Data Collection

The data compiled in Microsoft Excel was from testing scores of each county on School Report Card and technology access numbers on the Digital Readiness Report. The following links are the URLs for these resources.

School Report Card: ://www.kyschoolreportcard.com/home?year=2023

Digital Readiness Report: https://applications.education.ky.gov/trs_reports/Default.aspx

						Reading						
	County	2017-2018	Tech.	2018-2019	Tech.	2019-2020	Tech.	2020-2021	Tech.	2021-2022	Tech.	2022-2023	Tech.
	Adair	37.6	1115	39.3	1242	N/A	1221	N/A	2122	30	2128	24	2323
	Breckinridge	42.3	750	42.6	1426	N/A	1142	N/A	1338	37	1501	30	1642
	Fayette	33.1	10748	33.9	17898	N/A	24983	N/A	23935	26	23153	25	25848
	Green	47.7	502	56.5	721	N/A	838	N/A	1065	31	752	25	1532
	Hancok	39.7	520	41	710	N/A	710	N/A	828	29	894	31	890
	Hardin	34.9	6003	39.1	6829	N/A	7818	N/A	8083	29	10546	26	11906
	Jefferson	31.9	27076	31.2	29643	N/A	32925	N/A	46038	23	63576	23	70149
	Larue	35.2	804	41.4	825	N/A	867	N/A	1359	31	1359	27	1417
	Marion	37.4	1060	36.9	1481	N/A	1884	N/A	1990	26	2108	27	2279
	Taylor	44.2	368	37.4	472	N/A	842	N/A	1150	31	1380	28	1144
	Warren	35.2	5287	38	5859	N/A	10059	N/A	8360	26	10089	23	11725
						Math							
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Below are individual tables for each school year and the math and reading percentages, which is what the following charts have been based on.

Reading		
County	2017-2018	Tech.
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Fayette	26	23153
Green	31	752
Hancock	29	894
Hardin	29	10546
Jefferson	23	63576
Larue	31	1359
Marion	26	2108
Taylor	31	1380
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Technology Rates in Covid Years

