.5%	72.0%	19.6%	8.5%	14.0%	73.4%	12.6%	18.5%	67.9%	13.6%	27.9%	57.7%	14.3%
	Spring	66.6%	24.3%	9.1%	70.7%	20.6%	8.7%	84.6%	9.3%	6.1%	42.0%	37.8%	20.2%	45.8%	38.3%	15.9%	62.9%	24.2%	12.9%
5	**Fall**	33.2%	56.0%	10.8%	35.0%	56.1%	8.9%	57.4%	33.6%	9.1%	6.9%	82.8%	10.3%	15.1%	74.6%	10.3%	19.3%	70.5%	10.1%
	Winter	54.2%	33.8%	12.0%	54.4%	33.7%	11.8%	71.1%	20.6%	8.3%	12.9%	75.3%	11.8%	16.9%	69.9%	13.3%	23.0%	60.0%	17.0%
	Spring	67.5%	23.6%	8.9%	68.0%	23.3%	8.6%	82.5%	11.4%	6.1%	39.6%	36.3%	24.1%	43.9%	40.3%	15.8%	65.5%	18.7%	15.8%