County	2019-2020	2020-2021
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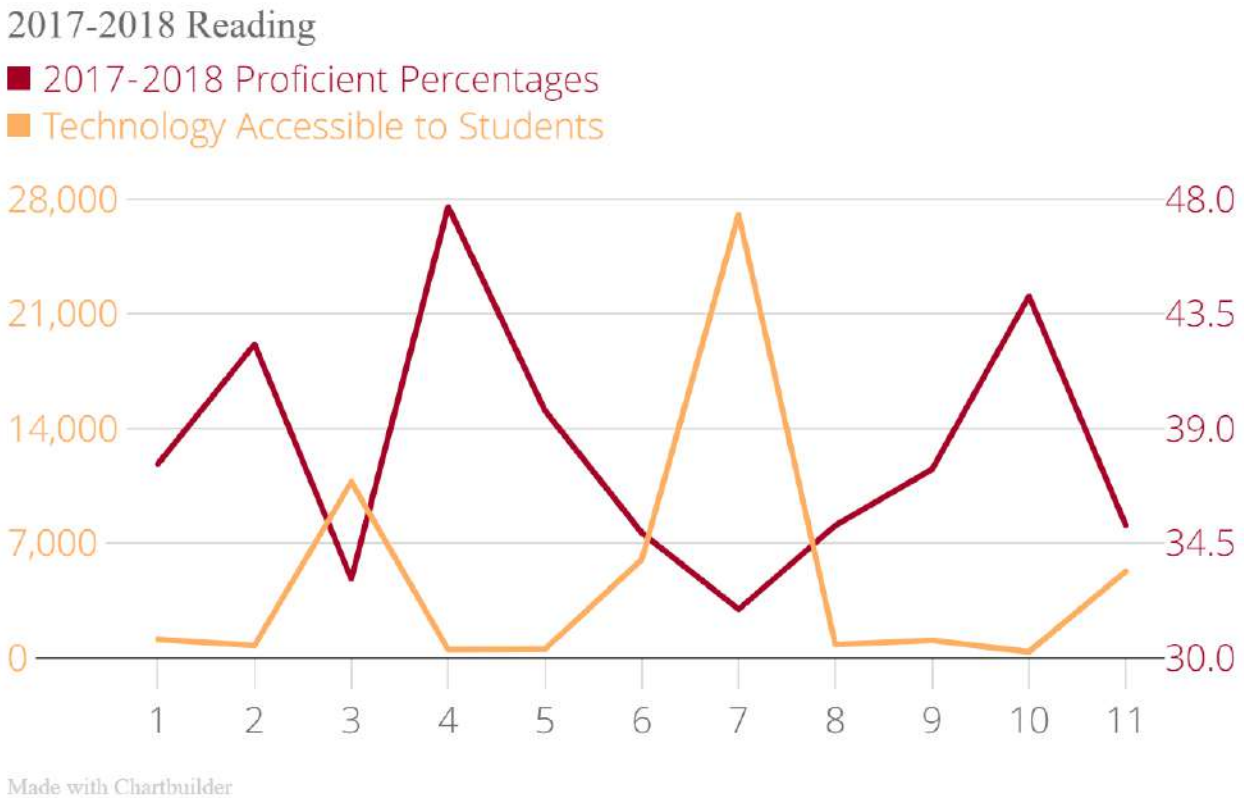
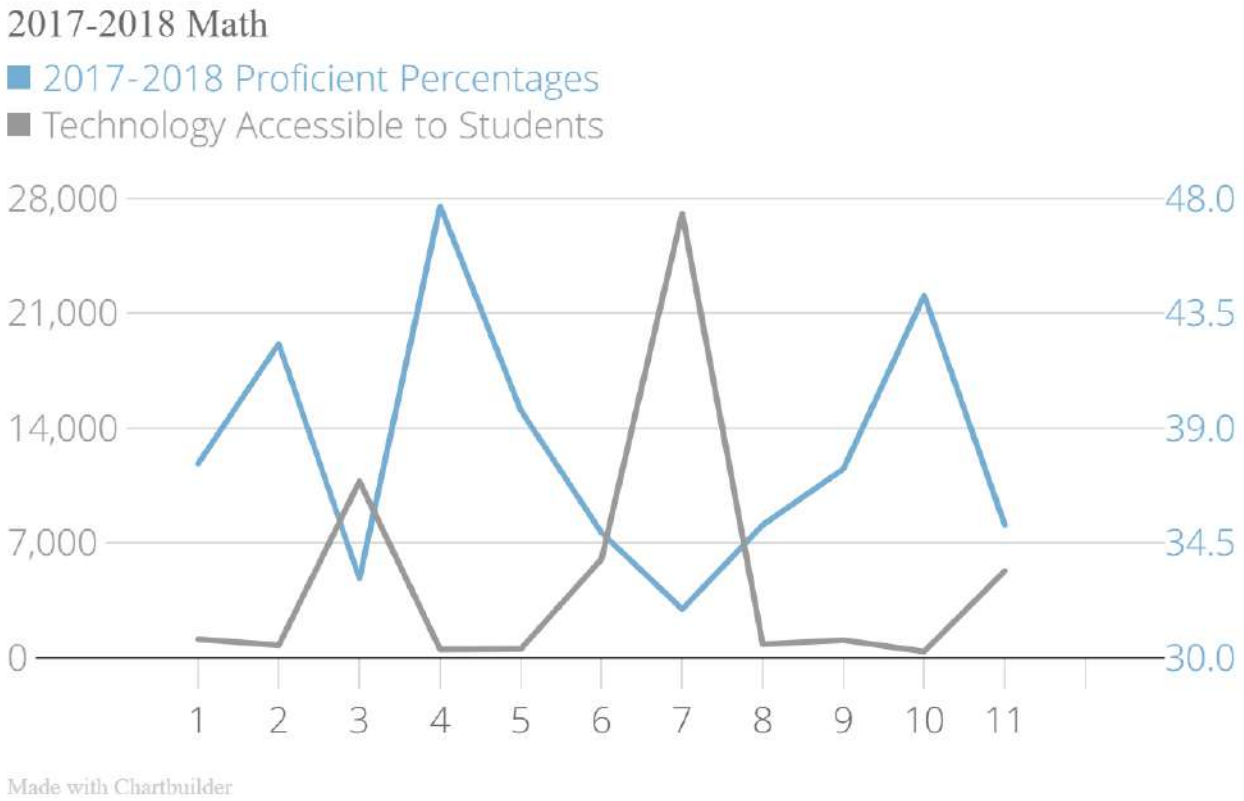
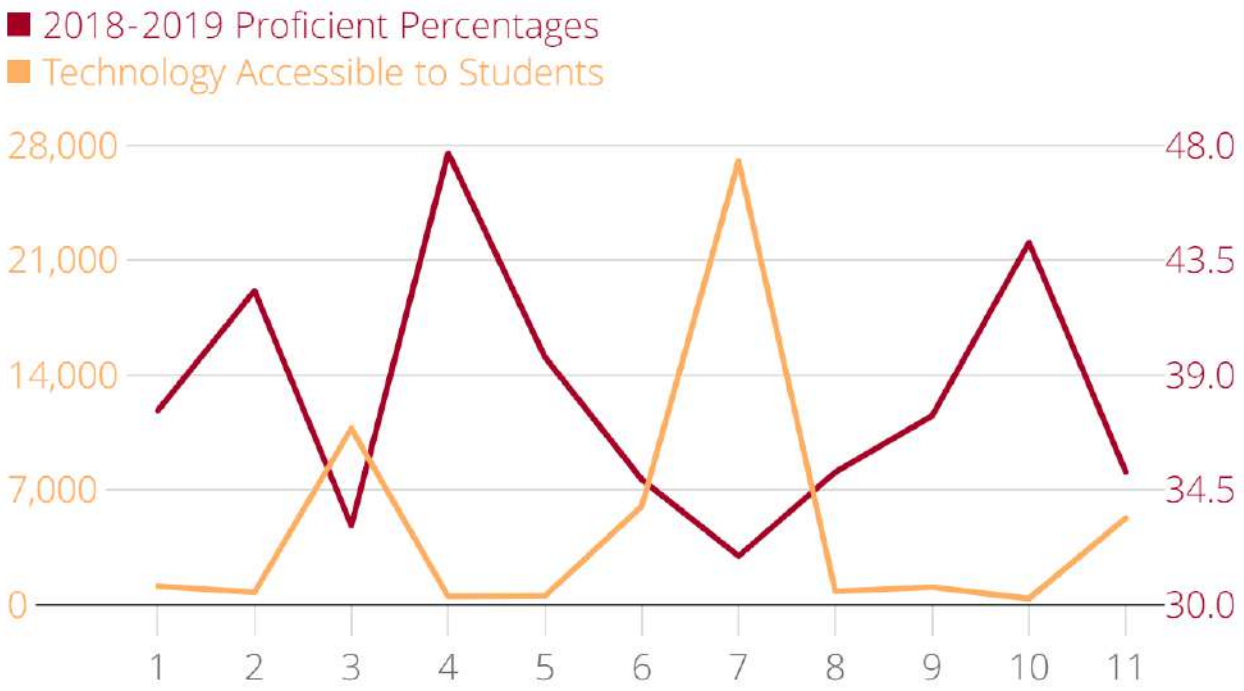
Data Analysis



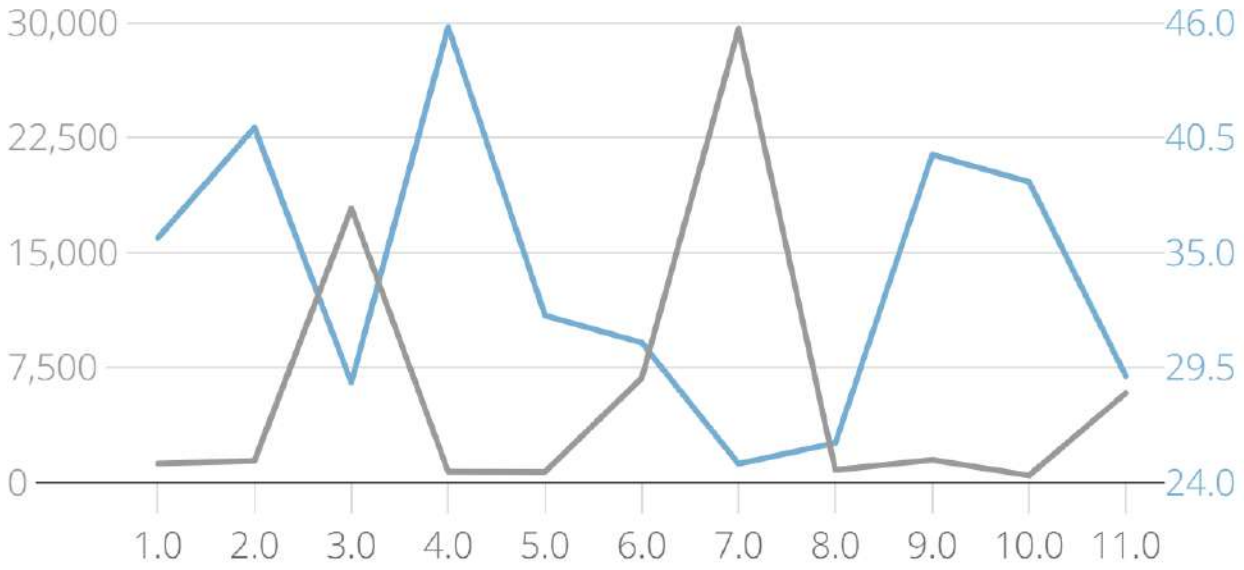


2018-2019 Reading



Made with Chartbuilder

2018-2019 Math



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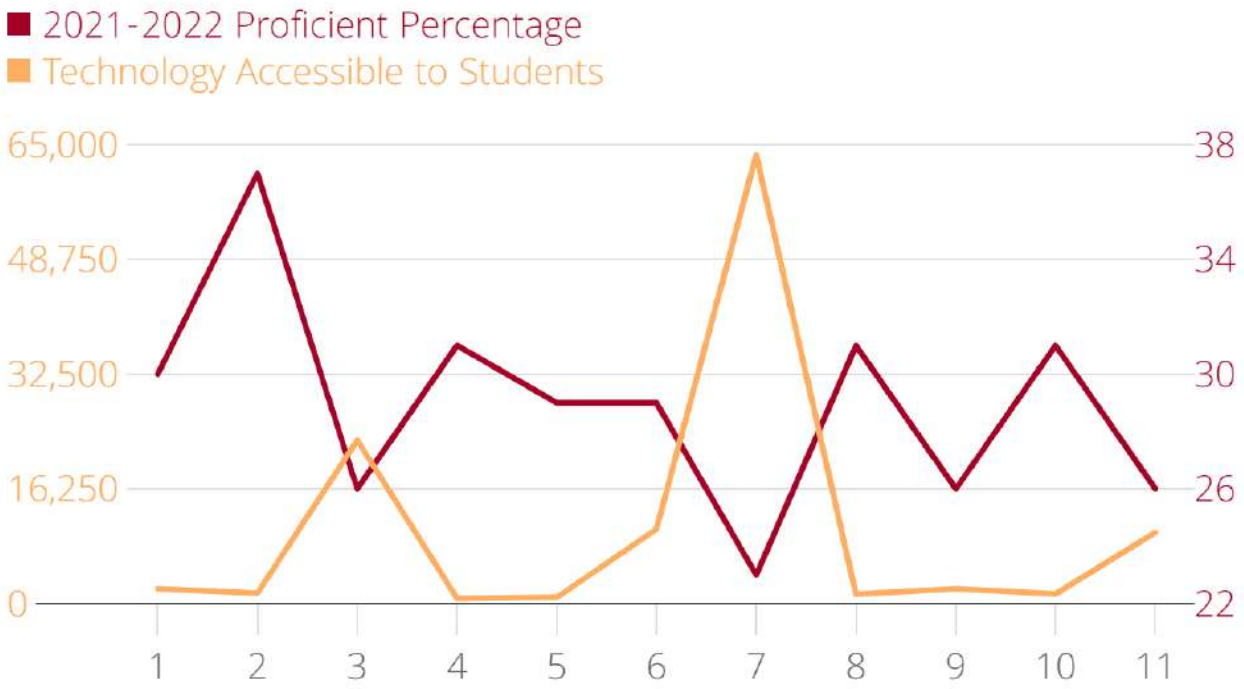

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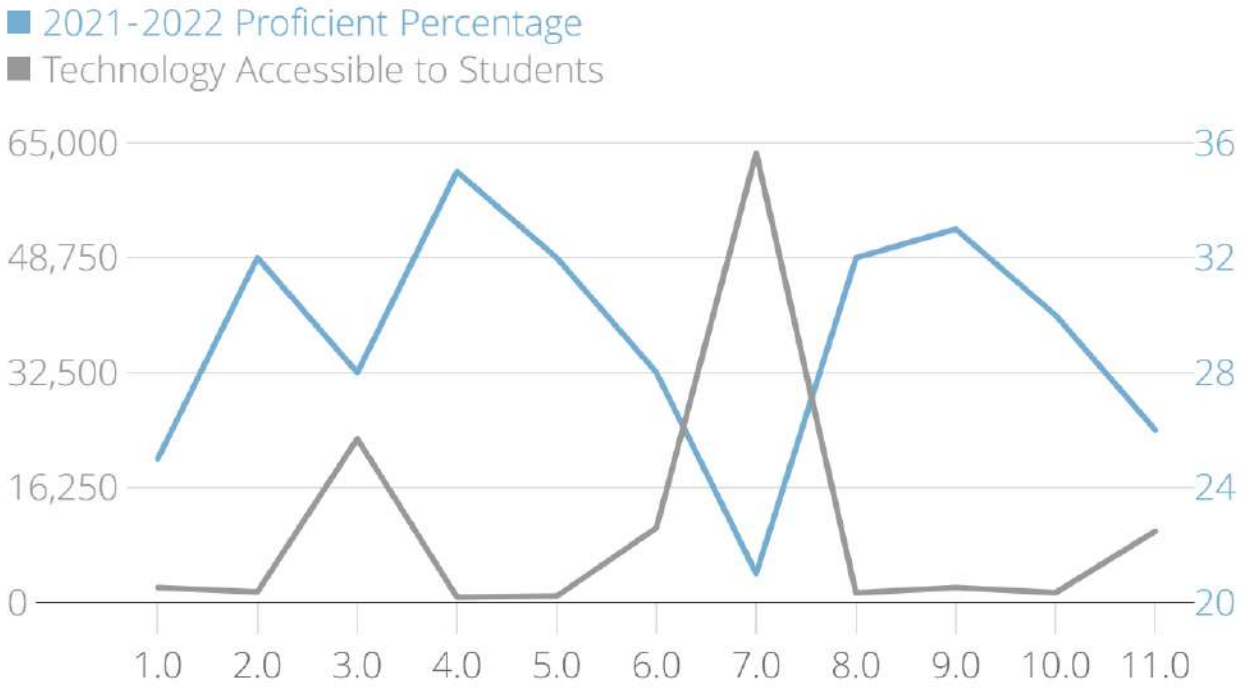
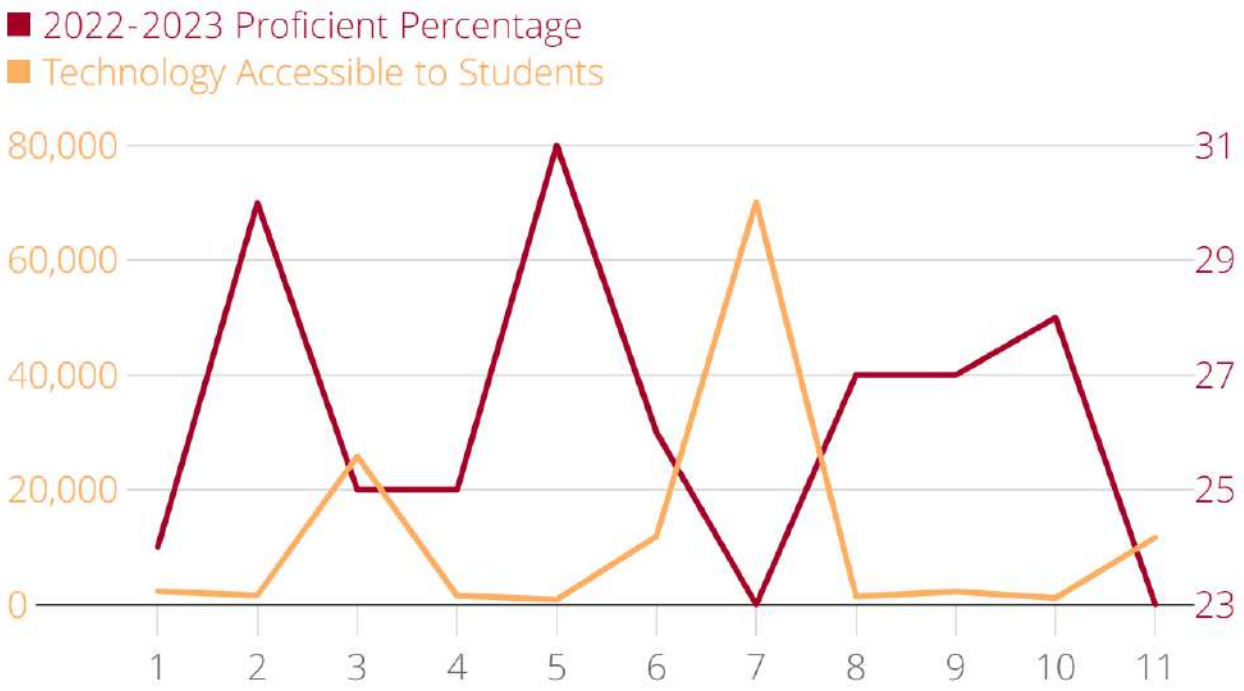


Made with Chartbuilder

2022-2023 Reading



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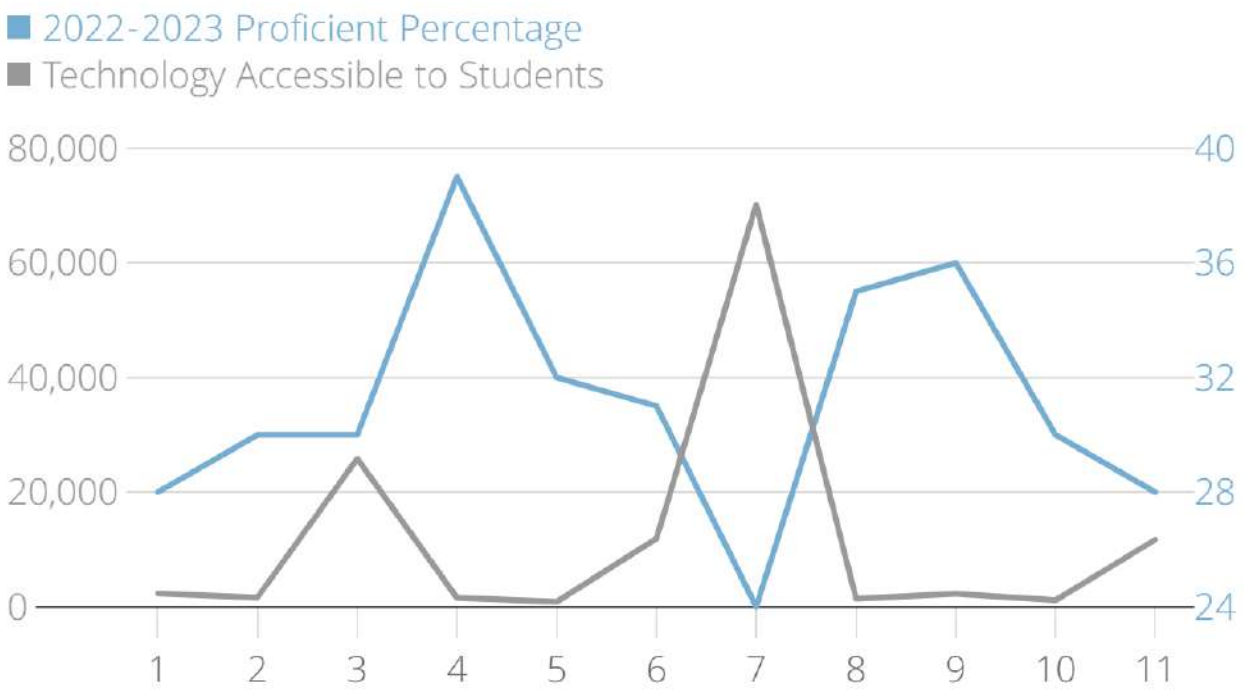
2022-2023 Math



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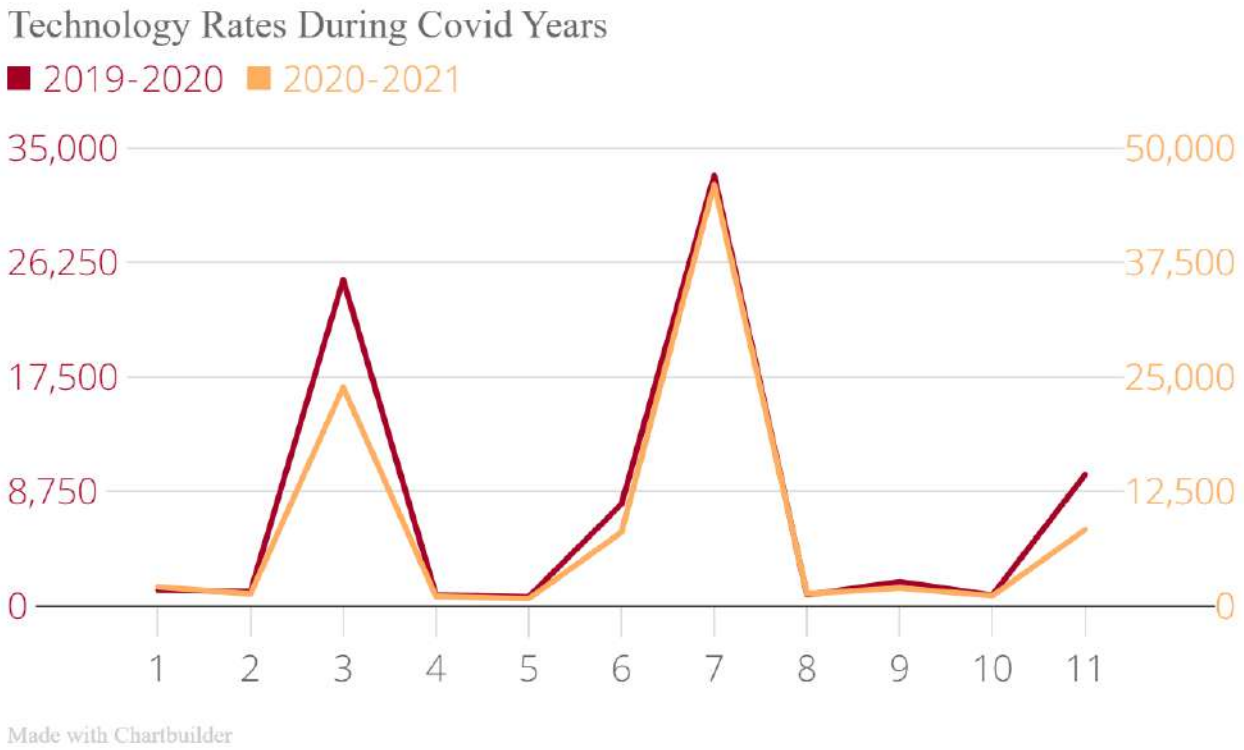

Within these data sets, regardless of the size of the county, one trend that can be tracked is that the availability of technology in elementary schools is only growing. Nearly every year, there was an increase in every school district of devices, or other resources, that were accessible. A large uptick in technology occurred during the "Covid Times," especially in the 2020-2021 school year. In addition to this, each school year where testing scores and technology data is available has been analyzed with descriptive statistics to find mean, median, range, and mode, if applicable, of each set.

In the 2017-2018 school year, the range in both reading and math was 15.8%, and 26,706 in the amount of technology available. The 2018-2019 school year range was charted at 25.3% in reading, 20.9% in math, and 29,171 in technology. There isn't data recorded for state testing scores in the 2019-2020 and 2020-2021 school years. In the 2021-2022 school year, returning

from Covid, the range in reading and math was 14%, and 62,824 in technology. Finally, in the 2022-2023 year, the range in reading is 8% and 15% in math, with a 69,259 gap in technology. From this data, it does show that there is a significant increase in technology and the gap between the amount accessible in larger counties versus smaller counties only gets bigger and bigger. That being said, the gap between percentages does steadily decline as the technology rates increase. Individually county proficiency percentages do, however, decline from the 2017-2018 school year to the 2022-2023. This has often been credited to the hit that education took during the pandemic, not necessarily the integration, or lack thereof, technology.

The mean for the data sets is also separated by year and topic. For 2017-2018, the mean for reading and math data was 38.% (to the nearest tenth), and 4930.3 for technology. In 2018-2019, it was 39.8% for reading, 33.1% for math, and 6100.5 for technology. Already, there is an increase, specifically in technology. In the 2021-2022 year, the mean was 29% for reading and 29.3% for math, with 10680.6 for technology. In the last year recorded (2022-2023), the mean score for reading was 26.3% and 31.2% respectively for math. The mean amount of technology 11895.1.

The mode was fairly uncommon for any of these sets, however, in 2017-2018 reading and math, the mode was 35.2%, 26% in 2021-2022 reading, 32% in 2021-2022 math, 25% for reading in 2022-2023 and 30% in math 2022-2023. There were no modes for any of the technology-related data in any of the school years. The median score varied. In 2017-2018, the median score was 37.4% in reading and math data, and 1060 in technology. In 2018-2019, the median was 39.1% in reading and, slightly less, 32% in math. The median technology available in this same year was 1426. Fast-forwarding to 2021-2022, the median in reading was 29% and

math was 30%; with 2108 the median for technology. Lastly, in 2022-2023, the median in reading was 26% and 30% in math. The median for technology was 2279.

Results

While there do seem to be some correlations between technology and student proficiency, from this data a true conclusion cannot be drawn. If you compare the data from 2017-2018 to 2018-2019, it does see that there is a fairly consistent growth in reading specifically, but not math. That being said, with there being a gap in data being recorded during the peak of the pandemic, it's difficult to see if that trend would carry on. After Covid, it is clear that overall proficiency declined, for both reading and math, however, it can't fully be determined from this data that that is because of the increase of technology accessibility and usage. The only thing that can definitely be confirmed from this data is that the amount of technology accessible has drastically increased.

Conclusion

In conclusion, the results of this study did align with the literature review. Consistent in the literature review works, it was stated that technology and its accessibility is rising in classrooms. Along with that, it said that there is potential for it to have benefits in various areas when used in a variety of ways. That being said, there was no definite proof to show a direct correlation between the increase in technology and testing scores in math and reading specifically. The literature review sources showed that some areas showed growth, when the technology was used in certain ways, but that there needed to be other factors considered when monitoring student growth and success. Along with that, because there is a two year gap directly in the middle of the time frame that School Report Card allowed, due to the global pandemic, it

is complicated to track any real trends. Students who returned to school once it was safe, though many did participate in virtually learning, lost a lot of ground, and the scores in the years following that showed a decline from pre-pandemic rankings. All that considered, this set of data did not show a definite relationship between technology and student achievement on standardized or benchmark tests.

Limitations

Obviously, a major limitation of this study was the gap in the data set due to the nontraditional times during the Pandemic. Because the data would have been so inaccurate had students tested from home, or however it had been determined, nothing was recorded while in the pandemic.

Another limitation of this study is the size of each school district versus the amount of technology they have available. It is a very wide range and that could, potentially, skew the overall data. It was very neat to see how the amount of technology has increased in all counties listed, despite their size. Some districts, such as Green County, have tripled in the amount of time that this data ranges.

Finally, a limitation of the data is that in the earliest years recorded there was an overall average score for elementary, middle, and high school, but you could also select the grade you wanted to see. For this, fourth grade was selected, because this is where is scores provided by The Nation's Report Card come from, however, in the later dates you can only choose the elementary level as a whole, so there is more data than just fourth grade factored in.

Recommendations

Going forward, I do think this same question could be posed and more accurate correlations could be made. For the most part, we have recovered from the pandemic and most students are back in school consistently. Testing is being completed and data is being recorded each year. In addition, technology is updated every year in the report used for this study. This same data could be tracked for the next 5 years and trends may be able to more accurately be tracked. In addition, this study could be revised to track more similarly sized districts, with more similarities in demographics, technology, and more. This research question could even be applied to one of the larger districts and track their testing percentages across the next several years to see if there is a connection between the amount of technology available and student success.